



# **LPC P-cap Series User Manual**

Panel PC, Intel® Braswell Celeron®3160, IP65 Compliant

Bezel & Wide Range Power Input

Published in Taiwan Release Date : Oct 2017 Revision : V1.0

# 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.

### Disclaimer

This information in this document is subject to change without notice. In no event shall ELGENS Co.,Ltd. be liable for damages of any kind, whether incidental or consequential, arising from either the use or misuse of information in this document or in any related materials.

#### Packing List

Accessories (as ticked)	included in this package are:
Panel Mounting Kits	
2 Din Mala Terminal Diack	
Optional Adapter	
Other	_(please specify)

### Safety Precautions

Follow the messages below to avoid 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.

# **Table of Contents**

Warning!	1
Packing List	2
Safety Precautions	2

### Chapter 1 Getting Started

1.1	Brief Description of LPC P-cap	5
1.2	System Specifications	5
1.3	Dimension	7
1.4	General Rear IO Replacement	.16
1.5	Front View	.17
1.6	Rear View	.18
1.7	Installation of HDD	.19

#### Chapter 2 **Main Board Introduction**

2.1	Mainboa	rd Spec	cifica	tion	21
2.2	Jumpers	Setting	and	Connectors	24

#### **Chapter 3 BIOS Setup**

3.1	Entering Setup	
3.2	The Menu Bar	
3.3	Main	
3.4	Advanced	
3.5	Boot	
3.6	Security	50
3.7	Chipset	51
3.8	Power	5 2
3.9	Save & Exit	5 4

### Chapter 4 USB 3.0 driver installation

## Chapter 5 Installation of Drivers

5.1	Windows 7 Patch Setup	58
5.2	Chipset Driver Setup	61
5.3	Audio Driver Setup	63
5.4	Graphics Driver Setup	.65
5.5	LAN Driver Setup	67
5.6	SIO Driver Setup	69
5.7	TXE Driver Setup	71
5.8	USB3.0 Driver Setup	73

### Chapter 6 Touch Screen Driver Installation

### Appendix WDT sample code

# Chapter 1 Getting Started

### **1.1** Brief Description of LPC P-cap Series

The LPC P-cap series is a power-optimized and delivers robust performance-per-watt for embedded HMI, powered by a Celeron<sup>®</sup> N3160 Quad Core 1.6 GHz processor. It comes with a mSATA slot and a SATA 2.5-inch hard disk drive, up to 8GB DDR3 memory, audio jack, 2 Ethernet, DC input, and 4 USB 3.0 ports. The unit supports Win 7 Pro/ WES7 / Win 8 / Win 10. The fanless touch panel computer is ideal for use as Web Browser, Terminal and HMI at all levels of automation control.

Model Number	LPC-P121S-01		LPC-P150	LPC-P150S		LPC-P156W		LPC-P156W-01		
Max Resolution	1024*768		1024*768		1366*768		19	1920*1080		
Color	16.7M		16.2M		16.7M		16	16.2M		
Luminance	350 n	its		420 nits		300 nits		40	400 nits	
View Angle	160/1	.60		160/160		160/170		14	140/120	
Contrast Ratio	800			800		500		500		
Model Number	LPC-P	170S	LPC-F	P173W	LPC-P185	W	LPC-P190S		LPC-P215W	
Max Resolution	1280*	<sup>•</sup> 1024	1920	*1080	1920*108	30 1280*1040			1920*1080	
Color	16.7N	1	16.71	Ν	16.7M		16.7M		16.7M	
Luminance	350 n	its	400 r	nits	350 nits		350 nits		250 nits	
View Angle	160/1	.70	140/	160 189/189			160/170		189/189	
Contrast Ratio	1000	1000 600			1000		1000		5000	
Computing										
Processor Intel Celeron			® N3160 So	DC CPU						
System Memory		1 x SO-DIMM, up to 8 GB DDR3L								
Storage	1 x SATA3 (6.0			lGb/s)						
		1 x mSA	λΤΑ (fι	ull size min	i-PCle)					
External I/O Port 4 x USB 3.0										
2 x GbE LAN (		J (RTL8111G)								
1 x Display Pc		ort								
1 x HDMI										
3 x RS-232		(COM2/3/4)								
1 x RS-422/48			85 (COM1	default R	6-485,	adjustable to	RS-	422 by BIOS)		

### **1.2** System Specifications

	1 x Audio
	1 x Power press button
	1 x 3-Pin Power Input
Expansion Slots	None
OS support	Win 7 Pro/ WES7 / Win 8 / Win 10
Touch Screen	
Туре	5 Wire Res with USB Interface
Light Transmission	85%
Power Supply	
Power Input	DC 9~36V Wide Range Power Input
Mechanical	
Construction	Metal
IP Rating	Front Panel compliant IP65
Mounting	Panel/VESA
Environmental	
Operating Temperature	0~50 °C
Storage Temperature	-20~70 °C
Storage Humidity	10~90% @40° C non-condensing
Order Information	
Order Information	12.1" P-cap Panel PC, Celeron <sup>®</sup> N3160, 1024 x 768 Reso, 350 nits LED
Order Information LPC-P121S-01	12.1" P-cap Panel PC, Celeron <sup>®</sup> N3160, 1024 x 768 Reso, 350 nits LED backlight, 4 COM, 4 USB, 2 LAN, DC 9~36V with 3-pin Power Terminal Block
Order Information LPC-P121S-01	12.1" P-cap Panel PC, Celeron® N3160, 1024 x 768 Reso, 350 nits LED backlight, 4 COM, 4 USB, 2 LAN, DC 9~36V with 3-pin Power Terminal Block 15" P-cap Panel PC, Celeron® N3160, 1024 x 768 Reso, 420 nits LED
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	backlight, 4 COM, 4 USB, 2 LAN, DC 9~36V with 3-pin Power Terminal Block
WFK-024	Wi-Fi kits w/ cable & Antenna (2.4GHz, 802.11 b/g/n, 1T1R)
WFK-524	Wi-Fi kits w/ cable & Antenna (2.4 & 5GHz, 802.11 a/b/g/n/ac + BT, 2T2R)
PB-936	Power Board for Input on board fuse / Input reverse protection / Over
	current protection / Output short circuit protection

Order Information		
LPC-PxxxS/W -H / -OB / -G / -AG / -AR / -B / -V / -T		
xxx = size, For example, 10.1" = 101		
S = Dimension Ratio Square = 4:3 or 5:4		
W= Dimension Ration Wide = 16:9 or 16:10		
H = High Brightness 1000 nits LED backlight		
OB = Optical Bonding		
G = Glass without touch		
AG = Anti-Glare		
AR = Anti-Reflection		
B = Power Board for		
Input on board fuse		
Input reverse protection		
Over current		
Output short circuit protection		
V = Vandal Proof Glass		
Γ = Backside Heatsink for Operating Temperature 60°C		

### 1.3 Dimension

### LPC-P121S-01 Drawing



### LPC-P150S Drawing



### LPC-P156W / 156W-01 Drawing



### LPC-P170S Drawing



### LPC-P173W Drawing



### LPC-P185W Drawing



### LPC-P190S Drawing



### LPC-P215W Drawing



### **1.4 General Rear IO Placement**



COM 1 is RS-485 as below pin definition, adjustable to RS-422 by BIOS



Power input terminal block pin definition is as below.



### **1.5 Front View of LPC- Pcap Series**



### **1.6 Rear View of LPC- Pcap Series**



### 1.7 Installation of HDD (Below example is LPC-P185W)

1.7.1 Remove screws from below red circles.



Notice : below screws located in right and left side should be removed as well.



- 1.7.2 After remove the casing, we will see as below.
- HDD is designed to fix with mounting bracket.
- DRAM is located the bottom side of main board, as a result, we strongly suggest our client to purchasing DRAM from ELGENS in order to save time & labor cost, and avoid the warranty issue.



# Chapter 2 Main Board Introduction

### 2.1 Mainboard Specification

#### 2.1.1: Mainboard Overview





#### 2.1.2: Mainboard Dimensions-TOP Side



2.1.3: Mainboard Dimensions- IO side



#### 2.1.4: Mainboard Specifications.

Mainboard Specifications		
Board Size	146 mm x 102 mm (3.5-inch size)	
Processor	Intel <sup>®</sup> Celeron <sup>®</sup> N3160 Processor	
Chipset	Integrated in SoC	
Memory Support	1 SO-DIMM slot for single-channel DDR3L 1600MHz Up to 8GB	

Super I/O	Fintek F81866AD-I
BIOS	AMIBIOS
Storage	1 x SATA 6Gb/s port 1 x mSATA 6Gb/s slot (shared with MINI_PCIE1)
USB	2 x USB 2.0 (2 x internal) 4 x USB 3.0 (4 x rear)
Serial	4 x COM (internal) COM1: RS-232/422/485, 0V/5V/12V COM2~4: RS-232
Network	2 x Realtek RTL8111G GbE LAN
Graphics	HD Graphics integrated in Intel <sup>®</sup> processor LVDS up to 1920 x 1200 @ 60 Hz HDMI up to 2560 x 1600 @ 60 Hz, 3840 x 2160 @ 30 Hz DisplayPort up to 2560 x 1600 @ 60 Hz, 3840 x 2160 @ 30 Hz Supports three independent displays: LVDS + HDMI + Display Port
Battery	Support CR2477 Li battery by 2-pin header
Audio	Realtek <sup>®</sup> ALC887-VD2-CG HD Audio Codec 1 x Front audio connector 1 x Amplifier connector
Keyboard /Mouse	1x PS2 keyboard/mouse by 1x6 box pin header
Expansion Bus	2 x Full-size (one w/ mSATA)
Power Management	DC12V~36V input 1 x 2-pin power input connector
Rear Panel I/O	1 x HDMI port 1 x DisplayPort 2 x RJ45 GbE LAN ports 4 x USB 3.0 ports
Watchdog Timer	Software programmable 1 – 255 second by Super I/O
Operation Temperature	0~60 Degree
Humidity	10% - 90%, non-condensing, operating
EMI/EMS	Meet CE/FCC class A

### 2.2 Jumpers Setting and Connectors

#### **Power Supply**

#### **DC-In Power Connector: JPWR1**

This connector is used to provide power to the motherboard.



#### SATA Power Connector: JPW1

This connector is used to provide power to SATA devices.



### Connector

#### Fan Power Connector: SYSFAN1

The fan power connector supports system cooling fan with +12V. When connecting the wire to the connectors, always note that the red wire is the positive and should be connected to the +12V; the black wire is Ground and should be connected to GND. If the motherboard has a System Hardware Monitor chipset onboard, you must use a specially designed fan with speed sensor to take advantage of the CPU fan control.



#### Serial ATA Connector: SATA1

This connector is a high-speed Serial ATA interface port. Each connector can connect to one Serial ATA device.



#### **Important**

Please do not fold the SATA cable into a 90-degree angle. Otherwise, data loss may occur during transmission.

### Front Panel Connector: JFP1

This front panel connector is provided for electrical connection to the front panel switches & LEDs and is compliant with Intel Front Panel I/O Connectivity Design Guide.



#### Front Audio Connector: JAUD1

This connector allows you to connect the front panel audio and is compliant with Intel Front Panel I/O Connectivity Design Guide.



### Audio Amplifier Connector: JAMP1

The connector is used to connect audio amplifiers to enhance audio performance.



#### **GPIO Connector: JGPIO1**

This connector is provided for the General-Purpose Input/Output (GPIO) peripheral module.



#### RS232 Serial Port Connector: JCOM2, JCOM3, JCOM4

This connector is a 16550A high speed communications port that sends/receives 16 bytes FIFOs. You can attach serial devices to it through the optional serial port bracket.



FIN	SGNAL	DESCRIPTION
000	SOLU	Cala Came: Delect
2	193.94	Sena n
3	ALCO .	Signer Col.
-1	304.3	Jala erringe Ready
9	CND	digne Creard
e	NDER	Cala doi Ready
7	NRTO	Request To Send
8	SCTR	Cico To Seno
0	9	Fing lind actor

### RS232/422/485 Serial Port Connector: JCOM1

This connector is a 16550A high speed communications port that sends/receives 16 bytes FIFOs. You can attach a serial device to it through an optional serial port bracket.







#### LVDS Inverter Connector: JINVDD1

The connector is provided for LCD backlight options.



#### LVDS Connector: JLVDS1

The LVDS (Low Voltage Differential Signal) connector provides a digital interface typically used with flat panels. After connecting an LVDS interface flat panel to the JLVDS1, be sure to check the panel datasheet and set the LVDS jumper to proper power voltage.



#### **Important**

Pin 12 is a detect pin. When using a customized LVDS cable, pin 12 should be asignal ground with a low impedance. Otherwise, LVDS will not function.

#### Keyboard/Mouse Connector: JKBMS1

This connector is provided to connect a keyboard and a mouse.



#### USB 2.0 Header: JUSB1

This connector, compliant with Intel I/O Connectivity Design Guide, is ideal for connecting high-speed USB interface peripherals such as USB HDD, digital cameras, MP3 players, printers, modems and the like.



#### **Important**

Note that the pins of VCC and GND must be connected correctly to avoid possible damage.

### LPC Debug Port Connector: JLPC1 (With TPM Support)

This connector works as LPC debug port and supports TPM modules through an adapter.



#### Jumper

#### **Important**

Avoid adjusting jumpers when the system is on; it will damage the motherboard.

#### **Clear CMOS Jumper: JCMOS1**

There is a CMOS RAM onboard that has a power supply from an external battery to keep the data of system configuration. With the CMOS RAM, the system can automatically boot OS every time it is turned on. If you want to clear the system configuration, set the jumper to clear data.



#### **Important**

You can clear CMOS by shorting 2-3 pin while the system is off. Then return to1-2 pin position. Avoid clearing the CMOS while the system is on; it will damage the motherboard.



#### AT/ATX Select Jumper: JAT1

This jumper allows users to select between AT and ATX power.

#### Serial Port Power Jumper: JCOMP1

The jumper specifies the operation voltage of the specified serial port.



#### LVDS Power Jumper: JVDD1

Use this jumper to specify the operation voltage of the LVDS display.



#### LVDS Inverter Power Jumper: JINV1

Use this jumper to specify the operation voltage of the LVDS inverter.



### Slot

#### Mini-PCIe (Peripheral Component Interconnect Express) Slot

The Mini-PCIe slot is provided for WiFi modules, Bluetooth modules, TV tuner cards and other Mini-PCIe cards.

- MINI\_PCIE1 supports Mini-PCIe and mSATA cards.
- MINI\_PCIE2 only supports Mini-PCIe cards.



#### **Important**

When adding or removing expansion cards, make sure that you unplug the power supply first. Meanwhile, read the documentation for the expansion card to config- ure any necessary hardware or software settings for the expansion card, such as jumpers, switches or BIOS configuration.

# Chapter 3 BIOS Setup

#### 3.1 BIOS setup

This chapter provides information on the BIOS Setup program and allows users to configure the system for optimal use:

Users may need to run the Setup program when:

- An error message appears on the screen at system startup and requests users to run SETUP.
- Users want to change the default settings for customized features.

#### **Important**

Please note that BIOS update assumes technician-level experience.

As the system BIOS is under continuous update for better system performance, the illustrations in this chapter should be held for reference only.

#### **Entering Setup**

Power on the computer and the system will start POST (Power On Self Test) process. When the message below appears on the screen, press <DEL> or <F2> key to enter Setup.

Press <DEL> or <F2> to enter SETUP

If the message disappears before you respond and you still wish to enter Setup, restart the system by turning it OFF and On or pressing the RESET button.You may also restart the system by simultaneously pressing <Ctrl>, <Alt>, and<Delete> keys.

#### **Important**

The items under each BIOS category described in this chapter are under continuous update for better system performance. Therefore, the description may be slightly different from the latest BIOS and should be held for reference only.

### **Control Keys**

$\leftarrow \rightarrow$	Select Screen
↓ ↑	Select Item
Enter	Select
+,-	Change Option
F1	General Help
F7	Previous Values
F9	Optimized Defaults
F10	Save & Exit
ESC	Exit

#### **Getting Help**

After entering the Setup menu, the first menu you will see is the Main Menu.

#### Main Menu

The main menu lists the setup functions you can make changes to. You can use the arrow keys (  $\uparrow \downarrow$  ) to select the item. The on-line description of the highlighted setup function is displayed at the bottom of the screen.

#### Sub-Menu

If you find a right pointer symbol appears to the left of certain fields that means a sub-menu can be launched from this field. A sub-menu contains additional options for a field parameter. You can use arrow keys (  $\uparrow \downarrow$  ) to highlight the field and press <Enter> to call up the sub-menu. Then you can use the control keys to enter values and move from field to field within a sub-menu. If you want to return to the main menu, just press the <Esc >.

### General Help <F1>

The BIOS setup program provides a General Help screen. You can call up this screen from any menu by simply pressing <F1>. The Help screen lists the appropriate keys to use and the possible selections for the highlighted item. Press <Esc> to exit the Help screen.

#### The Menu Bar



Main

Use this menu for basic system configurations, such as time, date, etc.

Advanced

Use this menu to set up the items of special enhanced features.

Boot

Use this menu to specify the priority of boot devices.

Security

Use this menu to set supervisor and user passwords.

Chipset

This menu controls the advanced features of the onboard chipsets.

Power

Use this menu to specify your settings for power management.

Save & Exit

This menu allows you to load the BIOS default values or factory default settings into the BIOS and exit the BIOS setup utility with or without changes.
### Main



### System Date

This setting allows you to set the system date. The date format is <Day>, <Month>,<Date> <Year>.

System Time

This setting allows you to set the system time. The time format is <Hour> <Minute> <Second>.

### SATA Mode Selection

This setting specifies the SATA controller mode.

### Advanced



### Full Screen Logo Display

This BIOS feature determines if the BIOS should hide the normal POST messages with the motherboard or system manufacturer's full-screen logo.

When it is enabled, the BIOS will display the full-screen logo during the boot-up sequence, hiding normal POST messages.

When it is disabled, the BIOS will display the normal POST messages, instead of the full-screen logo. Please note that enabling this BIOS feature often adds 2-3 seconds of delay to the booting sequence. This delay ensures that the logo is displayed for a sufficient amount of time. Therefore, it is recommended that you disable this BIOS feature for a faster boot-up time.

### Bootup NumLock State

This setting is to set the Num Lock status when the system is powered on. Setting to [On] will turn on the Num Lock key when the system is powered on. Setting to [Off] will allow users to use the arrow keys on the numeric keypad.

### Option ROM Messages

This item is used to determine the display mode when an optional ROM is initialized during POST. When set to [Force BIOS], the display mode used by AMI BIOS is used. Select [Keep Current] if you want to use the display mode of optional ROM.

### Advanced

Super IO Configuration

```
Serial Port 1
Device Settings
Change Settings
Hode Select
Serial Port 2
Device Settings
Change Settings
Change Settings
Change Settings
Serial Port 4
Device Settings
Change Settings
```

FIFO Mode Shared IRQ Mode Match Dog Timer iEnabledi ID=3F9h; IRQ=4; [Auto] [RS232] IEnabled] ID=2F8h; IRQ=3; [Auto] [Enabled] ID=3E8h; IRQ=7; [Auto] IEnabled] ID=2E8h; IRQ=7; [Auto]

[128-byte] [Leve1] [Disabled]

### Serial Port 1/ 2/ 3/ 4

This setting enables/disables the specified serial port.

### Change Settings

This setting is used to change the address & IRQ settings of the specified serial port.

### Mode Select

Select an operation mode for the specified serial port.

FIFO Mode

This setting controls the FIFO data transfer mode.

Shared IRQ Mode

This setting provides the system with the ability to share interrupts among its serial ports.

### Watch Dog Timer

You can enable the system watch-dog timer, a hardware timer that generates a reset when the software that it monitors does not respond as expected each time the watch dog polls it.

### ► H/W Monitor

These items display the current status of all monitored hardware devices/ components such as voltages, temperatures and all fans' speeds.

Advanced	
PC Health Status	
CPU temperature System temperature	: +31 C : +32 C
SYSFAN1 Speed	: N/A
VCC_CORE VCCS +12V VCCSV VSESV VSESV VSAT	: +0.904 V : +4.961 V : +12.056 V : +3.264 V : +3.248 V : +4.920 V : +3.056 V

Smart Fan Configuration



### Smart SYSFAN Target

This setting enables/disables the Smart Fan function. Smart Fan is an excellent feature which will adjust the CPU/system fan speed automatically depending on the current CPU/system temperature, avoiding the overheating to damage your system.

### CPU Configuration

Advanced	
CPU Configuration	
Intel(R) Celeron(R) CPU N3150 0 1.6	0GHz
Processor ID	406C3
Wicrocode Patch	35E
Max CPU Speed	1600 MHz
Processor Cores	4
64-bit	Supported
L2 Cache	1024 kB x 2
L3 Cache	Not Present
Intel Virtualization Technology	[Enabled]
EIST	[Enabled]

### Intel Virtualization Technology

Virtualization enhanced by Intel Virtualization Technology will allow a platform to run multiple operating systems and applications in independent partitions. With virtualization, one computer system can function as multiple "Virtual" systems.

### ► EIST

EIST (Enhanced Intel SpeedStep Technology) allows the system to dynamically adjust processor voltage and core frequency, which can result in decreased average power consumption and decreased average heat production. When disabled, the processor will return the actual maximum CPUID input value of the processor when queried.

Advanced		
Legacy USB Support Audio Controller Launch OnBoard Lan OpRom Launch OnBoard Lan OpRom	[Enabled] [Enabled] [Disabled] [Disabled]	

### Legacy USB Support

Set to [Enabled] if you need to use any USB 1.1/2.0 device in the operating system that does not support or have any USB 1.1/2.0 driver installed, such as DOS and SCO Unix.

### Audio Controller

This setting enables/disables the onboard audio controller.

### Launch OnBoard LAN OpROM

These settings enable/disable the initialization of the onboard/onchip LAN Boot ROM during bootup. Selecting [Disabled] will speed up the boot process.

Advanced	
Configure Special GPIO	
GP00 GP01 GP02 GP03	lucul (Lou) ILoui (Lou)

### ► GPO0 ~ GPO3

These settings control the operation mode of the specified GPIO.

### Boot



### CSM Support

This setting enables/disables the support for Compatibility Support Module, a part of the Intel Platform Innovation Framework for EFI providing the capability to support legacy BIOS interfaces.

Video

This setting selects the video mode.

OS Selection

This setting allows users to select the Operating System.

### Boot Option Priorities

This setting allows users to set the sequence of boot devices where BIOS attempts to load the disk operating system.

### Hard Drive BBS Priorities

This setting allows users to set the priority of the specified devices. First press

<Enter> to enter the sub-menu. Then you may use the arrow keys (  $\uparrow \downarrow$  ) to select the desired device, then press <+>, <-> or <PageUp>, <PageDown> key to move it up/down in the priority list.

## Security

Aptic Setup Utility - Copyright CC1 2015 American Anis Advanced Root Security Chipper Power Lave & Doit	Negatranda, Juc.
Administrator: Persent User: Pactward	Set Administrator Researd
<ul> <li>Trusted Computing</li> <li>Serial Port Consule Redirection</li> <li>Securits Cardizonation</li> </ul>	
	<pre>##: Select Spreen #1: Select Item Enter: Select #/-: Change Bpt. #1: General Mels #7: Province Values P9: Optimized Defaults #10: Save 8 Meset ESC: Exit</pre>
Version 2.17.1245, Departight 100 2015 American Ma	ntertmenda, Inc.

### Administrator Password

Administrator Password controls access to the BIOS Setup utility.

#### User Password

User Password controls access to the system at boot and to the BIOS Setup utility.

### Trusted Computing

Secu	nity
Configuration Security Device Support NO Security Device Found	[Enable]

### Security Device Support

This setting enables/disables BIOS support for security device. When set to [Disable], the OS will not show security device. TCG EFI protocol and INT1A interface will not be available.

### Serial Port Console Redirection



### Console Redirection

Console Redirection operates in host systems that do not have a monitor and keyboard attached. This setting enables/disables the operation of console redirection. When set to [Enabled], BIOS redirects and sends all contents that should be displayed on the screen to the serial COM port for display on the terminal screen. Besides, all data received from the serial port is interpreted as keystrokes from a local keyboard.

### Console Redirection Settings

Security	
COMI Donsale Recinection Settings	
Terminal Type Bits per second Data Bits Parity Step Bits Fick Control VT-DTRS Combo Key Support Recorder Hode Resolution Hosei Legacy US Redirection Resolution Futty RegRed Recircction Office BIDS FUEL	Inneci FutSS001 F81 Renet Fut Renet Renatues1 Renatues1 Resetued1

### Terminal Type

To operate the system's console redirection, you need a terminal supporting ANSI terminal protocol and a RS-232 null modem cable connected between the host system and terminal(s). This setting specifies the type of terminal device for console redirection.

### Bits per second, Data Bits, Parity, Stop Bits

This setting specifies the transfer rate (bits per second, data bits, parity, stop bits) of Console Redirection.

### Flow Control

Flow control is the process of managing the rate of data transmission between two nodes. It's the process of adjusting the flow of data from one device to another to ensure that the receiving device can handle all of the incoming data. This is particularly important where the sending device is capable of sending data much faster than the receiving device can receive it.

### VT-UTF8 Combo Key Support

This setting enables/disables the VT-UTF8 combination key support for ANSI/VT100 terminals.

### Recorder Mode, Resolution 100x31

These settings enable/disable the recorder mode and the resolution 100x31.

### Legacy OS Redirection Resolution

This setting specifies the redirection resolution of legacy OS.

### Putty Keypad

PuTTY is a terminal emulator for Windows. This setting controls the numeric keypad for use in PuTTY.

### Redirection After BIOS POST

This setting determines whether or not to keep terminals' console redirection running after the BIOS POST has booted.

## Security Configuration



### TXE FW Version

The setting shows the firmware information of the Intel Trusted Execution Engine (TXE).

### ► TXE HMRFPO

The setting enables/disables TXE HMRFPO (Host ME Region Flash Protection Override).

### ► TXE Firmware Update

This setting enables/disables TXE FW update.

### TXE EOP Message

This setting determines whether or not to send EOP (Exchange Online Protection) message before entering OS.

## Chipset



### DVMT Pre-Allocated

This setting defines the DVMT pre-allocated memory. Pre-allocated memory is the small amount of system memory made available at boot time by the system BIOS for video. Pre-allocated memory is also known as locked memory. This is because it is "locked" for video use only and as such, is invisible and unable to be used by the operating system.

### DVMT Total Gfx Mem

This setting specifies the memory size for DVMT.

LCD Panel Type

This setting specifies the LCD panel type.

LVDS Backlight Control

This setting controls the intensity of the LVDS backlight.

PlayReady 3 (for Windows 10 only)

This setting enables/disables Microsoft's PlayReady 3 technology. PlayReady is a content protection technology from Microsoft that includes encryption, output protection and Digital Rights Management (DRM). Window's PlayReady 3.0 DRM can support 4K content but use more restrictive digital rights management technology to curb illegitimate streams at the same time.

### Power

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Paulane VC Nomer Lase Back Showy Hode Gevenced Resume Reacts Control PCCC PHP USC Houm COVS4 HTC	(Last State) 1991 Croshiwol (Croshiwol (Croshiwol (Croshiwol (Croshiwol	Select XC summer statementer eccer es recommended enterna peuer Railare.
		<pre>90: Celerr Coreer 14: Celert Cham Britany Colley) NAS: Charles Upt. Pr: Demonst Dety 13: Prevince Velices 10: Optimized Defaults PI: Optimized Defaults PI: Sever 5 Poret PI: Definit</pre>
Vension 7, 12, 1213.	Copyright (1) 2011 Aperlinen	Negermande, Too.

### Restore AC Power Loss

This setting specifies whether your system will reboot after a power failure or interrupt occurs. Available settings are:

[Power Off]	Leaves the computer in the power off state.
[Power On]	Leaves the computer in the power on state.
[Last State]	Restores the system to the previous status before power failure or interrupt occurred.



### Deep Sleep Mode

The setting enables/disables the Deep S5 power saving mode. S5 is almost the same as G3 Mechanical Off, except that the PSU still supplies power, at a minimum, to the power button to allow return to S0. A full reboot is required. No previous content is retained. Other components may remain powered so the computer can "wake" on input from the keyboard, clock, modem, LAN, or USB device.

- \*\* Advanced Resume Events Control \*\*
- ► PCIE PME

This field specifies whether the system will be awakened from power saving modes when activity or input signal of onboard PCIE PME is detected.

### ► USB from S3/S4

The item allows the activity of the USB device to wake up the system from S3/ S4 sleep state.

### ► RTC

When [Enabled], your can set the date and time at which the RTC (real-time clock) alarm awakens the system from suspend mode.

### Save & Exit

nitto abtud Utility - Soperixit (t) cote therical Responder. Let anno eteanest koon kecuning thiosen Poten <mark>- Rose &amp; Role</mark>		
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Launch DTC Shall from Flüesyster de-Jos		
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service 2.12.0274. Longright (10.2005 Filerican	resourcends, unc.	

#### Save Changes and Reset

Save changes to CMOS and reset the system.

### Discard Changes and Exit

Abandon all changes and exit the Setup Utility.

Discard Changes

Abandon all changes.

### Load Optimized Defaults

Use this menu to load the default values set by the motherboard manufacturer specifically for optimal performance of the motherboard.

Save as User Defaults

Save changes as the user's default profile.

Restore User Defaults

Restore the user's default profile.

### Launch EFI Shell from filesystem device

This setting helps to launch the EFI Shell application from one of the available file system devices.

# Chapter 4 USB 3.0 driver installation

### SOP of USB 3.0 driver installation prior to Win 7 by Smart kit

### Purpose:

The original Windows 7 is imcompatible with USB 3.0, the program "MSI Smart Tool Kits" will help you to compile USB 3.0 driver into your original Windows 7, in order to avoid the system failure when you install OS. This tool can make your own bootable Windows 7 USB from your original Windows 7 disk.

### Things need to prepare:

Prepare your Windows 7 DVD, and an USB disk at least 8Gb Put the DVD in the DVD-ROM and plug USB into your computer. Please download "MSI Smart Tool Kits" from the website below: https://drive.google.com/drive/u/0/folders/0B0ap8HaD1zCCOU5sN2cyZ1JMSjQ

### MSI Smart Tool Kits

1. Click "Source folder" choose the location of your Windows 7 disc.

2.choose "USB storage" as bootable USB for your Windows 7

3.Click"Start"

4.Click"YES"





Once the status bar reach to 100%, withdraw the USB device and done.

### Step A.

- A-1. Plug your modified USB to USB 3.0 port, and keyboard
- A-2. Then turn on the LPC series press "Delete" to enter BIOS mode,
- A-3. In BIOS mode, go to "Boot" page and select "Hard Drive BBS Priorities"



A-4. Select your Modified USB disk as "Boot Option #1"



A-5. Then go to "Save & Exit" page choose "Save Changes and Reset"



A-6. Then the Win 7 installation will appear on the screen. Now you can install Windows 7 with your keyboard through USB 3.0.



End

# **Chapter 5** Installation Drivers

# 1. Windows 7 Patch Setup

1.1. Go to X:\Win\_patch , Choose" NDP451-KB2858728-x86-x64-AllOS-ENU.exe"

				Let B	14.0
Carlos - State Conserved	n o contra 22 - Martin - Mar	nder verste	10010-02		- 0
a mart grave	the waters			1.0.1	.0
The a	R Mar	here we as	2.99	364	
In Law	Steel JL About etc.	ACRONIC STREET	wine whippens	372.65	
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Mr Heaver					
- 100 Carlos Car			1000 C	10	
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Built and an		14-304, TX			

1.2. Choose "Yes"

S Har Arcourt	Control	178 <sup>11</sup>
To you change	want to allow the follow as to this computer?	ing program to make
<i>5</i>	Program name: NU1451-683 Verified publishes: Microsoft Co Microsoft Co Microsoft Co Microsoft Co	ESIT731-di8-s64-AUCS-ENU.exe. reporation officienmister
🛞 Show detai	Chertor	Yes No.

1.3. Choose"I have read and accept the license tems." Then Choose "Install"

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If the social 2.5 is Set in real electric the logice to be reader to be social to be a social to the	s owne	2 A
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1.4. Then press "Finish"

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	Check for more recent versions on all cover appendix
	Finish

1.5. Choose 32 or 64 Bit installation file



1.6. Choose"Yes"



1.7. After installation, choose"Restart Now"



# 2. Chipset Driver Setup

2.1. Go to X:\Chipset\ and choose" SetupChipset.exe"

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2.2. Choose"Next"



2.3. Choose"Accept"



2.4. Choose"Install"

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2.5. Choose"Yes", and wait to complete the installation.



# **3. Audio Driver Setup**

3.1. Go to X:\Audio\ and choose "Setup.exe"

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3.2. Choose"Yes", and wait until the installation is completed.

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2	Program name Ventied publisher File origin	InstallScript Setup Louncher Unicode In Realitek Semiconductor Corp Hard drive on this computer	
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3.3. Choose"Yes, I Want to restart my computer now", and press"OK" to restart.

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O No, 1 will restart my computer later.
CIK.

# 4. Graphics Driver Setup

4.1. Go to X:\Graphics\4277(Win7 8.1 64bit)\win64\ and choose" Setup.exe" according to your OS 32 bits or 64 bits.

This SOP is based on Win 7 64 Bit.

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4.2. Choose "Yes"



4.3. Choose"Next", and then "Yes" and "Next" until the installation is completed.

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Intel® Graphics Driver	/intel
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4.4. 點選"Yes, I Want to restart my computer now"後按"Finish"重開機

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# **5. LAN Driver Setup**

5.1.	Go to X:\	LAN\Install	Win7	7097	11232015	and choose"	Setup.exe"
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#### 5.2. Choose"Yes"

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### 5.3. Choose"Next"



5.4. Choose"Install"



5.5. Choose "Finish" to complete the installation.



# 6. SIO Driver Setup

6.1. Go to X:\SIO\1.2.3.0616(Win7)\ and choose "Intel Processor Win7 IO Drivers 64Bit.msi" according your OS by 32 or 64 Bits.

This SOP is based on Win 7 64 Bit.

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### 6.2. Choose "Next"



6.3. Choose "I accept the terms in the license agreement" and "Next", "Install", "Yes", "OK" until the installation is completed.



6.4. Choose "Finish" to complete the installation.



# 7. TXE Driver Setup

7.1. Go to X:\TXE\ and choose "SetupTXE.exe"



7.2. Choose "Yes" and "Next"



7.3. Choose "I accept the terms in the license agreement" and "Next" until the installation is completed.

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7.4. Choose "Finish" after the installation.


### 8. USB3.0 Driver Setup

8.1. Go to X:\USB3.0\4.0.3.49\ and choose "Setup.exe"

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8.2. Choose "Yes", "Next" and "Yes" until the installation is completed.

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unknown pu	blisher to make changes to this computer?
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8.3. Choose "Finish" until the installation is completed.



# **Chapter 6 Touch Screen Driver Installation**

## **Touch Driver installation for Windows 7**

1. Install Touch Driver in DVD ROM



2. Go to file of X:\EETI Touch Driver\eGalaxTouch\_5.11.0.9126 , then choose "setup" (X:\ means DVD location)

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3. Choose "Yes" to start installation



4. Choose "Next"



5. Choose "Next"



6. Choose "Next"



7. Choose "Next"

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8. Choose "OK"



9. Choose "Next""

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#### 11. Choose "Next"

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12. Choose "Next""



#### 13. Waif for installation to complete

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14. Choose "Yes" for 4 points calibration



15. Please use your finger to press the calibration point. When it shows "OK", please remove your finger from the touch screen. Please repeat it for next 3 calibration points. It requires totally 4 calibration points for complete touch screen installation.



16. After 4 points calibration, we have completed the touch function installation.

#### WDT Sample Code

```
SIO_INDEX_Port
                    equ 04Eh
                    equ 04Fh
SIO_DATA_Port
                    eau 087h
SIO UnLock Value
SIO_Lock_Value
                    equ 0AAh
                    equ 007h
WatchDog_LDN
WDT_UNIT
                    equ 60h
                                ;60h=second, 68h=minute, 40h=Disabled Watchdog timer
                                ;ex. 30 seconds
WDT_Timer
                    equ 30
Sample code:
;Enable config mode
            dx, SIO_INDEX_Port
al, SIO_UnLock_Value
    mov
    mov
            dx, al
    out
    jmp
            short $+2
                                     ;Io_delay
            short $+2
    jmp
                                     ;Io_delay
    out
            dx, al
;Change to WDT
            dx, SIO_INDEX_Port
    mov
            al, 07h
    mov
    out
            dx, al
    mov
            dx, SIO_DATA_Port
al, WatchDog_LDN
    mov
    out
            dx, al
;Acive WDT
            dx, SIO_INDEX_Port
   mov
            al, 30h
    mov
            dx, al
    out
            dx, SIO_DATA_Port
    mov
    in
            al, dx
            al, 01h
    or
    out
            dx, al
 ;set timer
    mov
            dx, SIO_INDEX_Port
    mov
            al, 0F6h
    out
            dx, al
            dx, SIO_DATA_Port
al, WDT_Timer
dx, al
    mov
    mov
    out
;set UINT
            dx, SIO_INDEX_Port
    mov
    mov
            al, 0F5h
    out
            dx, al
    mov
            dx, SIO_DATA_Port
    mov
            al, WDT_UNIT
    out
            dx, al
;enable reset
    mov
            dx, SIO_INDEX_Port
            al, OFAh
    mov
    out
            dx, al
    mov
            dx, SIO_DATA_Port
    in
            al, dx
    or
            al, 01h
            dx, al
    out
;close config mode
            dx, SIO_INDEX_Port
    mov
    mov
            al, SIO_Lock_Value
    out
            dx, al
```