OXY5135B COM Express with Intel Ivy Bridge+QM77 User's Manual





Safety Information

Electrical safety

- To prevent electrical shock hazard, disconnect the power cable from the electrical outlet before relocating the system.
- When adding or removing devices to or from the system, ensure that the power cables for the devices are unplugged before the signal cables are connected. If possible, disconnect all power cables from the existing system before you add a device.
- Before connecting or removing signal cables from the motherboard, ensure that all power cables are unplugged.
- Seek professional assistance before using an adapter or extension cord. These devices could interrupt the grounding circuit.
- Make sure that your power supply is set to the correct voltage in your area.
- If you are not sure about the voltage of the electrical outlet you are using, contact your local power company.
- If the power supply is broken, do not try to fix it by yourself. Contact a qualified service technician or your local distributor.

Operation safety

- Before installing the motherboard and adding devices on it, carefully read all the manuals that came with the package.
- Before using the product, make sure all cables are correctly connected and the power cables are not damaged. If you detect any damage, contact your dealer immediately.
- To avoid short circuits, keep paper clips, screws, and staples away from connectors, slots, sockets and circuitry.
- Avoid dust, humidity, and temperature extremes. Do not place the product in any area where it may become wet.
- Place the product on a stable surface.
- If you encounter any technical problems with the product, contact your local distributor

Statement

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Revision History

Revision	Date (dd.mm.yyyy)	Changes
Version 1.0	01.08.2013	Initial release

Packing list

OXY5135B COM Express Type 6 Module

CD (Driver + user's manual)

Optional Accessories

- Thermal kit: Heatspreader
- Thermal kit: Active heatsink
- SK505 COM Express Type 6 carrier board



If any of the above items is damaged or missing, please contact your local distributor.

Ordering Information

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Model Number	Description
OXY5135B-ET-3517UE	COM Express Type 6 Intel [®] Ivy Bridge Processor (Mobile)
	BGA CPU (Core™ i7-3517UE) (-20 to 70°C)
OXY5135B-ET-3610ME	COM Express Type 6 Intel [®] Ivy Bridge Processor (Mobile)
	BGA CPU (Core™ i5-3610ME) (-20 to 70°C)
OXY5135B-ET-3217UE	COM Express Type 6 Intel [®] Ivy Bridge Processor (Mobile)
	BGA CPU (Core™ i3-3217UE) (-20 to 70°C)
OXY5135B-UT-3517UE	COM Express Type 6 Intel [®] Ivy Bridge Processor (Mobile)
	BGA CPU (Core™ i7-3517UE) (-40 to 85°C optional)
OXY5135B-UT-3610ME	COM Express Type 6 Intel [®] Ivy Bridge Processor (Mobile)
	BGA CPU (Core™ i5-3610ME) (-40 to 85°C optional)
OXY5135B-UT-3217UE	COM Express Type 6 Intel [®] Ivy Bridge Processor (Mobile)
	BGA CPU (Core™ i3-3217UE) (-40 to 85°C optional)



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Chapter 1: Product Information

1.1 Block Diagram





1.2 Key Features

Processor & System	1
CPU Type	3rd Generation Intel [®] Core™ i7/i5/i3 processor, BGA type
	Core™ i7-3615QE (4C, 2.3GHz, 45W)
	Core™ i7-3612QE (4C, 2.1GHz, 35W)
	Core™ i7-3555LE (2C, 2.5GHz, 25W)
	Core™ i7-3517UE (2C, 1.7GHz, 17W)
	Core™ i5-3610ME (2C, 2.7GHz, 35W)
	Core™ i3-3120ME (2C, 2.4GHz, 35W)
	Core™ i3-3217UE (2C, 1.6GHz, 17W)
Chipset	Intel [®] QM77
Memory Type	Dual channel 4 GB DDR3 1600 MHz memory IC onboard
BIOS	AMI® UEFI BIOS
Super I/O	Fintek F81801-I
Watchdog	1-255 sec. or 1-255 min. software programmable, can generate system reset
Expansion Busses	1 x PCle x16 (2 x PCle x8 or 1 x PCle x8 + 2 x PCle x4)
	7 x PCle x1
Display	
Chipset	Integrated GFX in Ivy Bridge processor
VGA	Yes (Max. resolution 2048 x1536 @ 60 Hz)
LVDS	Dual channel 24-bit LVDS
DDI	Three DDI ports support HDMI/DP/SDVO/DVI
Audio	
Codec	Integrated Intel [®] High Definition Audio
Ethernet	
Chipset	1 x Intel® 82579LM GbE LAN
WOL	Yes
Boot from LAN	Yes for PXE
I/O Interface	
SATA	2 x SATAIII (6 Gb/s)
	2 x SATAII (3 Gb/s)
USB	4 x USB 3.0
	8 x USB 2.0
LPC bus	1
SMBus	1
l ² C	1



Mechanical and Environment		
Form Factor	COM Express Type 6	
Power Type	AT mode (12V)	
	ATX mode (12V & 5Vsb)	
Dimension	125 x 95 mm (4.9" x 3.7")	
Operating Temp.	-20 to 70°C	
Storage Temp.	-20 to 85°C	
Relative Humidity	10% to 90%, non-condensing	

*All specifications and photos are subject to change without notice.



1.3 Board Placement





1.4 Mechanical Drawing





Chapter 2: Jumpers and Connectors

2.1 AB Connector (CD Side close to board edge)

- VGA
- 24-bit LVDS Dual Channel
- 6 x PCle x1
- 1 x PCle x16
- 1 x Gigabit Ethernet
- High Definition Audio bus
- 2 x SATAIII, 2 x SATAII
- 4 x USB 3.0, 8 x USB 2.0
- LPC
- SMBus and I²C

2.2 CD Connector

- DDI1 (DP/HDMI/DVI/SDVO)
- DDI2 (DP/HDMI/DVI)
- DDI3 (DP/HDMI/DVI)
- 1 x PCle x1



2.3 Pin Definitions

RowA		Row B	
Pin	Definition	Pin	Definition
A1	GND	B1	GND
A2	GBEO_MDI3-	B2	gbeo_act#
A3	GBEO_MDI3+	B3	LPC_FRAME#
A4	GBEO_LINK100#	B4	LPC_AD0
A5	GBEO_LINK1000#	B5	LPC_AD1
A6	GBEO_MDI2-	B6	LPC_AD2
A7	GBE0_MDI2+	B7	LPC_AD3
A8	gbeo_link#	B8	LPC_DRQ0#
A9	GBEO_MDI1-	B9	LPC_DRQ#1
A10	GBE0_MDI1+	B10	lpc_ak
A11	GND	B11	GND
A12	GBEO_MDIO-	B12	PWRBTN#
A13	GBEO_MDIO+	B13	SMB_CLK
A14	GBEO_CTREF	B14	SMB_DAT
A15	SUS_S3#	B15	SMB_ALERT#
A16	Satao_tx+	B16	SATA1_TX+
A17	satao_tx-	B17	SATA1_TX-
A18	SUS_S4#	B18	SUS_STAT#
A19	Satao_rx+	B19	SATA1_RX+
A20	satao_rx-	B20	SATA1_RX-
A21	GND	B21	GND
A22	Sata2_tx+	B22	Sata3_tx+
A23	SATA2_TX-	B23	SATA3_TX-
A24	SUS_S5#	B24	PWR_OK
A25	Sata2_rx+	B25	SATA3_RX+
A26	Sata2_rx-	B26	SATA3_RX-
A27	BATLOW#	B27	WDT
A28	(S)ata_act#	B28	AC/HDA_SDIN2
A29	AC/HDA_SYNC	B29	AC/HDA_SDIN1
A30	AC/HDA_RST#	B30	AC/HDA_SDINO
A31	GND	B31	GND
A32	AC/HDA_BITCLK	B32	SPKR
A33	AC/HDA_SDOUT	B33	12C_CK

	RowC		Row D
Pin	Definition	Pin	Definition
C1	GND	D1	GND
02	GND	D2	GND
С	USB_SSRXO-	D3	USB_SSTX0-
C4	USB_SSRXO+	D4	USB_SSTX0+
C5	GND	D5	GND
60	USB_SSRX1-	D6	USB_SSTX1-
C7	USB_SSRX1+	D7	USB_SSTX1+
8	GND	D8	GND
ശ	USB_SSRX2-	D9	USB_SSTX2-
C10	USB_SSRX2+	D10	USB_SSTX2+
C11	GND	D11	GND
C12	USB_SSRX3-	D12	USB_SSTX3-
C13	USB_SSRX3+	D13	USB_SSTX3+
C14	GND	D14	GND
C15	DDI1_PAIR6+	D15	DDI1_CTRLCLK_AUX+
C16	DDI1_PAIR6-	D16	DDI1_CTRLDATA_AUX-
C17	NC	D17	NC
C18	NC	D18	NC
C19	PCIE_RX6+	D19	PCIE_TX6+
C2 0	PCIE_RX6-	D20	PCIE_TX6-
C21	GND	D21	GND
C22	NC	D22	NC
C23	NC	D23	NC
C 24	DDI1_HPD	D24	NC
C25	DDI1_PAIR4+	D25	NC
C2 6	DDI1_PAIR4-	D26	DDI1_PAIRO+
C 27	NC	D27	DDI1_PAIRO-
C28	NC	D28	NC
C 29	DDI1_PAIR5+	D29	DDI1_PAIR1+
C30	DDI1_PAIR5-	D30	DDI1_PAIR1-
C31	GND	D31	GND
C32	DDI2_CTRLCLK_AUX+	D32	DDI1_PAIR2+
C33	DDI2_CTRLDATA_AUX-	D33	DDI1_PAIR2-



A35THRMTRIP#B35THRW#A36USB6-B36USB7-A37USB6+B37USB7+A38USB_6_7_OC#B38USB_4_5_OC#A39USB4-B39USB5-A40USB4+B40USB5+A41GNDB41GNDA42USB2-B42USB3-A43USB2B41USB3+A44USB2_3_OC#B44USB_0_1_OC#A44USB2_3_OC#B44USB_0_1_OC#A45USB0-B45USB1+A46USB0+B46USB1+A47VCC_RTCB47EXCD1_PERST#A48EXCD0_PERST#B48EXCD1_PERST#A49EXCD0_CPE#B49SYS_RESET#A50IPC_SERIRQB50CB_RESET#A51GNDB51GNDA52PCIE_TX5+B53PCIE_RX5+A53PCIE_TX5+B53PCIE_RX5+A54GPI0B54GPO1A55PCIE_TX4+B55PCIE_RX4+A56PCIE_TX3+B58PCIE_RX3+A58PCIE_TX2+B61PCIE_RX2+A63GPI1B63GPO3A64PCIE_TX1+B64PCIE_RX1+A65PCIE_TX0+B66WAKE0#A66GNDB67WAKE1#A66PCIE_TX0+B68PCIE_RX0+A69PCIE_TX0+B69PCIE_RX0+A69PCIE_TX0+B69PCIE_RX0+ <th>A34</th> <th>BIOS_DISO#</th> <th>B34</th> <th>I2C_DAT</th>	A34	BIOS_DISO#	B34	I2C_DAT
A36USB6-B36USB7-A37USB6+B37USB7+A38USB_6_7_OC#B38USB_4_5_OC#A39USB4-B40USB5+A40USB4+B40USB5+A41GNDB41GNDA42USB2-B42USB3-A43USB2B42USB3-A44USB_1B41USB1-A44USB2_3_OC#B44USB_0_1_OC#A45USB0-B45USB1-A46USB0+B46USB1+A47VCC_RTCB47EXCD1_PERST#A48EXCD0_PERST#B48EXCD1_PERST#A49EXCD0_PERST#B48EXCD1_PERST#A51GNDB51GNDA52PCE_TX5+B53PCE_RX5+A53PCE_TX5+B53PCE_RX4+A54GPI0B54GPO1A55PCE_TX4+B55PCE_RX4+A56PCE_TX3+B58PCE_RX3+A57GNDB57GPO2A58PCE_TX3+B58PCE_RX3+A59PCE_TX2+B61PCE_RX2+A61PCE_TX2+B61PCE_RX1+A62PCE_TX1+B64PCE_RX1+A63FOIB67WAKE0#A64PCE_TX0+B66PCE_RX0+A65PCE_TX0+B66PCE_RX0+A66PCE_TX0+B67PCE_RX0+A67FOIB67WAKE0#	A35	THRIVITRIP#	B35	THRM#
A37USB6+B37USB7+A38USB_6_7_C/#B38USB_4_S_C/FA39USB4-B39USB5-A40USB4+B40USB5+A41GNDB41GNDA42USB2-B42USB3-A43USB2+B43USB_1-A44USB_2_3_C/#B44USB_0_1_C/#A45USB0-B45USB1-A46USB0+B46USB1+A47VCC_RTCB47EXCD1_PERST#A48EXCD0_CPE#B49SYS_RESET#A49EXCD0_CPE#B49SYS_RESET#A50IPC_SERIRQB50GB_RESET#A51GNDB51GNDA52PCIE_TX5+B52PCIE_RX5+A53PCIE_TX4+B55PCIE_RX4+A54GPI0B54GPO1A55PCIE_TX4+B55PCIE_RX4+A56PCIE_TX4+B55PCIE_RX3+A57GNDB57GPO2A58PCIE_TX3+B58PCIE_RX3+A59PCIE_TX2+B61PCIE_RX2+A60GNDB60GNDA61PCIE_TX1+B64PCIE_RX1+A62PCIE_TX1+B64PCIE_RX0+A63PCIE_TX0+B67WAKE0#A64PCIE_TX0+B68PCIE_RX0+A65PCIE_TX0+B69PCIE_RX0+A66PCIE_TX0+B69PCIE_RX0+A67GPI2B67WAKE1#	A36	USB6-	B36	USB7-
A38USB_6_7_OC#B38USB_4_S_OC#A39USB4-B39USB5-A40USB4+B40USB5+A41GNDB41GNDA42USB2-B42USB3-A43USB2_3_OC#B44USB_0_1_OC#A44USB_2_3_OC#B45USB1-A45USB0-B46USB1-A46USB0-B47EXCD1_PERST#A47VCC_RTCB47EXCD1_PERST#A48EXCD0_PERST#B48EXCD1_OPE#A49EXCD0_PERST#B49SYS_RESET#A50IPC_SERIRQB50GB_RESET#A51GNDB51GNDA52PCIE_TX5+B52PCIE_RX5+A53PCIE_TX5+B53PCIE_RX5+A54GPI0B54GPO1A55PCIE_TX4+B55PCIE_RX4+A57GNDB57GPO2A58PCIE_TX3+B58PCIE_RX3+A59PCIE_TX3+B58PCIE_RX3+A60GNDB60GNDA61PCIE_TX2+B61PCIE_RX2+A62PCIE_TX1+B64PCIE_RX1+A63GPI1B64PCIE_RX1+A64PCIE_TX1+B64PCIE_RX0+A65PCIE_TX0+B68PCIE_RX0+A66GNDB67VAKE0#A67GPI2B67VAKE1#A68PCIE_TX0+B69PCIE_RX0+A69PCIE_TX0+B69PCIE_RX0+<	A37	USB6+	B37	USB7+
A39USB4-B39USB5-A40USB4+B40USB5+A41GNDB41GNDA42USB2-B42USB3-A43USB2+B43USB1-A44USB2_3_OC#B44USB1-A45USB0-B45USB1-A46USB0+B46USB1+A47VCC_RTCB47EXCD1_PERST#A48EXCD0_PERST#B48EXCD1_OPPE#A49EXCD0_PERST#B49SYS_RESET#A50IPC_SERIRQB50GB_RESET#A51GNDB51GNDA52PCIE_TX5+B52PCIE_RX5+A53PCIE_TX5+B53PCIE_RX5+A54GP0B54GP01A55PCIE_TX4+B55PCIE_RX4+A56PCIE_TX4+B56PCIE_RX3+A57GNDB57GPO2A58PCIE_TX3+B58PCIE_RX3+A60GNDB60GNDA61PCIE_TX1+B64PCIE_RX1+A63GPI1B64PCIE_RX1+A64PCIE_TX1+B65PCIE_RX1+A65PCIE_TX1+B64PCIE_RX0+A66GNDB67GNDA67GPI2B67WAKE1#A68PCIE_TX0+B68PCIE_RX0+A69PCIE_TX0+B69PCIE_RX0+A69PCIE_TX0+B69PCIE_RX0+A69PCIE_TX0+B69PCIE_RX0+A69PC	A38	USB_6_7_0C#	B38	USB_4_5_OC#
A40USB4+B40USB5+A41GNDB41GNDA42USB2-B42USB3-A43USB2+B43USB_0_1_OC#A44USB_2_3_OC#B44USB_0_1_OC#A45USB0-B45USB1-A46USB0+B46USB1+A47VCC_RTCB47EXCD1_PERST#A48EXCD0_PERST#B48EXCD1_OPPE#A49EXCD0_OPPE#B49SYS_RESET#A50IPC_SERIRQB50GB_RESET#A51GNDB51GNDA52PCIE_TX5+B52PCIE_RX5+A53PCIE_TX5+B53PCIE_RX5+A54GPI0B54GPO1A55PCIE_TX4+B55PCIE_RX4+A56PCIE_TX3+B58PCIE_RX3+A57GNDB57GPO2A58PCIE_TX3+B58PCIE_RX3+A59PCIE_TX2+B61PCIE_RX2+A61PCIE_TX2+B61PCIE_RX2+A63GPI1B63GPO3A64PCIE_TX1+B64PCIE_RX1+A65PCIE_TX1+B65PCIE_RX1+A65PCIE_TX0+B67PCIE_RX0+A66GNDB67PCIE_RX0+A69PCIE_TX0+B69PCIE_RX0+A69PCIE_TX0+B69PCIE_RX0+A69PCIE_TX0+B69PCIE_RX0+A69PCIE_TX0+B69PCIE_RX0+A69PCIE_TX0+B69 <td< td=""><td>A39</td><td>USB4-</td><td>B39</td><td>USB5-</td></td<>	A39	USB4-	B39	USB5-
A41GNDB41GNDA42USB2-B42USB3-A43USB2+B43USB3+A44USB_3_3_CC#B44USB_1_CC#A45USB0-B45USB1-A46USB0+B46USB1+A47VCC_RTCB47EXCD1_PERST#A48EXCD0_PERST#B49SYS_RESET#A49EXCD0_CPE#B49SYS_RESET#A50IPC_SERIRQB50G_RESET#A51GNDB51GNDA52PCE_TX5+B53PCE_RX5+A53PCE_TX5+B53PCIE_RX5+A54GPOB54GPO1A55PCIE_TX4+B55PCIE_RX4+A56PCIE_TX3+B58PCIE_RX3+A57GNDB57GPO2A58PCIE_TX3+B58PCIE_RX3+A59PCIE_TX3-B59PCIE_RX3+A60GNDB60GNDA61PCIE_TX1+B61PCIE_RX1+A63GPI1B63GPO3A64PCIE_TX1+B64PCIE_RX1+A65PCIE_TX1-B65PCIE_RX1+A65PCIE_TX1+B64PCIE_RX0+A66GNDB67WAKE1#A67GPI2B67WAKE1#A68PCIE_TX0+B68PCIE_RX0+A69PCIE_TX0+B69PCIE_RX0+A69PCIE_TX0+B69PCIE_RX0+A69PCIE_TX0+B69PCIE_RX0+A6	A40	USB4+	B40	USB5+
A42USB2-B42USB3-A43USB2+B43USB3+A44USB_2_3_OC#B44USB_0_1_OC#A45USB0-B45USB1-A46USB0+B46USB1+A47VCC_RTCB47EXCD1_PERST#A48EXCD0_PERST#B48EXCD1_PERST#A49EXCD0_PEF#B49SYS_RESET#A50IPC_SERIRQB50CB_RESET#A51GNDB51GNDA52PCIE_TX5+B52PCIE_RX5+A53PCIE_TX5+B53PCIE_RX4+A54GPI0B54GPO1A55PCIE_TX4+B55PCIE_RX4+A56PCIE_TX4+B55PCIE_RX4+A57GNDB57GPO2A58PCIE_TX3+B58PCIE_RX3+A59PCIE_TX3+B59PCIE_RX3+A60GNDB60GNDA61PCIE_TX2+B61PCIE_RX1+A62PCIE_TX1+B64PCIE_RX1+A64PCIE_TX1+B64PCIE_RX1+A65PCIE_TX1+B64PCIE_RX1+A66GNDB67WAKE0#A67GPI2B67WAKE0#A68PCIE_TX0+B69PCIE_RX0+A69PCIE_TX0+B69PCIE_RX0+A69PCIE_TX0+B69PCIE_RX0-A69PCIE_TX0+B69PCIE_RX0+A69PCIE_TX0+B69PCIE_RX0+A69PCIE_TX0+B69 <t< td=""><td>A41</td><td>GND</td><td>B41</td><td>GND</td></t<>	A41	GND	B41	GND
A43USB2+B43USB3+A44USB2_3_OC#B44USB_0_1_OC#A45USB0-B45USB1-A46USB0+B46USB1+A47VCC_RTCB47EXCD1_PERST#A48EXCD0_PERST#B48EXCD1_CPPE#A49EXCD0_PEF#B49SYS_RESET#A50IPC_SERIRQB50CB_RESET#A51GNDB51GNDA52PCIE_TX5+B52PCIE_RX5+A53PCIE_TX5+B53PCIE_RX5+A54GPI0B54GPO1A55PCIE_TX4+B55PCIE_RX4+A56PCIE_TX3+B58PCIE_RX3+A57GNDB57GPO2A58PCIE_TX3+B58PCIE_RX3+A59PCIE_TX3+B59PCIE_RX3+A60GNDB60GNDA61PCIE_TX2+B61PCIE_RX2+A62PCIE_TX1+B64PCIE_RX1+A64PCIE_TX1+B64PCIE_RX1+A65PCIE_TX0+B67VAKE0#A66GNDB68PCIE_RX0+A67GPI2B67VAKE0#A68PCIE_TX0+B69PCIE_RX0+A69PCIE_TX0+B69PCIE_RX0+A60GNDB60GND	A42	USB2-	B42	USB3-
A44USB_2_3_OC#B44USB_0_1_OC#A45USB0-B45USB1-A46USB0+B46USB1+A47VCC_RTCB47EXCD1_PERST#A48EXCD0_PERST#B48EXCD1_PEF#A49EXCD0_CPPE#B49SYS_RESET#A50IPC_SERIRQB50CB_RESET#A51GNDB51GNDA52PCE_TX5+B52PCE_RX5+A53PCE_TX5+B53PCIE_RX5+A54GPI0B54GPO1A55PCIE_TX4+B55PCIE_RX4+A56PCIE_TX3+B58PCIE_RX3+A57GNDB57GPO2A58PCIE_TX3+B58PCIE_RX3+A59PCIE_TX3+B59PCIE_RX3+A60GNDB60GNDA61PCIE_TX2+B61PCIE_RX2+A62PCIE_TX1+B64PCIE_RX1+A64PCIE_TX1+B64PCIE_RX1+A65PCIE_TX0+B68PCIE_RX0+A66PCIE_TX0+B69PCIE_RX0+A68PCIE_TX0+B69PCIE_RX0+A69PCIE_TX0+B69PCIE_RX0+A69PCIE_TX0+B69PCIE_RX0+A69PCIE_TX0+B69PCIE_RX0+A69PCIE_TX0+B69PCIE_RX0+A69PCIE_TX0+B69PCIE_RX0+A69PCIE_TX0+B69PCIE_RX0+A69PCIE_TX0+B69PCIE_RX0+A69 <td< td=""><td>A43</td><td>USB2+</td><td>B43</td><td>USB3+</td></td<>	A43	USB2+	B43	USB3+
A45USB0-B45USB1-A46USB0+B46USB1+A47VCC_RTCB47EXCD1_PERST#A48EXCD0_PERST#B48EXCD1_CPPE#A49EXCD0_CPPE#B49SYS_RESET#A50IPC_SERIRQB50CB_RESET#A51GNDB51GNDA52PCIE_TX5+B52PCIE_RX5+A53PCIE_TX5+B53PCIE_RX5+A54GPI0B54GPO1A55PCIE_TX4+B55PCIE_RX4+A56PCIE_TX4+B56PCIE_RX4+A57GNDB57GPO2A58PCIE_TX3+B58PCIE_RX3+A59PCIE_TX3+B59PCIE_RX3+A60GNDB60GNDA61PCIE_TX2+B61PCIE_RX2+A63GPI1B63GPO3A64PCIE_TX1+B64PCIE_RX1+A65PCIE_TX0+B65PCIE_RX0+A66GNDB66WAKE0#A67GPI2B67WAKE1#A68PCIE_TX0+B68PCIE_RX0+A69PCIE_TX0+B69PCIE_RX0-A69PCIE_TX0+B69PCIE_RX0-A69PCIE_TX0+B69PCIE_RX0-A69PCIE_TX0+B69PCIE_RX0-A69PCIE_TX0+B67PCIE_RX0-A69PCIE_TX0+B67PCIE_RX0-A69PCIE_TX0+B67PCIE_RX0-A69PCIE_TX0+B67	A44	USB_2_3_OC#	B44	USB_0_1_OC#
A46USB0+B46USB1+A47VCC_RTCB47EXCD1_PERST#A48EXCD0_PERST#B48EXCD1_CPPE#A49EXCD0_CPPE#B49SYS_RESET#A50IPC_SERIRQB50CB_RESET#A51GNDB51GNDA52PCIE_TX5+B52PCIE_RX5+A53PCIE_TX4+B53PCIE_RX4+A54GPI0B54GPO1A55PCIE_TX4+B55PCIE_RX4+A56PCIE_TX4+B56PCIE_RX4+A57GNDB57GPO2A58PCIE_TX3+B58PCIE_RX3+A59PCIE_TX3+B59PCIE_RX3+A60GNDB60GNDA61PCIE_TX2+B61PCIE_RX2+A62PCIE_TX1+B63GPO3A64PCIE_TX1+B64PCIE_RX1+A65PCIE_TX0+B67WAKE0#A68PCIE_TX0+B68PCIE_RX0+A69PCIE_TX0+B69PCIE_RX0+A69PCIE_TX0+B69PCIE_RX0+A69PCIE_TX0+B69PCIE_RX0+A69PCIE_TX0+B69PCIE_RX0+A69PCIE_TX0+B69PCIE_RX0+A69PCIE_TX0+B69PCIE_RX0+	A45	USBO-	B45	USB1-
A47VCC_RTCB47EXCD1_PERST#A48EXCD0_PERST#B48EXCD1_CPPE#A49EXCD0_CPPE#B49SYS_RESET#A50IPC_SERIRQB50CB_RESET#A51GNDB51GNDA52PCIE_TX5+B52PCIE_RX5+A53PCIE_TX5+B53PCIE_RX5-A54GPI0B54GPO1A55PCIE_TX4+B55PCIE_RX4+A56PCIE_TX4+B56PCIE_RX4+A57GNDB57GPO2A58PCIE_TX3+B58PCIE_RX3+A59PCIE_TX3+B59PCIE_RX3+A60GNDB60GNDA61PCIE_TX2+B61PCIE_RX2+A62PCIE_TX1+B62PCIE_RX1+A63GPI1B63GPO3A64PCIE_TX1+B64PCIE_RX1+A65PCIE_TX0+B67WAKE0#A68PCIE_TX0+B68PCIE_RX0+A69PCIE_TX0+B69PCIE_RX0+A69PCIE_TX0+B69PCIE_RX0+A69PCIE_TX0+B69PCIE_RX0+A69PCIE_TX0+B69PCIE_RX0+	A46	USBO+	B46	USB1+
A48EXCDO_PERST#B48EXCD1_CPPE#A49EXCDO_CPPE#B49SYS_RESET#A50LPC_SERIRQB50CB_RESET#A51GNDB51GNDA52PCIE_TX5+B52PCIE_RX5+A53PCIE_TX5-B53PCIE_RX5+A54GPI0B54GPO1A55PCIE_TX4+B55PCIE_RX4+A56PCIE_TX4+B56PCIE_RX4+A57GNDB57GPO2A58PCIE_TX3+B58PCIE_RX3+A59PCIE_TX3+B59PCIE_RX3+A60GNDB60GNDA61PCIE_TX2+B61PCIE_RX2+A63GP11B63GPO3A64PCIE_TX1+B64PCIE_RX1+A65PCIE_TX0+B66VAKE0#A68PCIE_TX0+B68PCIE_RX0+A69PCIE_TX0+B69PCIE_RX0+A69AGIAGIB69PCIE_RX0+A69AGIAGIB69PCIE_RX0+A69AGIAGIB69PCIE_RX0+A69AGIAGIB69PCIE_RX0+A69AGIAGIB69PCIE_RX0+A69AGIAGIB69PCIE_RX0+A69AGIAGIB69PCIE_RX0+A69AGIAGIB69PCIE_RX0+A69AGIAGIB69PCIE_RX0+A69AGIAGIB69PCIE_RX0+A69AGI <td>A47</td> <td>VCC_RTC</td> <td>B47</td> <td>EXCD1_PERST#</td>	A47	VCC_RTC	B47	EXCD1_PERST#
A49EXCDO_CPPE#B49SYS_RESET#A50LPC_SERIRQB50CB_RESET#A51GNDB51GNDA52PCIE_TX5+B52PCIE_RX5+A53PCIE_TX5-B53PCIE_RX5-A54GPI0B54GPO1A55PCIE_TX4+B55PCIE_RX4+A56PCIE_TX4+B56PCIE_RX4+A57GNDB57GPO2A58PCIE_TX3+B58PCIE_RX3+A59PCIE_TX3-B59PCIE_RX3-A60GNDB60GNDA61PCIE_TX2+B61PCIE_RX2+A62PCIE_TX1+B63GPO3A64PCIE_TX1+B64PCIE_RX1+A65PCIE_TX1+B66WAKE0#A66GNDB67WAKE1#A68PCIE_TX0+B68PCIE_RX0+A69PCIE_TX0-B69PCIE_RX0-A70GNDB70GND	A48	EXCDO_PERST#	B48	EXCD1_CPPE#
A50 LPC_SERIRQ B50 CB_RESET# A51 GND B51 GND A52 PCIE_TX5+ B52 PCIE_RX5+ A53 PCIE_TX5- B53 PCIE_RX5- A54 GPI0 B54 GPO1 A55 PCIE_TX4+ B55 PCIE_RX4+ A56 PCIE_TX4+ B56 PCIE_RX4+ A57 GND B57 GPO2 A58 PCIE_TX3+ B58 PCIE_RX3+ A59 PCIE_TX3+ B59 PCIE_RX3+ A60 GND B60 GND A61 PCIE_TX2+ B61 PCIE_RX2+ A62 PCIE_TX2+ B62 PCIE_RX2+ A63 GPI1 B63 GPO3 A64 PCIE_TX1+ B64 PCIE_RX1+ A65 PCIE_TX1+ B65 PCIE_RX1+ A66 GND B67 WAKE0# A67 GPI2 B67 WAKE1# A68 PCI	A49	EXCDO_CPPE#	B49	SYS_RESET#
A51 GND B51 GND A52 PCIE_TX5+ B52 PCIE_RX5+ A53 PCIE_TX5- B53 PCIE_RX5- A54 GPI0 B54 GPO1 A55 PCIE_TX4+ B55 PCIE_RX4+ A56 PCIE_TX4- B56 PCIE_RX4+ A57 GND B57 GPO2 A58 PCIE_TX3+ B58 PCIE_RX3+ A59 PCIE_TX3- B59 PCIE_RX3- A60 GND B60 GND A61 PCIE_TX2+ B61 PCIE_RX2+ A62 PCIE_TX2- B62 PCIE_RX2- A63 GPI1 B63 GPO3 A64 PCIE_TX1+ B64 PCIE_RX1+ A65 PCIE_TX1- B65 PCIE_RX1- A66 GND B66 WAKE0# A67 GPI2 B67 WAKE1# A68 PCIE_TX0- B69 PCIE_RX0- A69 PCIE_TX0- B69 PCIE_RX0- A70 GND B70 <	A50	LPC_SERIRQ	B50	CB_RESET#
A52 PCIE_TX5+ B52 PCIE_RX5+ A53 PCIE_TX5- B53 PCIE_RX5- A54 GPI0 B54 GPO1 A55 PCIE_TX4+ B55 PCIE_RX4+ A56 PCIE_TX4- B56 PCIE_RX4+ A57 GND B57 GPO2 A58 PCIE_TX3+ B58 PCIE_RX3+ A59 PCIE_TX3- B59 PCIE_RX3- A60 GND B60 GND A61 PCIE_TX2+ B61 PCIE_RX2+ A62 PCIE_TX2+ B62 PCIE_RX2+ A63 GPI1 B63 GPO3 A64 PCIE_TX1+ B64 PCIE_RX1+ A65 PCIE_TX1- B65 PCIE_RX1- A66 GND B66 WAKE0# A67 GPI2 B67 WAKE1# A68 PCIE_TX0+ B68 PCIE_RX0+ A69 PCIE_TX0- B69 PCIE_RX0- A70	A51	GND	B51	GND
A53 PCIE_TX5- B53 PCIE_RX5- A54 GPI0 B54 GPO1 A55 PCIE_TX4+ B55 PCIE_RX4+ A56 PCIE_TX4- B56 PCIE_RX4- A57 GND B57 GPO2 A58 PCIE_TX3+ B58 PCIE_RX3+ A59 PCIE_TX3- B59 PCIE_RX3- A60 GND B60 GND A61 PCIE_TX2+ B61 PCIE_RX2+ A62 PCIE_TX2- B62 PCIE_RX2+ A63 GPI1 B63 GPO3 A64 PCIE_TX1+ B64 PCIE_RX1+ A65 PCIE_TX1- B65 PCIE_RX1+ A66 GND B66 WAKE0# A67 GPI2 B67 WAKE1# A68 PCIE_TX0+ B68 PCIE_RX0+ A69 PCIE_TX0- B69 PCIE_RX0- A69 PCIE_TX0- B69 PCIE_RX0- A69 PCIE_TX0- B69 PCIE_RX0- A70 GND B70<	A52	PCIE_TX5+	B52	PCIE_RX5+
A54 GPI0 B54 GPO1 A55 PCIE_TX4+ B55 PCIE_RX4+ A56 PCIE_TX4- B56 PCIE_RX4- A57 GND B57 GPO2 A58 PCIE_TX3+ B58 PCIE_RX3+ A59 PCIE_TX3- B59 PCIE_RX3- A60 GND B60 GND A61 PCIE_TX2+ B61 PCIE_RX2+ A62 PCIE_TX2- B62 PCIE_RX2- A63 GPI1 B63 GPO3 A64 PCIE_TX1+ B64 PCIE_RX1+ A65 PCIE_TX1- B65 PCIE_RX1+ A66 GND B66 WAKE0# A67 GPI2 B67 WAKE1# A68 PCIE_TX0- B68 PCIE_RX0+ A69 PCIE_TX0- B69 PCIE_RX0- A69 GND B70 GND	A53	PCIE_TX5-	B53	PCIE_RX5-
A55 PCIE_TX4+ B55 PCIE_RX4+ A56 PCIE_TX4- B56 PCIE_RX4- A57 GND B57 GPO2 A58 PCIE_TX3+ B58 PCIE_RX3+ A59 PCIE_TX3- B59 PCIE_RX3- A60 GND B60 GND A61 PCIE_TX2+ B61 PCIE_RX2+ A62 PCIE_TX2- B62 PCIE_RX2- A63 GPI1 B63 GPO3 A64 PCIE_TX1+ B64 PCIE_RX1+ A65 PCIE_TX1+ B64 PCIE_RX1+ A66 GND B66 WAKE0# A67 GPI2 B67 WAKE1# A68 PCIE_TX0+ B68 PCIE_RX0+ A69 PCIE_TX0- B69 PCIE_RX0+ A69 PCIE_TX0- B69 PCIE_RX0-	A54	GP10	B54	GPO1
A56 PCIE_TX4- B56 PCIE_RX4- A57 GND B57 GPO2 A58 PCIE_TX3+ B58 PCIE_RX3+ A59 PCIE_TX3- B59 PCIE_RX3- A60 GND B60 GND A61 PCIE_TX2+ B61 PCIE_RX2+ A62 PCIE_TX2- B62 PCIE_RX2- A63 GPI1 B63 GPO3 A64 PCIE_TX1+ B64 PCIE_RX1+ A65 PCIE_TX1- B65 PCIE_RX1- A66 GND B66 WAKE0# A67 GPI2 B67 WAKE1# A68 PCIE_TX0+ B68 PCIE_RX0+ A69 PCIE_TX0- B69 PCIE_RX0- A70 GND B70 GND GND	A55	PCIE_TX4+	B55	PCIE_RX4+
A57 GND B57 GPO2 A58 PCIE_TX3+ B58 PCIE_RX3+ A59 PCIE_TX3- B59 PCIE_RX3- A60 GND B60 GND A61 PCIE_TX2+ B61 PCIE_RX2+ A62 PCIE_TX2- B62 PCIE_RX2- A63 GP11 B63 GPO3 A64 PCIE_TX1+ B64 PCIE_RX1+ A65 PCIE_TX1- B65 PCIE_RX1- A66 GND B66 WAKE0# A67 GPI2 B67 WAKE1# A68 PCIE_TX0+ B68 PCIE_RX0+ A69 PCIE_TX0- B69 PCIE_RX0- A70 GND B70 GND	A56	PCIE_TX4-	B56	PCIE_RX4-
A58 PCIE_TX3+ B58 PCIE_RX3+ A59 PCIE_TX3- B59 PCIE_RX3- A60 GND B60 GND A61 PCIE_TX2+ B61 PCIE_RX2+ A62 PCIE_TX2- B62 PCIE_RX2- A63 GPI1 B63 GPO3 A64 PCIE_TX1+ B64 PCIE_RX1+ A65 PCIE_TX1- B65 PCIE_RX1- A66 GND B66 WAKE0# A67 GPI2 B67 WAKE1# A68 PCIE_TX0+ B68 PCIE_RX0+ A69 PCIE_TX0- B69 PCIE_RX0- A67 GND B70 GND	A57	GND	B57	GPO2
A59 PCIE_TX3- B59 PCIE_RX3- A60 GND B60 GND A61 PCIE_TX2+ B61 PCIE_RX2+ A62 PCIE_TX2- B62 PCIE_RX2- A63 GP11 B63 GPO3 A64 PCIE_TX1+ B64 PCIE_RX1+ A65 PCIE_TX1- B65 PCIE_RX1- A66 GND B66 WAKE0# A67 GPI2 B67 WAKE1# A68 PCIE_TX0+ B68 PCIE_RX0+ A69 PCIE_TX0- B69 PCIE_RX0- A70 GND B70 GND	A58	PCIE_TX3+	B58	PCIE_RX3+
A60 GND B60 GND A61 PCIE_TX2+ B61 PCIE_RX2+ A62 PCIE_TX2- B62 PCIE_RX2- A63 GP11 B63 GPO3 A64 PCIE_TX1+ B64 PCIE_RX1+ A65 PCIE_TX1- B65 PCIE_RX1- A66 GND B66 WAKE0# A67 GPI2 B67 WAKE1# A68 PCIE_TX0+ B68 PCIE_RX0+ A69 PCIE_TX0- B69 PCIE_RX0- A69 GND B70 GND	A59	PCIE_TX3-	B59	PCIE_RX3-
A61 PCIE_TX2+ B61 PCIE_RX2+ A62 PCIE_TX2- B62 PCIE_RX2- A63 GPI1 B63 GPO3 A64 PCIE_TX1+ B64 PCIE_RX1+ A65 PCIE_TX1- B65 PCIE_RX1- A66 GND B66 WAKE0# A67 GPI2 B67 WAKE1# A68 PCIE_TX0+ B68 PCIE_RX0+ A69 PCIE_TX0- B69 PCIE_RX0- A70 GND B70 GND	A60	GND	B60	GND
A62 PCIE_TX2- B62 PCIE_RX2- A63 GP11 B63 GPO3 A64 PCIE_TX1+ B64 PCIE_RX1+ A65 PCIE_TX1- B65 PCIE_RX1- A66 GND B66 WAKE0# A67 GPI2 B67 WAKE1# A68 PCIE_TX0+ B68 PCIE_RX0+ A69 PCIE_TX0- B69 PCIE_RX0- A70 GND B70 GND	A61	PCIE_TX2+	B61	PCIE_RX2+
A63 GPI1 B63 GPO3 A64 PCIE_TX1+ B64 PCIE_RX1+ A65 PCIE_TX1- B65 PCIE_RX1- A66 GND B66 WAKE0# A67 GPI2 B67 WAKE1# A68 PCIE_TX0+ B68 PCIE_RX0+ A69 PCIE_TX0- B69 PCIE_RX0- A70 GND B70 GND	A62	PCIE_TX2-	B62	PCIE_RX2-
A64 PCIE_TX1+ B64 PCIE_RX1+ A65 PCIE_TX1- B65 PCIE_RX1- A66 GND B66 WAKE0# A67 GPI2 B67 WAKE1# A68 PCIE_TX0+ B68 PCIE_RX0+ A69 PCIE_TX0- B69 PCIE_RX0- A70 GND B70 GND	A63	GPI1	B63	GPO3
A65 PCIE_TX1- B65 PCIE_RX1- A66 GND B66 WAKE0# A67 GPI2 B67 WAKE1# A68 PCIE_TX0+ B68 PCIE_RX0+ A69 PCIE_TX0- B69 PCIE_RX0- A70 GND B70 GND	A64	PCIE_TX1+	B64	PCIE_RX1+
A66 GND B66 WAKE0# A67 GPI2 B67 WAKE1# A68 PCIE_TXO+ B68 PCIE_RXO+ A69 PCIE_TXO- B69 PCIE_RXO- A70 GND B70 GND	A65	PCIE_TX1-	B65	PCIE_RX1-
A67 GPI2 B67 WAKE1# A68 PCIE_TXO+ B68 PCIE_RXO+ A69 PCIE_TXO- B69 PCIE_RXO- A70 GND B70 GND	A66	GND	B66	Wakeo#
A68 PCIE_TXO+ B68 PCIE_RXO+ A69 PCIE_TXO- B69 PCIE_RXO- A70 GND B70 GND	A67	GPI2	B67	WAKE1#
A69 PCIE_TXO- B69 PCIE_RXO- A70 GND B70 GND	A68	PCIE_TX0+	B68	PCIE_RXO+
A70 GND B70 GND	A69	PCIE_TXO-	B69	PCIE_RXO-
	A70	GND	B70	GND

C34	DDI2_DDC_AUX_SEL	D34	DDI1_DDC_AUX_SEL
C35	NC	D35	NC
C36	DDI3_CTRLCLK_AUX+	D36	DDI1_PAIR3+
C37	DDI3_CTRLDATA_AUX-	D37	DDI1_PAIR3-
C38	DDI3_DDC_AUX_SEL	D38	NC
C39	DDI3_PAIRO+	D39	DDI2_PAIRO+
C40	DDI3_PAIRO-	D40	DDI2_PAIRO-
C41	GND	D41	GND
C42	DDI3_PAIR1+	D42	DDI2_PAIR1+
C43	DDI3_PAIR1-	D43	DDI2_PAIR1-
C44	DDI3_HPD	D44	DDI2_HPD
C45	NC	D45	NC
C46	DDI3_PAIR2+	D46	DDI2_PAIR2+
C47	DDI3_PAIR2-	D47	DDI2_PAIR2-
C48	NC	D48	NC
C49	DDI3_PAIR3+	D49	DDI2_PAIR3+
C50	DDI3_PAIR3-	D50	DDI2_PAIR3-
C51	GND	D51	GND
C52	PEG_RX0+	D52	PEG_TX0+
C53	PEG_RXO-	D53	PEG_TXO-
C54	NC	D54	PEG_LANE_RV#
C55	PEG_RX1+	D55	PEG_TX1+
C56	PEG_RX1-	D56	PEG_TX1-
C57	NC	D57	GND
C58	PEG_RX2+	D58	PEG_TX2+
C59	PEG_RX2-	D59	PEG_TX2-
C60	GND	D60	GND
C61	PEG_RX3+	D61	PEG_TX3+
C62	PEG_RX3-	D62	PEG_TX3-
C 63	NC	D63	NC
C64	NC	D64	NC
C 65	PEG_RX4+	D65	PEG_TX4+
C66	PEG_RX4-	D66	PEG_TX4-
C67	NC	D67	GND
C68	PEG_RX5+	D68	PEG_TX5+
C69	PEG_RX5-	D69	PEG_TX5-
C7 0	GND	D70	GND



A71	LVDS_A0+	B71	LVDS_BO+
A72	LVDS_AO-	B72	LVDS_BO-
A73	LVDS_A1+	B73	LVDS_B1+
A74	LVDS_A1-	B74	LVDS_B1-
A75	LVDS_A2+	B75	LVDS_B2+
A76	LVDS_A2-	B76	LVDS_B2-
A77	LVDS_VDD_EN	B77	LVDS_B3+
A78	LVDS_A3+	B78	LVDS_B3-
A79	LVDS_A3-	B79	LVDS_BKLD_EN
A80	GND	B80	GND
A81	LVDS_A_CK+	B81	LVDS_B_CK+
A82	LVDS_A_CK-	B82	LVDS_B_CK-
A83	lvds_12c_ck	B83	LVDS_BKLT_CTLR
A84	LVDS_I2C_DAT	B84	VCC_5V_SBY
A85	GP13	B85	VCC_5V_SBY
A86	RSVD	B86	VCC_5V_SBY
A87	RSVD	B87	VCC_5V_SBY
A88	PCIEO_CK_REF+	B88	BIOS_DIS1#
A89	PCIEO_CK_REF-	B89	VGA_RED
A90	GND	B90	GND
A91	SPI_POWER	B91	VGA_GRN
A92	SPI_MISO	B92	VGA_BLU
A93	GPO0	B93	VGA_HSYNC
A94	SPI_CLK	B94	VGA_VSYNC
A95	SPI_MOSI	B95	VGA_I2C_CK
A96	PP_TPM	B96	VGA_I2C_DAT
A97	NC	B97	SPI_CS#
A98	RS1_TX	B98	RSVD
A99	RS1_RX	B99	RSVD
A100	GND	B100	GND
A101	rs2_tx	B101	FAN_PWMOUT
A102	rs2_rx	B102	FAN_TACHIN
A103	LID#	B103	SLEEP#
A104	VCC_12V	B104	VCC_12V
A105	VCC_12V	B105	VCC_12V
A106	VCC_12V	B106	VCC_12V
A107	VCC_12V	B107	VCC_12V

PEG_RX6+	D71	PEG_TX6+
PEG_RX6-	D72	PEG_TX6-
GND	D73	GND
PEG_RX7+	D74	PEG_TX7+
PEG_RX7-	D75	PEG_TX7-
GND	D76	GND
NC	D77	NC
PEG_RX8+	D78	PEG_TX8+
PEG_RX8-	D79	PEG_TX8-
GND	D80	GND
PEG_RX9+	D81	PEG_TX9+
PEG_RX9-	D82	PEG_TX9-
NC	D83	NC
GND	D84	GND
PEG_RX10+	D85	PEG_TX10+
PEG_RX10-	D86	PEG_TX10-
GND	D87	GND
PEG_RX11+	D88	PEG_TX11+
PEG_RX11-	D89	PEG_TX11-
GND	D90	GND
PEG_RX12+	D91	PEG_TX12+
PEG_RX12-	D92	PEG_TX12-
GND	D93	GND
PEG_RX13+	D94	PEG_TX13+
PEG_RX13-	D95	PEG_TX13-
GND	D96	GND
NC	D97	NC
PEG_RX14+	D98	PEG_TX14+
PEG_RX14-	D99	PEG_TX14-
GND	D100	GND
PEG_RX15+	D101	PEG_TX15+
PEG_RX15-	D102	PEG_TX15-
GND	D103	GND
VCC_12V	D104	VCC_12V
VCC_12V	D105	VCC_12V
VCC_12V	D106	VCC_12V
VCC_12V	D107	VCC_12V
	PEG_RX6+ PEG_RX6- GND PEG_RX7+ PEG_RX7- GND NC PEG_RX8+ PEG_RX8- GND PEG_RX8- GND PEG_RX8- GND PEG_RX9- NC GND PEG_RX10+ PEG_RX10+ PEG_RX10+ PEG_RX11+ PEG_RX11- GND PEG_RX12+ PEG_RX12- GND PEG_RX13- GND PEG_RX13- GND PEG_RX13- GND PEG_RX14- PEG_RX15- PEG_RX15- PEG_RX15- QND VCC_12V VCC_12V VCC_12V	PEG_RX6+D71PEG_RX6-D72GNDD73PEG_RX7+D74PEG_RX7-D75GNDD76NCD77PEG_RX8+D78PEG_RX8-D79GNDD80PEG_RX9+D81PEG_RX0+D83GNDD84PEG_RX10+D85PEG_RX10+D86GNDD87PEG_RX11+D88PEG_RX11+D89GNDD90PEG_RX12-D91PEG_RX12+D91PEG_RX13+D94PEG_RX13-D95GNDD96NCD97PEG_RX14-D98PEG_RX15+D101PEG_RX15+D102GNDD103VCC_12VD104VCC_12VD105VCC_12VD107



A108 VCC_12V	B108 VCC_12V	
A109 VCC_12V	B109 VCC_12V	
A110 GND	B110 GND	

C108	VCC_12V	D108	VCC_12V
C109	VCC_12V	D109	VCC_12V
C110	GND	D110	GND



Chapter 3: AMI BIOSUTILITY

This chapter provides users with detailed descriptions on how to set up a basic system configuration through the AMI BIOS setup utility

3.1 Starting

To enter the setup screens, perform the following steps:

- Turn on the computer and press the key immediately.
- After the key is pressed, the main BIOS setup menu displays. Other setup screens can be accessed from the main BIOS setup menu, such as the Chipset and Power menus.

3.2 Navigation Keys

The BIOS setup/utility uses a key-based navigation system called hot keys. Most of the BIOS setup utility hot keys can be used at any time during the setup navigation process. Some of the hot keys are <F1>, <F10>, <Enter>, <ESC>, and <Arrow> keys.



Some of the navigation keys may differ from one screen to another.

Left/Right	The Left and Right <arrow> keys moves the cursor to select a menu.</arrow>
Up/Down	The Up and Down < Arrow > keys moves the cursor to select a setup screen or sub-
	screen.
+- Plus/Minus	The Plus and Minus < Arrow > keys changes the field value of a particular setup
	setting.
Tab	The <tab> key selects the setup fields.</tab>
F1	The <f1> key displays the General Help screen.</f1>
F10	The <f10> key saves any changes made and exits the BIOS setup utility.</f10>
Esc	The <esc> key discards any changes made and exits the BIOS setup utility.</esc>
Enter	The <enter> key displays a sub-screen or changes a selected or highlighted option</enter>
	in each menu.



3.3 Main Menu

The Main menu is the first screen that you will see when you enter the BIOS Setup Utility.

Main Advanced Chipset Boot Se	curity Save & Exit	
BIOS Information BIOS Vendor Core Version Compliancy Project Version Build Date and Time Processor Information Name Brand String	American Megatrends 4.6.5.3 UEFI 2.3; PI 1.2 5135 0.06 x64 04/24/2013 02:44:29 IvyBridge Intel(R) Core(TM) i7-351	▲ Choose the system default language
Frequency Processor ID Stepping Number of Processors Microcode Revision GT Info	1600 MHz 306a9 E1 2Core(s) / 4Thread(s) 13 GT2 (1000 MHz) 2143	++: Select Screen 14: Select Item Enter: Select +/-: Change Opt. E1: General Heln
Memory RC Version Total Memory PCH Information Name Stepping TXT Capability of Platform/PCH	1.7.0.0 4096 MB (DDR3) PantherPoint 04/C1 Supported	F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Version 2.15.1229.	Copyright (C) 2012 American	Megatrends, Inc.
Aptio Potup Utilitu		
Main Advanced Chipset Boot Se	– Copyright (C) 2012 America curity Save & Exit	n Megatrends, Inc.
Main Advanced Chipset Boot Set Frequency Processor ID Stepping Number of Processors Microcode Revision GT Info IGFX VBIOS Version Memory RC Version Total Memory Nemory	- Copyright (C) 2012 Americal curity Save & Exit 1600 MHz	A Megatrends, Inc.
Main Advanced Chipset Boot See Frequency Processor ID Stepping Number of Processors Microcode Revision GT Info IGFX VBIOS Version Memory RC Version Total Memory PCH Information Name Stepping TXT Capability of Platform/PCH LAN PHY Revision DESCRIPTION DESC	- Copyright (C) 2012 Americal curity Save & Exit 1600 MHz 306a9 E1 2Core(s) / 4Thread(s) 13 GT2 (1000 MHz) 2143 1.7.0.0 4096 MB (DDR3) PantherPoint 04/C1 Supported C0	 Set the Time. Use Tab to switch between Time elements. ++: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F2: Previous Values
Main Advanced Chipset Boot Setup Frequency Processor ID Stepping Number of Processors Microcode Revision GT GT Info IGFX VBIOS Version Memory PCH Information Name Stepping TXT Capability of Platform/PCH LAN PHY Revision System Language System Date System Time System Time	- Copyright (C) 2012 Americal curity Save & Exit 1600 MHz	 Set the Time. Use Tab to switch between Time elements. ++: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit

System Language

Choose the system default language.



System Date

Set the Date. Use Tab to switch between Date elements. Select System Date using the Up and Down <Arrow> keys. Enter the new values through the keyboard. Press the Left and Right <Arrow> keys to move between fields. The date setting must be entered in MM/DD/YY format.

System Time

Set the Time. Use Tab to switch between Time elements.

Select System Time using the Up and Down <Arrow> keys. Enter the new values through the

keyboard. Press the Left and Right <Arrow> keys to move between fields.

The time setting is entered in HH:MM:SS format.

Note: The time is in 24-hourformat. For example, 5:30 A.M. appears as 05:30:00, and 5:30 P.M. as 17:30:00.

Access Level

Displays the access level of the current user in the BIOS.

3.4 Advanced Menu

The Advanced Menu allows you to configure your system for basic operation. Some entries are defaults required by the system board, while others, if enabled, will improve the performance of your system or let you set some features according to your preference. Setting incorrect field values may cause the system to malfunction.





3.4.1 ACPI Settings

System ACPI parameters

Aptio Set	up Utility – Copyright (C) 2012 American	Megatrends, Inc.
ACPI Settings		Select ACPI sleep state the system will enter when the SUSPEND button is pressed.
ACPI Sleep State		
		<pre> ++: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</pre>

ACPI Sleep State

Select ACPI sleep state the system will enter when the SUSPEND button is pressed.

3.4.2 CPU Configuration

This section is used to configure the CPU.

Aptio Setup Advanced	Utility – Copyright (C) 2012 Americ	an Megatrends, Inc.
CPU Configuration Intel(R) Core(TM) 17-35170 CPU Signature Microcode Patch Max CPU Speed Min CPU Speed CPU Speed Processor Cores Intel HT Technology Intel VT-x Technology Intel SMX Technology 64-bit L1 Data Cache L1 Code Cache L2 Cache L3 Cache	JE CPU @ 1.70GHz 306a9 13 1700 MHz 800 MHz 1600 MHz 2 Supported Supported Supported Supported Supported 32 kB x 2 32 kB x 2 32 kB x 2 256 kB x 2 4096 kB	<pre>++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</pre>
Version 2.1	15.1229. Convright (C) 2012 American	Megatrends, Inc.



3.4.3 COM Express GPIO Configuration

COM Express GPIO configuration settings

Aptio Setup Utility Advanced	– Copyright (C) 2012 America	n Megatrends, Inc.
COM Express GPIO Configuration		Set GPIO as Input or Output
GPIO Direction GPII Direction GPI2 Direction GPOO Direction GPO1 Direction GPO2 Direction GPO3 Direction	[Input] [Input] [Input] [Output] [Output] [Output] [Output] [Output]	<pre>++: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</pre>
United in 15 (200	Commission (c) 0010 American	Vieween American Street

GPIO Direction

Set GPIO as Input or Output



3.4.4 SATA Configuration

SATA device options settings



3.4.4.1 SATA Mode Selection

Determines how SATA controllers operate

SATA Mode Selection[IDE]Determines how SATA controller(s) operate.Serial ATA Port 0EmptySoftware PreserveUnknownSerial ATA Port 1EmptySoftware PreserveUnknownSerial ATA Port 2EmptySoftware PreserveUnknownSerial ATA Port 3EmptySoftware PreserveUnknownSerial ATA Port 3EmptySoftware PreserveUnknownSerial ATA Port 4EmptySoftware PreserveUnknownSerial ATA Port 5EmptySoftware PreserveUnknownSerial ATA Port 5EmptySoftware PreserveUnknownSerial ATA Port 5EmptySoftware PreserveUnknownFrieden PreserveUnknownSerial ATA Port 5EmptySoftware PreserveUnknownSerial ATA Port 5EmptySoftware PreserveUnknownFreezer PreserveUnknownSerial ATA Port 5EmptySoftware PreserveUnknownFile General HelpF2: Previous ValuesF3: Optimized DefaultsF4: Save & ExitESC: Exit	Aptio Setup Utilit Advanced	y – Copyright (C) 2012	American Megatrends, Inc.
Serial ATA Port 0 Empty Software Preserve Unknown Serial ATA Port 1 Empty Software Preserve Unknown Serial ATA Port 2 Empty Software Preserve Unknown Serial ATA Port 2 Empty Software Preserve Unknown Serial ATA Port 3 Empty Software Preserve Unknown Serial ATA Port 4 Empty Software Preserve Unknown Serial ATA Port 5 Empty Software Preserve Unknown H1: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit ESC: Exit	SATA Mode Selection	[IDE]	Determines how SATA
Software Preserve Unknown Serial ATA Port 1 Empty Software Preserve Unknown Serial ATA Port 2 Empty Software Preserve Unknown Serial ATA Port 3 Empty Software Preserve Unknown Serial ATA Port 3 Empty Software Preserve Unknown Serial ATA Port 4 Empty Software Preserve Unknown Serial ATA Port 5 Empty Software Preserve Unknown T1: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit ESC: Exit	Serial ATA Port O	Empty	
Serial ATA Port 1 Empty Software Preserve Unknown Serial ATA Port 2 Empty Software Preserve Unknown Serial ATA Port 3 Empty Software Preserve Unknown Serial ATA Port 4 Empty Software Preserve Unknown Serial ATA Port 5 Empty Software Preserve Unknown **: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit	Software Preserve	Unknown	
Software Preserve Unknown Serial ATA Port 2 Empty Software Preserve Unknown Serial ATA Port 3 Empty Software Preserve Unknown Serial ATA Port 3 Empty Software Preserve Unknown Serial ATA Port 4 Empty Software Preserve Unknown Serial ATA Port 5 Empty Software Preserve Unknown Serial ATA Port 5 Empty Software Preserve Unknown **: Select Screen 11: Select Item Enter: Select */-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit	Serial ATA Port 1	Empty	
Serial ATA Port 2 Empty Software Preserve Unknown Serial ATA Port 3 Empty Software Preserve Unknown Serial ATA Port 4 Empty Software Preserve Unknown Serial ATA Port 5 Empty Software Preserve Unknown Serial ATA Port 5 Empty Software Preserve Unknown Serial ATA Port 5 Empty Software Preserve Unknown **: Select Screen 11: Select Item Enter: Select */-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit	Software Preserve	Unknown	
Software Preserve Unknown Serial ATA Port 3 Empty Software Preserve Unknown Serial ATA Port 4 Empty Software Preserve Unknown Serial ATA Port 5 Empty Software Preserve Unknown Serial ATA Port 5 Empty Software Preserve Unknown Software Preserve Unknown **: Select Screen 11: Select Item Enter: Select */-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit	Serial ATA Port 2	Empty	
Serial ATA Port 3 Empty Software Preserve Unknown Serial ATA Port 4 Empty Software Preserve Unknown Serial ATA Port 5 Empty Software Preserve Unknown Software Preserve Unknown Software Preserve Unknown ++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit	Software Preserve	Unknown	
Software Preserve Unknown Software Preserve Unknown Serial ATA Port 5 Empty Software Preserve Unknown Software Preserve Unknown Software Preserve Unknown *+: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit	Serial ATA Port 3	Empty	
Serial ATA Port 4 Empty Software Preserve Unknown Serial ATA Port 5 Empty Software Preserve Unknown ++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit	Software Preserve	Unknown	
Software Preserve Unknown Serial ATA Port 5 Empty Software Preserve Unknown ++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit	Serial ATA Port 4	Empty	
Serial ATA Port 5 Empty Software Preserve Unknown ++: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit	Software Preserve	Unknown	
Software Preserve Unknown ++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit	Serial ATA Port 5	Empty	
<pre> f1: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</pre>	Software Preserve	Unknown	→+: Select Screen
Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit			↑↓: Select Item
+/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit			Enter: Select
F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit			+/−: Change Opt.
F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit			F1: General Help
F3: Optimized Defaults F4: Save & Exit ESC: Exit			F2: Previous Values
F4: Save & Exit ESC: Exit			F3: Optimized Defaults
ESC: Exit	the second s		F4: Save & Exit
			ESC: Exit
Vancian 2 15 1229 Comunicht (C) 2012 Amanican Madathande. The	Vencion 0 45 4000	Copuniant (C) 2010 A	monicon Wagathande The



3.4.5 F81801 Super IO Configuration

System Super IO chip parameters.



F81801 Super IO Configuration F81801 Super IO Chip F81801 ▶ Serial Port O Configuration	Set Parameters of Serial Port O (COMA)
F81801 Super IO Chip F81801 ▶ Serial Port O Configuration	
Serial Port 1 Configuration	
	<pre>++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</pre>



3.4.5.1 Serial Port 0 configuration

Set parameters of serial port 0 (COMA)

Aptio Setup Utilit Advanced	ty – Copyright (C) 2012 Am∈	rican Megatrends, Inc.
Serial Port O Configuration		Enable or Disable Serial Port
Serial Port Device Settings	[Enabled] IO=3F8h; IRQ=4;	
Change Settings	[Auto]	
		++: Select Screen ↑↓: Select Item
		Enter: Select +/-: Change Opt.
		F1: General Help F2: Previous Values F3: Optimized Defaults
		F4: Save & Exit ESC: Exit
Version 2.15.1229	9. Copyright (C) 2012 Ameri	can Megatrends, Inc.

Serial Port

Enable or Disable serial port (COM)

Change settings

Select an optimal setting for Super IO device.



3.4.5.2 Serial Port 1 configuration

Set parameters of serial port 1 (COMB)

Aptio Setup Utili Advanced	ty – Copyright (C) 2012 Ame	rican Megatrends, Inc.
Serial Port 1 Configuration		Enable or Disable Serial Port
Serial Port		
Device Settings	T0=2F8h: TR0=3:	
	10-11 0111 1110-01	
Change Settings	[Auto]	
		↔+: Select Screen
		↑↓: Select Item
		Enter: Select
the second		+/-: Change Opt.
		F1: General Help
		F2: Previous Values
		F3: Optimized Defaults
		F4: Save & Exit
		ESC: Exit
Version 2.15.122	9. Copyright (C) 2012 Ameri	can Megatrends, Inc.

Serial Port

Enable or Disable serial port (COM)

Change settings

Select an optimal setting for Super IO device.



3.4.6 F81866 Super IO Configuration

System Super IO chip parameters.





Serial Port Configuration

Set parameters of serial port (COM)



Parallel port configuration

Set parameters of parallel port (LPT/LPTE)

3.4.6.1 Serial Port 0 Configuration

Aptio Setup Utility Advanced	– Copyright (C) 2012 Amer	rican Megatrends, Inc.
Serial Port O Configuration		Enable or Disable Serial Port
Serial Port Device Settings	[Enabled] IO=3E8h; IRQ=5;	(COM)
Change Settings	[Auto]	
		↔+: Select Screen
		Enter: Select
		F1: General Help
		F2: Previous values F3: Optimized Defaults
		F4: Save & EXIT ESC: Exit
Version 2.15.1229.	Converight (C) 2012 Americ	an Megatrends, Inc.

Serial Port

Enable or Disable serial port (COM)

Change settings

Select an optimal setting for Super IO device.



3.4.6.2 Serial Port 1 Configuration

Enable or disable serial port (COM)

Aptio Setup Utili Advanced	ty – Copyright (C) 2012 Amer	rican Megatrends, Inc.
Serial Port 1 Configuration		Enable or Disable Serial Port
Serial Port Device Settings	[Enabled] IO=2E8h; IRQ=5;	(000)
Change Settings Mode	[Auto] [RS-232]	
		++: Select Screen 14: Select Item Enter: Select
		+/-: Change Opt. F1: General Help
		F2: Previous Values F3: Optimized Defaults F4: Save & Exit
		ESC: Exit
Version 2.15.122	9. Copyright (C) 2012 Ameria	can Megatrends, Inc.

Serial Port

Enable or Disable serial port (COM)

Change settings

Select an optimal setting for Super IO device.

Mode

RS232, RS-422, RS-485 selection.



3.4.6.3 Serial Port 2 Configuration

Enable or disable serial port (COM)



Serial Port

Enable or Disable serial port (COM)

3.4.6.4 Serial Port 3 Configuration

Enable or disable serial port (COM)

(COM)
++: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit



Serial Port

Enable or Disable serial port (COM)

3.4.6.5 Serial Port 4 Configuration

Enable or disable serial port (COM)



Serial Port

Enable or Disable serial port (COM)



3.4.6.6 Serial Port 5 Configuration

Enable or disable serial port (COM)



Serial Port

Enable or Disable serial port (COM)

3.4.6.7 Parallel port configuration

Enable or disable parallel port (LPT/LPTE)





Parallel Port

Enable or Disable parallel port (LPT/LPTE)

Change settings

Select an optimal setting for Super IO device.

Device Mode

Change the printer port mode

3.4.7 Serial Port Console Redirection

Serial port console redirection







Console Redirection

Console Redirection enable or disable

Console redirection settings

The settings specify how the host computer and the remote computer (which the user is using) will exchange data. Both computers should have the same or compatible settings.



3.4.7.1 Console redirection settings

Aptio Setup Utility - Advanced	· Copyright (C) 2012 Americar) Megatrends, Inc.
Out-of-Band Mgmt Port Terminal Type Bits per second Flow Control Data Bits Parity Stop Bits	[COMO (Disabled)] [VT-UTF8] [115200] [None] 8 None 1	Microsoft Windows Emergency Management Services (EMS) allows for remote management of a Windows Server OS through a serial port. ++: Select Screen fl: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Version 2 15 1229 (Conuright (C) 2012 American M	legatrends. Inc.

Out-of Band Mgmt Port

Microsoft Windows Emergency Management Services (EMS) allows for remote management of a Windows Server OS through a serial port.

Terminal Type

VT-UTF8 is the preferred terminal type for out-of-band management. The next best choice is VT100+ and then VT100. See above, in Console Redirection Settings page, for more help with terminal type/emulation.

Bits per second

Select serial port transmission speed. The speed must be matched on the other side. Long or noisy lines may require lower speeds.

Flow Control

Flow control can prevent data loss from buffer overflow. When sending data, if the receiving buffers are full, a 'stop' signal can be sent to stop the data flow. Once the buffers are empty, a 'start' signal can be sent to re-start the flow. Hardware flow control uses two wires to send star/stop signals.



3.4.8 Intel(R) 82579LM Gigabit Network Connection

Configure Gigabit Ethernet device parameters



3.4.8.1 PORT CONFIGURATION MENU

Aptio Setup Utility Advanced	– Copyright (C) 2012 Americar	h Megatrends, Inc.
<pre>PORT CONFIGURATION MENU NIC Configuration Blink LEDs (range 0-15 seconds) PORT CONFIGURATION INFORMATION UEFI Driver: Adapter PBA: Chip Type: PCI Device ID PCI Bus:Device:Function: Link Status Factory MAC Address:</pre>	0 Intel(R) PRD/1000 5.0.12 FFFFFF-OFF Intel PCH2 1502 0:25:0 [Disconnected] 88:88:88:88:87:88	Click to configure the network device port.
Version 2 15 1229	Conucight (C) 2012 American M	legatrends. Inc.

NIC Configuration

Click to configure the network device port



Blink LEDs (range 0-15 seconds)

Blink LEDs for the specified duration (up to 15 seconds)

3.4.8.1.1 NIC Configuration

Link Speed Wake on LAN	[AutoNeg] [Enabled]	Change link speed and duplex for current port.
		++: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit

Link Speed

Change link speed and duplex for current port.

Wake on LAN

Enable this option to wake the system with a magic packet.



3.5 Chipset

This section gives you functions to configure the system based on the specific features of the chipset. The chipset manages bus speeds and access to system memory resources.



3.5.1 System Agent (SA) configuration

System Agent (SA) parameters

Aptio Setup U Chipset	tility – Copyright (C) 2012 A	merican Megatrends, Inc.
System Agent Bridge Name System Agent RC Version VT–d Capability	IvyBridge 1.7.0.0 Supported	Check to enable VT-d function on MCH.
VT-d		
 ▶ Graphics Configuration ▶ Memory Configuration 		
		<pre>++: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</pre>
Version 2.15	1229 Converget (C) 2012 Ame	rican Megatrends. Inc.



VT-d

Check to enable VT-d function on MCH.

Graphics configuration

Config graphics settings

Memory Configuration

Memory configuration parameters

3.5.1.1 Graphics configuration

Aptio Set Chipse	up Utility – Copyright (C) 20 t	12 American Megatrends, Inc.
Graphics Configuration IGFX VBIOS Version IGfx Frequency	2143 350 MHz	LCD Control
▶ LCD Control		++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit



3.5.1.1.1 LCD Control

Aptio Setup Utilit Chipset	y – Copyright (C)	2012 Americ	can Megatrends, Inc.
LCD Control Primary IGFX Boot Display Secondary IGFX Boot Display LCD Panel Type Panel Color Depth	[CRT] [Disabled] [1024×768 [18 Bit]	LVDS]	Select the Video Device which will be activated during POST. This has no effect if external graphics present. Secondary boot display selection will appear based on your selection. VGA modes will be supported only on primary display
			++: Select Screen f4: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit

Primary IGFX Boot Display

Select the Video Devide which will be activated during POST. This has no effect if external graphics present. Secondary boot display selection will appear based on your selection. VGA modes will be supported only on primary display.

Secondary IGFX Boot Display

Select secondary display device.

LCD Panel Type

Select LCD panel used by Internal Graphics device by selexting the appropriate setup item.

Panel Color Depth Select the LFP panel color depth



3.5.1.2 Memory Information

Aptio Setup Utility - Chipset	· Copyright (C) 2012 America	an Megatrends, Inc.
Memory Information		
Memory RC Version	1.7.0.0	
Total Memory	4096 MB (DDR3)	
DIMM#0	2048 MB (DDR3)	
DIMM#1	Not Present	
DIMM#2	2048 MB (DDR3)	
DIMM#3	Not Present	
CAS Latency (tCL)	9	
Minimum delay time		
CAS to RAS (tRCDmin)	9	
Row Precharge (tRPmin)	9	
ACTIVE TO Precharge (TRASMIN)	24	
XMP Profile 1	Not Supported	++: Select Screen
XMP Prutile 2	Not Supported	T+: Select Item
		Enter: Select
		+/-: Unange upt.
		F1: General Help
		F2: Previous values
		F3. Optimized Defaults
		ECC. Evit
		LOO. LAIT
Version 2 15 1229	onuright (C) 2012 American	Megatrends Inc

3.6 Boot Setting

This section is used to configure the boot features.

– Aptio Setup Utility Main Advanced Chipset <mark>Boot</mark> Secu	Copyright (C) 2012 American nity Save & Exit	Megatrends, Inc.
Boot Configuration Setup Prompt Timeout Bootup NumLock State	1 [0n]	Number of seconds to wait for setup activation key. 65535(0xFFFF) means indefinite waiting
Quiet Boot	[Disabled]	weiting.
Boot Option Priorities		
▶ CSM parameters		<pre>++: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit</pre>
Version 2 15 1229 Pr	puright (C) 2012 American M	legatrends Inc

Setup Prompt Timeout

Number of seconds to wait for setup activation key. 65535 (0xFFFF) means idenfinite waiting



Bootup NumLock State

Select the keyboard NumLock State

Quiet Boot

Enables or diables Quite Boot option

CSM parametes

Enables or disables Quite Boot option

3.6.1 CSM parametes

Aptio Setup Utility - Boot	· Copyright (C) 2012 Americar	Megatrends, Inc.
Launch PXE OpROM policy Launch Storage OpROM policy	[Do not launch] [Legacy only]	Controls the execution of UEFI and Legacy PXE OpROM ++: Select Screen fl: Select Item Enter: Select t+/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Version 2.15.1229. (opyright (C) 2012 American ⊧	legatrends, Inc.

Launch PXE OpROM policy

Controls the execution of UEFI and Legacy PXE OpROM

Launch Storage OpROM policy

Controls the execution of UEFI and Legacy Storage OpROM



3.7 Security

Use the Security Menu to establish system passwords

Aptio Setup Ut Main Advanced Chipset Bo	ility – Copyright (C) 2012 ot Security Save & Exit	American Megatrends, Inc.
Password Description		Set Administrator Password
If ONLY the Administrator's then this only limits access only asked for when entering If ONLY the User's password is a power on password and m boot or enter Setup. In Setu have Administrator rights. The password length must be in the following range:	password is set, to Setup and is Setup. is set, then this wst be entered to p the User will	
Minimum length	3	
Maximum length	20	
Administrator Password User Password		Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values
System Mode state	Setup	F3: Optimized Defaults F4: Save & Exit ESC: Exit
Version 2.15.	1229. Copyright (C) 2012 A	merican Megatrends, Inc.

Administrator Password

Set administrator password

User Password

Set user password



3.8 Save & Exit

This screen provides functions for handling changes made to the BIOS settings and the exiting of the Setup program.



Save Changes and Exit

Exit system setup after saving the changes

Discard Changes and Exit

Exit system setup without saving any changes

Save Changes and Reset

Reset the system after saving the changes

Discard Changes and Reset

Reset system setup without saving any changes

Save Changes

Save changes done so far to any of the setup options

Discard Changes

Discard changes done so far to any of the setup options



Restore Defaults

Restore/Load Default values for all the setup options.

Save as User Defaults

Save the changes done so far as User Defaults.

Restore User Defaults

Restore the User Defaults to all the setup options.

Launch EFI Shell from filesystem device

Attemps to Launch EFI Shell application (Shellx64.efi) from one of the available filesystem devices.