ASRock® Rack

OPEN
Industry Standard, Flexible Architecture

GREEN
Less Heat, Less Power Consumption

STABLE
Robust Design, Quality Parts

Stable and
Reliable Solution

Server/Workstation
Motherboard

EP2C606-4L/D16

EP2C602-4L/D16

EP2C602/D16

EP2C606-4L

EP2C602-4L

EP2C602

User Manual

English

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FC

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 Rack Website: http://www.asrockrack.com

Contents

Chapter 1: Introduction

Thank you for purchasing ASRock Rack *EP2C606-4L/D16 / EP2C602-4L/ D16 / EP2C602/D16 / EP2C606-4L / EP2C602-4L / EP2C602* mother-board, a reliable motherboard produced under ASRock Rack's consistently stringent quality control. It delivers excellent performance with robust de-sign conforming to ASRock Rack's commitment to quality and endurance.

In this manual, chapter 1 and 2 contains the introduction of the mother-board and step-by-step hardware installation guide. Chapter 3 and 4 con-tains the configuration guide of BIOS setup and information of 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 Rack's website without further notice. You may find the latest memory and CPU support list on ASRock Rack's website as well. AS-Rock Rack website   http://www.asrockrack.com
> If you require technical support related to this motherboard, please visit our website for specific information about the model you are using.
> http://www.asrockrack.com/support/index.asp

1.1 Package Contents

ASRock Rack *EP2C606-4L/D16 / EP2C602-4L/D16 / EP2C602/D16 / EP2C606-4L / EP2C602-4L / EP2C602* Motherboard
(SSI EEB Form Factor: 12.0-in x 13-in, 30.5 cm x 33 cm)
User Manual
Support CD
8 x Serial ATA (SATA) Data Cables (Optional)
1 x I/O Panel Shield

1.2 Specifications

EP2C606-4L/D16 / EP2C602-4L/D16 / EP2C602/D16:

Physical Status	Form Factor	SSI EEB
	Dimension	12" x 13" (30.5 cm x 33 cm)
Processor System	CPU	- Supports Intel® Xeon processor E5-1600*/2600/4600 & v2 series * E5-1400 & E5-1600 support single socket.
	Socket	Dual Socket R (LGA2011)
	Power Phase	6 +1 Power Phase Design
	Chipset	**EP2C606-4L/D16**
		Intel® C606
		EP2C602-4L/D16 / EP2C602/D16
		Intel® C602
BIOS	BIOS type	64Mb AMI UEFI Legal BIOS
System Memory	Max. Capacity	256GB DDR3 RDIMM
	Socket	16 x 240-pin DDR3 DIMM slots
	Type	Quad Channel DDR3 1600/1333/1066 LR / Registered /ECC/ UDIMM
	Voltage	- 1.5V, 1.35V
Expansion Slot	PCIe 3.0 x 16	4 slots (2 x16, 1 x16/x8, 1 x8/x0)
	PCIe 3.0 x 4	1 slots
	PCI	1 slots
Storage	SATA/SAS controller	**EP2C606-4L/D16**
		2 x SATA3 6.0 Gb/s , 4 x SATA2 3.0 Gb/s , 8xSATA2/SAS 3Gb/s
		EP2C602-4L/D16 / EP2C602/D16
		2 x SATA3 6.0 Gb/s , 8 x SATA2 3.0 Gb/s
	Additional SATA controller	Marvell 9230 : 4 x SATA3 6.0 Gb/s
BMC	Controller	ASPEED AST2300

Graphics	Controller	ASPEED AST2300
	VRAM	DDR3 16MB
	Output	Supports D-Sub with max. resolution up to 1920x1200 @ 60Hz
Ethernet	Interface	Gigabit LAN 10/100/1000 Mb/s
	IPMI dedicated GLAN	Realtek RTL8211E
	LAN Controller	**EP2C606-4L/D16 / EP2C602-4L/D16**
		4 x Intel® 82574L
		EP2C602/D16
		2 x Intel® 82574L
Rear Panel I/O	Lan port (RJ45)	**EP2C606-4L/D16 / EP2C602-4L/D16**
		4 + 1 (for IPMI)
		EP2C602/D16
		2 + 1 (for IPMI)
	PS/2 KB/ mouse	2
	VGA port	D-sub x 1
	USB port	2 x USB 2.0
	Serial port	1 (COM1)
Internal connector	COM port header	1 (COM2)
	Auxiliary panel header	1 (include chassis intrusion , location button & LED, front LAN LED)
	TPM header	1
	IPMB header	1
	Buzzer	1
	Fan header	"8 x 4-pin" or "6 x 4-pin and 2 x 3-pin" *CPU fan header have 3-pin and 4-pin, only one of them can be used at a time.
	ATX power	1 (24-pin) + 2(8-pin)
	USB header	2 (each support 2 USB 2.0)
	Type A USB 2.0 port	1

Internal connector	80 debug port LED	1
	Front panel	1
	Speaker(4pin)	1

Support OS	OS	EP2C606-4L/D16
		Microsoft® Windows®: Windows 2003 32/64 (IDE mode) Windows 2003 R2 32/64 (IDE/AHCI mode) Windows 2008 32/64 Windows 2008 R2
		Linux: RedHad Enterprise Linux Server 5.5 32/64 (AHCI mode) RedHad Enterprise Linux Server 6.0 32/64 (AHCI mode) RedHad Enterprise Linux Server 6.4 32/64 CentOS 5.5 32/64 (AHCI mode) CentOS 6.0 32/64 (AHCI mode) Suse 10.3 32/64 (AHCI mode) Suse 11.1 32/64 (AHCI mode) VMware ESXi 5.1
		EP2C602-4L/D16 / EP2C602/D16
		Microsoft® Windows®: Windows 2003 32/64 (IDE mode) Windows 2003 R2 32/64 (IDE/AHCI mode) Windows 2008 32/64 Windows 2008 R2 Windows 2012 Windows 2012 R2
		Linux: RedHad Enterprise Linux Server 5.5 32/64 (AHCI mode) RedHad Enterprise Linux Server 6.0 32/64 (AHCI mode) RedHad Enterprise Linux Server 6.4 32/64 CentOS 5.5 32/64 (AHCI mode) CentOS 6.0 32/64 (AHCI mode) Suse 10.3 32/64 (AHCI mode) Suse 11.1 32/64 (AHCI mode) VMware ESXi 5.1

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

* EP2C606-4L/D16 is build-to-order manufacturing.

EP2C606-4L / EP2C602-4L / EP2C602:

Physical Status	Form Factor	EEB
	Dimension	12" x 13" (30.5 cm x 33 cm)
Processor System	CPU	- Supports Intel® Xeon processor E5-1600*/2600/4600 & v2 series * E5-1400 & E5-1600 support single socket.
	Socket	Dual Socket R (LGA2011)
	Power Phase	6 +1 Power Phase Design
	Chipset	**EP2C606-4L**
		Intel® C606
		EP2C602-4L / EP2C602
		Intel® C602
BIOS	BIOS type	64Mb AMI UEFI Legal BIOS
System Memory	Max. Capacity	128GB DDR3 RDIMM
	Socket	8 x 240-pin DDR3 DIMM slots
	Type	Quad Channel DDR3 1600/1333/1066 LR / Registered /ECC/ UDIMM
	Voltage	- 1.5V, 1.35V
Expansion Slot	PCIe 3.0 x 16	5 slots (3 x16, 1 x16/x8, 1 x8/x0)
	PCIe 3.0 x 4	1 slots
	PCI	1 slots
Storage	SATA/SAS controller	**EP2C606-4L**
		2 x SATA3 6.0 Gb/s , 4 x SATA2 3.0 Gb/s , 8x SATA2/SAS 3Gb/s
		EP2C602-4L / EP2C602
		2 x SATA3 6.0 Gb/s , 8 x SATA2 3.0 Gb/s
	Additional SATA controller	Marvell 9230 : 4 x SATA3 6.0 Gb/s
BMC	Controller	ASPEED AST2300

Graphics	Controller	ASPEED AST2300
	VRAM	DDR3 16MB
	Output	Supports D-Sub with max. resolution up to 1920x1200 @ 60Hz
Ethernet	Interface	Gigabit LAN 10/100/1000 Mb/s
	IPMI dedicated GLAN	Realtek RTL8211E
	LAN Controller	**EP2C606-4L / EP2C602-4L**
		4 x Intel® 82574L
		EP2C602
		2 x Intel® 82574L
Rear Panel I/O	Lan port (RJ45)	**EP2C606-4L / EP2C602-4L**
		4 + 1 (for IPMI)
		EP2C602
		2 + 1 (for IPMI)
	PS/2 KB/ mouse	2
	VGA port	D-sub x 1
	USB port	2 x USB 2.0
	Serial port	1 (COM1)
Internal connector	COM port header	1 (COM2)
	Auxiliary panel header	1 (include chassis intrusion , location button & LED, front LAN LED)
	TPM header	1
	IPMB header	1
	Buzzer	1
	Fan header	"8 x 4-pin" or "6 x 4-pin and 2 x 3-pin" *CPU fan header have 3-pin and 4-pin, only one of them can be used at a time.
	ATX power	1 (24-pin) + 2(8-pin)
	USB header	2 (each support 2 USB 2.0)
	Type A USB 2.0 port	1

Internal connector	80 debug port LED	1
	Front panel	1
	Speaker (4pin)	1

Support OS	OS	**EP2C606-4L**
		Microsoft® Windows®: Windows 2003 32/64 (IDE mode) Windows 2003 R2 32/64 (IDE/AHCI mode) Windows 2008 32/64 Windows 2008 R2 **Linux:** RedHad Enterprise Linux Server 5.5 32/64 (AHCI mode) RedHad Enterprise Linux Server 6.0 32/64 (AHCI mode) CentOS 5.5 32/64 (AHCI mode) CentOS 6.0 32/64 (AHCI mode) Suse 10.3 32/64 (AHCI mode) Suse 11.1 32/64 (AHCI mode)
		EP2C602-4L / EP2C602
		Microsoft® Windows®: Windows 2003 32/64 (IDE mode) Windows 2003 R2 32/64 (IDE/AHCI mode) Windows 2008 32/64 Windows 2008 R2 Windows 2012 Windows 2012 R2 **Linux:** RedHad Enterprise Linux Server 5.5 32/64 (AHCI mode) RedHad Enterprise Linux Server 6.0 32/64 (AHCI mode) CentOS 5.5 32/64 (AHCI mode) CentOS 6.0 32/64 (AHCI mode) Suse 10.3 32/64 (AHCI mode) Suse 11.1 32/64 (AHCI mode)

* For detailed product information, please visit our website:
  http://www.asrockrack.com
* EP2C606-4L is build-to-order manufacturing.

1.4 Motherboard Layout

EP2C606-4L/D16

1	2 x 240-pin DDR3 DIMM Slots
	(DDR3_G2, DDR3_H2, White)
2	2 x 240-pin DDR3 DIMM Slots
	(DDR3_G1, DDR3_H1, Blue)
3	2 x 240-pin DDR3 DIMM Slots
	(DDR3_A2, DDR3_B2, White)
4	ATX Power Connector (ATXPWR1)
5	ATX 12V Power Connector (ATX12V1)
6	2 x 240-pin DDR3 DIMM Slots
	(DDR3_A1, DDR3_B1, Blue)
7	CPU Fan Connector (CPU_FAN1_2)
8	CPU Fan Connector (CPU_FAN1_1)
9	2011-Pin CPU Socket (CPU_BSP1)
10	Front Fan Connector (FRNT_FAN1)
11	Front Fan Connector (FRNT_FAN2)
12	Front Fan Connector (FRNT_FAN3)
13	Front Fan Connector (FRNT_FAN4)
14	PSU SMBus (PSU_SMB1)
15	2 x 240-pin DDR3 DIMM Slots
	(DDR3_F2, DDR3_E2, White)
16	2 x 240-pin DDR3 DIMM Slots
	(DDR3_D1, DDR3_C1, Blue)
17	PSU Jumpers
	(PSU_CLK_SEL1, PSU_DATA_SEL2, PSU_ALT_SEL3)
18	SATA3 Connector (SATAIII_M0, White)
19	SATA3 Connector (SATAIII_M1, White)
20	SATA3 Connector (SATAIII_M2, White)
21	SATA3 Connector (SATAIII_M3, White)
22	SATA3 Connector (SATAIII_0, White)
23	SATA3 Connector (SATAIII_1, White)
24	Speaker Header (SPEAKER1)
25	SATA2 Connector (SATAII_2, Blue)
26	SCU SGPIO Connector (SCU_SGPIO2)
27	SATA2 Connector (SATAII_3, Blue)
28	SATA2 Connector (SATAII_4, Blue)

29	SATA SGPIO Connector (SATA_SGPIO2)
30	SATA2 Connector (SATAII_5, Blue)
31	SATA SGPIO Connector (SATA_SGPIO1)
32	SCU Connector (SCU_PORT_7, Black)
33	SCU Connector (SCU_PORT_6, Black)
34	SCU Connector (SCU_PORT_5, Black)
35	SCU Connector (SCU_PORT_4, Black)
36	SCU SGPIO Connector (SCU_SGPIO1)
37	UP ROM Header (UP_ROM1)
38	ME Recovery Jumper (ME_RECOVERY1)
39	SCU Connector (SCU_PORT_3, Black)
40	SCU Connector (SCU_PORT_2, Black)
41	SCU Connector (SCU_PORT_1, Black)
42	SCU Connector (SCU_PORT_0, Black)
43	System Panel Header (PANEL1)
44	SPI Flash Memory (64Mb)
45	Dr. Debug
46	USB 2.0 Ports (USB_4_5)
47	USB 2.0 Ports (USB_2_3)
48	USB 2.0 Ports (USB_6)
49	Buzzer (BUZZER1)
50	Auxiliary panel header (AUX_PANEL1)
51	Front Lan LED Connector (FRONT_LED_LAN34)
52	Thermal Sensor header (TR1)
53	TPM Header (TPM1)
54	BMC SMB Header (BMC_SMB1)
55	Non Maskable Interrupt Button (NMI_BTN1)
56	Intelligent Platform Management Bus header (IPMB_1)
57	COM Port Header (COM2)
58	BMC ROM
59	PCI Slot (PCI1, White)
60	PCI Express 3.0 x16 Slot (PCIE2, Blue) from CPU_BSP1
61	Intel C606 Chipset
62	PCI Express 3.0 x16 Slot (PCIE3, Blue) from CPU_BSP1
63	PCI Express 3.0 x16 Slot (PCIE4, Blue) from CPU_BSP1

64	PCI Express 3.0 x16 Slot (PCIE5, Blue) from CPU_AP1
65	Clear CMOS Pad (CLRCMOS2)
66	PCI Express 2.0 x 4 Slot (PCIE6, White) from CPU_BSP1
67	2 x 240-pin DDR3 DIMM Slots
	(DDR3_D2, DDR3_C2, White)
68	2 x 240-pin DDR3 DIMM Slots
	(DDR3_F1, DDR3_E1, Blue)
69	Rear Fan Connector (REAR_FAN2)
70	Rear Fan Connector (REAR_FAN1)
71	CPU Fan Connector (CPU_FAN2_2)
72	CPU Fan Connector (CPU_FAN2_1)
73	2011-Pin CPU Socket (CPU_AP1)
74	ATX 12V Power Connector (ATX12V2)

EP2C602-4L/D16

1	2 x 240-pin DDR3 DIMM Slots
	(DDR3_G2, DDR3_H2, White)
2	2 x 240-pin DDR3 DIMM Slots
	(DDR3_G1, DDR3_H1, Blue)
3	2 x 240-pin DDR3 DIMM Slots
	(DDR3_A2, DDR3_B2, White)
4	ATX Power Connector (ATXPWR1)
5	ATX 12V Power Connector (ATX12V1)
6	2 x 240-pin DDR3 DIMM Slots
	(DDR3_A1, DDR3_B1, Blue)
7	CPU Fan Connector (CPU_FAN1_2)
8	CPU Fan Connector (CPU_FAN1_1)
9	2011-Pin CPU Socket (CPU_BSP1)
10	Front Fan Connector (FRNT_FAN1)
11	Front Fan Connector (FRNT_FAN2)
12	Front Fan Connector (FRNT_FAN3)
13	Front Fan Connector (FRNT_FAN4)
14	PSU SMBus (PSU_SMB1)
15	2 x 240-pin DDR3 DIMM Slots
	(DDR3_F2, DDR3_E2, White)
16	2 x 240-pin DDR3 DIMM Slots
	(DDR3_D1, DDR3_C1, Blue)
17	PSU Jumpers
	(PSU_CLK_SEL1, PSU_DATA_SEL2, PSU_ALT_SEL3)
18	SATA3 Connector (SATAIII_M0, White)
19	SATA3 Connector (SATAIII_M1, White)
20	SATA3 Connector (SATAIII_M2, White)
21	SATA3 Connector (SATAIII_M3, White)
22	SATA3 Connector (SATAIII_0, White)
23	SATA3 Connector (SATAIII_1, White)
24	Speaker Header (SPEAKER1)
25	SATA2 Connector (SATAII_2, Blue)
26	SATA2 Connector (SATAII_3, Blue)
27	SATA2 Connector (SATAII_4, Blue)
28	SATA2 Connector (SATAII_5, Blue)

29	SATA SGPIO Connector (SATA_SGPIO2)
30	SATA SGPIO Connector (SATA_SGPIO1)
31	SCU SGPIO Connector (SCU_SGPIO1)
32	UP ROM Header (UP_ROM1)
33	ME Recovery Jumper (ME_RECOVERY1)
34	SCU Connector (SCU_PORT_3, Blue)
35	SCU Connector (SCU_PORT_2, Blue)
36	SCU Connector (SCU_PORT_1, Blue)
37	SCU Connector (SCU_PORT_0, Blue)
38	System Panel Header (PANEL1)
39	SPI Flash Memory (64Mb)
40	Dr. Debug
41	USB 2.0 Ports (USB_4_5)
42	USB 2.0 Ports (USB_2_3)
43	USB 2.0 Ports (USB_6)
44	Buzzer (BUZZER1)
45	Auxiliary panel header (AUX_PANEL1)
46	Front Lan LED Connector (FRONT_LED_LAN34)
47	Thermal Sensor header (TR1)
48	TPM Header (TPM1)
49	BMC SMB Header (BMC_SMB1)
50	Non Maskable Interrupt Button (NMI_BTN1)
51	Intelligent Platform Management Bus header (IPMB_1)
52	COM Port Header (COM2)
53	BMC ROM
54	PCI Slot (PCI1, White)
55	PCI Express 3.0 x16 Slot (PCIE2, Blue) from CPU_BSP1
56	Intel C602 Chipset
57	PCI Express 3.0 x16 Slot (PCIE3, Blue) from CPU_BSP1
58	PCI Express 3.0 x16 Slot (PCIE4, Blue) from CPU_BSP1
59	PCI Express 3.0 x16 Slot (PCIE5, Blue) from CPU_AP1
60	Clear CMOS Pad (CLRCMOS2)
61	PCI Express 3.0 x 4 Slot (PCIE6, White) from CPU_BSP1
62	2 x 240-pin DDR3 DIMM Slots
	(DDR3_D2, DDR3_C2, White)

63	2 x 240-pin DDR3 DIMM Slots
	(DDR3_F1, DDR3_E1, Blue)
64	Rear Fan Connector (REAR_FAN2)
65	Rear Fan Connector (REAR_FAN1)
66	CPU Fan Connector (CPU_FAN2_2)
67	CPU Fan Connector (CPU_FAN2_1)
68	2011-Pin CPU Socket (CPU_AP1)
69	ATX 12V Power Connector (ATX12V2)

EP2C602/D16

26.7cm (13 in)

30.5cm (12 in)

PS2 Keyboard
PS2 Mouse
VGA
COM1
USB 2.0
T: USB0
B: USB1
Top:
LAN2
ATX12V2

IPMI LAN
LAN1

CPU_FAN1_1
CPU_FAN2_2

REAR_FAN1
REAR_FAN2

PCIE6
PCIE5
PCIE4
PCIE3
PCIE2
PCI1

RoHS
ASRock
EP2C602/D16

BMC ROM

CLRCMOS2
CMOS Battery

Super I/O

BUZZER1
USB_6
Dr. Debug

Intel
C602

ATXPWR1
ATX12V1

DDR3_G1 (64 bit, 240-pin module)
DDR3_G2 (64 bit, 240-pin module)
DDR3_H1 (64 bit, 240-pin module)
DDR3_H2 (64 bit, 240-pin module)

DDR3_A1 (64 bit, 240-pin module)
DDR3_A2 (64 bit, 240-pin module)
DDR3_B1 (64 bit, 240-pin module)
DDR3_B2 (64 bit, 240-pin module)

CPU_FAN1_1
CPU_FAN1_2

FRNT_FAN1
FRNT_FAN2
FRNT_FAN3
FRNT_FAN4
PSU_SMB1

DDR3_F2 (64 bit, 240-pin module)
DDR3_F1 (64 bit, 240-pin module)
DDR3_E2 (64 bit, 240-pin module)
DDR3_E1 (64 bit, 240-pin module)

DDR3_D2 (64 bit, 240-pin module)
DDR3_D1 (64 bit, 240-pin module)
DDR3_C2 (64 bit, 240-pin module)
DDR3_C1 (64 bit, 240-pin module)

PSU_CLR_SEL1
PSU_DATA_SEL2
PSU_ALT_SEL3

SATAII_M0
SATAII_M1
SATAII_M2
SATAII_M3
SATAII_0
SATAII_1
SATAII_2
SATAII_3
SATAII_4
SATAII_5

COM2
IPMI_1
KBC_MTK1
EMC_SMB1
TPM1
TB1
AUX_PANEL1
USB_4_5
USB_2_3
S4MB0 BIOS
PANEL1
SGPIO1
HDD_SAT...
HDD_SAT...
HDD_PWR1
SPI_RECOVERY1
LPT_REDM1
SPDIF
BMC_GPIO1

CLR_CMOS
HDD_SGPIO2
HDD_SGPIO2

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1	2 x 240-pin DDR3 DIMM Slots
	(DDR3_G2, DDR3_H2, White)
2	2 x 240-pin DDR3 DIMM Slots
	(DDR3_G1, DDR3_H1, Blue)
3	2 x 240-pin DDR3 DIMM Slots
	(DDR3_A2, DDR3_B2, White)
4	ATX Power Connector (ATXPWR1)
5	ATX 12V Power Connector (ATX12V1)
6	2 x 240-pin DDR3 DIMM Slots
	(DDR3_A1, DDR3_B1, Blue)
7	CPU Fan Connector (CPU_FAN1_2)
8	CPU Fan Connector (CPU_FAN1_1)
9	2011-Pin CPU Socket (CPU_BSP1)
10	Front Fan Connector (FRNT_FAN1)
11	Front Fan Connector (FRNT_FAN2)
12	Front Fan Connector (FRNT_FAN3)
13	Front Fan Connector (FRNT_FAN4)
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19	SATA3 Connector (SATAIII_M1, White)
20	SATA3 Connector (SATAIII_M2, White)
21	SATA3 Connector (SATAIII_M3, White)
22	SATA3 Connector (SATAIII_0, White)
23	SATA3 Connector (SATAIII_1, White)
24	Speaker Header (SPEAKER1)
25	SATA2 Connector (SATAII_2, Blue)
26	SATA2 Connector (SATAII_3, Blue)
27	SATA2 Connector (SATAII_4, Blue)
28	SATA2 Connector (SATAII_5, Blue)

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35	SCU Connector (SCU_PORT_2, Blue)
36	SCU Connector (SCU_PORT_1, Blue)
37	SCU Connector (SCU_PORT_0, Blue)
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41	USB 2.0 Ports (USB_4_5)
42	USB 2.0 Ports (USB_2_3)
43	USB 2.0 Ports (USB_6)
44	Buzzer (BUZZER1)
45	Auxiliary panel header (AUX_PANEL1)
46	Thermal Sensor header (TR1)
47	TPM Header (TPM1)
48	BMC SMB Header (BMC_SMB1)
49	Non Maskable Interrupt Button (NMI_BTN1)
50	Intelligent Platform Management Bus header (IPMB_1)
51	COM Port Header (COM2)
52	BMC ROM
53	PCI Slot (PCI1, White)
54	PCI Express 3.0 x16 Slot (PCIE2, Blue) from CPU_BSP1
55	Intel C602 Chipset
56	PCI Express 3.0 x16 Slot (PCIE3, Blue) from CPU_BSP1
57	PCI Express 3.0 x16 Slot (PCIE4, Blue) from CPU_BSP1
58	PCI Express 3.0 x16 Slot (PCIE5, Blue) from CPU_AP1
59	Clear CMOS Pad (CLRCMOS2)
60	PCI Express 3.0 x 4 Slot (PCIE6, White) from CPU_BSP1
61	2 x 240-pin DDR3 DIMM Slots
	(DDR3_D2, DDR3_C2, White)
62	2 x 240-pin DDR3 DIMM Slots

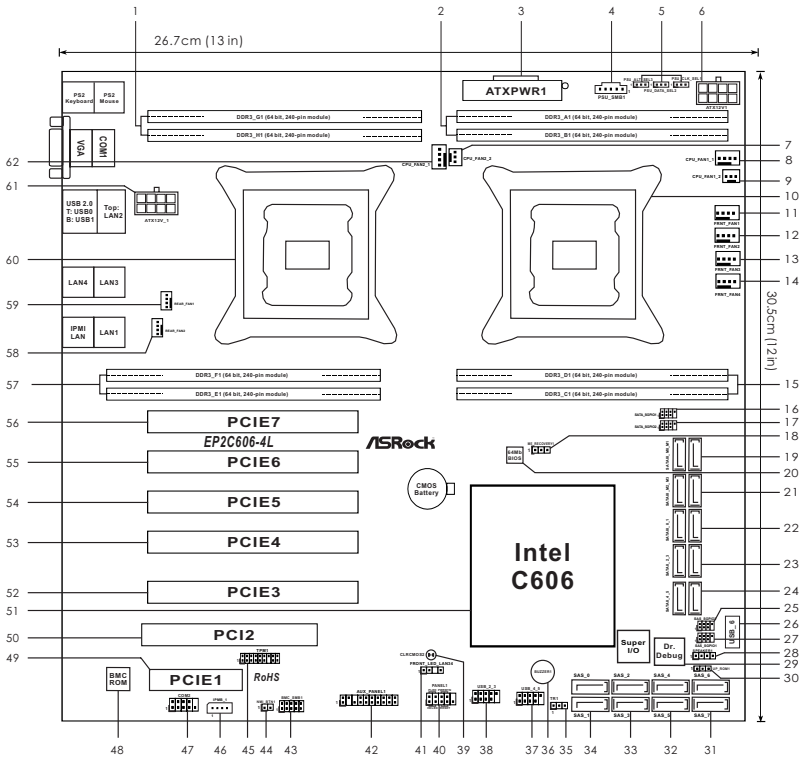|	
	(DDR3_F1, DDR3_E1, Blue)
63	Rear Fan Connector (REAR_FAN2)
64	Rear Fan Connector (REAR_FAN1)
65	CPU Fan Connector (CPU_FAN2_2)
66	CPU Fan Connector (CPU_FAN2_1)
67	2011-Pin CPU Socket (CPU_AP1)
68	ATX 12V Power Connector (ATX12V2)

EP2C606-4L

26.7cm (13 in)

30.5cm (12 in)

1	2 x 240-pin DDR3 DIMM Slots
	(DDR3_G1, DDR3_H1, Blue)
2	2 x 240-pin DDR3 DIMM Slots
	(DDR3_A1, DDR3_B1, White)
3	ATX Power Connector (ATXPWR1)
4	PSU SMBus (PSU_SMB1)
5	PSU Jumpers
	(PSU_CLK_SEL1, PSU_DATA_SEL2, PSU_ALT_SEL3)
6	ATX 12V Power Connector (ATX12V1)
7	CPU Fan Connector (CPU_FAN2_2)
8	CPU Fan Connector (CPU_FAN1_1)
9	CPU Fan Connector (CPU_FAN1_2)
10	2011-Pin CPU Socket (CPU_BSP1)
11	Front Fan Connector (FRNT_FAN1)
12	Front Fan Connector (FRNT_FAN2)
13	Front Fan Connector (FRNT_FAN3)
14	Front Fan Connector (FRNT_FAN4)
15	2 x 240-pin DDR3 DIMM Slots
	(DDR3_D1, DDR3_C1, Blue)
16	SATA SGPIO Connector (SATA_SGPIO1)
17	SATA SGPIO Connector (SATA_SGPIO2)
18	ME Recovery Jumper (ME_RECOVERY1)
19	SATA3 Connector (SATAIII_M0_M1, White)
20	SPI Flash Memory (64Mb)
21	SATA3 Connector (SATAIII_M2_M3, White)
22	SATA3 Connector (SATAIII_0_1, White)
23	SATA2 Connector (SATAII_2_3, Blue)
24	SATA2 Connector (SATAII_4_5, Blue)
25	SAS Connector (SAS_SGPIO2)
26	USB 2.0 Ports (USB_6)
27	SAS Connector (SAS_SGPIO1)
28	Speaker Header (SPEAKER1)
29	Dr. Debug
30	UP ROM Header (UP_ROM1)
31	SAS Connector (SAS_6_7, Black)

32	SAS Connector (SAS_4_5, Black)
33	SAS Connector (SAS_2_3, Black)
34	SAS Connector (SAS_0_1, Black)
35	Thermal Sensor header (TR1)
36	Buzzer (BUZZER1)
37	USB 2.0 Ports (USB_4_5)
38	USB 2.0 Ports (USB_2_3)
39	Clear CMOS Pad (CLRCMOS2)
40	System Panel Header (PANEL1)
41	Front Lan LED Connector (FRONT_LED_LAN34)
42	Auxiliary panel header (AUX_PANEL1)
43	BMC SMB Header (BMC_SMB1)
44	Non Maskable Interrupt Button (NMI_BTN1)
45	TPM Header (TPM1)
46	Intelligent Platform Management Bus header (IPMB_1)
47	COM Port Header (COM2)
48	BMC ROM
49	PCI Express 3.0 x 4 Slot (PCIE1, White) from CPU_BSP1
50	PCI Slot (PCI2, White)
51	Intel C602 Chipset
52	PCI Express 3.0 x16 Slot (PCIE3, Blue) from CPU_BSP1
53	PCI Express 3.0 x16 Slot (PCIE4, Blue) from CPU_BSP1
54	PCI Express 3.0 x16 Slot (PCIE5, Blue) from CPU_BSP1
55	PCI Express 3.0 x16 Slot (PCIE6, Blue) from CPU_AP1
56	PCI Express 3.0 x16 Slot (PCIE7, Blue) from CPU_AP1
57	2 x 240-pin DDR3 DIMM Slots
	(DDR3_F1, DDR3_E1, Blue)
58	Rear Fan Connector (REAR_FAN2)
59	Rear Fan Connector (REAR_FAN1)
60	2011-Pin CPU Socket (CPU_AP1)
61	ATX 12V Power Connector (ATX12V_1)
62	CPU Fan Connector (CPU_FAN2_1)

EP2C602-4L

26.7cm (13 in)

PS2 Keyboard
PS2 Mouse

VGA
COM1

USB 2.0
T: USB0
B: USB1
Top:
LAN2
ATX12V_1

LAN4 LAN3

IPMI LAN LAN1

DDR3_G1 (64 bit, 240-pin module)
DDR3_H1 (64 bit, 240-pin module)
DDR3_A1 (64 bit, 240-pin module)
DDR3_B1 (64 bit, 240-pin module)

ATXPWR1

PSU_SMB1
PSU_SMB2
PS2_DATA_SEL2
PS2_CLK_SEL2
ATX12V1

CPU_FAN2_1
CPU_FAN2_2

CPU_FAN1_1
CPU_FAN1_2

FRNT_FAN1
FRNT_FAN2
FRNT_FAN3
FRNT_FAN4

speak_com
speak_hdr

DDR3_F1 (64 bit, 240-pin module)
DDR3_E1 (64 bit, 240-pin module)
DDR3_D1 (64 bit, 240-pin module)
DDR3_C1 (64 bit, 240-pin module)

30.5cm (12 in)

ASRock

PCIE7

EP2C602-4L

PCIE6

PCIE5

PCIE4

PCIE3

PCI2

PCIE1

RoHS

BMC ROM

CMOS Battery

Intel C602

SB

BMC
BIOS

Super I/O

Dr. Debug

CLRCMOS1
FRONT_LED_LAN1A
PANEL1
USB_2_3
USB_4_5
AUX_PANEL1
SAS_0
SAS_2
SAS_1
SAS_3
SAS_SGPIO1
SAS_SGPIO2
SATA3_M_0
SATA3_M_1
SATA2_0
SATA2_1
SATA3_4_5
USB
UP_SCAN
FRNT_FAN5

CORE1
IPMB_1
REC_SMB1

47

1	2 x 240-pin DDR3 DIMM Slots
	(DDR3_G1, DDR3_H1, Blue)
2	2 x 240-pin DDR3 DIMM Slots
	(DDR3_A1, DDR3_B1, White)
3	ATX Power Connector (ATXPWR1)
4	PSU SMBus (PSU_SMB1)
5	PSU Jumpers
	(PSU_CLK_SEL1, PSU_DATA_SEL2, PSU_ALT_SEL3)
6	ATX 12V Power Connector (ATX12V1)
7	CPU Fan Connector (CPU_FAN2_2)
8	CPU Fan Connector (CPU_FAN1_1)
9	CPU Fan Connector (CPU_FAN1_2)
10	2011-Pin CPU Socket (CPU_BSP1)
11	Front Fan Connector (FRNT_FAN1)
12	Front Fan Connector (FRNT_FAN2)
13	Front Fan Connector (FRNT_FAN3)
14	Front Fan Connector (FRNT_FAN4)
15	2 x 240-pin DDR3 DIMM Slots
	(DDR3_D1, DDR3_C1, Blue)
16	SATA SGPIO Connector (SATA_SGPIO1)
17	SATA SGPIO Connector (SATA_SGPIO2)
18	ME Recovery Jumper (ME_RECOVERY1)
19	SATA3 Connector (SATAIII_M0_M1, White)
20	SPI Flash Memory (64Mb)
21	SATA3 Connector (SATAIII_M2_M3, White)
22	SATA3 Connector (SATAIII_0_1, White)
23	SATA2 Connector (SATAII_2_3, Blue)
24	SATA2 Connector (SATAII_4_5, Blue)
25	USB 2.0 Ports (USB_6)
26	SAS Connector (SAS_SGPIO1)
27	Speaker Header (SPEAKER1)
28	UP ROM Header (UP_ROM1)
29	Dr. Debug
30	SAS Connector (SAS_2_3, Blue)
31	SAS Connector (SAS_0_1, Blue)

32	Thermal Sensor header (TR1)
33	Buzzer (BUZZER1)
34	USB 2.0 Ports (USB_4_5)
35	USB 2.0 Ports (USB_2_3)
36	Clear CMOS Pad (CLRCMOS2)
37	System Panel Header (PANEL1)
38	Front Lan LED Connector (FRONT_LED_LAN34)
39	Auxiliary panel header (AUX_PANEL1)
40	BMC SMB Header (BMC_SMB1)
41	Non Maskable Interrupt Button (NMI_BTN1)
42	TPM Header (TPM1)
43	Intelligent Platform Management Bus header (IPMB_1)
44	COM Port Header (COM2)
45	BMC ROM
46	PCI Express 3.0 x 4 Slot (PCIE1, White) from CPU_BSP1
47	PCI Slot (PCI2, White)
48	Intel C602 Chipset
49	PCI Express 3.0 x16 Slot (PCIE3, Blue) from CPU_BSP1
50	PCI Express 3.0 x16 Slot (PCIE4, Blue) from CPU_BSP1
51	PCI Express 3.0 x16 Slot (PCIE5, Blue) from CPU_BSP1
52	PCI Express 3.0 x16 Slot (PCIE6, Blue) from CPU_AP1
53	PCI Express 3.0 x16 Slot (PCIE7, Blue) from CPU_AP1
54	2 x 240-pin DDR3 DIMM Slots
	(DDR3_F1, DDR3_E1, Blue)
55	Rear Fan Connector (REAR_FAN2)
56	Rear Fan Connector (REAR_FAN1)
57	2011-Pin CPU Socket (CPU_AP1)
58	ATX 12V Power Connector (ATX12V_1)
59	CPU Fan Connector (CPU_FAN2_1)

EP2C602

26.7cm (13 in)

30.5cm (12 in)

PS2 Keyboard
PS2 Mouse
VGA
COM1
ATXPWR1
PSU_SMB1
ATX12V1

DDR3_G1 (64 bit, 240-pin module)
DDR3_H1 (64 bit, 240-pin module)
DDR3_A1 (64 bit, 240-pin module)
DDR3_B1 (64 bit, 240-pin module)

USB 2.0
T: USB0
B: USB1
Top:
LAN2
ATX12V_1

CPU_FAN2_1
CPU_FAN2_2
CPU_FAN1_1
CPU_FAN1_2

IPMI
LAN
LAN1
REAR_FAN1
REAR_FAN2

FRNT_FAN1
FRNT_FAN2
FRNT_FAN3
FRNT_FAN4

DDR3_F1 (64 bit, 240-pin module)
DDR3_E1 (64 bit, 240-pin module)
DDR3_D1 (64 bit, 240-pin module)
DDR3_C1 (64 bit, 240-pin module)

PCIE7
EP2C602
ASRock
SATA_SGPIO2
SATA_SGPIO1

PCIE6
BK RECOVERY
S-SATA BIOS

PCIE5
CMOS Battery
Intel C602

PCIE4

PCIE3

PCI2
Super I/O
Dr. Debug

PCIE1
BMC ROM
RoHS
TPM1
IPMB_1
BACK_PANEL1
PANEL1
USB_2_3
USB_4_5
BUZZER1
SAS_0
SAS_2
SAS_1
SAS_3
CLRCMOS1
SP_SCAN1

SATA3_M0_M1
SATA3_M2_M3
SATA3_4_1
SATA3_3_2
SATA3_4_3
USB 3.0
USB 3.0

1	2 x 240-pin DDR3 DIMM Slots
	(DDR3_G1, DDR3_H1, Blue)
2	2 x 240-pin DDR3 DIMM Slots
	(DDR3_A1, DDR3_B1, White)
3	ATX Power Connector (ATXPWR1)
4	PSU SMBus (PSU_SMB1)
5	PSU Jumpers
	(PSU_CLK_SEL1, PSU_DATA_SEL2, PSU_ALT_SEL3)
6	ATX 12V Power Connector (ATX12V1)
7	CPU Fan Connector (CPU_FAN2_2)
8	CPU Fan Connector (CPU_FAN1_1)
9	CPU Fan Connector (CPU_FAN1_2)
10	2011-Pin CPU Socket (CPU_BSP1)
11	Front Fan Connector (FRNT_FAN1)
12	Front Fan Connector (FRNT_FAN2)
13	Front Fan Connector (FRNT_FAN3)
14	Front Fan Connector (FRNT_FAN4)
15	2 x 240-pin DDR3 DIMM Slots
	(DDR3_D1, DDR3_C1, Blue)
16	SATA SGPIO Connector (SATA_SGPIO1)
17	SATA SGPIO Connector (SATA_SGPIO2)
18	ME Recovery Jumper (ME_RECOVERY1)
19	SATA3 Connector (SATAIII_M0_M1, White)
20	SPI Flash Memory (64Mb)
21	SATA3 Connector (SATAIII_M2_M3, White)
22	SATA3 Connector (SATAIII_0_1, White)
23	SATA2 Connector (SATAII_2_3, Blue)
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25	USB 2.0 Ports (USB_6)
26	SAS Connector (SAS_SGPIO1)
27	Speaker Header (SPEAKER1)
28	UP ROM Header (UP_ROM1)
29	Dr. Debug
30	SAS Connector (SAS_2_3, Blue)
31	SAS Connector (SAS_0_1, Blue)

32	Thermal Sensor header (TR1)
33	Buzzer (BUZZER1)
34	USB 2.0 Ports (USB_4_5)
35	USB 2.0 Ports (USB_2_3)
36	Clear CMOS Pad (CLRCMOS2)
37	System Panel Header (PANEL1)
38	Auxiliary panel header (AUX_PANEL1)
39	BMC SMB Header (BMC_SMB1)
40	Non Maskable Interrupt Button (NMI_BTN1)
41	TPM Header (TPM1)
42	Intelligent Platform Management Bus header (IPMB_1)
43	COM Port Header (COM2)
44	BMC ROM
45	PCI Express 3.0 x 4 Slot (PCIE1, White) from CPU_BSP1
46	PCI Slot (PCI2, White)
47	Intel C602 Chipset
48	PCI Express 3.0 x16 Slot (PCIE3, Blue) from CPU_BSP1
49	PCI Express 3.0 x16 Slot (PCIE4, Blue) from CPU_BSP1
50	PCI Express 3.0 x16 Slot (PCIE5, Blue) from CPU_BSP1
51	PCI Express 3.0 x16 Slot (PCIE6, Blue) from CPU_AP1
52	PCI Express 3.0 x16 Slot (PCIE7, Blue) from CPU_AP1
53	2 x 240-pin DDR3 DIMM Slots
	(DDR3_F1, DDR3_E1, Blue)
54	Rear Fan Connector (REAR_FAN2)
55	Rear Fan Connector (REAR_FAN1)
56	2011-Pin CPU Socket (CPU_AP1)
57	ATX 12V Power Connector (ATX12V_1)
58	CPU Fan Connector (CPU_FAN2_1)

1.5 I/O Panel

EP2C606-4L/D16

1 PS/2 Mouse Port (Green)						*** 6 IPMI LAN Port**		

 1 PS/2 Mouse Port (Green)   * 6 IPMI LAN Port
 2 Serial Port (COM1)   * 7 LAN RJ-45 Port (LAN4)
* 3 LAN RJ-45 Port (LAN2)   8 USB 2.0 Ports (USB01)
* 4 LAN RJ-45 Port (LAN3)   9 D-Sub Port (VGA)
* 5 LAN RJ-45 Port (LAN1)   10 PS/2 Keyboard Port (Purple)

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

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	100Mbps connection	Green	1Gbps connection

ACT/LINK   SPEED
LED   LED

LAN Port

EP2C602-4L/D16

1 PS/2 Mouse Port (Green)	*** 6 IPMI LAN Port**
2 Serial Port (COM1)	*** 7 LAN RJ-45 Port (LAN4)**
* 3 LAN RJ-45 Port (LAN2)	**8 USB 2.0 Ports (USB01)**
* 4 LAN RJ-45 Port (LAN3)	**9 D-Sub Port (VGA)**
* 5 LAN RJ-45 Port (LAN1)	**10 PS/2 Keyboard Port (Purple)**

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

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	100Mbps connection	Green	1Gbps connection

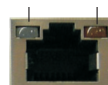**ACT/LINK LED** **SPEED LED**

LAN Port

EP2C602/D16

1 **PS/2 Mouse Port (Green)**
2 **Serial Port (COM1)**
* 3 **LAN RJ-45 Port (LAN2)**
* 4 **LAN RJ-45 Port (LAN1)**

* 5 **IPMI LAN Port**
6 **USB 2.0 Ports (USB01)**
7 **D-Sub Port (VGA)**
8 **PS/2 Keyboard Port (Purple)**

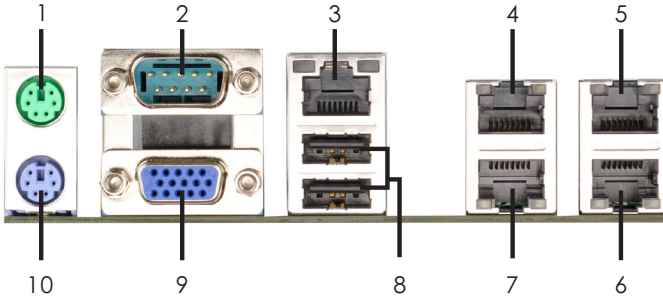* There are two LEDs on each LAN port. Please refer to the table below for the LAN port LED indications.

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	100Mbps connection	Green	1Gbps connection

ACT/LINK LED   SPEED LED

LAN Port

EP2C606-4L

1 PS/2 Mouse Port (Green)	* 6 IPMI LAN Port
2 Serial Port (COM1)	* 7 LAN RJ-45 Port (LAN4)
* 3 LAN RJ-45 Port (LAN2)	8 USB 2.0 Ports (USB01)
* 4 LAN RJ-45 Port (LAN3)	9 D-Sub Port (VGA)
* 5 LAN RJ-45 Port (LAN1)	10 PS/2 Keyboard Port (Purple)

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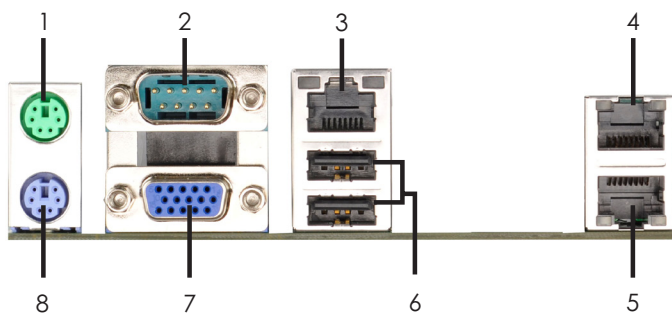 port LED indications.

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	100Mbps connection	Green	1Gbps connection

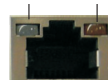**ACT/LINK LED   SPEED LED**

LAN Port

EP2C602-4L

1 **PS/2 Mouse Port (Green)**   * 6 **IPMI LAN Port**

2 **Serial Port (COM1)**   * 7 **LAN RJ-45 Port (LAN4)**

* 3 **LAN RJ-45 Port (LAN2)**   8 **USB 2.0 Ports (USB01)**

* 4 **LAN RJ-45 Port (LAN3)**   9 **D-Sub Port (VGA)**

* 5 **LAN RJ-45 Port (LAN1)**   10 **PS/2 Keyboard Port (Purple)**

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

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	100Mbps connection	Green	1Gbps connection

ACT/LINK LED   **SPEED LED**

LAN Port

EP2C602

1 PS/2 Mouse Port (Green)   * 5 IPMI LAN Port
2 Serial Port (COM1)   6 USB 2.0 Ports (USB01)
* 3 LAN RJ-45 Port (LAN2)   7 D-Sub Port (VGA)
* 4 LAN RJ-45 Port (LAN1)   8 PS/2 Keyboard Port (Purple)

* There are two LEDs on each LAN port. Please refer to the table below for the LAN
  port LED indications.
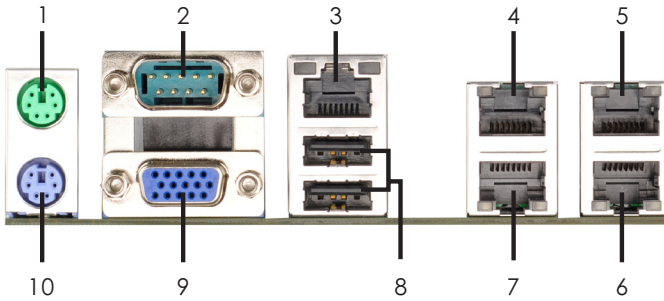
LAN Port LED Indications			
Activity/Link LED		SPEED LED	
Status	Description	Status	Description
Off	No Link	Off	10Mbps connection
Blinking	Data Activity	Orange	100Mbps connection
On	100Mbps connection	Green	1Gbps connection

ACT/LINK   SPEED
LED   LED

LAN Port

1.6 Block Diagram

EP2C606-4L/D16

EP2C602-4L/D16

EP2C602/D16

Quad-Channel Memory x8 Slots

DDR3 1066/1333/1600	CH A
DDR3 1066/1333/1600	CH B
DDR3 1066/1333/1600	CH C
DDR3 1066/1333/1600	CH D
PCIEx4 SLOT(x4)	PCIE
PCIEx16 SLOT(x16, X8)	PCIE
PCIEx16 SLOT(x8, X0)	PCIE
PCIEx16 SLOT(x16)	PCIE

Intel Processor
Sandy Bridge-E
LGA-2011 Pin Socket
CPU1

QPI

Intel Processor
Sandy Bridge-E
LGA-2011 Pin Socket
CPU2

Quad-Channel Memory x8 Slots

CH A	DDR3 1066/1333/1600
CH B	DDR3 1066/1333/1600
CH C	DDR3 1066/1333/1600
CH D	DDR3 1066/1333/1600
PCIE	PCIEx16

| SATAIII_M0 |
| SATAIII_M1 |
| SATAIII_M2 |
| SATAIII_M3 |

SATA3 9230
LAN1 82574L

PCIEx2
PCIEx1

INTEL
PatsburgPCH

C602

SATA BUS

| SATA2_0 | SATA2_2 | SATA3_0 |
| SATA2_1 | SATA2_3 | SATA3_1 |

480Mb/s

High-Speed USB
7 ports

SCU_0

| SCU_PORT_0 | SCU_PORT_1 | SCU_PORT_2 | SCU_PORT_3 |

SATA only

LAN2 82574L
PCIEx1

BMC AST2300
PCIEx1

| D-SUB connector |
| COM PORT connector |
| Realtek PHY 8211E |

SPI

SPI FLASH
64Mb

LPC BUS

SIO NCT6776D

KB/MS

| PC1 SLOT | PCI |

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EP2C606-4L

Quad-Channel Memory x4 Slots

DDR3 1066/1333/1600	CH A	
DDR3 1066/1333/1600	CH B	Intel Processor
DDR3 1066/1333/1600	CH C	**Sandy Bridge-EP**
DDR3 1066/1333/1600	CH D	LGA-2011 Pin Socket

Intel Processor
Sandy Bridge-EP
LGA-2011 Pin Socket
CPU_BSP1

QPI

Intel Processor
Sandy Bridge-EP
LGA-2011 Pin Socket
CPU_AP1

CH A DDR3 1066/1333/1600
CH B DDR3 1066/1333/1600
CH C DDR3 1066/1333/1600
CH D DDR3 1066/1333/1600
PCIE PCIEx16 SLOT(X16)
PCIE PCIEx16 SLOT(X16)

PCIE PCIEx16 SLOT(X16)
PCIE PCIEx16 SLOT(X16,X8)
PCIE PCIEx16 SLOT(X8,X0)
PCIE PCIEx4 SLOT(X4)

DMI

SATA111_M0
SATA111_M1
SATA111_M2
SATA111_M3

SATA3 9230 PCIEx2
LAN 1 82574L PCIEx1
LAN 4 82574L PCIEx1
LAN 3 82574L PCIEx1
LAN 2 82574L PCIEx1

NCSI

BMC AST2300 PCIEx1

INTEL
Patsburg
PCH

SATA BUS SATA11_0 SATA11_2 SATA111_0 / SATA11_1 SATA11_3 SATA111_1
SPI **SPI FLASH 64Mb**
LPC BUS **SIO NCT6776D**

480Mb/s High-Speed USB 8 ports

SCU 0 SCU_PORT_0 SCU_PORT_1 SCU_PORT_2 SCU_PORT_3
SCU 1 SCU_PORT_4 SCU_PORT_5 SCU_PORT_6 SCU_PORT_7

EP2C602-4L

EP2C602

Quad-Channel Memory x4 Slots

DDR3 1066/1333/1600	CH A
DDR3 1066/1333/1600	CH B
DDR3 1066/1333/1600	CH C
DDR3 1066/1333/1600	CH D
PCIEx16 SLOT(X16)	PCIE
PCIEx16 SLOT(X16,X8)	PCIE
PCIEx16 SLOT(X8,X0)	PCIE
PCIEx4 SLOT(X4)	PCIE

Intel Processor

Sandy Bridge-EP

LGA-2011 Pin Socket
CPU_BSP1

QPI

Intel Processor

Sandy Bridge-EP

LGA-2011 Pin Socket
CPU_AP1

Quad-Channel Memory x4 Slots

CH A	DDR3 1066/1333/1600
CH B	DDR3 1066/1333/1600
CH C	DDR3 1066/1333/1600
CH D	DDR3 1066/1333/1600
PCIE	PCIEx16 SLOT(X16)
PCIE	PCIEx16 SLOT(X16)

DMI

DMI2

| SATA111_M0 |
| SATA111_M1 |
| SATA111_M2 |
| SATA111_M3 |

SATA3 9230

LAN1 82574L

LAN2 82574L

PCIEx2

PCIEx1

PCIEx1

INTEL
Patsburg

PCH
C602

SATA BUS	SATA11_0	SATA11_2	SATA111_0
	SATA11_1	SATA11_3	SATA111_1

SPI

SPI FLASH
64Mb

LPC BUS

SIO NCT6776D

KB/MS

480Mb/s

High-Speed USB
7 ports

ICSI

| D-SUB connector |
| COM PORT connector |
| Realtek PHY 8211E |

BMC AST2300

PCIEx1

SCU 0

SCU_PORT_0	SCU_PORT_1	SCU_PORT_2	SCU_PORT_3

SATA only

| PCI SLOT | PCI |

Chapter 2: Installation

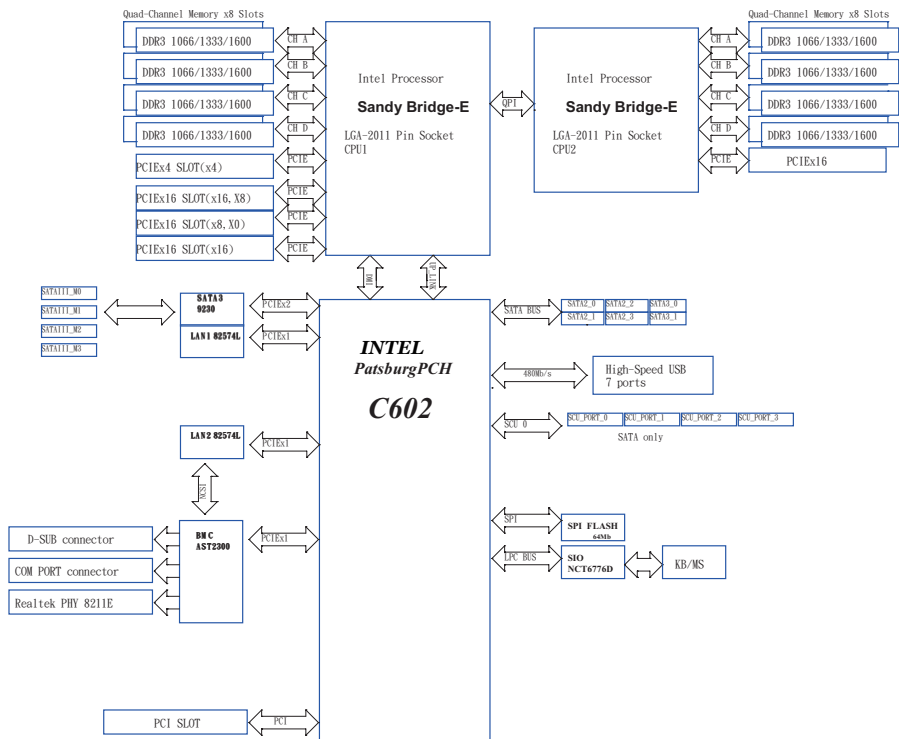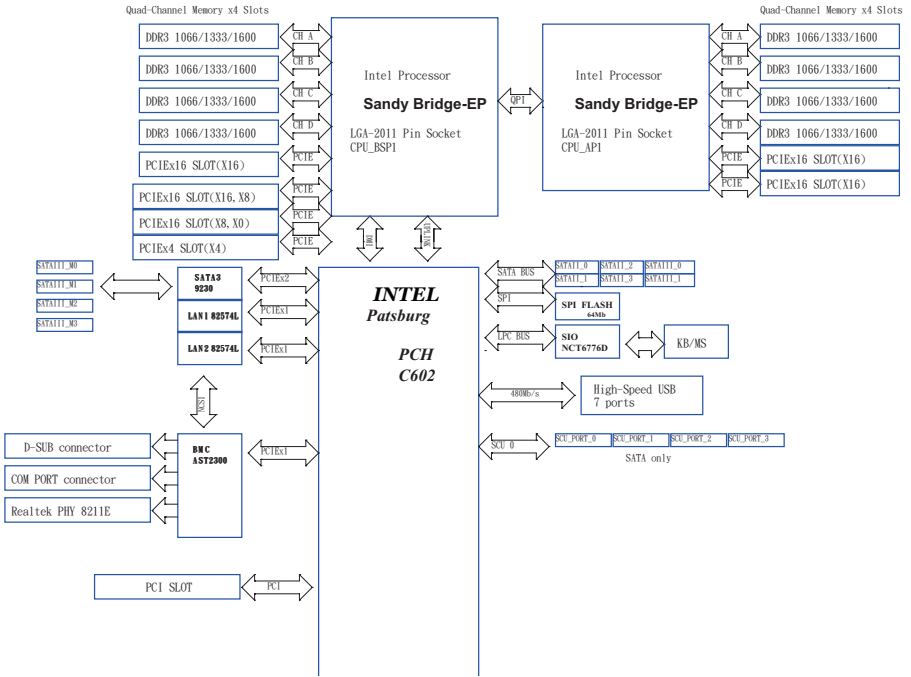Before you install the motherboard, study the configuration of your chassis to ensure that the motherboard fits into it.

EP2C606-4L/D16 / EP2C602-4L/D16 / EP2C602/D16 / EP2C606-4L / EP2C602-4L / EP2C602 are dual socket motherboards that support Intel® Xeon® E5-2400/1400 Series Processors. Please install a primary processor (BootStrap Processor) into "CPU_BSP1" socket and then install a non-Primary Processor (Application Processors) into "CPU_AP1" socket. *For a single CPU, please install it into "CPU_BSP1" socket (framed by a square).

2.1 Pre-installation Precautions

Take note of the following precautions before you install motherboard components or change any motherboard settings.

1. Make sure to unplug the power cord before installing or removing the motherboard. Failure to do so may cause physical injuries to you and damages to motherboard components.

2. In order to avoid damage from static electricity to the motherboard's components, NEVER place your motherboard directly on a carpet. Also remember to use a grounded wrist strap or touch a safety grounded object before you handle the components.

3. Hold components by the edges and do not touch the ICs.

4. Whenever you uninstall any components, place them on a grounded anti-static pad or in the bag that comes with the components.

5. When placing screws to secure the motherboard to the chassis, please do not over-tighten the screws! Doing so may damage the motherboard.
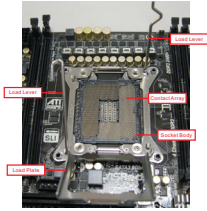
2.2 Screw Holes

Place screws into the holes indicated by circles to secure the motherboard to the chassis.

2.3 CPU Installation

For the installation of Intel 2011-Pin CPU, please follow the steps below.

2011-Pin Socket Overview

Before you insert the 2011-Pin CPU into the socket, please check if the CPU surface is unclean or if there are any bent pins in the socket. Do not force to insert the CPU into the socket if above situation is found. Otherwise, the CPU will be seriously damaged.

Step 1.   Open the socket:

      Step 1-1. Disengage the left lever by pressing it down and sliding it out of the hook.

      Step 1-2. Disengage the right lever by pressing it down and sliding it out of the hook.

      Step 1-3. Keep the right lever positioned at about 90 degrees in order to flip up the load plate.
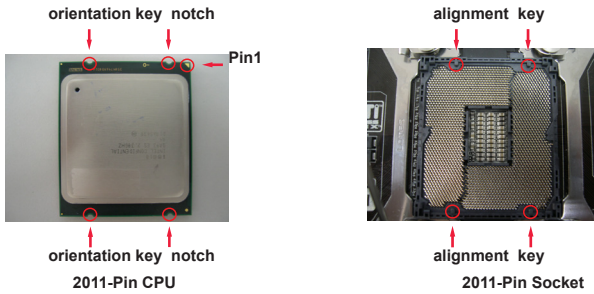

Step 2.   Insert the 2011-Pin CPU:

      Step 2-1. Hold the CPU by the edge with the triangle mark(Pin 1) on your upper right corner.

Pin1

Step 2-2. Locate Pin1 and the two orientation key notches.

orientation key notch

Pin1

orientation key notch

2011-Pin CPU

alignment key

alignment key

2011-Pin Socket

For proper inserting, please ensure to match the four orientation key notches of the CPU with the four alignment keys of the socket.

Step 2-3. Carefully place the CPU into the socket by using a purely vertical motion.

Step 2-4. Verify that the CPU is within the socket and properly mated to the orient keys.

Step 3. Close the socket:

Step 3-1. Flip the load plate onto the IHS, then the cover will automatically come off by itself.

The cover must be placed if returning the motherboard for after service.

Step 3-2. Press down the right load lever, and secure it with the load plate tab under the retention tab.

Step 3-3. Press down the left load lever, and secure it with the load plate tab under the retention tab.

2.4 Installation of CPU Fan and Heatsink

This motherboard is equipped with 2011-Pin socket that supports Intel 2011-Pin CPU. Please adopt the type of heatsink and cooling fan compliant with Intel 2011-Pin CPU to dissipate heat. Before you installed the heatsink, you need to spray thermal interface material between the CPU and the heatsink to improve heat dissipation. Ensure that the CPU and the heatsink are securely fastened and in good contact with each other. Then connect the CPU fan to the CPU_FAN connector.

For proper installation, please kindly refer to the instruction manuals of your CPU fan and heatsink.

Below is an example to illustrate the installation of the heatsink for 2011-Pin CPU.

Step 1. Apply thermal interface material onto center of IHS on the socket surface.
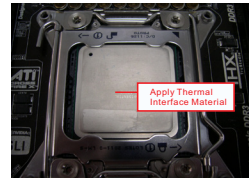
Step 2. Place the heatsink onto the socket. Ensure fan cables are oriented on side closest to the CPU fan connector on the motherboard.

Step 3. Align screws with the motherboard's holes.

Step 4. Use a screw driver to install the screws.

> If you don't fasten the screws, the heatsink cannot be secured on the motherboard.

Step 5. Connect fan header with the CPU fan connector on the motherboard.

Step 6. Secure excess cable with tie-wrap to ensure the cable does not interfere with fan operation or contact other components.

2.5 Installation of Memory Modules (DIMM)

This motherboard provides four 240-pin DDR3 (Double Data Rate 3) DIMM slots, and supports Dual Channel Memory Technology. For dual channel configuration, you always need to install two identical (the same brand, speed, size and chip-type) memory modules in the DDR3 DIMM slots to activate Dual Channel Memory Technology. Otherwise, it will operate at single channel mode.

1. It is not allowed to install a DDR or DDR2 memory module into a DDR3 slot; otherwise, this motherboard and DIMM may be damaged.
2. If you install only one memory module or two non identical memory modules, it is unable to activate Dual Channel Memory Technology.
3. Some DDR3 1GB double-sided DIMMs with 16 chips may not work on this motherboard. It is not recommended to install them on this motherboard.
4. A single memory module should be installed in the blue socket.
5. If you install only one CPU (CPU_BSP1) on the motherboard, make sure to install DIMMs into DDR3_A, DDR3_B, DDR3_C, or DDR3_D slot(s).

Installing a DIMM

Please make sure to disconnect the power supply before adding or removing DIMMs or system components.

Step 1. Unlock a DIMM slot by pressing the retaining clips outward.

Step 2. Align a DIMM on the slot such that the notch on the DIMM matches the break on the slot.

notch
break

notch
break
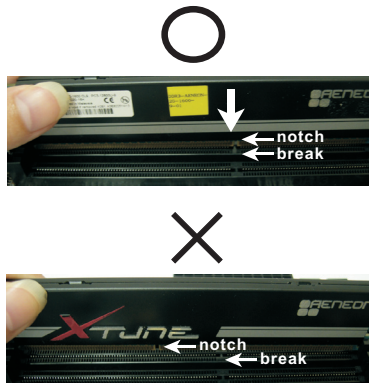
> The DIMM only fits in one correct orientation. It will cause per-manent damage to the motherboard and the DIMM if you force the DIMM into the slot at incorrect orientation.

Step 3. Firmly insert the DIMM into the slot until the retaining clips at both ends fully snap back in place and the DIMM is properly seated.

2.6 Expansion Slots (PCI and PCI Express Slots)

EP2C606-4L/D16 / EP2C602-4L/D16 / EP2C602/D16:

There are 1 PCI slots and 5 PCI Express slots on the motherboard.

PCI slot: The PCI1 is used to install expansion cards that have 32-bit PCI interface.

PCIE slots:

PCIE6 (PCIE 3.0 x4 slot) is used for PCI Express x4 lane width cards.

PCIE3 (PCIE 3.0 x16 slot) is used for PCI Express x8 lane width graphics cards.

PCIE2, PCIE4 ,and PCIE5 (PCIE 3.0 x16 slot) are used for PCI Express x16 lane width graphics cards.

> Please note that PCIE5 is available ONLY when the second CPU (CPU_AP1) is installed.

EP2C606-4L / EP2C602-4L / EP2C602:

There are 1 PCI slot and 5 PCI Express slots on the motherboard.

PCI slot: The PCI1 slot is used to install expansion cards that have 32-bit PCI interface.

PCIE slots:

PCIE1 (PCIE 3.0 x4 slot) is used for PCI Express x4 lane width cards.

PCIE4, (PCIE 3.0 x16 slot) is used for PCI Express x8 lane width graphics cards.

PCIE3, PCIE5, PCIE6, and PCIE7 (PCIE 3.0 x16 slot) are used for PCI Express x16 lane width graphics cards.

> Please note that PCIE6 & PCIE7 are available ONLY when the second CPU (CPU_AP1) is installed.

> **For EP2C606-4L/D16 / EP2C602-4L/D16 / EP2C602/D16:**
> In single VGA card mode, it is recommended to install a PCI
> Express x16 graphics card on PCIE2 or PCIE4 slot.
> **For EP2C606-4L / EP2C602-4L / EP2C602:**
> In single VGA card mode, it is recommended to install a PCI
> Express x16 graphics card on PCIE3 or PCIE5 slot.

Installing an expansion card

Step 1.   Before installing an expansion card, please make sure that the power supply is switched off or the power cord is unplugged. Please read the documentation of the expansion card and make necessary hardware settings for the card before you start the installation.

Step 2.   Remove the system unit cover (if your motherboard is already installed in a chassis).

Step 3.   Remove the bracket facing the slot that you intend to use. Keep the screws for later use.

Step 4.   Align the card connector with the slot and press firmly until the card is completely seated on the slot.

Step 5.   Fasten the card to the chassis with screws.

Step 6.   Replace the system cover.

2.7 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.

Short   Open
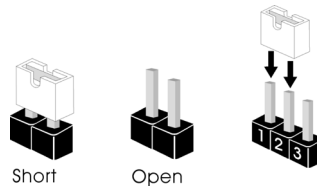
ME Recovery Jumper
(3-pin ME_RECOVERY1)
(see p.12,16, 20, 24, 27, 30)

1 2 3
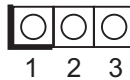
1-2:
Default
2-3:
ME recovery mode

PSU Jumper
For EP2C606-4L/D16 /
EP2C602-4L/D16 /
EP2C602/D16:
(9-pin PSU Jumper)
(see p.12, 16, 20)

1
1
1

1-2:
PSU_SMBus loads the data via PCH chip
2-3:
PSU_SMBus loads the data via BMC chip (Default)

For EP2C606-4L /
EP2C602-4L / EP2C602:
(9-pin PSU Jumper)
(see p. 24, 27, 30)

1   1   1

2.8 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 to the motherboard!

Serial ATA2 Connectors
(For EP2C60xD16 Series)
(SATAII_2)
(SATAII_3)
(SATAII_4)
(SATAII_5)
(see p.12, 16, 20)

SATAII_2
SATAII_3
SATAII_4
SATAII_5

These four Serial ATA2 (SATA2) connectors support SATA data cables for internal storage devices. The current SATA2 interface allows up to 3.0 Gb/s data transfer rate.

(For EP2C60x Series)
(SATAII_2_3)
(SATAII_4_5)
(see p. 24, 27, 30)
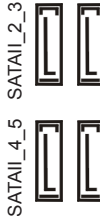
SATAII_2_3
SATAII_4_5

Serial ATA3 Connectors
(For EP2C60xD16 Series)
(SATAIII_M0)
(SATAIII_M1)
(SATAIII_M2)
(SATAIII_M3)
(SATAIII_0)
(SATAIII_1)
(see p.12, 16, 20)

SATAIII_M0
SATAIII_M1
SATAIII_M2
SATAIII_M3
SATAIII_0
SATAIII_1

These six 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.

(For EP2C60x Series)

(SATAIII_0_1)
(SATAIII_M2_M3)
(SATAIII_M0_M1)

SATAIII_M0_M1

SATAIII_M2_M3

SATAIII_0_1

Serial ATA (SATA)
Data Cable

Either end of the SATA data cable can be connected to SATA / SATA2 / SATA3 hard disks or the SATA2 / SATA3 connectors on this motherboard.

SCU Connectors
(For EP2C60xD16 Series)

(SCU_PORT_0)
(SCU_PORT_1)
(SCU_PORT_2)
(SCU_PORT_3)
(SCU_PORT_4)
(SCU_PORT_5)
(SCU_PORT_6)
(SCU_PORT_7)

SCU_PORT_0
SCU_PORT_1
SCU_PORT_2
SCU_PORT_3
SCU_PORT_4
SCU_PORT_5
SCU_PORT_6
SCU_PORT_7
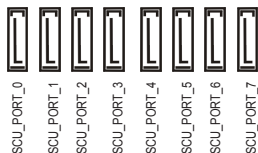
These eight SCU connectors support SAS/SATA data cables for internal storage devices. The current SAS2/SATA3 interface allows up to 6.0 Gb/s data transfer rate. For connecting SAS HDDs, please contact SAS data cable dealers.

SAS Connectors
(For EP2C60x Series)
(SAS_0)
(SAS_1)
(SAS_2)
(SAS_3)
(see p. 24, 27, 30)
(SAS_4)
(SAS_5)
(SAS_6)
(SAS_7)
(see p.24, 27)

```
SAS_0   SAS_2   SAS_4   SAS_6



SAS_1   SAS_3   SAS_5   SAS_7
```
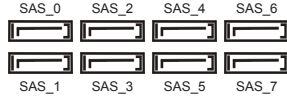
These eight SAS connectors support SAS/SATA data cables for internal storage devices. The current SAS2/SATA3 interface allows up to 6.0 Gb/s data transfer rate. For connecting SAS HDDs, please contact SAS data cable dealers.

USB 2.0 Headers
and Ports
(9-pin USB_2_3)
(9-pin USB_4_5)
(see p.12,16, 20, 24, 27, 30)

```
         USB_PWR
          -B
           +B
             GND
               DUMMY

1

             GND
           +A
          -A
         USB_PWR
```
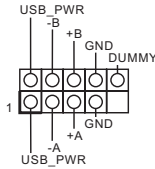
Besides two default USB 2.0 ports on the I/O panel, there are are two USB 2.0 headers and one port on this motherboard. Each USB 2.0 header can support two USB 2.0 ports.

(USB_6)
(see p.12,16, 20, 24, 27, 30)

TPM Header
(17-pin TPM1)
(see p.12,16, 20, 24, 27, 30)

```
      GND
        SMB_CLK_MAIN
          SMB_DATA_MAIN
            LAD2
              LAD1
                GND
                  S_PWRDWN#
                    SERIRQ#
                      GND

1
      PCICLK
        FRAME
          PCIRST#
            LAD3
              +3V
                LAD0
                  +3VSB
                    GND
```
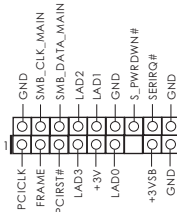
This connector supports Trusted Platform Module (TPM) system, which can securely store keys, digital certificates, passwords, and data. A TPM system also helps enhance network security, protects digital identities, and ensures platform integrity.

System Panel Header

(9-pin PANEL1)

(see p.12,16, 20, 24, 27, 30)

```
PLED+
 PLED-
   PWRBTN#
    GND
  ┌─────────┐
  │ ○ ○ ○ ○ │
1 │ ○ ○ ○ ○ │
  └─────────┘
        GND
        RESET#
     GND
   HDLED-
 HDLED+
```

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 sys-tem is in S1/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.

Auxiliary Panel Header

(18-pin AUX_PANEL1)
(see p.12,16, 20, 24, 27, 30)
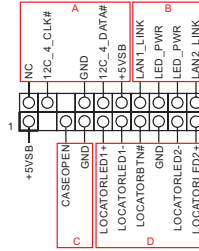
This header supports multiple functions on the front panel, including front panel SMB, internet status indicator and chassis intrusion pin.

A. Front panel SMBus connecting pin (6-pin FPSMB)

This header allows you to connect SMBus (System Management Bus) equipment. It can be used for communication between peripheral equipment in the system, which has slower transmission rates, and power management equipment.

B. Internet status indicator (2-pin LAN1_LED, LAN2_LED)

These two 2-pin headers allow you to use the Gigabit internet indicator cable to connect to the LAN status indicator. When this indicator flickers, it means that the internet is properly connected.

C. Chassis intrusion pin (2-pin CHASSIS)

This header is provided for host computer chassis with chassis intrusion detection designs. In addition, it must also work with external detection equipment, such as a chassis intrusion detection sensor or a microswitch. When this function is activated, if any chassis component movement occurs, the sensor will immediately detect it and send a signal to this header, and the system will then record this chassis intrusion event. The default setting is set to the CASEOPEN and GND pin; this function is off.

D. Locator LED (6-pin LOCATOR)

This header is for the locator switch and LED on the front panel.

Speaker Header

(4-pin SPEAKER1)
(see p.12,16, 20, 24, 27, 30)
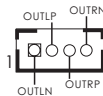
Please connect the speaker to this header.

Front and Rear
Fan Connectors
(4-pin FRNT_FAN1)
(4-pin FRNT_FAN2)
(4-pin FRNT_FAN3)
(4-pin FRNT_FAN4)
(see p.12,16, 20, 24, 27, 30)

FAN_SPEED_CONTROL
FAN_SPEED
+12V
GND
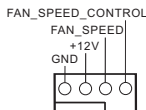
Please connect the fan cables to the fan connectors and match the black wire to the ground pin. All fans supports Fan Control.

(4-pin REAR_FAN1)
(4-pin REAR_FAN2)
(see p.12,16, 20, 24, 27, 30)

FAN_SPEED_CONTROL — 4
FAN_SPEED — 3
+ 12V — 2
GN D — 1
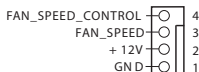
CPU Fan Connectors
(For EP2C60xD16 Series)
(4-pin CPU_FAN1_1)
(see p.12, 16, 20)

FAN_SPEED_CONTROL — 4
FAN_SPEED — 3
+ 12V — 2
GN D — 1

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

(4-pin CPU_FAN2_1)
(see p.12, 16, 20)

1 — GN D
2 — + 12V
3 — CPU_FAN_SPEED
4 — FAN_SPEED_CONTROL
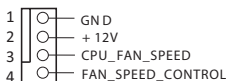
(For EP2C60x Series)
(4-pin CPU_FAN1_1)
(see p. 24, 27, 30)

FAN_SPEED_CONTROL
FAN_SPEED
+12V
GND
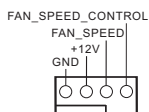
(4-pin CPU_FAN2_1)
(see p. 24, 27, 30)

FAN_SPEED_CONTROL — 4
FAN_SPEED — 3
+ 12V — 2
GN D — 1

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

(For EP2C60xD16 Series)

(3-pin CPU_FAN1_2)
(see p.12, 16, 20)
(3-pin CPU_FAN2_2)
(see p.12, 16, 20)

GND
FAN_VOLTAGE
CPU_FAN_SPEED
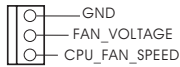
(For EP2C60x Series)

(3-pin CPU_FAN1_2)
(see p. 24, 27, 30)

FAN_SPEED
+12V
GND

(3-pin CPU_FAN2_2)
(see p. 24, 27, 30)

GND
FAN_VOLTAGE
CPU_FAN_SPEED

ATX Power Connector   Please connect an ATX pow-
(For EP2C60xD16 Series)   24   13   er supply to this connector.

(24-pin ATXPWR1)
(see p.12, 16, 20)   12   1
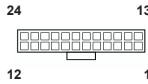
(For EP2C60x Series)   1   12

(24-pin ATXPWR1)
(see p. 24, 27, 30)   13   24
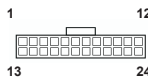
Though this motherboard provides a 24-pin ATX power connector, it can still work if you adopt a traditional 20-pin ATX power supply. To use a 20-pin ATX power supply, please plug your power supply along Pin 1 and Pin 13.

24   **13**

20-Pin ATX Power Supply Installation

12   **1**
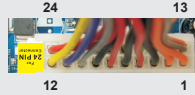
Though this motherboard provides an 8-pin ATX 12V power connector, it can still work if you adopt a traditional 4-pin ATX 12V power supply. To use a 4-pin ATX power supply, please plug your power supply along Pin 1 and Pin 5.

8   **5**

4-Pin ATX 12V Power Supply Installation

4   **1**

ATX 12V Power
Connector
(For EP2C60xD16 Series)
(8-pin ATX12V1)
(see p.12, 16, 20)

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

```
1        4
5        8
```
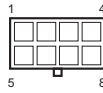
(8-pin ATX12V2)
(see p.12, 16, 20)

```
8        5
4        1
```
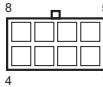
(For EP2C60x Series)
(8-pin ATX12V1)
(see p. 24, 27, 30)
(8-pin ATX12V_1)
(see p. 24, 27, 30)

```
5    1
8    4
```

Serial port Header
(9-pin COM2)
(see p.12,16, 20, 24, 27, 30)

RRXD1
DDTR#1
DDSR#1
CCTS#1
1
RRI#1
RRTS#1
GND
TTXD1
DDCD#1
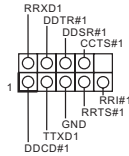
This COM2 header supports a serial port module.

Intelligent Platform
Management Bus header
(4-pin IPMB_1)
(see p.12,16, 20, 24, 27, 30)

IPMB_SCL
IPMB_SDA
GND
No connect
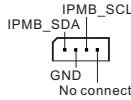
This 4-pin connector is used to provide a cabled base-board or front panel connection for value added features and 3rd-party add-in cards, such as Emergency Management cards, that provide management features using the IPMB.

Thermal Sensor header
(3-pin TR1)
(see p.12,16, 20, 24, 27, 30)

TR1   TR1
1
GND

Please connect the thermal sensor cable to either pin 1-2 or pin 2-3 and the other end to the device which you wish to monitor its temperature.

Clear CMOS Pad
(CLRCMOS2)
(see p.12,16, 20, 24, 27, 30)

CLRCMOS2 allows you to clear the data in CMOS. To clear CMOS, take out the CMOS battery and short the Clear CMOS Pad.

Serial General Purpose
Input/Output Header
(For EP2C60xD16 Series)
(SCU_SGPIO1)
(SCU_SGPIO2)
(see p.12, 16, 20)
(For EP2C60x Series)
(SAS_SGPIO1)
(SAS_SGPIO2)
(see p. 24, 27, 30)

SAS_CLOCK
SAS_LOAD
GND

1

SAS_DATAIN
SAS_DATAOUT
GND
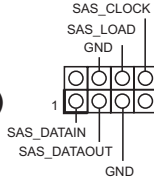
This header supports Serial
Link interface for onboard
SAS / SATA connections.

(SATA_SGPIO1)
(SATA_SGPIO2)
(see p.12,16, 20, 24, 27, 30)

SCLOCK
SLOAD
GND

1

SDATAOUT
GND
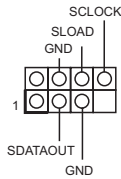
This header supports Serial
Link interface for onboard
SATA connections.

PSU SMBus
(PSU_SMB1)
(see p.12,16, 20, 24, 27, 30)

GND
SMBDATA

1

+3VSB   SMBCLK
ALERT
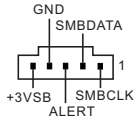
PSU SMBus monitors the
status of the power supply,
fan and system temperature.

Non Maskable Interrupt
Button Header
(NMI_BTN1)
(see p.12,16, 20, 24, 27, 30)

GND

1

CONTROL

Please connect a NMI de-
vice to this header.

Front Lan LED
Connector
(FRONT_LED_LAN34)
(see p.12, 16, 24, 27)

LAN4_LINK
LED_PWR

1

LAN3_LINK
LED_PWR
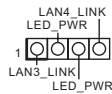
This 4-pin connector is used
for the front LAN status
indicator.

2.9 Driver Installation Guide

To install the drivers to your system, please insert the support CD to your optical drive first. Then, the drivers compatible to your system can be auto-detected and listed on the support CD driver page. Please follow the order from top to bottom to install those required drivers. Therefore, the drivers you install can work properly.

2.10 Hot Plug for Hard Disk Drives

This motherboard supports Hot Plug for HDDs in AHCI / RAID mode.

What is Hot Plug?

If the HDDs are NOT set for RAID, it is called "Hot Plug" for the action to insert and remove the HDDs while the system is still powered on and in working condition. However, please note that it cannot perform Hot Plug if the OS has been installed into the HDD.

Chapter 3: UEFI SETUP UTILITY

3.1 Introduction

This section explains how to use the UEFI SETUP UTILITY to configure your system. The UEFI chip on the motherboard stores the UEFI SETUP UTILITY. You may run the UEFI SETUP UTILITY when you start up the computer. Please press <F2> or <Del> during the Power-On-Self-Test (POST) to enter the UEFI SETUP UTILITY, otherawise, POST will continue with its test routines.

If you wish to enter the UEFI SETUP UTILITY after POST, restart the system by pressing <Ctl> + <Alt> + <Delete>, or by pressing the reset button on the system chassis. You may also restart by turning the system off and then back on.

> Because the UEFI software is constantly being updated, the following UEFI setup screens and descriptions are for reference purpose only, and they may not exactly match what you see on your screen.

3.1.1 UEFI Menu Bar

The top of the screen has a menu bar with the following selections:

Main   For setting system time/date information
Advanced   For advanced system configurations
H/W Monitor   Displays current hardware status
Boot   For configuring boot settings and boot priority
Security   For security settings
Save & Exit   Exit the current screen or the UEFI Setup Utility
Server Mgmt   For managing the server
Event Logs   For event log configuration

3.1.2 Navigation Keys

Use < ← > key or < → > key to choose among the selections on the menu bar, and use < ↑ > key or < ↓ > key to move the cursor up or down to select items, then press <Enter> to get into the sub screen. You can also use the mouse to click your required item.

Please check the following table for the descriptions of each navigation key.

Navigation Key(s)	Function Description
+ / -	To change option for the selected items
<Tab>	Switch to next function
<PGUP>	Go to the previous page
<PGDN>	Go to the next page
<HOME>	Go to the top of the screen
<END>	Go to the bottom of the screen
<F1>	To display the General Help Screen
<F7>	Discard changes and exit the SETUP UTILITY
<F9>	Load optimal default values for all the settings
<F10>	Save changes and exit the SETUP UTILITY
<F12>	Print screen
<ESC>	Jump to the Exit Screen or exit the current screen

3.2 Main Screen

When you enter the UEFI SETUP UTILITY, the Main screen will appear and display the system overview.
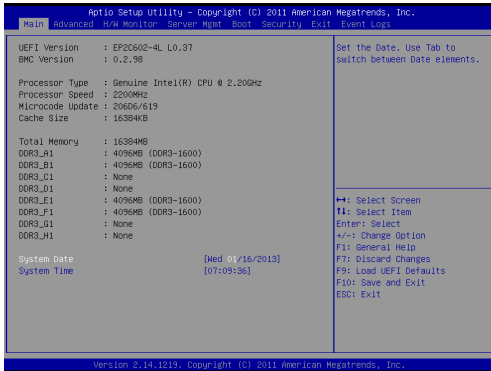
3.3 Advanced Screen

In this section, you may set the configurations for the following items: ACPI Configuration, WHEA Configuration, CPU Configuration, North Bridge Configuration, South Bridge Configuration, USB Configuration, ME Subsystem, Clock Generator Configuration, Storage Configuration, Super IO Configuration, Serial Port Console Redirection and Voltage Control.
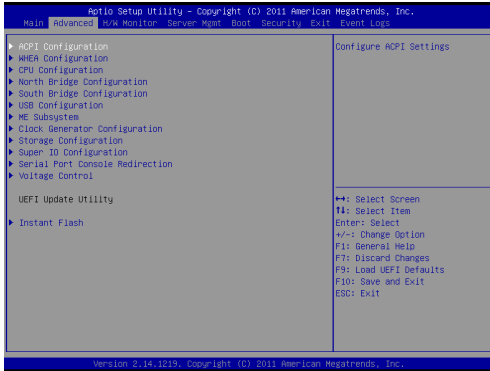
Setting wrong values in this section may cause the system to malfunction.

Instant Flash

Instant Flash is a UEFI flash utility embedded in Flash ROM. This convenient UEFI update tool allows you to update system UEFI without entering operating systems first like MS-DOS or Windows®. Just save the new UEFI file to your USB flash drive, floppy disk or hard drive and launch this tool, then you can update your UEFI only in a few clicks without preparing an additional floppy diskette or other complicated flash utility. Please be noted that the USB flash drive or hard drive must use FAT32/16/12 file system. If you execute Instant Flash utility, the utility will show the UEFI files and their respective information. Select the proper UEFI file to update your UEFI, and reboot your system after the UEFI update process is completed.

3.3.1 ACPI Configuration

```
            Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.
     Advanced

   ACPI Configuration                                      Select the highest ACPI sleep
                                                           state the system will enter
   Suspend Mode                        [Enabled]           when the SUSPEND button is
   ACPI HPET Table                     [Enabled]           pressed.

   PS/2 Keyboard Power On              [Disabled]
   PCI Devices Power On                [Disabled]
   RTC Alarm Power On                  [By OS]
   Ring-In Power On                    [Disabled]

   USB Keyboard/Remote Power On        [Disabled]
   USB Mouse Power On                  [Disabled]

                                                           ↔: Select Screen
                                                           ↑↓: Select Item
                                                           Enter: Select
                                                           +/-: Change Option
                                                           F1: General Help
                                                           F7: Discard Changes
                                                           F9: Load UEFI Defaults
                                                           F10: Save and Exit
                                                           ESC: Exit


            Version 2.14.1219. Copyright (C) 2011 American Megatrends, Inc.
```

Suspend Mode

Use this item to enable or disable the highest ACPI Sleep state (S1). If enabled, the system enters S1 level when the SUSPEND button is pressed.

ACPI HPET Table

Use this item to enable or disable ACPI HPET Table. The default value is [Enabled].

PS/2 Keyboard Power On

Use this item to enable or disable PS/2 keyboard to turn on the system from the power-soft-off mode.

PCI Devices Power On

Use this item to enable or disable PCI devices to turn on the system from the power-soft-off mode.

Ring-In Power On

Use this item to enable or disable Ring-In signals to turn on the system from the power-soft-off mode.

RTC Alarm Power On

Use this item to enable or disable RTC (Real Time Clock) to power on the system.

USB Keyboard/Remote Power On

Use this item to enable or disable USB Keyboard/Remote to turn on the system from the power-soft-off mode.

USB Mouse Power On

Use this item to enable or disable USB Mouse to turn on the system from the power-soft-off mode.

3.3.2 WHEA Configuration

```
                 Aptio Setup Utility – Copyright (C) 2011 American Megatrends, Inc.
    Advanced

  WHEA Support                        [Enabled]          Enable or disable Windows
                                                         Hardware Error Architecture.



                                                         ←→: Select Screen
                                                         ↑↓: Select Item
                                                         Enter: Select
                                                         +/-: Change Option
                                                         F1: General Help
                                                         F7: Discard Changes
                                                         F9: Load UEFI Defaults
                                                         F10: Save and Exit
                                                         ESC: Exit

                 Version 2.14.1219. Copyright (C) 2011 American Megatrends, Inc.
```
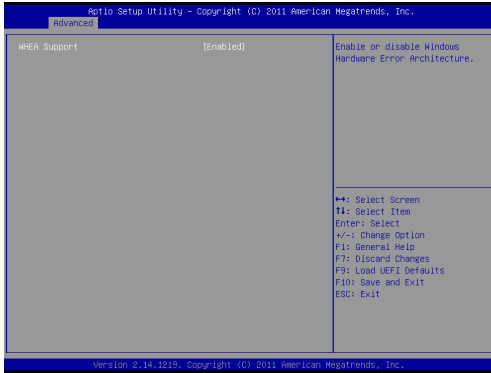
WHEA Support

Use this option to enable or disable Windows Hardware Error Architecture. The default value is [Enabled].

3.3.3 CPU Configuration
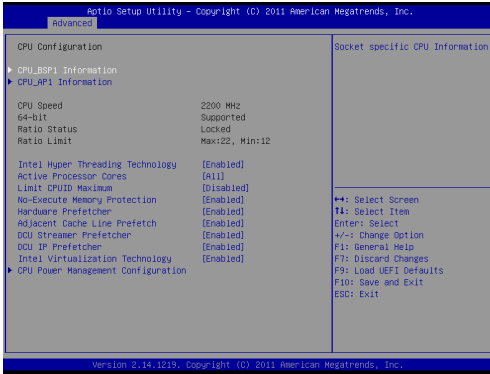
CPU_BSP1 Information

Display information regarding the primary processor (BootStrap Processor).

CPU_AP1 Information

Display information regarding the non-primary processor (Application Processors).

Intel Hyper Threading Technology

To enable this feature, a computer system with an Intel processor that supports Hyper-Threading technology and an operating system that includes optimization for this technology is required. This option will be hidden if the installed CPU does not support Hyper-Threading technology.

Active Processor Cores

Use this item to select the number of cores to enable in each processor package. The default value is [All].

Limit CPUID Maximum

This function allows you to limit CPUID maximum value. Unless the OS is Windows® NT, disable this function.

No-Execute Memory Protection

No-Execution (NX) Memory Protection Technology is an enhance-ment to the IA-32 Intel Architecture. An IA-32 processor with "No Execute (NX) Memory Protection" can prevent data pages from being used by malicious software to execute codes. This option will be hidden if the current CPU does not support No-Excute Memory Protection.

Hardware Prefetcher

Use this turn on/off the MLC streamer prefetcher.

Adjacent Cache Line Prefetch

Use this to turn on/off prefetching of adjacent cache lines.

DCU Streamer Prefetcher

If enabled, the DCU (data cache unit) Streamer Prefetcher prefetches the next L1 Data line based upon multiple loads in same cache line. It is recommended to enable this option to en-hance data processing capacity.

DCU IP Prefetcher

If enabled, the DCU (data cache unit) IP (Instruction Pointer) Prefetcher predict what memory addresses are going to be used by the program and deliver that data just in time.

Intel Virtualization Technology

When this option is set to [Enabled], a VMM (Virtual Machine Architecture) can utilize the additional hardware capabilities pro-vided by Vanderpool Technology. This option will be hidden if the installed CPU does not support Intel Virtualization Technology.

CPU Power Management

Use this to configure CPU Power Management.

3.3.4 North Bridge Configuration


```
                 Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.
     Advanced

  Intel(R) VT-d                    [Disabled]        Enable/Disable Intel(R)
  Intel(R) I/OAT                   [Disabled]        Virtualization Technology for
  Primary Graphics Adapter         [PCI Express]     Directed I/O.
  OnBoard VGA                      [Auto]

  PCIE 1 Link Speed                [GEN2]
  PCIE 3 Link Speed                [GEN2]
  PCIE 4 & PCIE 5 Link Width       [Auto]
  PCIE 4 & PCIE 5 Link Speed       [GEN2]
  PCIE 6 Link Speed                [GEN2]
  PCIE 7 Link Speed                [GEN2]

                                                     ↔: Select Screen
                                                     ↑↓: Select Item
                                                     Enter: Select
                                                     +/-: Change Option
                                                     F1: General Help
                                                     F7: Discard Changes
                                                     F9: Load UEFI Defaults
                                                     F10: Save and Exit
                                                     ESC: Exit


                 Version 2.14.1219. Copyright (C) 2011 American Megatrends, Inc.
```

IOH (I/O hub) Configuration

Intel® VT-d

  Use this to enable/disable Intel® Virtualization Technology for the
  Directed I/O.

Intel® I/OAT

  Use this to enable/disable Intel® I/O AcclearationTechnology.

Primary Graphics Adapter

  This allows you to select a graphics device as the primary display.
  The default value is [PCI Express].

Onboard VGA

  Enable or disable the onboard VGA.

For EP2C606-4L/D16 / EP2C602-4L/D16 / EP2C602/D16:

PCIE2 Link Speed

  This allows you to select PCIE2 Link Speed.

PCIE3 & PCIE4 Link Width

  This allows you to select PCIE 3 & PCIE 4 Link Width.

PCIE3 & PCIE4 Link Speed

  This allows you to select PCIE 3 & PCIE 4 Link Speed.

PCIE5 Link Speed

This allows you to select PCIE5 Link Speed.

PCIE6 Link Speed

  This allows you to select PCIE6 Link Speed.

For EP2C606-4L / EP2C602-4L / EP2C602:

PCIE1 Link Speed

This allows you to select PCIE1 Link Speed.

PCIE3 Link Speed

This allows you to select PCIE3 Link Speed.

PCIE4 & PCIE5 Link Width

This allows you to select PCIE 4 & PCIE 5 Link Width.

PCIE4 & PCIE5 Link Speed

This allows you to select PCIE 4 & PCIE 5 Link Speed.

PCIE6 Link Speed

This allows you to select PCIE6 Link Speed.

PCIE7 Link Speed

This allows you to select PCIE7 Link Speed.

QPI (Intel Quickpath Interconnect) Configuration

Isoc

Use this to enable/disable Isoc. It is recommended to select [En abled].

QPI Link Speed Mode

This allows you to select QPI Link Speed Mode. It is recommended to select [Auto].

QPI Link Frequency Select

This allows you to select QPI Link Frequency.

Memory Configuration

Memory Mode

Select the mode for memory initialization.

[Independent]:

Independent channel mode.

[Mirroring]:

The memory subsystem writes identical data to two channels simultaneously. Identical memory modules should be installed in the two channels closest to the processor.

[Lock Step]:

The two channels closest to the processor are com bined to form a single channel. Memory modules must be iden tical in size, speed, and technology in corresponding slots.

[Sparing]:

This mode occurs when on-demand inactive memory is auto matically activated by the system to temporarily replace failed memory until a service action can be performed.

DRAM RAPL BWLIMIT

This item sets the limits on the average power consumption and the bandwidth of a DRAM module.The options are Disabled, 0, 1(Intel recommended value), 8 and 16.

Perform and DFX devices

This item can set the Perfmon and DFX devices hidden or unhid den.

DRAM RAPL (Running Average Power Limit) Mode

RAPL (Running Average Power Limit) provides mechanisms to enforce power consumption limits on supported processors. The default is [DRAM RAPL Mode 1].

Numa

Enable or disable the support of Non-Uniform Memory Access.

MPST Support

Enable or disable the support of Memory Power StateTable.

DRAM Frequency

If [Auto] is selected, the motherboard will detect the memory module(s) inserted and assign the appropriate frequency auto matically.

Channel Interleaving

It allows you to enable Channel Memory Interleaving. The default value is [Auto].

Rank Interleaving

It allows you to select a rank memory interleaving method. The default value is [Auto].

Patrol Scrub

Patrol Scrub is a background activity initiated by the processor to seek out and fix memory errors. The default value is [Enabled].

Demand Scrub

Fix the error when the CPU or I/O issues a demand-read com mand, and the read data from memory turns out to be a correct able error. The default value is [Disabled].

Data Scrambling

Enable this feature to ensure data security and integrity.

Device Tagging

The ability to replace a device with excessive corrected error. Once a device is tagged, errors can only be detected and not cor rected.

Thermal Throttling

Use this automatic memory throttling feature to reduce power consumption. The default value is [CLTT] (Closed Loop Thermal Throttling).

DIMM Information

Display DIMM information.

3.3.5 South Bridge Configuration
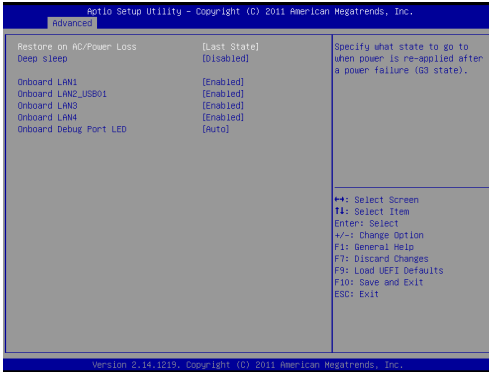
Restore on AC/Power Loss

This allows you to set the power state after an unexpected AC/power loss. If [Power Off] is selected, the AC/power remains off when the power recovers. If [Power On] is selected, the AC/power resumes and the system starts to boot up when the power recovers.

Deep Sleep

Mobile platforms support Deep S4/S5 in DC only and desktop platforms support Deep S4/S5 in AC only. The default value is [Disabled].

Onboard LAN1

This allows you to enable or disable the Onboard LAN1.

Onboard LAN2_USB01

This allows you to enable or disable the Onboard LAN2_USB01.

Onboard LAN3 *(For EP2C606-4L/D16 / EP2C602-4L/D16 / EP2C606-4L / EP2C602-4LOnly)*

This allows you to enable or disable the Onboard LAN3.

Onboard LAN4 *(For EP2C606-4L/D16 / EP2C602-4L/D16 / EP2C606-4L / EP2C602-4LOnly)*

This allows you to enable or disable the Onboard LAN4.

Onboard Debug Port LED

Use this to enable or disable the Onboard Debug Port LED. The default value is [Auto].

3.3.6 USB Configuration
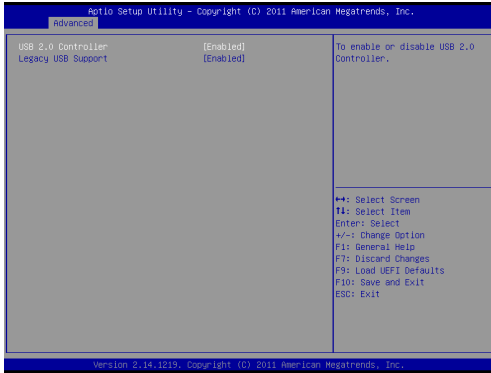
USB 2.0 Controller

Use this item to enable or disable the use of USB 2.0 controller.

Legacy USB Support

Use this option to select legacy support for USB devices. There are four configuration options: [Enabled], [Auto], [Disabled] and [UEFI Setup Only]. The default value is [Enabled]. Please refer to below descriptions for the details of these four options:

[Enabled] - Enables support for legacy USB.

[Auto] - Enables legacy support if USB devices are connected.

[Disabled] - USB devices are not allowed to use under legacy OS and UEFI setup when [Disabled] is selected. If you have USB compatibility issues, it is recommended to select [Disabled] to enter OS.

[UEFI Setup Only] - USB devices are allowed to use only under UEFI setup and Windows / Linux OS.

3.3.7 Intel® ME Subsystem


```
                Aptio Setup Utility – Copyright (C) 2011 American Megatrends, Inc.
      Advanced

  Intel ME Subsystem Configuration
  ME Version              :           2.1.5.95
  ME FW State             :           SPS ME FW Active


                                                              →←: Select Screen
                                                              ↑↓: Select Item
                                                              Enter: Select
                                                              +/-: Change Option
                                                              F1: General Help
                                                              F7: Discard Changes
                                                              F9: Load UEFI Defaults
                                                              F10: Save and Exit
                                                              ESC: Exit



                Version 2.14.1219. Copyright (C) 2011 American Megatrends, Inc.
```
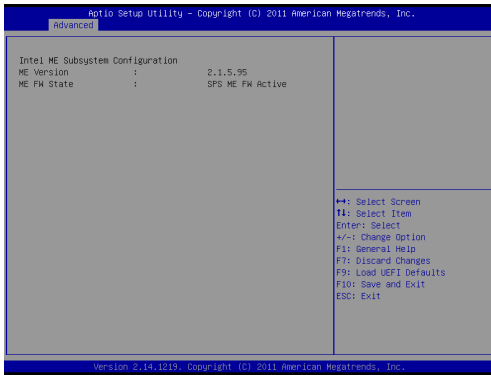
Intel® ME Subsystem

Display information regarding Intel® Management Engine.

3.3.8 Clock Generator Configuration
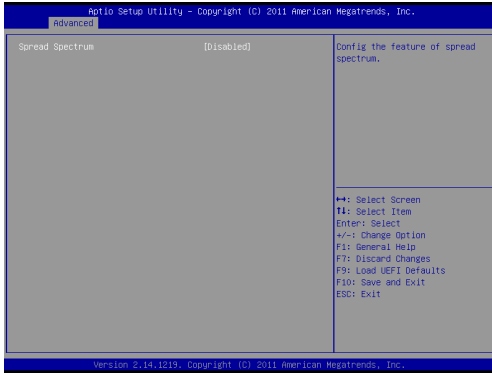
Spread Spectrum

It is recommended to disable this option for better system stability.

3.3.9 Storage Configuration
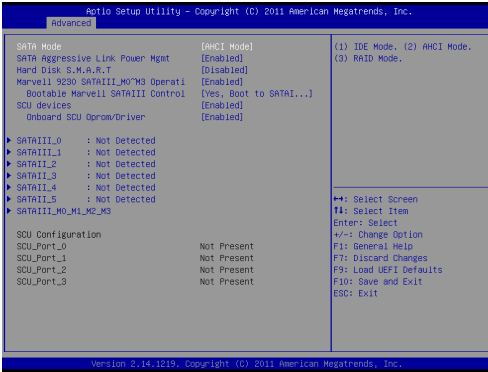
SATA Mode Selection

This item is for SATAIII_0_1, SATAII_2_3 and SATAII_4_5 ports. Use this to select SATA mode. Configuration options: [IDE Mode], [AHCI Mode], [RAID Mode] and [Disabled]. The default value is [AHCI Mode].

AHCI (Advanced Host Controller Interface) supports NCQ and other new features that will improve SATA disk performance but IDE mode does not have these advantages.

SATA Aggressive Link Power Management

Use this item to configure Aggressive Link Power Management.

Hard Disk S.M.A.R.T.

Use this to enable or disable S.M.A.R.T. (Self-Monitoring, Analysis, and Reporting Technology).

Marvell 9230 SATA3_M0~M3 Operation:

This item is for SATAIII_M0_M1 and SATAIII_M2_M3 ports. Use this to enable or disable Marvell SATA3 operation mode.

Bootable Marvell SATA3 Controller

Use this to select onboard Marvell SATAIII Option ROM

SCU Devices

Use this to enable or disable SCU devices.

83

Onboard SCU Oprom/Driver

Use this to enable or disable Onboard Marvell SATA3 Option ROM. If Option ROM is disabled, you cannot use the SATA devices connected to the Marvell SATA3 controller as Boot Device.

We recommend to use Intel® C606/C602 SATA ports (SATAIII_0_1, SATAII_2_3 and SATAII_4_5) for your bootable devices. This will minimum your boot time and get the best performance. But if you still want to boot from the Marvell SATA3 controller, you can enable it from the UEFI.

3.3.10 Super IO Configuration

```
                  Aptio Setup Utility – Copyright (C) 2011 American Megatrends, Inc.
       Advanced

    ▶ Serial Port 1 Configuration                        Set Parameters of Serial Port
    ▶ Serial Port 2 Configuration                        1 (COM1)




                                                         ↔: Select Screen
                                                         ↑↓: Select Item
                                                         Enter: Select
                                                         +/-: Change Option
                                                         F1: General Help
                                                         F7: Discard Changes
                                                         F9: Load UEFI Defaults
                                                         F10: Save and Exit
                                                         ESC: Exit



                  Version 2.14.1219. Copyright (C) 2011 American Megatrends, Inc.
```
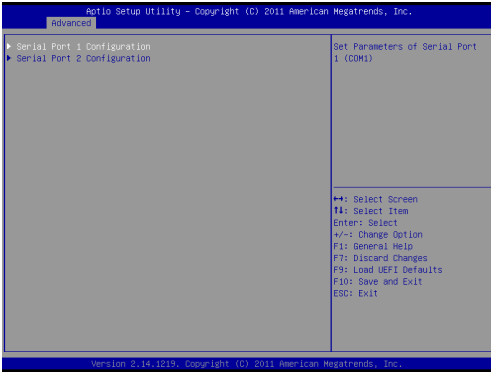
Serial Port 1 Configuration

Use this item to configure the onboard serial port 1.

Serial Port 2 Configuration

Use this item to configure the onboard serial port 2.

3.3.11 Serial Port Console Redirection

```
              Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.
      Advanced

                                                            Console Redirection Enable or
 COM1                                                       Disable.
 Console Redirection                  [Disabled]
 ▶ Console Redirection Settings

 COM2
 Console Redirection                  [Disabled]
 ▶ Console Redirection Settings

 Serial Port for Out-of-Band Management/
 Windows Emergency Management Services (EMS)
 Console Redirection                  [Enabled]
 ▶ Console Redirection Settings
                                                            ↔: Select Screen
                                                            ↑↓: Select Item
                                                            Enter: Select
                                                            +/-: Change Option
                                                            F1: General Help
                                                            F7: Discard Changes
                                                            F9: Load UEFI Defaults
                                                            F10: Save and Exit
                                                            ESC: Exit



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```

Console Redirection

Use this option to enable or disable Console Redirection.

Console Redirection Settings

Use this option to configure Console Redirection Settings.

3.3.12 Voltage Control

```
             Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.
        Advanced

    Voltage Control                                          Fixed/Offset Mode Select

    CPU 1 Core Voltage   0.875V          [Auto]
    CPU 2 Core Voltage   0.880V          [Auto]
    VCCSA 1 Voltage      0.915V          [Auto]
    VCCSA 2 Voltage      0.905V          [Auto]
    DRAM 1 Voltage       1.500V          [Auto]
    DRAM 2 Voltage       1.500V          [Auto]
    PLL 1 Voltage        1.810V          [Auto]
    PLL 2 Voltage        1.810V          [Auto]
    VTT 1 Voltage        1.050V          [Auto]
    VTT 2 Voltage        1.050V          [Auto]
    PCH Voltage          1.100V          [Auto]
                                                        ↔: Select Screen
                                                        ↑↓: Select Item
                                                        Enter: Select
                                                        +/-: Change Option
                                                        F1: General Help
                                                        F7: Discard Changes
                                                        F9: Load UEFI Defaults
                                                        F10: Save and Exit
                                                        ESC: Exit


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```

CPU 1 Core voltage

Use this to select CPU 1 Core voltage. The default value is [Auto].

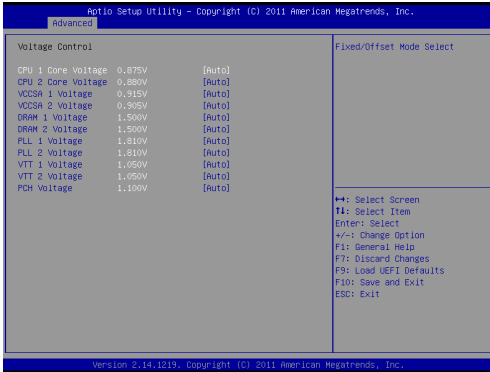**CPU 2 Core voltage**

Use this to select CPU 2 Core voltage. The default value is [Auto].

VCCSA 1 Voltage

Use this to select VCCSA 1 Voltage. The default value is [Auto].

VCCSA 2 Voltage

Use this to select VCCSA 2 Voltage. The default value is [Auto].

DRAM 1 Voltage

Use this to select DRAM 1 Voltage. The default value is [Auto].

DRAM 2 Voltage

Use this to select DRAM 2 Voltage. The default value is [Auto].

PLL 1 Voltage

Use this to select CPU PLL 1 Voltage. The default value is [Auto].

PLL 2 Voltage

Use this to select CPU PLL 2 Voltage. The default value is [Auto].

VTT 1 Voltage

Use this to select VTT 1 Voltage. The default value is [Auto].

VTT 2 Voltage

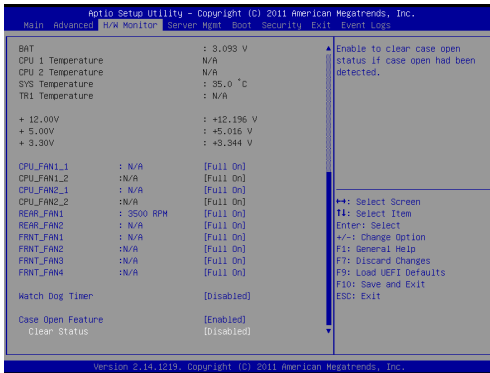Use this to select VTT 2 Voltage. The default value is [Auto].

PCH Voltage

Use this to select PCH Voltage. The default value is [Auto].

3.4 Hardware Health Event Monitoring Screen

In this section, it allows you to monitor the status of the hardware on your system, including the parameters of the CPU temperature, motherboard temperature and the critical voltage.

```
              Aptio Setup Utility – Copyright (C) 2011 American Megatrends, Inc.
        Main  Advanced  H/W Monitor  Server Mgmt  Boot  Security  Exit  Event Logs

  BAT                              : 3.093 V            ▲  Enable to clear case open
  CPU 1 Temperature                  N/A                   status if case open had been
  CPU 2 Temperature                  N/A                   detected.
  SYS Temperature                  : 35.0 °C
  TR1 Temperature                  : N/A

  + 12.00V                         : +12.196 V
  + 5.00V                          : +5.016 V
  + 3.30V                          : +3.344 V

  CPU_FAN1_1       : N/A           [Full On]
  CPU_FAN1_2       :N/A            [Full On]
  CPU_FAN2_1       : N/A           [Full On]
  CPU_FAN2_2       :N/A            [Full On]
  REAR_FAN1        : 3500 RPM      [Full On]           ↔: Select Screen
  REAR_FAN2        : N/A           [Full On]           ↑↓: Select Item
  FRNT_FAN1        : N/A           [Full On]           Enter: Select
  FRNT_FAN2        :N/A            [Full On]           +/-: Change Option
  FRNT_FAN3        :N/A            [Full On]           F1: General Help
  FRNT_FAN4        :N/A            [Full On]           F7: Discard Changes
                                                       F9: Load UEFI Defaults
  Watch Dog Timer                  [Disabled]          F10: Save and Exit
                                                       ESC: Exit
  Case Open Feature                [Enabled]
    Clear Status                   [Disabled]      ▼

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```

CPU_Fan1_1 Setting

This allows you to set the speed of CPU_Fan1_1. The default value is [Full On].

CPU_Fan1_2 Setting

This allows you to set the speed of CPU_Fan1_2. The default value is [Full On].

CPU_Fan2_1 Setting

This allows you to set the speed of CPU_Fan2_1. The default value is [Full On].

CPU_Fan2_2 Setting

This allows you to set the speed of CPU_Fan2_2. The default value is [Full On].

REAR_Fan1 Setting

This allows you to set the speed of REAR Fan1. The default value is [Full On].

REAR_Fan2 Setting

This allows you to set the speed of REAR Fan1. The default value is [Full On].

FRNT_Fan1 Setting

This allows you to set the speed of FRNT Fan1. The default value is [Full On].

FRNT Fan2 Setting

This allows you to set the speed of FRNT Fan2. The default value is [Full On].

FRNT Fan3 Setting

This allows you to set the speed of FRNT Fan3. The default value is [Full On].

FRNT Fan4 Setting

This allows you to set the speed of FRNT Fan42. The default value is [Full On].

Watch Dog Timer

This allows you to enable or disable the Watch Dog Timer. The default value is [Disabled].
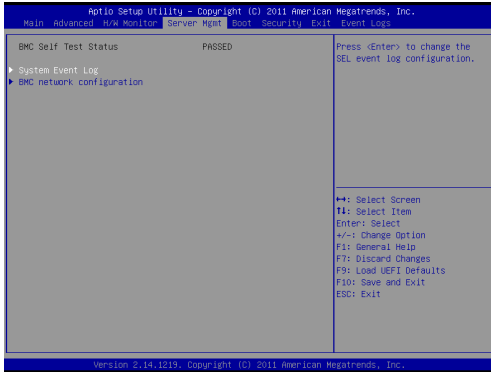
Case Open Feature

This allows you to enable or disable the Case Open Feature. The default value is [Enabled].

Clear Status

Enable to clear case open status if case open has been detected.

3.5 Server Management

System Event Log

Enter to configure System Event Logging features during boot.

BMC Network Configuration

Enter to configure BMC Network parameters.

Configuration Address Source

Select to configure BMC network parameters statically or dynamically(by BIOS or BMC).

Configuration options: [Unspecified], [Static], and [Dynamic].

Unspecified: BMC network parameters are configured by BMC itself.

Static: Manually enter the IP Address, Subnet Mask and Gateway Address in the BIOS for BMC LAN channel configuration.

Dynamic: IP address, Subnet Mask and Gateway Address are automatically assigned by the network's DHCP server.
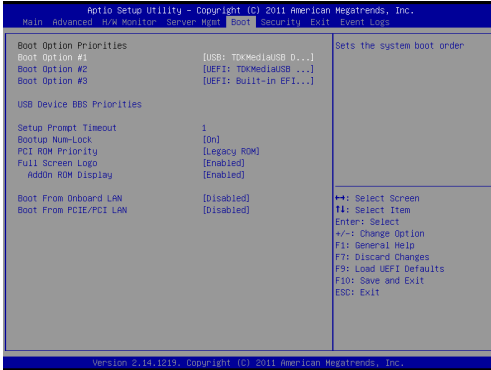
To configure BMC network parameters using the BIOS setup, select either [Static] or [Dynamic] option.

To configure BMC network parameters using the BMC web interface, select [Unspecified] option.

3.6 Boot Screen

In this section, it will display the available devices on your system for you to configure the boot settings and the boot priority.

Boot Option #1

Select boot option #1.

Boot Option #2

Select boot option #2.

Boot Option #3

Select boot option #3.

Hard Drive BBS Priorities

Set the boot priorities for hard drives.

CD/DVD ROM Drive BBS Priorities

Set the boot priorities for CD/DVD ROM Drive.

USB Device BBS Priorities

Set the boot priorities for USB devices.

Setup Prompt Timeout

This shows the number of seconds to wait for setup activation key. 65535(0XFFFF) means indefinite waiting.

Bootup NumLock State

If this item is set to [On], it will automatically activate the Numeric Lock function after boot-up.

PCI ROM Priority

Use this to adjust the PCI ROM Priority. The default value is [Leg
acy ROM].

Full Screen Logo

Use this item to enable or disable OEM Logo. The default value
is [Enabled].

AddOn ROM Display

Use this option to adjust AddOn ROM Display. If you enable the
option "Full Screen Logo" but you want to see the AddOn ROM
information when the system boots, please select [Enabled]. Con-
figuration options: [Enabled] and [Disabled]. The default value is
[Enabled].

Boot From Onboard LAN

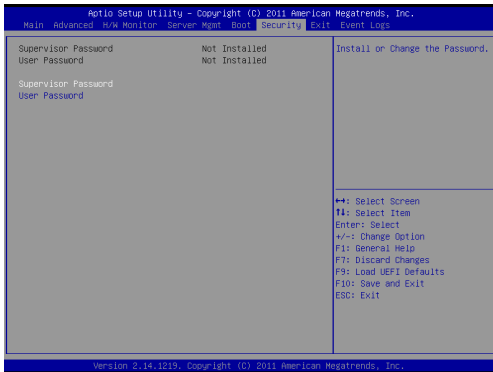Use this item to enable or disable the Boot From Onboard LAN
feature.

Boot From PCIE/PCI LAN

Use this item to enable or disable the Boot From PCIE/PCI LAN
feature.

3.7 Security Screen

In this section, you may set or change the supervisor/user password for the system. For the user password, you may also clear it.

Aptio Setup Utility – Copyright (C) 2011 American Megatrends, Inc.
Main Advanced H/W Monitor Server Mgmt Boot Security Exit Event Logs

Supervisor Password   Not Installed   Install or Change the Password.
User Password   Not Installed

Supervisor Password
User Password

→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Option
F1: General Help
F7: Discard Changes
F9: Load UEFI Defaults
F10: Save and Exit
ESC: Exit

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3.8 Exit Screen


```
             Aptio Setup Utility – Copyright (C) 2011 American Megatrends, Inc.
     Main  Advanced  H/W Monitor   Server Mgmt  Boot  Security  Exit  Event Logs

  Save Changes and Exit                            Exit system setup after saving
  Discard Changes and Exit                         the changes.
  Discard Changes
  Load UEFI Defaults                               F10 key can be used for this
                                                   operation.




                                                   →←: Select Screen
                                                   ↑↓: Select Item
                                                   Enter: Select
                                                   +/-: Change Option
                                                   F1: General Help
                                                   F7: Discard Changes
                                                   F9: Load UEFI Defaults
                                                   F10: Save and Exit
                                                   ESC: Exit


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```

Save Changes and Exit

When you select this option, the following message "Save con-
figuration changes and exit setup?" will pop-out. Select [Yes] to
save the changes and exit the UEFI SETUP UTILITY.

Discard Changes and Exit

When you select this option, the following message "Discard
changes and exit setup?" will pop-out. Select [Yes] to exit the
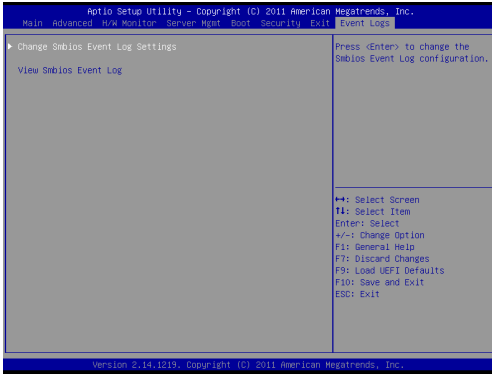UEFI SETUP UTILITY without saving any changes.

Discard Changes

When you select this option, the following message "Discard
changes?" will pop-out. Select [Yes] to discard all changes.

Load UEFI Defaults

Load UEFI default values for all the setup questions. F9 key can
be used for this operation.

3.9 Event Logs

Change Smbios Event Log Settings

This allows you to configure the Smbios Event Log Settings.

View Smbois Event Log

This allows you to view the Smbios Event Log.

Chapter 4: Software Support

4.1 Install Operating System

This motherboard supports Microsoft® Windows® Server 2003 / 2003 R2 / 2008 / 2008 R2 / 2012 / 2012 R2 / Linux compliant. Because motherboard settings and hardware options vary, use the setup procedures in this chapter for general reference only. Refer your OS documentation for more information.

4.2 Support CD Information

The Support CD that came with the motherboard contains necessary drivers and useful utilities that enhance the motherboard's features.

4.2.1 Running The Support CD

To begin using the support CD, insert the CD into your CD-ROM drive. The CD automatically displays the Main Menu if "AUTORUN" is enabled in your computer. If the Main Menu does not appear automatically, locate and double click on the file "ASRSETUP.EXE" in the Support CD to display the menu.

4.2.2 Drivers Menu

The Drivers Menu shows the available device's drivers if the system detects installed devices. Please install the necessary drivers to activate the devices.

4.2.3 Utilities Menu

The Utilities Menu shows the application softwares that the motherboard supports. Click on a specific item then follow the installation wizard to install it.

4.2.4 Contact Information

If you need to contact ASRock Rack or want to know more about ASRock Rack, you're welcome to visit ASRock Rack's website at http://www.asrockrack.com; or you may contact your dealer for further information.

Chapter 5: Troubleshooting

5.1 Troubleshooting Procedures

Follow the procedures below to troubleshoot your system.

> Always unplug the power cord before adding, removing or changing any hardware components. Failure to do so may cause physical injuries to you and damages to motherboard components.

1. Disconnect the power cable and check whether the PWR LED is off.
2. Unplug all cables, connectors and remove all add-on cards from the motherboard. Make sure that the jumpers are set to default settings.
3. Confirm that there are no short circuits between the motherboard and the chassis.
4. Install a CPU and fan on the motherboard, then connect the chassis speaker and power LED.

If there is no power...
1. Confirm that there are no short circuits between the motherboard and the chassis.
2. Make sure that the jumpers are set to default settings.
3. Check the settings of the 115V/230V switch on the power supply.
4. Verify if the battery on the motherboard provides ~3VDC. Install a new battery if it does not.

If there is no video...
1. Try replugging the monitor cables and power cord.
2. Check for memory errors.

If there are memory errors...
1. Verify that the DIMM modules are properly seated in the slots.
2. Use recommended DDR3 1600/1333/1066 ECC DIMMs.
3. If you have installed more than one DIMM modules, they should be identical with the same brand, speed, size and chip-type.
4. Try inserting different DIMM modules into different slots to identify

faulty ones.

5. Check the settings of the 115V/230V switch on the power supply.

Unable to save system setup configurations...

1. Verify if the battery on the motherboard provides ~3VDC. Install a new battery if it does not.

2. Confirm whether your power supply provides adaquate and stable power.

Other problems...

1. Try searching keywords related to your problem on ASRock Rack's FAQ page:

   http://www.asrockrack.com/support/faq.asp

2. Try downloading and updating the latest UEFI on ASRock Rack's website:

   http://www.asrockrack.com/support/download.asp

5.2 Technical Support Procedures

If you have tried the troubleshooting procedures mentioned above and the problems are still unsolved, please contact ASRock Rack's technical support with the following information:

1. Your contact information
2. Model name, BIOS version and problem type.
3. System configuration.
4. Problem description.

You may contact ASRock Rack's technical support at:
http://www.asrockrack.com/support/tsd.asp

5.3 Returning Merchandise for Service

For warranty service, the receipt or a copy of your invoice marked with the date of purchase is required. By calling your vendor or going to our RMA website (http://www.asrockrack.com/support/index.asp?cat=RMA) you may obtain a Returned Merchandise Authorization (RMA) number.
The RMA number should be displayed on the outside of the shipping carton which is mailed prepaid or hand-carried when you return the motherboard to the manufacturer. Shipping and handling charges will be applied for all orders that must be mailed when service is complete.

This warranty does not cover damages incurred in shipping or from failure due to alteration, misuse, abuse or improper maintenance of products.

Contact your distributor first for any product related problems during the warranty period.