

# NP-9XX-MA

12.1", 19", 24" Intel 4<sup>th</sup> Core i3/i5/i7 Marine PC

# **User Manual**

Release Date

Revision V1.0

Oct. 2015

# **Revision History**

Reversion	Date	Description
1.0	2015/10/23	Official Version

# Warning!

This equipment generates, uses and can radiate radio frequency energy and if not installed and used in accordance with the instructions manual, it may cause interference to radio communications. It has been tested and found to comply with the limits for a Class A computing device pursuant to FCC Rules, which are designed to provide reasonable protection against such interference when operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference in which case the user at his own expense will be required to take whatever measures may be required to correct the interference.

Electric Shock Hazard – Do not operate the machine with its back cover removed. There are dangerous high voltages inside.

#### Caution

Risk of explosion if the battery is replaced with an incorrect type. Batteries should be recycled where possible. Disposal of used batteries must be in accordance with local environmental regulations.

## Packing List

Accessories (as ticked) included in this package area			
Accessories (as ticked) included in this package are:			
□ Adaptor			
Driver & manual CD disc			
Other(please specify)			

## Safety Precautions

Follow the messages below to prevent your systems from damage:

- Avoid your system from static electricity on all occasions.
- Prevent electric shock. Don't touch any components of this card when the card is power-on. Always disconnect power when the system is not in use.
- Disconnect power when you change any hardware devices. For instance, when you connect a jumper or install any cards, a surge of power may damage the electronic components or the whole system.

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# Chapter 1 Getting Started

## 1.1 Features

- 12.1"/19"/24" TFT LCD
- Aluminum (10mm) bezel and Aluminum housing, with Anti-Corrosion Coating)
- Intel Core 4<sup>th</sup> Gen i3/i5/i7 Processor
- 4G DDR3L onboard (8G for option)
- 1 x 2.5" Storage space (Recommended Industrial SSD)
- 1 x SD slot onboard and 1 x CF slot (option)
- 9~36V DC Power Input with isolated
- CE/FCC Class A/IEC 60945 Certificated
- Marine application

## **1.2 Specifications**

	NP-912-MA	NP-919-MA	NP-924-MA		
System					
CPU	Intel Core i3-4010U Processor (3M Cache, 1.7 GHz) / TDP: 15W				
	Intel Core i5-4310U Processor (3M Cache, 2.0 GHz) / TDP: 15W				
Chipset		SoC			
Memory	Onboard 4G	B DDR3L 1333/1600 MHz, 80	B for option		
IO Port					
USB		2 x USB 3.0 type A			
Serial/Parallel	1 x RS-232/422/485 DB-9 selectable, default RS-485, COM1				
	1 x RS-232 DB-9, COM2				
Audio	1 x Line-out, phone jack				
LAN		2 x GbE LAN RJ-45			
Power	1 x 2-pin terminal block connector (for remote power switch)				
	1 x 3-pin terminal block connector				
Other	1 x ESD Ground				
Front Side IO	1 x Backlight on/off with touch on/off				
	1 x Power System LED				
	1 x VR Knob Brightness Control				

	1 x Power on/off Button ( 19"/24" default, optional for 12.1")			
	2 x LED light for power and HDD indication (19"/24" default, optional for 12.1")			
	1 x USB Port with Waterproof Cover Design (19"/24" default, optional for 12.1")			
Option	TB-528C1U2			
only for 19"and 24"		2 x USB, 1 x RS-232		
Storage Space				
Storage		Default:		
	1 x 2.5" Sto	rage Space (Recommended Ir	ndustrial SSD)	
		1 x Internal SD slot onboard	ł	
		Optional:		
		1 x Internal CF Slot		
Expansion				
Expansion Slot	1:	x Mini PCIe full size slot onbo	ard	
	Op	otion wifi/BT or 3G with Ante	nna	
	1>	Mini PCIe full size slot onboa	ard	
	Optio	n isolation 2 x RS-422/485 isc	blation	
Display			-	
Display Type	12.1" color TFT LCD	19" color TFT LCD	24" color TFT LCD	
Max. Resolution	1024 x 768	1280 x 1024	1920 x 1080	
Max. Color	16.7M	16.7M	16.7M	
Luminance	500	350	300	
Contrast Ratio	700 : 1	1000 : 1	3000 : 1	
Viewing Angle	160 (H) / 140 (V)	170 (H) / 160 (V)	178 (H) / 178 (V)	
Backlight Lifetime	50,000 hrs	50,000 hrs	50,000 hrs	
Touch Screen – Resi	stive Touch Window Type			
TS Control IC		PenMount 6000 on Board		
Interface		USB		
Light Transmission		Over 80%		
Power				
Power Input		Default:		
	9~36V DC with isolated			
	Option:			
	AC Power input			
Power	MAX: 37.2W	MAX: 67W	MAX: 41.8W	
Consumption				
Mechanical				
Chassis Color	Black / Aluminum (10mm) bezel and Aluminum housing			

	Anti-Corrosion Coating			
Mounting	Panel Mount and Front Access Mount			
	Mounting Bracket (option)			
IP Rating	IP65 Front Panel			
Dimensions	337.2 x 293.2 x 65 mm 484 x 400 x 60 mm 647 x 414 x 65 mm			
Net Weight	4.4 Kg	9.5 Kg	11.7 Kg	
Operating System S	upport			
OS Support	Windows 7 Professional for Embedded Systems,			
	Windows Embedded Standard 7 (WES7),			
	Windows 10 IoT 2016 LTSB/CBB			
Environmental				
Operating	2.52%			
temperature	0~50°C			
	Optional WT1 -20°C ~60°C (with industrial SSD)			
Storage				
temperature	-30~70°C			
Storage humidity	10 to 90% @ 40°C, non- condensing			
Certification	CE / FCC Class A/IEC 60945 Certificated			
	Meet IACS E10/DNV Standard			

## 1.3 Dimensions



Figure 1.1: Dimensions of NP-912-MA



Figure 1.2: Dimensions of NP-919-MA



Figure 1.3: Dimensions of NP-924-MA

## 1.4 Brief Description of NP-9XX-MA

NP-9XX-MA series are powered by Intel 4<sup>th</sup> Gen. i3/i5/i7 Processor. It is aluminum (10mm) bezel and aluminum housing with anti-corrosion coating and IP65 front panel designed. It comes with 12.1", 19", or 24" display with resistive touch screen. The model supports 4GB DDR3L onboard, 8GB is for option, 9~36V DC wide-ranging power input with isolated, 1 x 2.5" storage space(Recommended Industrial SSD), 1 x SD slot onboard, 1 x CF slot for option, and so on. It is CE, FCC Class A, IEC 60945 certificated, and meets IACS E10 and DNV Standard, and the model is designed for marine application.



Figure 1.4: Front View of NP-9XX-MA



Figure 1.5: Rear View of NP-912-MA



Figure 1.6: Front View of NP-919-MA



Figure 1.7: Rear View of NP-919-MA



Figure 1.8: Front View of NP-924-MA



Figure 1.9: Rear View of NP-924-MA

## 1.5 Mounting of NP-9XX-MA



Figure 1.10: Panel Mounting of NP-9XX-MA



Figure 1.11: Adjustable Mounting Bracket of NP-9XX-MA

## 2.1 Mainboard Introduction

SBC-7110 is a 4" industrial motherboard developed on the basis of Intel Haswell-U Processors, which provides abundant peripheral interfaces to meet the needs of different customers. Also, it features dual GbE ports, 5-COM ports and one Mini PCIE configuration, one eDP port, one HDMI port, one LVDS interface. To satisfy the special needs of high-end customers, CN1 and CN2 and CN3 richer extension functions. The product is widely used in various sectors of industrial control.

Specifications		
Board Size	170mm x 113mm	
CPU Support	Intel <sup>®</sup> Core <sup>™</sup> i3-4010U /1.7GHz (onboard)	
	Intel <sup>®</sup> Core <sup><math>m</math></sup> /i5-4310U /2.0 up to 3.00GHz (option )	
Chipset	SoC	
Memory Support	Onboard 4GB DDR3L SDRAM	
Graphics	Intel <sup>®</sup> HD Graphics 4400	
Display Mode	1 x HDMI Port	
	1 x LVDS (18/24-bit dual LVDS)	
	1 x eDP Port (EDP1, option)	
Support	Up to 1920 x 1200 for HDMI	
Resolution	Up to 1920 x 1200 for LVDS (PS8625)	
	Up to 1920 x 1200 for eDP	
Dual Display	HDMI + LVDS	
Super I/O	ITE IT8518E	
	Fintek F81216AD	
BIOS	AMI/UEFI	
Storage	1 x SATAIII Connector (7P)	
	1 x SATAIII Connector (7P+15P)	
	1 x SD Slot	

## 2.2 Specifications

Ethernet	2 x PCIe Gbe LAN by Intel 82574L	
USB	<ul> <li>2 x USB 3.0 (type A)stack ports (USB3) (USB 3.0: USB3-1/USB3-2, USB 2.0: USB1/USB2)</li> <li>2 x USB 2.0 Pin header for CN3 (USB3/USB4)1</li> <li>x USB 2.0 Pin header for CN2 (USB5)</li> <li>1 x USB 2.0 Pin header for CN1 (USB7 or Touch, option)</li> <li>1 x USB 2.0 for MPCIE1 (USB8)</li> </ul>	
Serial	<ul> <li>1 x RS232/RS422/RS485 port, DB9 connector for external (COM1)</li> <li>Pin 9 w/5V/12V/Ring select</li> <li>1 x RS232 port, DB9 connector for external (COM2)</li> <li>Pin 9 w/5V/12V/Ring select</li> <li>2 x UART for CN3 (COM3,COM4)</li> <li>1 x RS422/485 header for CN2 (IT8518E/COM5)</li> <li>1 x RS422/485 header for CN2 (IT8518E/COM6,option)</li> </ul>	
Digital I/O	8-bit digital I/O by Pin header (CN2) 4-bit digital Input 4-bit digital Output 4-bit digital I/O by Pin header (CN3) 2-bit digital Input 2-bit digital Output	
Battery	Support CR2477 Li battery by 2-pin header (BAT1/CMOS)	
Smart Battery	1 x Smart battery Support 3 Serial Li battery by 10-pin header (BAT2)	
Audio	Support Audio via Realtek ALC662-VD HD audio codecSupport Line-in, Line-out, MIC by 2x6-pin header	
Keyboard /Mouse	1 x PS2 keyboard/mouse by box pin header (CN3)	
Expansion Bus	1 x mini-PCI-express slot 1 x PCI-express (CN3)	
Touch Ctrl	1 x Touch ctrl header for TCH1 (ITE8518E/COM6)(JP4 setting: RS232 or USB 2.0)	
Power Management	Wide Range DC9V~36V input 1 x 3-pin power input connector	

Switches and LED Indicators	1 x Power on/off switch (BT1/BT2/CN2/CN3) 1 x Reset (CN2) 1 x HDD LED status (CN2) 1 x Power LED status (CN1) 1 x Buzzer	
External I/O port	2 x COM Ports (COM1/COM2) 2 x USB 3.0 Ports (stack) 2 x RJ45 GbE LAN Ports 1 x HDMI Port 1 x Stack audio Jack (Line out)	
Watchdog Timer	Software programmable 1–255 level by Super I/O (Reserve)	
Temperature	Operating: -20°C to 70°C Storage: -40°C to 85°C	
Humidity	10% - 90%, non-condensing, operating	
Power Consumption	12V /1.33A (Intel I3-4010U processor with 4GB DDR3L DRAM) 12V /1.33A (Intel I5-4310U processor with 4GB DDR3L DRAM)	
EMI/EMS	Meet CE/FCC class A	
	2 x CAN bus	
TB-528CAN2	1 x SIM Card Socket	
	1 x mini-PCI-express slot	



Figure 2.1: Mainboard Dimensions



## 2.3 Jumpers and Connectors Location

Figure 2.2: Jumpers and Connectors Location- Board Top





## 2.4 Jumpers Setting and Connectors

1. CPU1:

(FCBGA1168), onboard Intel Haswell-U Processors.

Model	Processor				
	Number	PBF	Cores/Threads	TDP	Remarks
SBC-7110-i34010-4G	I3-4010U	1.7GHz	2 / 4	15W	
SBC-7110-i34010P-4G	i3-4010U	1.7GHz	2/4	15W	Option
SBC-7110-i54310-4G	i5-4310U	2.0 up to 3.0GHz	2 / 4	15W	Option
SBC-7110-i54310P-4G	i5-4310U	2.0 up to 3.0GHz	2 / 4	15W	Option

2. H3/H4/H5/H6(option):

CPU1 Heat Sink Screw holes, four screw holes for intel Haswell-U Processors Heat Sink assemble.

3. FAN1(option):

(2.54mm Pitch 1x3 Pin Header), Fan connector, cooling fans can be connected directly for use. You may set the rotation condition of cooling fan in menu of BIOS CMOS Setup.



Pin#	Signal Name
1	Ground
2	VCC
3	Rotation detection

Note:

Output power of cooling fan must be limited under 5W.

 U2/U3/U4/U5/U7/U8/U9/U10: (FBGA96)Onboard DDR3L Memory.

Model	Memory
SBC-7110-i34010-4G	4GB
SBC-7110-i34010P-4G	4GB (option)
SBC-7110-i54310-4G	4GB (option)
SBC-7110-i54310P-4G	4GB (option)

#### 5. S-422 (PIN6):

(Switch), ATX Power and Auto Power on jumper setting.

S-422(Switch)	Mode
Pin6 (Off)	ATX Power
Pin6 (On)	Auto Power on (Default)

#### 6. PS\_ON (option):

(2.0mm Pitch 1x2 Pin wafe Header), ATX Power and Auto Power on jumper setting.

Pin#	Mode
Open	ATX Power
Close 1-2	Auto Power on (Default)

#### 7. BAT1:

(1.25mm Pitch 1x2 Wafer Pin Header) 3.0V Li battery is embedded to provide power for CMOS.

Pin#	Signal Name
Pin1	VBAT
Pin2	Ground

8. JP3:

(2.0mm Pitch 1x2 Pin Header) CMOS clear jumper, CMOS clear operation will permanently reset old BIOS settings to factory defaults.

JP3	CMOS
Open	NORMAL (Default)
Close 1-2	Clear CMOS



Procedures of CMOS clear:

- a) Turn off the system and unplug the power cord from the power outlet.
- b) To clear the CMOS settings, use the jumper cap to close pins 1 and 2 for about 3 seconds then reinstall the jumper clip back to pins open.
- c) Power on the system again.
- d) When entering the POST screen, press the <ESC> or <DEL> key to enter CMOS Setup Utility to load optimal defaults.
- e) After the above operations, save changes and exit BIOS Setup.

#### 9. BAT2:

(2.0mm Pitch 1x10 Wafer Pin Header), Smart battery Interface.

Pin#	Signal Name
Pin1	VCC_BAT1
Pin2	VCC_BAT1
Pin3	VCC_BAT1
Pin4	SMB_DAT_SW
Pin5	SMB_SCL_SW
Pin6	BAT1_TEMP
Pin7	Ground
Pin8	Ground
Pin9	Ground
Pin10	SET_BAT1_ON

Function	Specifications
Nominal voltage (3S1P)	11.1~12.6V
Charge voltage	12.6V
Charge current	0.5C

#### 10. BAT\_LED:

(2.0mm Pitch 1x4 Wafer Pin Header), The Charge status indicator for BAT2. Pin1-Pin3: Charge LED status.

Pin2-Pin3: Discharge LED status.

Pin4-Pin3: EC LED status.

Pin# Signal Name
------------------

Pin1	BAT2_LED+		
Pin2	BAT2_LED-		
Pin3	Ground		
Pin4	RST_EC		

#### 11. DC\_IN1:

(5.08mm Pitch 1x3 Pin Connector), DC9V~36V System power input connector.

Pin#	Signal Name		
Pin1	DC+9V~36V		
Pin2	Ground		
Pin3	FG		

Model	DC_IN1
SBC-7110-i34010U-4G	180°Connector
SBC-7110-I54310U-4G	180°Connector
SBC-7110-I34010UP-4G	45°Connector
SBC-7110-I54310UP-4G	45°Connector

#### 12. BT1/BT2:

Power on/off button, They are used to connect power switch button. The two pins are disconnected under normal condition. You may short them temporarily to realize system startup & shutdown or awaken the system from sleep state.

#### 13. LED2/LED3/LED4/LED5:

LED2: LED STATUS. Green LED for Motherboard EC status. LED3: LED STATUS. Green LED for Power status. LED4: LED STATUS. Green LED for Motherboard Standby Power Good status. LED5: LED STATUS. Green LED for CPU1 status

14. HDMI1:

(HDMI 19P Connector), High Definition Multimedia Interface connector.



### 15. JP6:

(2.0mm Pitch 2x2 Pin Header), LVDS jumper setting.



	—		
JP6	Function (CN1)		
Pin1-Pin2 (Close) Signal channel LVDS			
Pin1-Pin2 (Open)	Dual channel LVDS (Default)		
Pin3-Pin4 (Close)	8/24 bit (Default)		
Pin3-Pin4 (Open) 6/18 bit			

### 16. U22:

AT24C02-DIP8, The EEPROM IC (U22) is the set of LVDS resolution. If you need other resolution settings, please upgrade U22 data.

Model	LVDS resolution		
	1280 x 1024 (Default)		
SBC-7110-i34010U-XX	800 x 480 (option)		
SBC-7110-i54310U-XX	800 x 600 (option)		
	1024 x 768 (option)		
	1920 x 1080 (option)		

#### 17. INVT1:

(2.0mm Pitch 1x6 wafer Pin Header), Backlight control connector for LVDS.



Pin#	Signal Name
1	+DC12V_S0
2	+DC12V_S0
3	Ground
4	Ground
5	BKLT_EN_OUT

6 BKLT_CTRL
-------------

18. CN1:

(1.25mm Pitch 2x20 Connector, DF13-40P), For 18/24-bit LVDS output connector, Fully supported by Parad PS8625(DP to LVDS), the interface features dual channel 24-bit output. Low Voltage Differential Signaling, A high speed, low power data transmission standard used for display connections to LCD panels.

Function	Signal Name	Pin#	Pin#	Signal Name	Function	
	12V_S0	2	1	12V_S0		
	BKLT_EN_OUT	4	3	BKLT_CTRL		
	Ground	6	5	Ground		
	LVDS_VDD5	8	7	LVDS_VDD5		
	LVDS_VDD3	10	9	LVDS_VDD3		
	Ground	12	11	Ground		
	LA_D0_P	14	13	LA_D0_N		
LVDS	LA_D1_P	16	15	LA_D1_N	LVDS	
	LA_D2_P	18	17	LA_D2_N		
	LA_D3_P	20	19	LA_D3_N		
	LA_CLKP	22	21	LA_CLKN		
	LB_D0_P	24	23	LB_D0_N		
	LB_D1_P	26	25	LB_D1_N		
	LB_D2_P	28	27	LB_D2_N		
	LB_D3_P	30	29	LB_D3_N		
	LB_CLKP	32	31	LB_CLKN		
	Ground	34	33	Ground	USB7	
USB7	USB7_P	36	35	USB7_N	(JP4 open)	
(JP4 open)	5V_S5_USB	38	37	5V_S5_USB		
Power LED	PWR_LED+	40	39	Ground	Power LED	

#### 19. EDP1 (option)

Function	Signal Name	Pin#	Pin#	Signal Name	Function
	12V_S0_EDP	2	1	12V_S0_EDP	
	12V_S0_EDP	4	3	12V_S0_EDP	
	Ground	6	5	Ground	

	EDP_VDD5	8	7	EDP_VDD5	
	EDP_VDD3	10	9	EDP_VDD3	
	Ground	12	11	Ground	
EDP	EDP_BKLT_EN	14	13	EDP_TXN_1	EDP
	EDP_BKLT_CTRL	16	15	EDP_TXP_1	
	EDP_VDD_EN	18	17	Ground	
	EDP_TXN_2	20	19	EDP_TXN_0	
	EDP_TXP_2	22	21	EDP_TXP_0	
	Ground	24	23	Ground	
	EDP_TXN_3	26	25	EDP_AUX_N	
	EDP_TXP_3	28	27	EDP_AUX_P	
	EDP_DISP_UTIL	30	29	12C1_SCL	12C
	EDP_HP_CN	32	31	12C1_SDA	
	Ground	34	33	Ground	USB7
USB7	USB7_P	36	35	USB7_N	(option)
(option)	5V_S5_USB	38	37	5V_S5_USB	
Power LED	PWR_LED+	40	39	Ground	Power LED

#### 20. JP4:

(2.0mm Pitch 2x2 wafer Pin Header), USB3(CN1) or Touch jumper setting.



Δ							
JP4	Function						
	USB7 (CN1)	Touch (TCH1)					
Close 3-4 (default)	-	Yes					
Open 3-4 (option)	Yes	-					
Open 1-2 (default)	-						

#### 21. TCH1:

(2.0mm Pitch 1x6 wafer Pin Header), internal Touch controller connector.

Signal Name
SENSE
X+
Х-
Y+

5	Y-
6	GND_EARCH

#### 22. LED1:

LED1: LED STATUS. Green LED for Touch Power status.

#### 23. JP1:

(2.0mm Pitch 2x3 Pin Header), COM1 jumper setting, pin 1~6 are used to select signal out of pin 9 of COM1 port.

JP1 Pin#	Function	
Close 1-2	COM1 RI (Ring Indicato	or) (default)
Close 3-4	COM1 Pin9: DC+5V	(option)
Close 5-6	COM1 Pin9: DC+12V	(option)

#### 24. S\_232

(Switch), COM1 jumper setting, it provides selectable RS232 or RS422 or RS485 serial signal output.

Function	S_232 Pin#
RS232	ON:
(Default)	Pin1, Pin2, Pin3, Pin4
RS422	OFF:
(option)	Pin1, Pin2, Pin3, Pin4
RS485	OFF:
(option)	Pin1, Pin2, Pin3, Pin4

#### 25. S\_422:

(Switch), COM1 setting, it provides selectable RS232 or RS422 or RS485 serial signal output.

Function	S_422 Pin#
RS232	OFF:
(Default)	Pin1, Pin2, Pin3, Pin4, Pin5
RS422	ON:
(option)	Pin1, Pin2, Pin3, Pin4, Pin5
RS485	ON:
(option)	Pin1, Pin2, Pin3, Pin4, Pin5

### 26. COM1

(Type DB9M), Rear serial port, standard DB9 Male serial port is provided to make a direct connection to serial devices. COM1 port is controlled by pins No. 1~6 of JP1, select output Signal RI or 5V or 12V, For details, please refer to description of JP1 and S\_232 and S\_422 setting.

$\bigcirc \underbrace{\begin{pmatrix} 1 & \circ & \circ & \circ & 5 \\ \circ & \circ & \circ & \circ & \circ \\ & & & 9 \\ & & & & 9 \\ \hline & & & & & & \\ & & & & & & \\ & & & &$
---

RS232 (Default)	
Pin#	Signal Name
1	DCD# (Data Carrier Detect)
2	RXD (Received Data)
3	TXD (Transmit Data)
4	DTR (Data Terminal Ready)
5	Ground
6	DSR (Data Set Ready)
7	RTS (Request To Send)
8	CTS (Clear To Send)
9	JP1 select Setting (RI/5V/12V)
BIOS Setup:	
Advanced/F81216 Super IO Configuration/Serial Port 0	
Configuration 【RS-232	2]

RS422 (option)	
Pin#	Signal Name
1	422_RX+
2	422_RX-
3	422_TX-
4	422_TX+
5	Ground
6	NC
7	NC
8	NC
9	NC

BIOS Setup:	
Advanced/F81216 Super IO Configuration/Serial Port 0	
Configuration 【RS-422】	
RS485 (option)	
Pin#	Signal Name
1	NC
2	NC
3	485-
4	485+
5	Ground
6	NC
7	NC
8	NC
9	NC
BIOS Setup:	
Advanced/F81216 Super IO Configuration/Serial Port 0	
Configuration 【RS-485】	

#### 27. JP2:

(2.0mm Pitch 2x3 Pin Header), COM2 jumper setting, pin 1~6 are used to select signal out of pin 9 of COM2 port.

JP2 Pin#	Function	
Close 1-2	COM2 RI (Ring Indicato	or) (default)
Close 3-4	COM2 Pin9: DC+5V	(option)
Close 5-6	COM2 Pin9: DC+12V	(option)

#### 28. COM2:

(Type DB9M), Rear serial port, standard DB9 Male serial port is provided to make a direct connection to serial devices.



	)
Pin#	Signal Name
1	DCD# (Data Carrier Detect)
2	RXD (Received Data)
3	TXD (Transmit Data)

4	DTR (Data Terminal Ready)
5	Ground
6	DSR (Data Set Ready)
7	RTS (Request To Send)
8	CTS (Clear To Send)
9	JP2 select Setting (RI/5V/12V)

#### 29. SATA\_P:

(2.5mm Pitch 1x2 box Pin Header), One onboard 5V output connector are reserved to provide power for SATA devices.

Pin#	Signal Name
1	+DC5V
2	Ground

### Note:

Output current of the connector must not be above 1A.

30. SATA2:

(SATA 7Pin), SATA Connectors, one SATA connector are provided, with transfer speed up to 6.0Gb/s.

#### 31. SATA1:

(SATA 7Pin+15Pin), SATA Connectors, one SATA connector are provided, with transfer speed up to 6.0Gb/s.

#### 32. SD1:

(SD card slot), Secure Digital Memory Card socket.

33. MPCIE1:

(Socket 52Pin), mini PCIe socket, it is located at the top, it supports mini PCIe devices with USB2.0 and LPC and SMBUS and PCIe signal. MPCIe card size is 30 x 50.95mm.

34. H1/H2:

MPCIE1 SCREW HOLES, H1 and H2 for mini PCIE card (30mm x 50.95mm) assemble.

#### 35. AUDIO1:

(2.0mm Pitch 2x6 Pin Header), Front Audio, An onboard Realtek ALC662-VD codec is used to provide high-quality audio I/O ports. Line Out can be connected to headphone or amplifier. Line In is used for the connection of external audio source via a Line in cable. MIC is the port for microphone input audio.

Signal Name	Pin#	Pin#	Signal Name	
+5V	1	2	GND_AUD	
LINE-OUT-L	3	4	LINE-OUT-R	
FRONT_JD	5	6	LINE1_JD	
LINE-IN-L	7	8	LINE-IN-R	
MIC-IN-L	9	10	MIC-IN-R	
GND_AUD	11	12	MIC1_JD	

36. LINE\_OUT:

(Diameter 3.5mm Jack), HD Audio port, An onboard Realtek ALC662-VD codec is used to provide high quality audio I/O ports. Line Out can be connected to a headphone or amplifier.



37. USB3:

USB3-1/USB3-2: (Double stack USB type A), Rear USB connector, it provides up to two USB3.0 ports, High-speed USB 2.0 allows data transfers up to 480 Mb/s, USB3.0 allows data transfers up to 5.0Gb/s, support USB full-speed and low-speed signaling.

ليعممها	USB3-1/USB3.0
[ <del></del> ]	USB3-2/USB3.0

Each USB Type A Receptacle (2 Ports) Current limited value is 1.5A. If the external USB device current exceeds 1.5A, please separate connectors into different Receptable.

38. LAN1/LAN2:

LAN1/LAN2: (RJ45 Connector), Rear LAN port, Two standard 10/100/1000M

RJ-45 Ethernet ports are provided. Used intel 82574L chipset, LINK LED (green) and ACTIVE LED (yellow) respectively located at the left-hand and right-hand side of the Ethernet port indicate the activity and transmission state of LAN.



39. BUZ1:

Onboard buzzer.

40. CN2:

(DF13-30P Connector), For expand output connector, It provides eight GPIO, one RS422 or RS485, one USB2.0, one Power on/off, one Reset.

		1	1		1			
Function	Signal Name	Pin#	Pin#	Signal Name	Function			
5V	5V_S5	2	1	5V_S5	5V			
PCH_GPIO49	GPIO_IN2	4	3	GPIO_IN1	PCH_GPIO48			
PCH_GPIO51	GPIO_IN4	6	5	GPIO_IN3	PCH_GPIO50			
PCH_GPIO53	GPIO_OUT2	8	7	GPIO_OUT1	PCH_GPIO52			
PCH_GPIO55	GPIO_OUT4	10	9	GPIO_OUT3	PCH_GPIO54			
	Ground	12	11	Ground				
485 or 422	485+_422TX5+	14	13	485422TX5-	485 or 422			
(COM5)	422_RX5+	16	15	422_RX5-	(COM5)			
485 or 422	485+_422TX6+	18	17	485422TX6-	485 or 422			
(COM6)	422_RX6+	20	19	422_RX6-	(COM6)			
5V	5V_S0	22	21	HDD_LED+	HDD LED			
	5V_USB5	24	23	5V_USB5	USB2.0			
USB2.0	USB5_P	26	25	USB5_N				
	Ground	28	27	FP_RST-	RESET			
Power auto on	PWRBTN_ON	30	29	Ground				
COM5 BIOS Setup:								
Advanced/Super IO Configuration/Serial PortO Configuration [RS-422]								
Advanced/Super IO Configuration/Serial Port 0 Configuration [RS-485]								
COM6 BIOS Setup:								
Advanced/Super IO Configuration/Serial Port 1 Configuration [RS-422]								
Advanced/Super IO Configuration/Serial Port 1 Configuration [RS-485]								
# 41. EC\_GPIO:

(2.0mm Pitch 1x10 Pin Header), For expand connector, It provides eight GPIO.

Pin#	Signal Name			
1	Ground			
2	EC_GPIO1			
3	EC_GPIO2			
4	EC_GPIO3			
5	EC_GPIO4			
6	EC_GPIO5			
7	EC_GPIO6			
8	EC_GPIO7			
9	EC_GPIO8			
10	3.3V_ALLS_EC			

# 42. CN3:

(1.27mm Pitch 2X30 Female Header), For expand output connector, It provides four GPIO, two USB 2.0, one PS/2 mouse, one PS/2 keyboard, two uart, one PCIex1, one SMbus. It's connected to the TB-528 riser Card

Function	Signal Name	Pin#	Pin#	Signal Name	Function
	5V_S5_USB	1	2	5V_S5_USB	
	5V_S5_USB	3	4	5V_S5_SB	
	USB34_OC	5	6	PSON_ATX-	
USB3	USB3_N	7	8	USB3_P	USB3
USB4	USB4_N	9	10	USB4_P	USB4
	Ground	11	12	Ground	
PS/2 MS	PS2_MSCLK	13	14	PS2_MSDATA	PS/2 MS
PS/2 KB	PS2_KBCLK	15	16	PS2_KBDATA	PS/2 KB
	COM4_RI	17	18	COM4_DCD-	
COM4	COM4_TXD	19	20	COM4_RXD	COM4
(UART)	COM4_DTR	21	22	COM4_RTS-	(UART)
	COM4_DSR	23	24	COM4_CTS-	-
	Ground	25	26	Ground	
	COM3_RI	27	28	COM3_DCD-	
СОМЗ	COM3_TXD	29	30	COM3_RXD	СОМЗ

(UART)	COM3_DTR	31	32	COM3_RTS-	(UART)
	COM3_DSR	33	34	COM3_CTS-	
GPIO56	PCH_GPIO56	35	36	PCH_GPIO58	GPIO58
GPIO57	PCH_GPIO57	37	38	PCH_GPIO59	GPIO59
	Ground	39	40	Ground	
	PCIE1_TX_N0	41	42	PE1_TX_PO	
	PCIE1_RX_N0	43	44	PE1_RX_PO	
PCIE	Ground	45	46	Ground	PCIE
	CLK_100M_PE1_N	47	48	CLK_100M_PE1_P	
	PCIE1_WAKE_N	49	50	PLT_RST_BUF2-	
SMBUS	SMB_CLK_S5	51	52	SMB_DATA_S5	SMBUS
PCIE	CLKREQ_PE1-	53	54	Ground	
	3P3V_S5	55	56	PWRBTN_ON-	Power Auto on
	3P3V_S5	57	58	3P3V_S5	
12V	12V_S0	59	60	12V_S0	12V

43. TB-528C2ME1 (option):

SBC-7110 Riser Card, TB-528C2ME1 CN3 connect to SBC-7110 CN3 pin Header. TB-528C2ME1 Top:



CN3:

(1.27mm Pitch 2x30 Pin Header), connect to SBC-7110 CN3 pin Header.

#### M-PCIE1:

(Socket 52Pin), mini PCIe socket, it is located at the top, it supports mini PCIe devices with USB2.0 (USB3), Smbus, SIM and PCIe signal. MPCIE card size is 30 x 30mm or 30 x 50.95mm.

Signal Name	Function support	
PCIe 1X	Yes	
USB2.0 (USB2)	Yes	
SMBus	Yes	
SIM	Yes	

### H1/H2:

MPCIE1 SCREW HOLES, H2 for mini PCIE card (30mm x 30mm) assemble. H1 for mini PCIE card (30mm x 50.95mm) assemble.

#### LED1:

Mini PCIe devices LED Status.

#### SIM1:

(SIM Socket 6 Pin), Support SIM Card devices.

#### PS2:

(2.0mm Pitch 1x6 Pin Wafer), PS/2 keyboard and mouse port, the port can be connected to PS/2 keyboard or mouse via a dedicated cable for direct used.

Pin#	Signal Name	
1	KBDATA	
2	MSDATA	
3	Ground	
4	+5V	
5	KBCLK	
6	MSCLK	

#### GPIO1:

(2.0mm Pitch 2x5 Pin Header), General-purpose input/output port, it provides a group of self-programming interfaces to customers for flexible use.

Signal Name	Pin#	Pin#	Signal Name

Ground	1	2	NC	
NC	3	4	SMB_DATA_R	
SMB_CLK_R	5	6	PCH-GPIO56	
PCH-GPIO57	7	8	PCH-GPIO59	
PCH-GPIO58	9	10	+5V	

#### USB\_23:

(2.0mm Pitch 2x5 Pin Header), Front USB connector, it provides one USB port via a dedicated USB cable, speed up to 480Mb/s.

Signal Name	Pin#	Pin#	Signal Name	
5V_USB23	1	2	5V_USB23	
USB4_N	3	4	USB3_N (option, NC)	
USB4_P	5	6	USB3_P (option, NC)	
Ground	7	8	Ground	
NC	9	10	Ground	



Before connection, make sure that pinout of the USB Cable is in accordance with that of the said tables. Any inconformity may cause system down and even hardware damages.

### JP5:

(2.0mm Pitch 2x3 Pin Header), COM5 setting jumper, pin 1~6 are used to select signal out of pin 9 of COM5 port.

JP5 Pin#	Function		
Close 1-2	RI (Ring Indicator) (default)		
Close 3-4	COM5 Pin9=+5V	(option)	
Close 5-6	COM5 Pin9=+12V	(option)	

#### COM5(SBC-7110/COM3):

(Type DB9), serial port, standard DB9 serial port is provided to make a direct connection to serial devices. COM5 port is controlled by pins No. 1~6 of JP5, select output Signal RI or 5V or 12V, For details, please refer to description of JP3.

	$\bigcirc \left( \begin{array}{ccc} 1 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 \\ 0 & 0 &$			
Pin#	Signal Name			
1	DCD# (Data Carrier Detect)			
2	RXD (Received Data)			
3	TXD (Transmit Data)			
4	DTR (Data Terminal Ready)			
5	Ground			
6	DSR (Data Set Ready)			
7	RTS (Request To Send)			
8	CTS (Clear To Send)			
9	JP5 Setting:			
	Pin1-2: RI (Ring Indicator) (default)			
	Pin3-4: 5V Standby power (option)			
	Pin5-6: 12V Standby power (option)			

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# JP6:

(2.0mm Pitch 2x3 Pin Header), COM6 setting jumper, pin 1~6 are used to select signal out of pin 9 of COM6 port.

JP6 Pin#	Function		
Close 1-2	RI (Ring Indicator) (default)		
Close 3-4	COM6 Pin9=+5V	(option)	
Close 5-6	COM6 Pin9=+12V	(option)	

#### COM6(SBC-7110/COM4):

(Type DB9), serial port, standard DB9 serial port is provided to make a direct connection to serial devices. COM6 port is controlled by pins No.1~6 of JP6, select output Signal RI or 5V or 12V, For details, please refer to description of JP6.

$\bigcirc \underbrace{\begin{pmatrix} 1 & \circ & \circ & \circ & \circ \\ \circ & \circ & \circ & \circ & \circ \\ \circ & \circ &$
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Pin#	Signal Name
1	DCD# (Data Carrier Detect)
2	RXD (Received Data)

3	TXD (Transmit Data)
4	DTR (Data Terminal Ready)
5	Ground
6	DSR (Data Set Ready)
7	RTS (Request To Send)
8	CTS (Clear To Send)
9	JP6 Setting:
	Pin1-2: RI (Ring Indicator) (default)
	Pin3-4: 5V Standby power (option)
	Pin5-6: 12V Standby power (option)

COM\_6 (option, SBC-7110/COM4):

(2.0mm Pitch 2x5 Pin Header), COM6 Port, up to one standard RS232 port are provided. They can be used directly via COM cable connection.

Signal Name	Pin#	Pin#	Signal Name
DCD	1	2	RXD
TXD	3	4	DTR
Ground	5	6	DSR
RTS	7	8	CTS
JP6 Setting:	9	10	NC
RI/5V/12V			

44. TB-528C2 (option):

SBC-7110 Riser Card, TB-528C2ME1 CN3 connect to SBC-7110 CN3 pin Header. TB-528C21 Top:



#### CN3:

(1.27mm Pitch 2 x 30 Pin Header), connect to SBC-7110 CN3 pin Header.

#### LED1:

Mini PCIe devices LED Status.

# PS2:

(2.0mm Pitch 1x6 Pin Wafer), PS/2 keyboard and mouse port, the port can be connected to PS/2 keyboard or mouse via a dedicated cable for direct used.

Pin#	Signal Name
1	KBDATA
2	MSDATA
3	Ground
4	+5V
5	KBCLK
6	MSCLK

#### GPIO1:

(2.0mm Pitch 2x5 Pin Header), General-purpose input/output port, it provides a group of self-programming interfaces to customers for flexible use.

Signal Name	Pin#	Pin#	Signal Name
Ground	1	2	NC

NC	3	4	SMB_DATA_R
SMB_CLK_R	5	6	PCH-GPIO56
PCH-GPIO57	7	8	PCH-GPIO59
PCH-GPIO58	9	10	+5V

USB\_23:

(2.0mm Pitch 2x5 Pin Header), Front USB connector, it provides one USB port via a dedicated USB cable, speed up to 480Mb/s.

Signal Name	Pin#	Pin#	Signal Name
5V_USB23	1	2	5V_USB23
USB4_N	3	4	USB3_N
USB4_P	5	6	USB3_P
Ground	7	8	Ground
NC	9	10	Ground



# Note:

Before connection, make sure that pinout of the USB Cable is in accordance with that of the said tables. Any inconformity may cause system down and even hardware damages.

#### JP5:

(2.0mm Pitch 2x3 Pin Header), COM5 setting jumper, pin 1~6 are used to select signal out of pin 9 of COM5 port.

JP6 Pin#	Function	
Close 1-2	RI (Ring Indicator)	(default)
Close 3-4	COM5 Pin9=+5V	(option)
Close 5-6	COM5 Pin9=+12V	(option)

# COM5(SBC-7110/COM3):

(Type DB9), serial port, standard DB9 serial port is provided to make a direct connection to serial devices. COM5 port is controlled by pins No.1~6 of JP5, select output Signal RI or 5V or 12v, For details, please refer to description of JP3.

	$\bigcirc \left( \begin{array}{ccc} 1 & \circ & \circ & \circ & \circ \\ 0 & \circ & \circ & \circ & \circ \\ 0 & \circ & \circ & \circ & \circ \\ 6 & & 9 \end{array} \right) \bigcirc$
Pin#	Signal Name
1	DCD# (Data Carrier Detect)
2	RXD (Received Data)
3	TXD (Transmit Data)
4	DTR (Data Terminal Ready)
5	Ground
6	DSR (Data Set Ready)
7	RTS (Request To Send)
8	CTS (Clear To Send)
9	JP5 Setting:
	Pin1-2: RI (Ring Indicator) (default)
	Pin3-4: 5V Standby power (option)
	Pin5-6: 12V Standby power (option)

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# COM6(SBC-7110/COM3):

(Type DB9), serial port, standard DB9 serial port is provided to make a direct connection to serial devices. COM6 port is controlled by pins No.1~6 of JP6, select output Signal RI or 5V or 12v, For details, please refer to description of JP6.

$\bigcirc \underbrace{\begin{pmatrix} 1 & \circ & \circ & \circ & 5 \\ 0 & \circ & \circ & \circ & \circ \\ 0 & \circ & \circ & \circ & \circ \\ 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 \\ 0 & 0 &$
---

Pin#	Signal Name
1	DCD# (Data Carrier Detect)
2	RXD (Received Data)
3	TXD (Transmit Data)
4	DTR (Data Terminal Ready)
5	Ground
6	DSR (Data Set Ready)
7	RTS (Request To Send)
8	CTS (Clear To Send)
9	JP6 Setting:
	Pin1-2: RI (Ring Indicator) (default)
	Pin3-4: 5V Standby power (option)

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COM\_6 (option, SBC-7110/COM3):

(2.0mm Pitch 2X5 Pin Header), COM6 Port, up to one standard RS232 port are provided. They can be used directly via COM cable connection.

Signal Name	Pin#	Pin#	Signal Name
DCD	1	2	RXD
TXD	3	4	DTR
Ground	5	6	DSR
RTS	7	8	CTS
JP6 Setting:	9	10	NC
RI/5V/12V			

# 45. TB-528C1U2P1/TB-528C1U2 (option):

SBC-7110 Riser Card, TB-528C1U2P1 CN3 connect to SBC-7110 CN3 pin Header. TB-528C1U2P1 Top:



# CN3:

(1.27mm Pitch 2X30 Pin Header), connect to SBC-7110 CN3 pin Header.

# M-PCIE1:

(Socket 52Pin), mini PCIe socket, it is located at the top, it supports mini PCIe devices with Smbus, SIM and PCIe signal. MPCIe card size is 30x30mm or 30x50.95mm.

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Signal Name	Function support
PCIe 1X	Yes
USB2.0 (USB3)	NC (option)
SMBus	Yes
SIM	Yes

# H1/H2:

MPCIE1 SCREW HOLES, H2 for mini PCIE card (30mmx30mm) assemble. H1 for mini PCIE card (30mmx50.95mm) assemble.

#### LED1:

Mini PCIe devices LED Status.

SIM1 (option) : (SIM Socket 6 Pin), Support SIM Card devices.

#### PS\_ON1:

(2.0mm Pitch 1X2 Pin Wafer), ATX Power and Auto Power on jumper setting.

PS_ON	Mode	
Close 1-2	Auto Power on (Default)	
Open 1-2	ATX Power	

PS\_ON2 (option) :

(2.0mm Pitch 1X2 Pin Wafer).

### PS2:

(2.0mm Pitch 1X6 Pin Wafer), PS/2 keyboard and mouse port, the port can be connected to PS/2 keyboard or mouse via a dedicated cable for direct used.

Pin#	Signal Name
1	KBDATA
2	MSDATA
3	Ground
4	+5V
5	KBCLK

6	MSCLK
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GPIO1:

(2.0mm Pitch 2x5 Pin Header), General-purpose input/output port, it provides a group of self-programming interfaces to customers for flexible use.

Signal Name	Pin#	Pin#	Signal Name
Ground	1	2	NC
NC	3	4	SMB_DATA_R
SMB_CLK_R	5	6	PCH-GPIO56
PCH-GPIO57	7	8	PCH-GPIO59
PCH-GPIO58	9	10	+5V

### USB23(SBC-7110 USB3/USB4):

(Double stack USB type A), Rear USB connector, it provides up to 2 USB2.0 ports, speed up to 480Mb/s.



USB\_23 (option) :

(2.0mm Pitch 2x5 Pin Header), Front USB connector, it provides one USB port via a dedicated USB cable, speed up to 480Mb/s.

Signal Name	Pin#	Pin#	Signal Name
5V_USB23	1	2	5V_USB23
USB4_N	3	4	USB3_N
USB4_P	5	6	USB3_P
Ground	7	8	Ground
NC	9	10	Ground



Note: Before connection, make sure that pinout of the USB Cable is in accordance with that of the said tables. Any inconformity may cause system down and even hardware damages.

JP5:

(2.0mm Pitch 2x3 Pin Header), COM5 setting jumper, pin 1~6 are used to select signal out of pin 9 of COM5 port.

JP3 Pin#	Function		
Close 1-2	RI (Ring Indicator)	(default)	
Close 3-4	COM5 Pin9: +5V	(option)	
Close 5-6	COM5 Pin9: +12V	(option)	

# COM5(SBC-7110/COM3):

(Type DB9), serial port, standard DB9 serial port is provided to make a direct connection to serial devices. COM5 port is controlled by pins No.1~6 of JP5, select output Signal RI or 5V or 12v, For details, please refer to description of JP3.



(			
Pin#	Signal Name		
1	DCD# (Data Carrier Detect)		
2	RXD (Received Data)		
3	TXD (Transmit Data)		
4	DTR (Data Terminal Ready)		
5	Ground		
6	DSR (Data Set Ready)		
7	RTS (Request To Send)		
8	CTS (Clear To Send)		
9	JP5 Setting:		
	Pin1-2: RI (Ring Indicator) (default)		
	Pin3-4: 5V Standby power (option)		
	Pin5-6: 12V Standby power (option)		

#### JP6:

(2.0mm Pitch 2x3 Pin Header), COM6 setting jumper, pin 1~6 are used to select signal out of pin 9 of COM6 port.

JP3 Pin#	Function		
Close 1-2	RI (Ring Indicator)	(default)	
Close 3-4	COM6 Pin9: +5V	(option)	
Close 5-6	COM6 Pin9: +12V	(option)	

#### COM6(SBC-7110/COM4):

(Type DB9), serial port, standard DB9 serial port is provided to make a direct connection to serial devices. COM6 port is controlled by pins No.1~6 of JP6, select output Signal RI or 5V or 12v, For details, please refer to description of JP6.

Pin#	Signal Name
1	DCD# (Data Carrier Detect)
2	RXD (Received Data)
3	TXD (Transmit Data)
4	DTR (Data Terminal Ready)
5	Ground
6	DSR (Data Set Ready)
7	RTS (Request To Send)
8	CTS (Clear To Send)
9	JP6 Setting:
	Pin1-2: RI (Ring Indicator) (default)
	Pin3-4: 5V Standby power (option)
	Pin5-6: 12V Standby power (option)

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#### S1:

PWR BT: POWER on/off Button, They are used to connect power switch button. The two pins are disconnected under normal condition. You may short them temporarily to realize system startup & shutdown or awaken the system from sleep state.

PWR LED: POWER LED status.

S1	Model		
Yes	TB-528C1U2P1		
No	TB-528C1U2		

#### 46. TB -528CAN2 R0.10 (option)

SBC-7110 Riser Card, TB-528CAN2 CN3 connect to SBC-7110 CN3 pin Header. It provides two CAN-bus Interface. TB-528CAN2 Top:



### CN3:

(1.27mm Pitch 2X30 Pin Header), connect to SBC-7110 CN3 pin Header.

#### M-PCIE1:

(Socket 52Pin), mini PCIe socket, it is located at the top, it supports mini PCIe devices with Smbus, USB2.0,SIM and PCIe signal. MPCIe card size is 30x30mm or 30x50.95mm.

Signal Name	Function support	
PCIe 1X	Yes	
USB2.0 (USB2)	Yes	
SMBus	Yes	
SIM	Yes	

#### H1/H2:

MPCIE1 SCREW HOLES, H2 for mini PCIE card (30mmx30mm) assemble. H1 for mini PCIE card (30mmx50.95mm) assemble.

#### LED1 :

Mini PCIe devices LED Status.

SIM1 (option) :

(SIM Socket 6 Pin), Support SIM Card devices.

#### PS2 :

(2.0mm Pitch 1X6 Pin Wafer), PS/2 keyboard and mouse port, the port can be connected to PS/2 keyboard or mouse via a dedicated cable for direct used.

Pin#	Signal Name		
1	KBDATA		
2	MSDATA		
3	Ground		
4	+5V		
5	KBCLK		
6	MSCLK		

#### USB\_IN (option) :

(2.0mm Pitch 2x5 Pin Header) ,Front USB connector, it provides two USB port via a dedicated USB cable, speed up to 480Mb/s.

Signal Name	Pin#	Pin#	Signal Name
5V_USB34	1	2	5V_USB34
NC (USB4_N)	3	4	NC (USB3_N)
NC (USB4_P)	5	6	NC (USB3_P)
Ground	7	8	Ground
NC	9	10	Ground



Note:

Before connection, make sure that pinout of the USB Cable is in accordance with that of the said tables. Any inconformity may cause system down and even hardware damages.

### JP\_SET (option) :

(2.0mm Pitch 2x5 Pin Header).

Signal Name	Pin#	Pin#	Signal Name
3P3V_S5_USB	1	2	3P3V_S5
3P3V_S5_USB	3	4	3P3V_S5
3P3V_S5_USB	5	6	3P3V_S5
PSON_ATX	7	8	Ground
PSON_ATX	9	10	Ground

# JP6:

(2.0mm Pitch 2x3 Pin Header), COM6 setting jumper, pin 1~6 are used to select signal out of pin 9 of COM6 port.

JP3 Pin#	Function	
Close 1-2	RI (Ring Indicator)	(default)
Close 3-4	COM6 Pin9: +5V	(option)
Close 5-6	COM6 Pin9: +12V	(option)

### COM6(SBC-7110/COM4):

(2.0mm Pitch 2X5 Pin Header), COM6 Port, up to one standard RS232 port are provided. They can be used directly via COM cable connection.

Signal Name	Pin#	Pin#	Signal Name
DCD	1	2	RXD
TXD	3	4	DTR
Ground	5	6	DSR
RTS	7	8	CTS
JP6 Setting:	9	10	NC
RI/5V/12V			

# COM5(SBC-7110/COM3):

(2.0mm Pitch 2X5 Pin Header), COM5 Port, up to one standard RS232 port are provided. They can be used directly via COM cable connection.

Signal Name	Pin#	Pin#	Signal Name
DCD	1	2	RXD
TXD	3	4	DTR
Ground	5	6	DSR
RTS	7	8	CTS

RI	9	10	NC
----	---	----	----

GPIO1:

(2.0mm Pitch 2x5 Pin Header), General-purpose input/output port, it provides a group of self-programming interfaces to customers for flexible use.

Signal Name	Pin#	Pin#	Signal Name
Ground	1	2	NC
NC	3	4	SMB_DATA_R
SMB_CLK_R	5	6	PCH-GPIO56
PCH-GPIO57	7	8	PCH-GPIO59
PCH-GPIO58	9	10	+5V

JTAG:

(2.0mm Pitch 2x5 Pin Header), Reserve.

JP1:

(2.0mm Pitch 1x2 Pin Header), Reserve.

# JP2:

(2.0mm Pitch 1x2 Pin Header), Reserve.

#### CAN1/CAN2:

(3.5mm Pitch 1x10 Pin connector), it provides two CAN-bus Interface.

Pin#	Channel	Signal Name	Function		
1		CANL2	CAN bus Signal L		
2		R2-	Terminal resistor R-(internally connected to CANL2)		
3	CAN2	FG	Shield cable (FG)		
4		R2+	Terminal resistor R+(internally connected to CANH2)		
5		CANH2	CAN bus Signal H		
6		CANL1	CAN bus Signal L		
7		R1-	Terminal resistor R-(internally connected to CANL1)		
8	CAN1	FG	Shield cable (FG)		
9		R1+	Terminal resistor R+(internally connected to CANH1)		
10		CANH1	CAN bus Signal H		

[See TB-528AN2 Manual]

#### 47. TB-528U2 (option)

SBC-7110 Riser Card, TB-528U2 CN3 connect to SBC-7110 CN3 pin Header.

TB-528U2 Top:





(1.27mm Pitch 2X30 Pin Header), connect to SBC-7110 CN3 pin Header.

# USB23(SBC-7110 USB3/USB4):

(Double stack USB type A), Rear USB connector, it provides up to 2 USB2.0 ports, speed up to 480Mb/s.



# Chapter 3 BIOS Setup

# 3.1 Operations after POST Screen

After CMOS discharge or BIOS flashing operation, press [Delete] key to enter CMOS Setup.



After optimizing and exiting CMOS Setup, the POST screen displayed for the first time is as follows and includes basic information on BIOS, CPU, memory, and storage devices.

# 3.2 BIOS Setup Utility

Press [Delete] key to enter BIOS Setup utility during POST, and then a main menu containing system summary information will appear.

# 3.3 Main Settings

Aptio Setup Utility – Copyright (C) 2015 American Megatrends, Inc.						
Main	Advanced	Chipset	Security	Boot	Save & Exit	
BIOS	Information				Choose the system default	
BIOS	Vendor	Ame	rican Megatro	ends	Language	
Core \	/ersion	4.6.5	.4			
Compl	liancy	UEF	2.3.1; PI 1.2	2		
Projec	t Version	7110	V 0.08 x64			
Build (	Date and Time	01/05	/2015 10:27:	48		
Syster	n Language	[Engl	ish]			
Syster	n Date	[Thu	01/01/2009]			
Syster	n Time	[00:0	0:18]			
Acces	s Level	Adm	Administrator			
					→ -: Select Screen	
					↑↓ : Select Item	
					Enter: Select	
					+/- : Charge Opt.	
					F1 : General Help	
					F2: Previous Values	
				F3:Optimized Defaults		
					F4:Save and Exit	
					ESC Exit	
	Version 2.17.	1246. Cop	right (C) 20	15 America	an Megatrends , Inc.	

System Time:

Set the system time, the time format is:

Hour :	0 to 23
Minute :	0 to 59
Second :	0 to 59

System Date:

Set the system date, the date format is:

Day: Note that the 'Day' automatically changes when you set the date.

Month:	01 to 12
Date:	01 to 31
Year:	1998 to 2099

# 3.4 Advanced Settings

Aptio Setup Utility – Copyright (C) 2015 American Megatrends, Inc.					
Main	Advanced	Chipset	Security	Boot	Save & Exit
a					System ACPI Parameters.
ACPI Se	ettings				
CPU Co	nfiguration				
SATA C	onfiguration				
USB Co	nfiguration				
Super IC	O Configuration	n			
F81216	Second Supe	r IO Configu	ration		
Intel (R	) 82574L Gig	abit Network	Configuration-	70:B3:D5:E7	40
Intel (R	) 82574L Gig	abit Network	Configuration-	70:B3:D5:E7	4
					14.
					→ —: Select Screen
					11 : Select Item
					Enter: Select
					+/- : Charge Opt.
					F1 : General Help
					F2: Previous Values
					F3:Optimized Defaults
					F4:Save and Exit
					ESC Exit
	Version	2.17.1246. 0	opyright (C) 2	015 America	n Megatrends , Inc.

3.4.1 ACPI Settings

Enable ACPI Auto Conf:

	[Disabled]	
	[Enabled]	
Enable Hibernation:		
	[Enabled]	
	[Disabled]	
ACPI Sleep State:		
	[S1 only (CPU Stop Clock) ]	
	[S3 (Suspend to RAM)]	
	[Suspend Disabled]	
	[Both S1 and S3 available for OS to	choose from]
Lock Legacy Resources:		
	[Disabled]	
	[Enabled]	
		57

S3 Video Repost:

[Disabled]

[Enabled]

ACPI Low Power SO Idle:

[Disabled] [Enabled]

3.4.2 CPU Configuration

Intel(R) Core(TM) i5-4310	U @ 2.00GHz	
CPU Signature	40651	
Processor Family	6	
Microcode Patch	17	
FSB Speed	100 MHz	
Max CPU Speed	2000 MHz	
Mix CPU Speed	800 MHz	
CPU Speed	2400 MHz	
Processor Cores	2	
Intel HT Technology	Supported	
Intel HT-X Technology	Supported	
Intel SMX Technology	Supported	
64-bit	Supported	
EIST Technology	Supported	
CPU C3 State	Supported	
CPU C6 State	Supported	
CPU C7 State	Supported	
L1 Date Cache	32KB x 2	
L1 Code Cache	32KB x 2	
L2 Cache	256KB x 2	
L3 Cache	3072KB	
Hyper-threading	[Enabled]	
Active Processor Cores	[Enabled]	
Overclocking lock	[AII]	
Limit CPUID Maximum	[Disabled]	
Execute Disabled Bit [En	abled]	
Intel Virtualization Techno	ology [Enabled]	
Hardware Prefetcher	[Enabled]	
Asjacent Cache Line Prefe	tch [Enabled]	
CPU AES	[Enabled]	
Boot Performance mode [	Turbo Performance]	

EIST	[Enabled]
Turbo Mode	[Enabled]

.....

# 3.4.3 SATA Configuration

SATA Configuration(S)	
	[Enabled]
	[Disabled]
SATA Mode Selection	
	[AHCI]
	[RAID]
SATA Test Mode	
	[Disabled]
	[Enabled]
Aggressive LPM Support	
	[Enabled]
	[Disabled]
SATA Controller Speed	
	[Default]
	[Gen1]
	[Gen2]
	[Gen3]

# Software Feature Mask Configuration

Serial ATA Port 0	Empty
Software Preserve	Unknown

Serial ATA Port 1 Empty Software Preserve Unknown

# 3.4.4 USB Configuration

USB Configuration USB Module Version 8.10.31 USB Devices: 1 Keyboard, 1 Mouse, 1 Hubs Legacy USB Support:

		[Disabled]
	XHCI Hand-off:	
		[Enabled]
		[Disabled]
	EHCI Hand-off:	
		[Disabled]
		[Enabled]
	USB Mass Storage Driver	Support
		[Enabled]
		[Disabled]
	USB hardware delays and	time-outs:
	USB transfer time-out:	
		[20 sec]
		[10 sec]
		[5 sec]
		[1 sec]
	Device reset time-out:	
		[20 sec]
		[10 sec]
		[30 sec]
		[40 sec]
	Device power-up delay	
		[Auto]
		[Manual]
3.4.5 Super IO Config	guration	
	Super IO chip	IT8518/IT8519
	Serial Port 0 Configuration	n (COM5)
	Device Mode Select	ion:
		[RS-485]
		[RS-422]
	Serial Port 1 Configuration	n (COM6)
	Device Mode Select	tion:

[RS-485]

[RS-422]

3.4.6 F81216 Second Super IO Configuration Super IO chip F81216 Second IO Serial Port 0 Configuration UART1 Mode Selection: [RS-232] [RS-485] [RS-422] Serial Port 1 Configuration **Change Settings** [Auto] Serial Port 2 Configuration **Change Settings** [Auto] Serial Port 3 Configuration **Change Settings** [Auto]

3.4.7 Intel (R) 82574L Gigabit Network Configuration-70:B3:D5:E7

3.4.8 Intel (R) 82574L Gigabit Network Configuration-70:B3:D5:E7

# 3.5 Chipset Settings

Aptio Setup Utility – Copyright (C) 2015 American Megatrends, Inc.					
Main A	dvanced	Chipset	Security	Boot	Save & Exit
					PCH Parameters
PCH-IO Co	nfiguration				
System Age	ent (SA)	Configuration	า		
					→←: Select Screen
					↑↓ : Select Item
					Enter: Select
					+/- : Charge Opt.
			F1 : General Help		
					F2: Previous Values
					F3:Optimized Defaults
					F4:Save and Exit
					ESC Exit
Version 2.17.1246. Copyright (C) 2015 American Megatrends , Inc.					

# 3.5.1 PCH-IO Configuration

Intel PCH RC Version	1.8.0.0
Intel PCH SKU Name	Premium SKU
Intel PCH Rev ID	04/B2

# PCH Express Configuration

PCI Express Clock Gating	[Enabled]
DMI Link ASPM Control	[Enabled]
DMI Link Extended Synch	Control [Disabled]
PCIe-USB Glitch W/A	[Disabled]
PCIE Root Port Function S	Swapping [Disabled]
Subtractive Decode	[Disabled]
PCI Express Root Port 1	
PCI Express Root Port 2	
PCI Express Root Port 3	
PCI Express Root Port 4	
PCI Express Root Port 5	
PCI Express Root Port 6	

USB Configuration

USB Precondition	[Disabled]
XHCI Mode	
XHCI Idle L1	
BTCG	
USB Ports Per-Port Disabled Control	[Disabled]
Restore AC Power Loss	[Power off]

# 3.6 Boot Settings

Aptio Setup Utility – Copyright (C) 2015 American Megatrends, Inc.				
Main Advanced	Chipset	Boot	Security	Save & Exit
Boot Configuration				Number of seconds toWait for
Setup Prompt Timeou	ıt			Setup Activation key.
Bootup Numlock State	e (	On]		65535(0xFFFF)means Indef
and the second sec				inite waiting.
Quiet Boot	[	Disabled]		
Fast Boot	[	Enabled]		
Boot Option Priorities				
Boot Option #1	I	UEFI:Built-ir	n EFI]	
				→ —: Select Screen
				↑↓ : Select Item
				Enter: Select
				+/- : Charge Opt.
				F1 : General Help
				F2: Previous Values
				F3:Optimized Defaults
				F4:Save and Exit
				ESC Exit
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3.6.1 Administrator Password



3.6.2 User Password

Create New Password –

Type the password with up to 20 characters and then press *<*Enter*>* key. This will clear all previously typed CMOS passwords. You will be requested to confirm the password. Type the password again and press *<* Enter*>* key. You may press Esc*>* key to abandon password entry operation.

To clear the password, just press  $\blacktriangleleft$  nter > key when password input window pops

up. A confirmation message will be shown on the screen as to whether the password will be disabled. You will have direct access to BIOS setup without typing any password after system reboot once the password is disabled.

Once the password feature is used, you will be requested to type the password each time you enter BIOS setup. This will prevent unauthorized persons from changing your system configurations.

Also, the feature is capable of requesting users to enter the password prior to system boot to control unauthorized access to your computer. Users may enable the feature in Security Option of Advanced BIOS Features. If Security Option is set to System, you will be requested to enter the password before system boot and when entering BIOS setup; if Security Option is set to Setup, you will be requested for password for entering BIOS setup.



# **3.7 Security Settings**

**Bootup Numlock State** 

	[On]
	[off]
Quiet Boot	
	[Disabled]
	[Enabled]
Fast Boot	
	[Disabled]
	[Enabled]
<b>Boot Option Priorities</b>	
Boot Option #1	
	Sets the system boot order
Hard Drive BBS Priorities	[SATA PM:*** ]
	Boot Option #1
	SATA PM:***
	****
	Disabled

# 3.8 Save & Exit Settings

Aptio Setup Utility – Copyright (C) 2015 American Megatrends, Inc.					
Main	Advanced	Chipset	Boot	Security	Save & Exit
Save	Changes and	Exit			Exit system setup after
Disca	ard Changes ar	nd Exit			Saving the changes.
Save	Changes and	Reset			
Disca	ard Changes ar	nd Reset			
Save	Options				
Save	Changes				
Disca	ard Changes				
Rest	ore Defaults				→  —: Select Screen
Save	user Defaults				↑↓ : Select Item
Rest	ore user Defaul	ts			Enter: Select
					+/- : Charge Opt.
Boot	Override				F1 : General Help
UEFI	Built-in EFI Sh	ell			F2: Previous Values
					F3:Optimized Defaults
					F4:Save and Exit
					ESC Exit
	Version 2.17	.1246. Copy	right (C) 2	015 American	Megatrends , Inc.

Save Changes and Exit	
Save & Exit Setup save Configuration and exit ?	
	[Yes]
	[No]
Discard Changes and Ext	
Exit Without Saving Quit without saving?	
	[Yes]
	[No]
Save Changes and Reset	
Save & reset Save Configuration and reset?	
	[Yes]
	[No]
Discard Changes and Reset	[10]
Poset Without Saving Poset without saving?	
Reset without saving Reset without saving:	[Voc]
	[res]
	נואסן
Save Changes	
Save Setup Values Save configuration?	
	[Yes]
	[No]
Discard Changes	
Load Previous Values Load Previous Values?	
	[Yes]
	[No]
Restore Defaults	
Load Optimized Defaults Load optimized Defaults	;?
	[Yes]
	[No]
Save user Defaults	
Save Values as User Defaults Save configuration?	
	[Yes]
	[No]
Restore user Defaults	-
Restore User Defaults Restore User Defaults?	
	[Yes]
	[No]

# Chapter 4 Installation of Drivers

This chapter describes the installation procedures for software and drivers under the windows 7. The software and drivers are included with the motherboard. The contents include Intel CORE TM SoC chipset driver, VGA driver, LAN drivers, Audio driver, USB 3.0 Driver, Intel<sup>®</sup> MEI Driver Installation instructions are given below.

Important Note:

After installing your Windows operating system, you must install first the Intel Chipset Software Installation Utility before proceeding with the installation of drivers.



# 4.1 Intel(R) CORE TM SoC Chipset

To install the Intel chipset driver, please follow the steps below. Step 1. Select Intel (R) CORE TM SoC Chipset from the list



Step 2. Click Next to setup program.



Step 3. Read the license agreement. Click Accept to accept all of the terms of the license agreement.



Step 4. Click Install to begin the installation.



Step 5. Click Finish to complete the setup process.

Intel(R) Chipset Device Software Completion	(intel)
You have successfully installed the following product:	
Intel(R) Chipset Device Software	
Press Finish to complete the setup process.	
View Log Files	
	Finish

# 4.2 Intel(R) VGA Chipset

To install the VGA drivers, follow the steps below to proceed with the installation.

Step 1.Select Intel(R) VGA Chipset from the list.

Drivers CD Industria	al Pan winz - d		CBIU
	DRIVERS	Intel(R) CORE TM SoC Chipse Intel(R) VGA 'Chipsel Intel(R) 82574L LAN Driver Realtek ALC662 HD Audio D USB 3.0 Driver Touch Panel Driver Intel(R) MEI Driver	et Priver
	OTHERS	User Manual	
		Vi	ew EXIT

# Step 2. Click Automatically run WinSAT and enable the Windows Aero desktop theme(if supported). Click Next.

Intel® Installation Framework	
Intel® Graphics Driver	
Welcome to the Setup Program	(intel)
This setup program will install the following components: - Intel® Graphics Driver - Intel® Display Audio Driver	
It is strongly recommended that you exit all programs before contin	nuing. Click Next to continue.
Automatically run WinSAT and enable the Windows Aero deskto	op theme (if supported).
< <u>B</u> ack	Next > Cancel

Step 3. Read license agreement. Click Yes.
Intel® Installation Framework		
Intel® Graphics Driver		
License Agreement	Ú	tel
You must accept all of the terms of the license agreement program. Do you accept the terms?	in order to continue the setu	p
INTEL SOFTWARE LICENSE AGREEMENT (OEM / IHV / ISV	/ Distribution & Single User)	*
IMPORTANT - READ BEFORE COPYING, INSTALLING OR I	USING.	
Do not use or load this software and any associated mate until you have carefully read the following terms and con Software, you agree to the terms of this Agreement. If y	erials (collectively, the "Softw ditions. By loading or using th you do not wish to so agree, o	are") e lo not
install or use the Software.		
Please Also Note:	• J J J J J	25
<ul> <li>If you are an Original Equipment Manufacturer (OEM), J (IHV), or Independent Software Vendor (ISV), this complet * If you are an End-User, then only Exhibit A, the INTEL</li> </ul>	ete LICENSE AGREEMENT app SOFTWARE LICENSE AGREEM	or blies; 1ENT, *
< 5	Back Yes	No
	Intel® Installatio	n Framework

### Step 4. Click Next to continue.

tel® Installation Framework	
ntel® Graphics Driver Readme File Information	intel
Refer to the Readme file below to view the system require README FILE Release Version: Production Version	ements and installation information.
Driver Version: 15.33.22.3621 Operating System(s): Microsoft Windows* 7 Microsoft Windows* 8 Microsoft Windows* 8.1	
ا < <u>8</u>	ack Next > Cancel

Step 5. Click Next to continue.

Intel® Graphics Driver         etup Progress         Please wait while the following setup operations are performed:         Copying File: C: \Windows\system32\difxapi.dll         Deleting Registry Key: HKLM\SOFTWARE \Microsoft\Windows\CurrentVersion\Uninstall\HDMI         Deleting Registry Key: HKLM\SOFTWARE \Intel\IGDI         Deleting File: C: \ProgramData \Microsoft\Windows\Start Menu\Programs\Intel\Intel(R) HD Graphics I         Deleting File: C: \ProgramData \Microsoft\Windows\Start Menu\Programs\Intel\Intel(R) Graphics and         Deleting File: C: \ProgramData \Microsoft\Windows\Start Menu\Programs\Intel\Intel(R) Iris(TM)         Deleting File: C: \Users\Public\Desktop\Intel(R) IFIS(TM) Graphics Control Panel.Ink         Deleting File: C: \Users\Public\Desktop\Intel(R) Iris(TM) Graphics Control Panel.Ink         Click Next to continue.       Teix(TM) Graphics Control Panel.Ink <th></th> <th></th> <th></th>			
Please wait while the following setup operations are performed: Copying File: C:\Windows\system32\difxapi.dll Deleting Registry Key: HKLM\SOFTWARE\Microsoft\Windows\CurrentVersion\Uninstall\HDMI Deleting Registry Key: HKLM\SOFTWARE\Intel\IGDI Deleting File: C:\ProgramData\Microsoft\Windows\Start Menu\Programs\Intel\Intel(R) HD Graphics Deleting File: C:\ProgramData\Microsoft\Windows\Start Menu\Programs\Intel\Intel(R) HD Graphics Deleting File: C:\ProgramData\Microsoft\Windows\Start Menu\Programs\Intel\Intel(R) Graphics Deleting File: C:\ProgramData\Microsoft\Windows\Start Menu\Programs\Intel\Intel(R) Graphics Deleting File: C:\ProgramData\Microsoft\Windows\Start Menu\Programs\Intel\Intel(R) Graphic Deleting File: C:\ProgramData\Microsoft\Windows\Start Menu\Programs\Intel\Intel(R) Iris(TM) Deleting File: C:\Users\Public\Desktop\Intel(R) Iris(TM) Graphics Control Panel.lnk Eleting File: C:\Users\Public\Desktop\Intel(R) Iris(TM) Graphics Control Panel.lnk Click Next to continue.	ntel® Graphics Driver etup Progress	(intel)	
Copying File: C: \Windows\system32\difxapi.dll Deleting Registry Key: HKLM\SOFTWARE\Microsoft\Windows\CurrentVersion\Uninstall\HDMI Deleting Registry Key: HKLM\SOFTWARE\Intel\IGDI Deleting File: C: \ProgramData\Microsoft\Windows\Start Menu\Programs\Intel\Intel(R) HD Graphics I Deleting File: C: \ProgramData\Microsoft\Windows\Start Menu\Programs\Intel(R) HD Graphics I Deleting File: C: \ProgramData\Microsoft\Windows\Start Menu\Programs\Intel(R) Graphics I Deleting File: C: \ProgramData\Microsoft\Windows\Start Menu\Programs\Intel(R) Graphics I Deleting File: C: \ProgramData\Microsoft\Windows\Start Menu\Programs\Intel(R) Graphics I Deleting File: C: \ProgramData\Microsoft\Windows\Start Menu\Programs\Intel\Intel(R) Graphic Deleting File: C: \ProgramData\Microsoft\Windows\Start Menu\Programs\Intel\Intel(R) Iris(TM) Deleting File: C: \ProgramData\Microsoft\Windows\Start Menu\Programs\Intel\Intel(R) Iris(TM) Deleting File: C: \Users\Public\Desktop\Intel(R) Iris(TM) Graphics Control Panel.lnk Eleting File: C: \Users\Public\Desktop\Intel(R) Iris(TM) Graphics Control Panel.lnk	lease wait while the following setup operations a	re performed:	
	Copying File: C: \Windows\system32\difxapi.dll Deleting Registry Key: HKLM\SOFTWARE\Microso Deleting Registry Key: HKLM\SOFTWARE\Intel\IG Deleting File: C: \ProgramData\Microsoft\Windows Deleting File: C: \ProgramData\Microsoft\Windows	oft\Windows\CurrentVersion\Uninstall\HDMI GDI s\Start Menu\Programs\Intel\Intel(R) HD Grap s\Start Menu\Programs\Intel(R) HD Graphics i s\Start Menu\Programs\Intel(R) Graphics and s\Start Menu\Programs\Intel\Intel(R) Graphic D Graphics Control Panel.Ink s\Start Menu\Programs\Intel\Intel(R) Iris(TM) is(TM) Graphics Control Panel.Ink	•

# Step 6. Select Yes, I want to restart this computer now. Then click Finish to complete the installation.



# 4.3 Intel(R) LAN Driver

To install the Intel (R) LAN driver, please follow the steps below. Step 1. Select Intel(R) 82574L LAN Driver from the list.

Drivers CD Industria	al Par		
	WIN7 - D DRIVERS	Intel(R) CORE TM SoC Chipset Intel(R) VGA Chipset Intel(R) VGA Chipset Intel(R) 82574L LAW Driver Realtek ALC662 HD Audio Driv USB 3.0 Driver Touch Panel Driver Intel(R) MEL Driver	ver e
	OTHERS	User Manual	
		View	EXIT

Step 2. . Click Next.



Step 3. Read license agreement. Click I accept the terms in the license agreement.

Click Next.	
時 Intel(R) Network Connections Install Wizard	<b>-</b> ×-
License Agreement Please read the following license agreement carefully.	(intel)
INTEL SOFTWARE LICENSE AGREEMENT IMPORTANT - READ BEFORE COPYING, INSTALLING OR USING. Do not copy, install, or use this software and any associated materials (collectively, the "Software") provided under this license agreement ("Agreement") until you have carefully read the following terms and con By copying, installing, or otherwise using the Software, you agree to be to the terms of this Agreement. If you do not agree to the terms of this Agreement.	ditions. bound by eement,
I accept the terms in the license agreement     I do not accept the terms in the license agreement	Print
< <u>B</u> ack <u>N</u> ext >	Cancel

Step 4. Click Next to continue.

Intel(R) Network Connections Install Wizard	
Setup Options Select the program features you want installed.	(intel)
Install:	
< <u>B</u> ack	Next > Cancel

Step 5. Click Install to begin the installation.

岃 Intel(R) Network Connections Install Wizard	<b>—</b> ×-
Ready to Install the Program	(intel)
The wizard is ready to begin installation.	
Click Install to begin the installation.	
If you want to review or change any of your installation settings, dick Back. Click exit the wizard.	Cancel to
< <u>B</u> ack Install	Cancel

#### Step 6. Click Finish to exit the wizard.



## 4.4 Realtek ALC662 HD Audio Driver

To install the Realtek ALC662 HD Audio Driver, please follow the steps below. Step 1. Select Realtek AL662 HD Audio Driver from the list

Drivers CD Industrial	Pan	el PG	CBIO	
WI	N7 - D	RIVER		_
DR	IVERS	Intel(R) CORE TM SoC Chip Intel(R) VGA Chipset Intel(R) 82574L LAN Driv Realtel: AUGRE2 IID Audr USB 3.0 Driver Touch Panel Driver Intel(R) MEI Driver	iset Ier (Diswar	Ð
от	HERS	User Manual		
			View	EXIT

Step 2. Click Next to continue.



Step 3. Click Yes, I want to restart my computer now. Click Finish to complete the installation.



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## 4.5 USB 3.0 Driver

To install the USB 3.0 Driver, please follow the steps below.

Step 1. Select USB 3.0 Driver from the list







Step 3. Read the license agreement. Then click Yes to continue.

tel® Installation Framework				×
Intel® USB 3.0 eXtensible H	lost Controlle	r Driver		
icense Agreement			(intel	)
You must accept all of the terms of the licens program. Do you accept the terms?	e agreement in order	to continue	the setup	
INTEL SOFTWARE LICENSE AGREEMENT (OF IMPORTANT - READ BEFORE COPYING, INS' Do not use or load this software and any ass until you have carefully read the following to Software, you agree to the terms of this Ag	EM / IHV / ISV Distribu TALLING OR USING. sociated materials (co erms and conditions. E reement. If you do no	tion & Single llectively, the by loading or ot wish to so	User) : "Software") using the agree, do not	Â
Please Also Note: * If you are an Original Equipment Manufact (IHV), or Independent Software Vendor (ISV * If you are an End-User, then only Exhibit /	turer (OEM), Independ /), this complete LICE A, the INTEL SOFTWA	dent Hardwar NSE AGREEM NRE LICENSE	e Vendor ENT applies; AGREEMENT,	÷
	< <u>B</u> ack	Yes	No	
		— Intel® Ir	nstallation Fram	neworl

## Step 4. Click Next to continue.

ntel® Installation Framework			
Intel® USB 3.0 eXtensible H Readme File Information	lost Controlle	r Driver (	intel
Refer to the Readme file below to view the s  ***** WARNING ***** Do not run this driver's installer (Setup.exe) device (ie. external USB hard drive or USB t installation, please copy driver files to a loca and run from there.  * * * Production Version Releases	system requirements a from a USB storage humb drive). For prop al hard drive folder	er	nformation.
* Microsoft Windows* 7 *			÷
	< Back	Next >	Cancel
		— Intel® Inst	allation Framework

Step 5. Click Next to continue.

tel® Installation Framework	
ntel® USB 3.0 eXtensible	Host Controller Driver
Setup Progress	inter
Please wait while the following setup ope	rations are performed:
Copying File: C:\Program Files\Intel\Inte Copying File: C:\Program File: C:\Program Files\Intel\Inte Copying File: C:\Program File: C:\Progr	el(R) USB 3.0 eXtensible Host Controller Driver \Applica el(R) USB 3.0 eX
<	
	Next >
	Intel® Installation Framework

Step 6. Select Yes, I want to restart this computer now. Then click Finish to complete





# 4.6 Intel(R) MEI Driver

To install the Intel(R) MEI Driver, please follow the steps below. Step 1. Select Intel(R) MEI Driver from the list.







Step 3. Read the License Agreement and then click Yes to continue.

ntel® Installation Framework		(	00	×
Intel® Management Engine Con	nponents			s
License Agreement			Intel	
You must accept all of the terms of the license agre program. Do you accept the terms?	ement in order to o	continue the	e setup	1
INTEL SOFTWARE LICENSE AGREEMENT (OEM / IH	V / ISV Distribution	& Single Us	ser)	*
IMPORTANT - READ BEFORE COPYING, INSTALLIN Do not use or load this software and any associate until you have carefully read the following terms ar Software, you agree to the terms of this Agreemen install or use the Software.	G OR USING, d materials (collect nd conditions, By lo nt, If you do not w	ively, the "s ading or usi ish to so ag	Software") ing the ree, do not	
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	< Back	Yes	No	
		Intel® Inst	allation Fram	ework

### Step 4. Click Next to continue.

tel® Installa intel® N	ation Framework Aanagement	Engine Components	
Setup Pro	ogress		(intel)
Please wait	while the following se	etup operations are performed:	
Creating Pr Creating Pr Copying File Creating Pr Deleting File Creating Pr Creating Pr Creating Pr Deleting File Click Next t	ocess: regsvr32.exe ocess: regsvr32.exe e: C:\Windows\syste ocess: C: \Program Files\I e: C:\Program Files\I e: C:\Program Files\I ocess: C:\Program Fi ocess: C:\Program Fi ocess: C:\Program Files\I o continue.	m32\drivers\IntelMEFWVer.dll iles\Intel\Intel(R) Management Engine Com ntel\Intel(R) Management Engine Compone intel\Intel(R) Management Engine Com iles\Intel\Intel(R) Management Engine Com iles\Intel\Intel(R) Management Engine Com ntel\Intel(R) Management Engine Compone	ponents \FWService nts \FWService \Inte nts \FWService \Inte ponents \FWService ponents \FWService nts \FWService \Inte mts \FWService \Inte
< 10	III		P
		Iotel	<u>N</u> ext >

# Step 5. Select Yes, I want to restart this computer now. Then click Finish to complete the installation.



# Chapter 5 Touch Screen Installation

This chapter describes how to install drivers and other software that will allow your touch screen work with different operating systems.

## 5.1 Windows 7/8/8.1 Universal Driver Installation for

## PenMount 6000 Series

Before installing the Windows 7/8/8.1 driver software, you must have the Windows 7/8/8.1 system installed and running on your computer. You must also have one of the following PenMount 6000 series controller or control boards installed: PM6500, PM6300.

## 5.1.1 Installing Software

If you have an older version of the PenMount Windows 7 driver installed in your system, please remove it first. Follow the steps below to install the PenMount DMC6000 Windows 7 driver.

Step 1. Insert the product CD, the screen below would appear. Click Touch Panel Driver from the list.

Drivers CD Industria	al Pan win7 - d		
	DRIVERS	Intel(R) CORE TM SoC Chipset Intel(R) VGA Chipset Intel(R) 82574L LAN Driver Realtek ALC662 HD Audio Drive USB 3.0 Driver Touch Panel Driver Intel(R) MEI Driver	•
40.57.10	OTHERS	User Manual	
		View	EXIT

### Step 2. Click Next to continue.

🖳 PenMount Windows Universal Driver(WHQL) V2.4.0.306 Setup 🛛 🔳 🔲 🔀		
	Welcome to the PenMount Windows Universal Driver(WHQL) V2.4.0.306 Setup Wizard	
	This wizard will guide you through the installation of PenMount Windows Universal Driver(WHQL) V2.4.0.306.	
	It is recommended that you close all other applications before starting Setup. This will make it possible to update relevant system files without having to reboot your computer.	
R	Click Next to continue.	
	Next > Cancel	

Step 3. Read the license agreement. Click I Agree to agree the license agreement.

🖴 PenMount Windows Universal Driver(WHQL) V2.4.0.306 Setup 🛛 📃			
License Agreement Please review the license terms before installing PenMount Windows Universal Driver(WHQL) V2.4.0.306.	P		
Press Page Down to see the rest of the agreement.			
PLEASE READ THE LICENSE AGREEMENT	^		
PenMount touch screen driver software is only for using with PenMount touch screen controller or control board			
Any person or company using a PenMount driver on any piece of equipment which does not utilize an PenMount touch screen controller			
will be prosecuted to the full extent of the law.	~		
If you accept the terms of the agreement, click I Agree to continue. You must accept the agreement to install PenMount Windows Universal Driver(WHQL) V2.4.0.306.			
Nullsoft Install System v2.46			
< <u>B</u> ack I <u>A</u> gree Can	cel		

Step 4. Choose the folder in which to install PenMount Windows Universal Driver. Click Install to start the installation.

🖳 PenMount Windows Universal Driver(WHQL) V2.4.0.306 Setup 🛛 🗔 🗔 🔀
Choose Install Location Choose the folder in which to install PenMount Windows Universal Driver(WHQL) V2.4.0.306.
Setup will install PenMount Windows Universal Driver(WHQL) V2.4.0.306 in the following folder. To install in a different folder, click Browse and select another folder. Click Install to start the installation.
Destination Folder           C:\Program Files\PenMount Windows Universal Driver(WHQL)         Browse
Space required: 0.0KB Space available: 13.9GB
Nullsoft Install System v2.46

Step 5. Wait for installation. Then click Next to continue.

🖳 PenMount Windows Universal Driver(WHQL) V2.4.0.306 Setup	×
Installing Please wait while PenMount Windows Universal Driver(WHQL) V2.4.0.306 is being installed.	I
Execute: "C:\Program Files\PenMount Windows Universal Driver(WHQL)\install.exe" /Install	
Nullsoft Install System v2.46 < <u>B</u> ack <u>N</u> ext > Cancel	)

Step 6. Click Continue Anyway.

Hardwa	re Installation
<u>.</u>	The software you are installing for this hardware: PenMount 6000 Serial has not passed Windows Logo testing to verify its compatibility with Windows XP. (Tell me why this testing is important.) Continuing your installation of this software may impair or destabilize the correct operation of your system either immediately or in the future. Microsoft strongly recommends that you stop this installation now and contact the hardware vendor for software that has passed Windows Logo testing.
	Continue Anyway STOP Installation

Step 7. Click Finish to complete installation.



## 5.2 Software Functions

## 5.2.1 Software Functions

Upon rebooting, the computer automatically finds the new 6000 controller board. The touch screen is connected but not calibrated. Follow the procedures below to carry out calibration.

1. After installation, click the PenMount Monitor icon "PM" in the menu bar.

2. When the PenMount Control Panel appears, select a device to "Calibrate."

### PenMount Control Panel

The functions of the PenMount Control Panel are Device, Multiple Monitors ,Tools and About, which are explained in the following sections.

#### Device

In this window, you can find out that how many devices be detected on your system.

👫 PenMount Control Panel	
Device Multiple Monitors Tools About	
Select a device to configure.	
6	
PenMount 6000 USB	
Confirme   Definite	
	OK

## Calibrate

This function offers two ways to calibrate your touch screen. 'Standard Calibration' adjusts most touch screens. 'Advanced Calibration' adjusts aging touch screens.

Standard Calibration	Click this button and arrows appear pointing to red squares. Use
	your finger or stylus to touch the red squares in sequence. After the
	fifth red point calibration is complete. To skip, press 'ESC'.
Advanced Calibration	Advanced Calibration uses 4, 9, 16 or 25 points to effectively
	calibrate touch panel linearity of aged touch screens. Click this
	button and touch the red squares in sequence with a stylus. To skip,
	press ESC'.

Step 1. Please select a device then click "Configure". You can also double click the device too.

📲 PenMount Control Panel	
Device   Multiple Monitors   Tools   About	
Select a device to configure.	
6	
PenMount 6000 USB	
Configure Refresh	
	ОК

Step 2.Click "Standard Calibration" to start calibration procedure

Calibrate Setting About	
Standard Calibration	
1	
1	<u>ОК</u> 2
	2

NOTE: The older the touch screen, the more Advanced Mode calibration points you need for an accurate calibration. Use a stylus during Advanced Calibration for greater accuracy. Please follow the step as below:

Step 3.Come back to "PenMount Control Panel" and select Tools then click Advanced Calibration.

🍓 PenMount Control Panel	
Device Multiple Monitors Tools About	1
Draw Test	by drarwing on the touch screen
Advanced Calibration	ON/OFF Advanced Calibration Mode
Right Button Icon	/Hide the icon for switching buttons
	Back to Default_OK

Step 4. Select Device to calibrate, then you can start to do Advanced Calibration.

- Alexandre	J.
	Advanced Mode 9 💽
Standard <u>C</u> alibration	Advanced Calibration
Turn off EEPBOM storage	
Turn off EEPROM storage.	

NOTE: Recommend to use a stylus during Advanced Calibration for greater accuracy.



Plot Calibration Data	Check this function and a touch panel linearity
	comparison graph appears when you have finished
	Advanced Calibration. The blue lines show linearity
	before calibration and black lines show linearity after
	calibration.
Turn off EEPROM	The function disable for calibration data to write in
storage	Controller. The default setting is Enable.

## Setting

Calibrate Setting About	
Touch Mode	ter al familie and
	C Click on Touch
Eeep Sound	Kind of Sound Buzzer Beep 💌
Beep Mode	Beep Frequency 1800Hz
🕫 Beep on pen d <u>o</u> wn	
C Beep on pen yp	Beep Duration 100 ms
C Beep on both	
Cursor Stabilizer	Use press and hold as right click
You can use Cursor Stabilizer to remove	Delay: 2.0 sec
jitter of cursor.	Area:
	plann

Touch Mode	This mode enables and disables the mouse's ability to drag
	on-screen icons – useful for configuring POS terminals
	Mouse Emulation – Select this mode and the mouse
	functions as normal and allows dragging of icons.
	Click on Touch – Select this mode and mouse only provides a
	click function, and dragging is disables.
Beep Sound	Enable Beep Sound – turns beep function on and off
	Beep on Pen Down – beep occurs when pen comes down
	Beep on Pen Up – beep occurs when pen is lifted up
	Beep on both – beep occurs when comes down and lifted up
	Beep Frequency – modifies sound frequency
	Beep Duration – modifies sound duration
Cursor Stabilizer	Enable the function support to prevent cursor shake.
Use press and	You can set the time out and area for you need.
hold as right click	

#### About

This panel displays information about the PenMount controller and driver version.

🖉 Device O (Pen	Mount 6000 USB)		
Calibrate Setting	About		
	PenMount 6000 USB (10-bit)		
<i>~</i>	Driver Version	2.1.0	
	Firmware Version	6000.3.0.0	
	Firmware Config Data	6,36864,341,32,7,0,0	
			]
			OK

#### **Multiple Monitors**

Multiple Monitors support from two to six touch screen displays for one system. The PenMount drivers for Windows 7/8/8.1 support Multiple Monitors. This function supports from two to six touch screen displays for one system. Each monitor requires its own PenMount touch screen control board, either installed inside the display or in a central unit. The PenMount control boards must be connected to the computer COM ports via the USB interface. Driver installation procedures are the same as for a single monitor. Multiple Monitors support the following modes:

Windows Extends Monitor Function Matrox DualHead Multi-Screen Function nVidia nView Function

NOTE: The Multiple Monitor function is for use with multiple displays only. Do not use this function if you have only one touch screen display. Please note once you turn on this function the rotating function is disabled.

Enable the multiple display function as follows:

1. Check the Enable Multiple Monitor Support box; then click Map Touch Screens to assign touch controllers to displays.

🙀 PenMount Control Panel	
Calibrate Draw Multiple Monitors Option About	
Map Touch Screens	
	ОК

2. When the mapping screen message appears, click OK.

🖷 PenMount Control Panel	
Calibrate Draw Multiple Monitors Option About	
Enable Multiple Monitor Support	
Mapping	
Please touch the panel as indicated in the following	screens.
	ОК

3. Touch each screen as it displays "Please touch this monitor". Following this sequence and touching each screen is called mapping the touch screens.



- 4. Touching all screens completes the mapping and the desktop reappears on the monitors.
- 5. Select a display and execute the "Calibration" function. A message to start calibration appears. Click OK.

touch the panel to calibrate in	the following screen.
ОК	
	touch the panel to calibrate in

- 6. "Touch this screen to start its calibration" appears on one of the screens. Touch the screen.
- 7. "Touch the red square" messages appear. Touch the red squares in sequence.
- 8. Continue calibration for each monitor by clicking Standard Calibration and touching the red squares.

NOTES:

- 1. If you use a single VGA output for multiple monitors, please do not use the Multiple Monitor function. Just follow the regular procedure for calibration on each of your desktop monitors.
- 2. The Rotating function is disabled if you use the Multiple Monitor function.
- 3. If you change the resolution of display or screen address, you have to redo Map Touch Screens, so the system understands where the displays are.

## About

This panel displays information about the PenMount controller and this driver version.



PenMount Monitor Menu Icon

The PenMount monitor icon (PM) appears in the menu bar of Windows 7/8/8.1 system when you turn on PenMount Monitor in PenMount Utilities.



PenMount Monitor has the following function

	Control Panel	
Device 0	Beep.	
	Right Button	
	Exit	

Control Panel	Open Control Panel Windows
Веер	Setting Beep function for each device
Right Button	When you select this function, a mouse icon appears in the right-bottom of the screen.
	Click this icon to switch between Right and Left Button functions.
Exit	Exits the PenMount Monitor function.

Configuring the Rotate Function

- 1. Install the rotation software package.
- 2. Choose the rotate function (0°, 90°, 180°, 270°) in the 3rd party software. The calibration screen appears automatically. Touch this point and rotation is mapped.

the point		

NOTE: The Rotate function is disabled if you use Monitor Mapping