WPPC-H1780T

WPPC-H1580T

User's Manual

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Version Note

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1	A0.1	first publish	20201029	Echo

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Acknowledgements

Product Warranty (2 years)

JHC warrants to you, the original purchaser, that each of its products will be free from defects in materials and workmanship for two years from the date of purchase.

This warranty does not apply to any products which have been repaired or altered by persons other than repair personnel authorized by JHC, or which have been subject to misuse, abuse, accident or improper installation.

JHC assumes no liability under the terms of this warranty as a consequence of such events.

Because of JHC.s high quality-control standards and rigorous testing, most of our customers never need to use our repair service. If an JHC product is defective, it will be repaired or replaced at no charge during the warranty period. For out-of-warranty repairs, you will be billed according to the cost of replacement materials, service time and freight. Please consult your dealer for more details.

If you think you have a defective product, follow these steps:

1. Collect all the information about the problem encountered. (For example, CPU speed, JHC products used, other hardware and software used, etc.) Note anything abnormal and list any onscreen messages you get when the problem occurs.

2. Call your dealer and describe the problem. Please have your manual, product, and any helpful information readily available.

3. If your product is diagnosed as defective, obtain an RMA (return merchandise authorization) number from your dealer. This allows us to process your return more quickly.

4. Carefully pack the defective product, a fully-completed Repair and Replacement Order Card and a photocopy proof of purchase date (such as your sales receipt) in a shippable container. A product returned without proof of the purchase date is not eligible for warranty service.

5. Write the RMA number visibly on the outside of the package and ship it prepaid to your dealer.

Declaration of Conformity

CE

This product has passed the CE test for environmental specifications

when shielded cables are used for external wiring. We recommend the use

of shielded cables. This kind of cable is available from JHC. Please

contact your local supplier for ordering information. Test conditions for

passing included the equipment being operated within an industrial enclosure.

In order to protect the product from being damaged by ESD (Electrostatic

Discharge) and EMI leakage, we strongly recommend the use of

CE-compliant industrial enclosure products.

FCC Class B

Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a resident installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, in which case the user will be required to correct the interference at his own expense.

Technical Support and Assistance

Step 1.   Visit the JHC web site at www.jhctech.com.cn where you can find the latest information about the product.

Step 2.   Contact your distributor, sales representative, or JHC's customer service center for technical support if you need additional assistance. Please have the following information ready before you call:

- Product name and serial number

- Description of your peripheral attachments

  - Description of your software (operating system, version, application software, etc.)

- A complete description of the problem

- The exact wording of any error messages

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CHAPTER

1

General Information

1.1 Introduction

WPPC-H1780T/WPPC-H1580T is a new product developed by JHC. WPPC-H1780T is a rugged, super-reliable, fanless embedded waterproof panel PC. The front panel is made of SUS304 stainless steel. The back cover is made of a 3.0mm 5052 aluminum alloy, which can meet both CPU thermal dissipation and VESA mounting.It powered by Intel® Celeron J1900 CPU,1-Ch DDR3L 1333 MHz SODIMM, Up to 8GB. Advanced Gen.7 Intel® HD Graphics.

WPPC-H1780T offers 1*VGA, 1*HDMI, support dual independent displays, 2*GbE LANs, 1*USB3.0, 3*USB2.0, 2*COM RS232/422/485, 1*F-Mini PCIe with SIM slot, which supports 4G/LTE/Wifi/BT/ GPS. 1*mSATA, support AHCI; WPPC-H1780T provides 1*2.5"SATA2 (3Gbps) HDD/SSD are used for storage, DC 9~36V power supply. WPPC-H1780T supports 17- inch 1280*1024@60Hz TFT LCD, Resistive/ Capacitive touch. WPPC-H1580T supports 15-inch 1280*1024@60Hz TFT LCD, Resistive/Capacitive touch. This PC adopts full flat bezel design. In addition to IO interface, the waterproof grade of this PC can reach IP65/IP66. It has super waterproof, solid and reliable, high performance, multi - IO, multi – extension, and wide range of applications. Suitable for wet, cold and harsh environment.

1.2 Features

Key Features

- Intel® Baytrail Celeron J1900 2.0-2.42G CPU
- Intel SoC
- 1-Ch DDR3L 1333MHZ SODIMM, Up to 8GB
- SUS304 grade stainless steel enclosure
- 3.0mm 5052 aluminum rear cover
- Full Flat bezel design, fanless
- Totally IP65/IP66(except for IO interface)
- Support for standard VESA 100*100 mounting
- 15"/17" LED TFT LCD, Resistive/Capacitive touch
- 1*HDMI, 1*VGA,2*GbE LAN,2*COM, 1*USB3.0, 3*USB2.0
- 1*Opt. ANT, support 4G LTE/WiFi/BT4.0
- 1*Mini PCIe (PCIe+USB, w/SIM)

- 1*Simple-swap 2.5" SATA bay , 1*mSATA

- DC 9~36V power input

1.3 Specifications

1.3.1 General

CPU: Intel® Baytrail Celeron J1900 2.0-2.42G CPU

System Memory: 1-Ch DDR3L, 1333MHz SODIMM up to 8GB

Watchdog Timer: 255-level interval timer, setup by software

Serial Ports: 2* RS232/422/485 DB9 male

USB: 1*USB 3.0 gen2 Type A, 3*USB2.0 Type A

Expansion Interface:

1*Full size Mini PCIe (PCIeX1+USB) with SIM slot

1* Full size mSATA，with USB2.0，support AHCI

Storage:

1*2.5" HDD SATA bay

1.3.2 Display

Chipset: Intel® Gen.7 HD Graphics

Display Memory: Shared system memory

Resolution: VGA 1900x1200@60Hz; HDMI 1920*1080@60Hz

1.3.3 Ethernet

Chipset: 2*Intel® I210AT Ethernet controllers

Speed: 10/100/1000 Mbps Integrated

Interface: 2*RJ45

1.3.4 Power Consumption

Power Consumption: TDP 12V/2.5A (WPPC-H1780T) TDP 12V/1.62A (WPPC-H1580T)

Power Supply: DC 9~36V，D-Jack w/ M8

1.4 Environmental Specifications

Operating temperature: 0~60°C

Relative humidity: 10~90% @ 40°C (non-condensing)

Storage temperature: -40 ~ 85°C (-40 ~ 185°F)

Vibration loading during operation:

With SSD: 5.0 Grms, random, 5 ~ 500 Hz

With HDD:1.0 Grms, random, 5 ~ 500 Hz

Shock during operation:

10g, peak acceleration (11 ms duration)

EMC: CE, FCC Class B

1.5 Order Information

Modol No.	Introduction
WPPC-H1780T-T001	Industrial Waterproof Panel PC, Intel® Baytrail Celeron J1900 CPU, 17"TFT LCD, Resistive touch, 1*HDMI,　1*VGA, 2*G-LAN, 2*COM, 1*Opt. ANT, 1*USB3.0, 3*USB2.0, 1*Mini PCIe , 1*Simple-swap 2.5"SATA bay, 1*mSATA, DC 9~36V
WPPC-H1780T(P)-T001	Industrial Waterproof Panel PC, Intel® Baytrail Celeron J1900 CPU, 17"TFT LCD, Capacitive touch, 1*HDMI,　1*VGA, 2*G-LAN, 2*COM, 1*Opt. ANT, 1*USB3.0, 3*USB2.0, 1*Mini PCIe , 1*Simple-swap 2.5"SATA bay,1*mSATA, DC 9~36V
WPPC-H1580T-T001	Industrial Waterproof Panel PC, Intel® Baytrail Celeron J1900 CPU, 15"TFT LCD, Resistive touch, 1*HDMI,　1*VGA, 2*G-LAN, 2*COM, 1*Opt. ANT, 1*USB3.0, 3*USB2.0, 1*Mini PCIe , 1*Simple-swap 2.5"SATA bay, 1*mSATA, DC 9~36V
WPPC-H1580T(P)-T001	Industrial Waterproof Panel PC, Intel® Baytrail Celeron J1900 CPU, 15"TFT LCD, Capacitive touch, 1*HDMI,　1*VGA, 2*G-LAN, 2*COM, 1*Opt. ANT, 1*USB3.0, 3*USB2.0, 1*Mini PCIe , 1*Simple-swap 2.5"SATA bay,1*mSATA, DC 9~36V

1.6 Mechanical Specifications

The WPPC-H1780T/ WPPC-H1580T is industrial waterproof panel PC of JHCTECH, consists of a JHC ESBC single board computer (ECM-I715) and installed in the universal aluminum rectangular profile housing.

Main Board Front (ECM-I715)
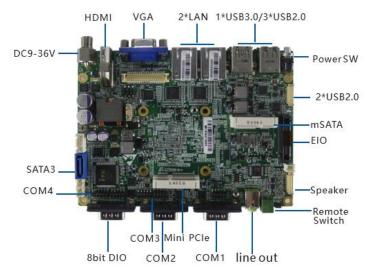
Figure 1.1

Main Board Rear (ECM-I715)
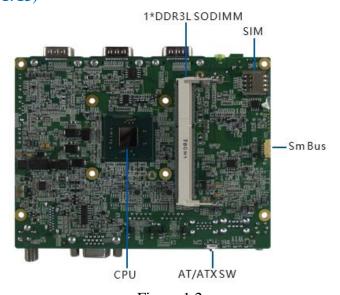
Figure 1.2

WPPC-H1780T/WPPC-H1580T Fornt
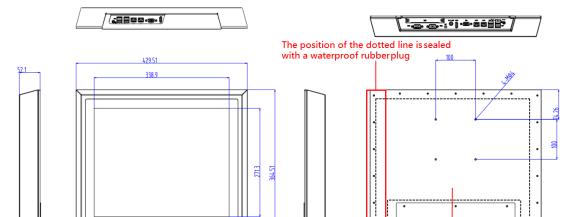
Figure 1.3

WPPC-H1780T Dimension: Unit: mm

Figure 1.4

WPPC-H1580T Dimension: Unit: mm

Figure 1.5

CHAPTER **2**
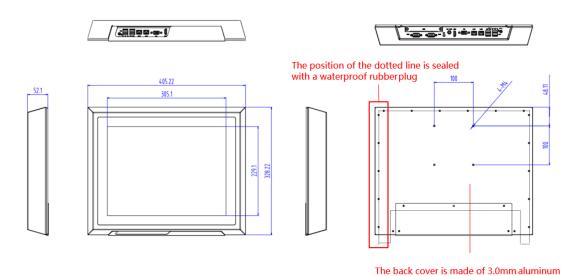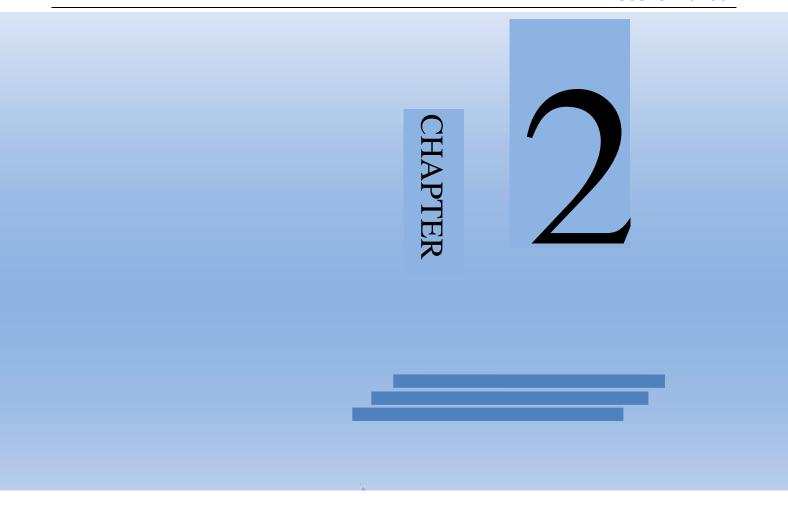
Hardware Installation

2.1 Introduction

The following sections show jumpers settings and the external connectors and pin assignments for

applications.

2.2 Jumpers setting

The WPPC-H1780T/WPPC-H1580T Box Computer has a number of jumpers that allows you to

configure your system to suit your application. The table below shows the function of each of the board's

Jumpers:

Jumpers

Jumpers	Name	Description
AT/ATX	Set Power-on mode at AT or ATX	Jumper

2.2.1 ATX- AT/ATX Power on mode selection
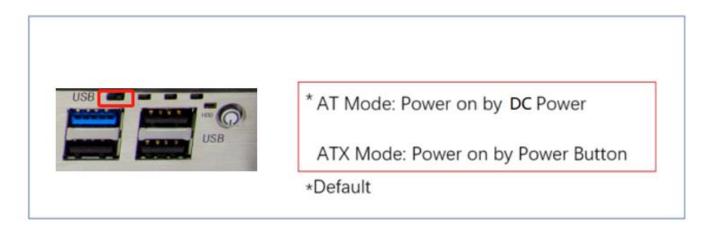
Figure 2. 1

The WPPC-H1780T/WPPC-H1580T provides an AT/ATX jumper, which users can set Power-on mode by
it. When you set pins 2 and 3 on, it means power on by AC Power; when you set pins 1 and 2 on, it means
power on by Power button.

2.3 I/O Ports Indication

WPPC-H1780T/WPPC-H1580T Front Panel I/O Ports
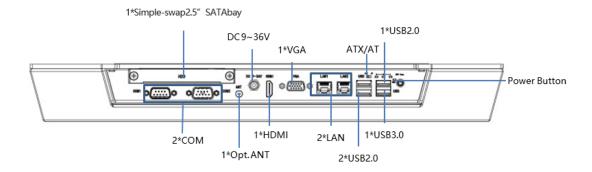
Figure 2. 2

The Rear panel I/O ports consist of the following:

- 1*DC-in Power: D-Jack w/ M8　DC 9~36V

- 1*USB3.0 Type A 、3*USB2.0 TypeA

- 1*HDMI , 1*VGA

- 2*LAN:RJ45

- 2*COM: DB9

- `*2.5"SATA2 tray

2.3.1 Ethernet Connector

The WPPC-H1780T/WPPC-H1580T is equipped with 2*Intel I211AT chips for 10/100/1000Mbps Ethernet controllers. The product provides 2*RJ45, with LED indicators on the front side to show its Active/Link status (Green LED) and Speed status (yellow LED).

Table 2.1 for pin assignments.
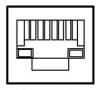
Figure 2. 3

Table 2.1: RJ-45 Connector pin assignments			
Pin	10/100/1000BaseT Signal	Pin	10/100/1000BaseT Signal
1	TX+(10/100), LAN_DA+(GHz)	5	LAN_DC-(GHz)
2	TX-(10/100), LAN_DA-(GHz)	6	RX-(10/100), LAN_DB-(GHz)
3	RX+(10/100), LAN_DB+(GHz)	7	LAN_DD-(GHz)
4	LAN_DC+(GHz)	8	LAN_DD-(GHz)

2.3.2 USB Connector

The USB device allows data exchange between your computer and a wide range of simultaneously accessible external Plug and Play peripherals.

The WPPC-H1780T/WPPC-H1580T provides 1*USB3.0 gen2, 3*USB2.0. The USB interface can be disabled in the system BIOS setup. Table 2.2 for USB 3.0 pin assignments.
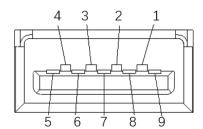
Figure 2. 4

Table 2.2: USB3.0 Port Pin Assignments			
Pin	Signal	Pin	Signal
1	VBUS	6	StdA_SSRX+
2	D-	7	GND_DRAIN
3	D+	8	StdA_SSTX-
4	GND	9	StdA_SSTX+
5	StdA_SSRX-	Shell	Shield

Table 2.3 for USB2.0 pin assignments.
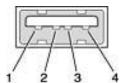
Figure 2. 5

Table 2.3: USB2.0 Port Pin Assignments			
Pin	Signal	Pin	Signal
1	USB_VCC	2	USB_D-
3	USB_D+	4	USB_GND

2.3.3 VGA

The WPPC-H1780T/WPPC-H1580T provides a standard VGA display port. They can support the most resolution up to 1900*1200@60Hz.

Table 2.4 for VGA pin assignments.
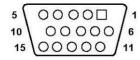
Figure 2. 6

Table 2.4: VGA Pin Assignments					
Pin	Signal	Pin	Signal	Pin	Signal
1	VGA_z_R	6	GND_RGB	11	SPD
2	VGA_z_G	7	GND_7	12	VGA_SDA
3	VGA_z_B	8	GND_RGB	13	MONHSYNC
4	SPC	9	VGA_5V	14	MONVSYNC
5	GND	10	GND	15	VGA_SCL

2.3.4 HDMI

The WPPC-H1780T/WPPC-H1580T provides a standard HDMI ports, it supports the most resolution up to 1920*1080@60Hz.

Table 2.4 for HDMI pin assignments.
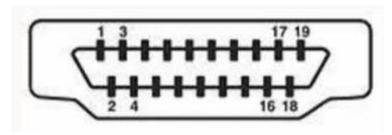
Figure 2. 7

Table 2.5: DP Pin Assignments					
Pin	Signal	Pin	Signal	Pin	Signal
1	DATA2_P	8	GND	15	SCL
2	GND	9	DATA0_N	16	SDA
3	DATA2_N	10	CLK_P	17	GND
4	DATA1_P	11	GND	18	VCC
5	GND	12	CLK_N	19	DETECT
6	DATA1_N	13	NC		
7	DATA0_P	14	NC		

2.3.5 COM Connector

The WPPC-H1780T/WPPC-H1580T provides 2 serial ports of COM1/2/ by 2*D-sub 9-pin connectors.

COM1/2 can be configured as RS232、RS422 or RS485 by BIOS setup. Table 2.6 for COM1/2 pin

assignments.
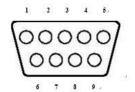
Figure 2. 1

Table 2.6: COM1/2 Serial Ports Pin Assignments			
Pin	RS-232 Signal	RS-422 Signal	RS-485 Signal
1	DCD	TX-	DATA-
2	RxD	TX+	DATA+
3	TxD	RX+	NC
4	DTR	RX-	NC
5	GND	GND	GND
6	DSR	NC	NC
7	RTS	NC	NC
8	CTS	NC	NC
9	RI	NC	NC

2.3.6 Serial ATA

The WPPC-H1780T/WPPC-H1580T provides 1*SATA2.0, data transfer rate up to 3Gb/s. Table 2.7 for

pin assignments.

Figure 2. 2

Table 2.7: Serial ATA pin assignments			
Pin	Signal	Pin	Signal
1	GND	5	RX-

2	TX+	6	RX+
3	TX-	7	GND
4	GND		

2.3.7 Serial ATA Power

Figure 2. 3

Table 2.8 for pin assignments.

Table 2.8: Serial ATA Power pin assignments			
Pin	Signal	Pin	Signal
1	5V	3	GND
2	GND	4	12V

2.3.8 Mini-PCIe Connector

The WPPC-H1780T/WPPC-H1580T provides a Mini PCIe. Mini PCIe interface with PCIe and USB signal, Install Mini PCI Express cards such as network cards or other cards that comply with the Mini PCI Express specifications into the Mini PCI Express slot.

(Note: SIM1 slot is connected to MPE1 slot)

Mini-PCIe
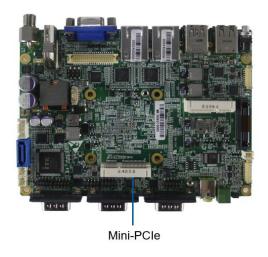
Figure 2. 11

2.3.9 mSATA connector

WPPC-H1780T/WPPC-H1580T provides a standard full size mSATA with USB2.0, support AHCI.

Figure 2. 12

2.3.10 LED

The WPPC-H1780T/WPPC-H1580T panel has one power indicator, one hard disk indicator, three network connection status indicators, and three CPU operating temperature indicators. When the CPU operating temperature ≤85℃, the green light; When the CPU temperature is between 86℃ and 95℃, the yellow light is on, and when the CPU operating temperature is ≥96℃, the red light is on. If you keep the CPU running at a red light, it will affect the life of the machine.
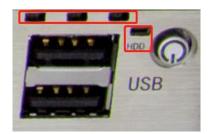
Figure 2. 13

2.4 Installation

2.4.1 HDD/SSD Installation

Step 1: unscrew the 2 screws on the HDD/SSD bracket of the rear panel.

Step 2: remove the HDD/SSD stent.

Step 3: load the HDD/SSD into the bracket and tighten the 4 screws on the left and right sides to fix the HDD/SSD.

Step 4: push the bracket with HDD/SSD into the slot and tighten the 2 screws on the bracket.

Figure 2. 14

Figure 2. 15

Figure 2. 16

2.4.2 Installing mSATA

Step 1: Unscrew the 29 screws on the back panel and remove the cover plate

Step 2: Insert the corresponding mSATA module into the corresponding slot and fix it by locking the

screw.

Step 3: Use the opposite steps to complete the installation of the machine
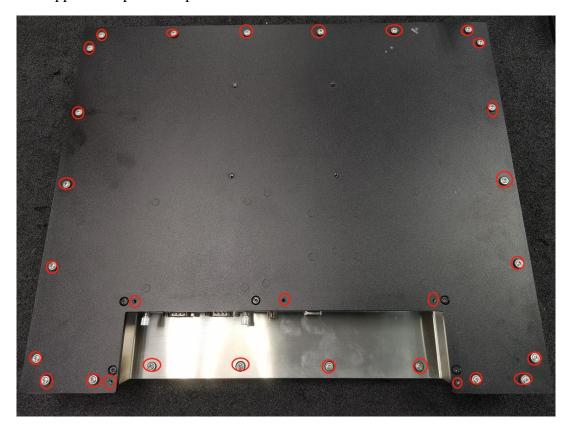
Figure 2. 17

Figure 2. 18

2.4.3 Installing Mini PCIe

Step 1: The step here is the same as above chapter "2.4.2 Installing mSATA", For details, please refer to the above chapter "2.4.2 Installing mSATA"

Figure 2. 19

CHAPTER

3

BIOS Setup

3.1 BIOS Description

BIOS is the communication bridge between hardware and software. How to correctly set the BIOS

parameters is crucial for the system to work stably and whether the system works at its best.

This chapter describes how to change the system settings through the BIOS settings.

Note: For the purpose of better product maintenance, the manufacture reserves the right to change the

BIOS items presented in this manual. The BIOS setup screens shown in this chapter are for reference only

and may differ from the actual BIOS.

You need to make SETUP settings as follows:

1. An error message appears on the screen during the system self-test and asks for the SETUP setting.

2. You want to change the factory default settings based on customer characteristics.

(But in general, customers are not recommended to set it up. In most cases, using the default value is

already the best setting.)

The BIOS Setup Utility enables you to configure:

•   Hard drives, diskette drives and peripherals

•   Video display type and display options

•   Password protection from unauthorized use

•   Power Management features

3.1.1 Entering the Setup Utility

When you power on the system, BIOS enters the Power-On Self-Test (POST) routines. POST is a series

of built-in diagnostics performed by the BIOS. After the POST routines are completed, Press the "**DEL**"

key to enter BIOS Setup Utility.

```
              Aptio Setup Utility - Copyright (C) 2020 American Megatrends, Inc.
            Main  Advanced  Chipset  Security  Boot  Save & Exit

            BIOS Information                                        OS Selection
            BIOS Vendor                    American Megatrends
            Build Date and Time            07/28/2020 15:02:45
            Model                          R715S003

            OS Selection                   [Windows 7]

            System Language                [English]

            System Date                    [Fri 10/30/2020]
            System Time                    [14:46:52]

            Access Level                   Administrator
                                                                   →←: Select Screen
                                                                   ↑↓: Select Item
                                                                   Enter: Select
                                                                   +/-: Change Opt.
                                                                   F1: General Help
                                                                   F2: Previous Values
                                                                   F9: Optimized Defaults
                                                                   F10: Save & Exit
                                                                   ESC: Exit

                   Version 2.17.1249. Copyright (C) 2020 American Megatrends, Inc.
```

Figure 3.1

3.2 BIOS parameter settings

When you start the Setup Utility, the main menu appears. The main menu of the Setup Utility displays a list of the options that are available. A highlight indicates which option is currently selected. Use the cursor arrow keys to move the highlight to other options. When an option is highlighted, execute the option by pressing <Enter>.

Some options lead to pop-up dialog boxes that prompt you to verify that you wish to execute that option. Other options lead to dialog boxes that prompt you for information.

Some options (marked with a triangle ▶) lead to submenus that enable you to change the values for the option. Use the cursor arrow keys to scroll through the items in the submenu.

In this manual, default values are enclosed in parenthesis. Submenu items are denoted by a triangle ▶.
The default BIOS setting for this motherboard apply for most conditions with optimum performance. We do not suggest users change the default values in the BIOS setup and take no responsibility to any damage caused by changing the BIOS settings.

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3.2.1 BIOS Navigation Keys

Enter the SETUP settings interface, The BIOS navigation keys are listed below:

Table 3.1: The BIOS navigation keys	
KEY	**FUNCTION**
ESC	Exit the current menu
↑↓→←	Scrolls through the items on a menu
+/-	Change Opt.
Enter	Select
F1	General Help
F2	Previous Values
F3	Optimized Defaults
F4	Save & Exit

3.2.2 Main Menu

When you enter the BIOS Setup program, the main menu appears, giving you an overview of the basic

system information. Select an item and press <Enter> to display the submenu.

```
          Aptio Setup Utility - Copyright (C) 2020 American Megatrends, Inc.
      Main  Advanced  Chipset  Security  Boot  Save & Exit

      BIOS Information                                        OS Selection
      BIOS Vendor                   American Megatrends
      Build Date and Time           07/28/2020 15:02:45
      Model                         R715S003

      OS Selection                  [Windows 7]

      System Language               [English]

      System Date                   [Fri 10/30/2020]
      System Time                   [14:46:52]

      Access Level                  Administrator
                                                            →←: Select Screen
                                                            ↑↓: Select Item
                                                            Enter: Select
                                                            +/-: Change Opt.
                                                            F1: General Help
                                                            F2: Previous Values
                                                            F9: Optimized Defaults
                                                            F10: Save & Exit
                                                            ESC: Exit



          Version 2.17.1249. Copyright (C) 2020 American Megatrends, Inc.
```

Figure 3.2

21

BIOS Vendor (American Megatrends)

This item shows the information of the BIOS vendor.

BIOS ID (JH715A14)

This item shows the information of the BIOS version.

OS Selection (Windows 7)

This item shows the OS Selection.

Build Date and Time (02/05/2018/ 19:26:45)

This item shows the information of the BIOS build date and time.

System Date & Time

The Date and Time items show the current date and time on the computer. If you are running a Windows OS, these items are automatically updated whenever you make changes to the Windows Date and Time Properties utility.

3.2.3 Advanced Menu

This page sets up more advanced information about your system. Handle this page with caution. Any changes can affect the operation of your computer.
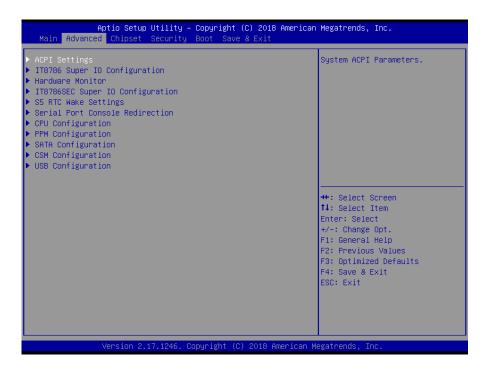
Figure 3.3

▶**ACPI Settings**

The item in the menu shows the highest ACPI sleep state when the system enters suspend.

```
                Aptio Setup Utility - Copyright (C) 2018 American Megatrends, Inc.
         Advanced

 ACPI Settings                                          Enables or Disables BIOS ACPI
                                                        Auto Configuration.
 Enable ACPI Auto Configuration       [Disabled]

 Enable Hibernation                   [Enabled]
 ACPI Sleep State                     [Suspend Disabled]
 Lock Legacy Resources                [Disabled]



                                                        _____
                                                        � ➔: Select Screen
                                                        ↑↓: Select Item
                                                        Enter: Select
                                                        +/-: Change Opt.
                                                        F1: General Help
                                                        F2: Previous Values
                                                        F3: Optimized Defaults
                                                        F4: Save & Exit
                                                        ESC: Exit




                Version 2.17.1246. Copyright (C) 2018 American Megatrends, Inc.
```

Figure 3.4

ACPI Sleep State

Suspend Disabled: Shut down system sleep

S3：Suspend to RAM

This item allows user to enter the ACPI S3 (Suspend to RAM) Sleep State (default).

Press <Esc> to return to the Advanced Menu page.

▶ **IT8786 Supper IO Configuration**

The item in the menu shows the information of RTC wake settings.

```
              Aptio Setup Utility - Copyright (C) 2018 American Megatrends, Inc.
        Advanced

   IT8786 Super IO Configuration                              Set Parameters of Serial Port
                                                              1 (COMA)
   Super IO Chip                    IT8786
 ▶ Serial Port 1 Configuration
 ▶ Serial Port 2 Configuration
 ▶ Serial Port 3 Configuration
 ▶ Serial Port 4 Configuration


   GPIO Modules Mode Settings
   GPIO 70 Controller               [Input]
   GPIO 71 Controller               [Input]
   GPIO 72 Controller               [Input]
   GPIO 73 Controller               [Input]                  →←: Select Screen
   GPIO 74 Controller               [Output High]            ↑↓: Select Item
   GPIO 75 Controller               [Output High]            Enter: Select
   GPIO 76 Controller               [Output High]            +/-: Change Opt.
   GPIO 77 Controller               [Output High]            F1: General Help
                                                             F2: Previous Values
                                                             F3: Optimized Defaults
                                                             F4: Save & Exit
                                                             ESC: Exit




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```

Figure 3.5

Serial Port 1 Configuration: Serial Port 1 Settings

Serial Port 2 Configuration: Serial 2 Settings

Serial Port 3 Configuration: Serial Port 3 Settings

Serial Port 4Configuration: Serial Port 4 Settings

8-bit TTL GPIO input and output settings

Serial Port 1 Configuration

```
              Aptio Setup Utility - Copyright (C) 2018 American Megatrends, Inc.
        Advanced

   Serial Port 1 Configuration                               Serial Mode:422 or 485 port
                                                              Setting
   Serial Port                      [Enabled]
   Device Settings                  IO=3F8h; IRQ=4;

   Change Settings                  [Auto]
   Serial Mode                      [232 MODE]

                           ┌──────── Serial Mode ────────┐
                           │  Disabled                   │
                           │  232 MODE                   │
                           │  422 MODE                   │
                           │  485 MODE                   │
                           └─────────────────────────────┘
                                                             →←: Select Screen
                                                             ↑↓: Select Item
                                                             Enter: Select
                                                             +/-: Change Opt.
                                                             F1: General Help
                                                             F2: Previous Values
                                                             F3: Optimized Defaults
                                                             F4: Save & Exit
                                                             ESC: Exit




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```

Figure 3.6

24

Serial Port

This item is used to set the serial interface to be turned on or off. The setting value is [Enabled]

[Disabled]

Device Setting (Read Only)

This item displays the interrupt and address of the serial port.

Change Setting

Set port interrupt and address of the serial port.

Serial MODE

Set the mode of the serial port

(Subcard IO) used with the subcard ECB-154
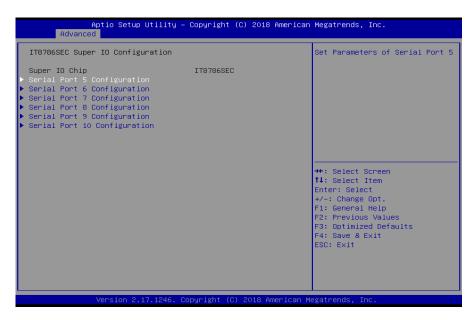
Figure 3.7

Figure 3.8

Serial Port 5-10Configuration

Serial Port 5-10 Configuration is the same as above

▶H/W Monitor

PC Health Status

This item is used for hardware security detection. The BIOS will display the current CPU and system

temperature.

Figure 3.9

▶ **S5 RTC Wake Settings**

Figure 3.10

Wake system from S5

This item is used to set whether to power on regularly. The setting value is [Enabled] [Disabled].

If you select [Enabled], set the hour, minute, and second in the pop-up options.

▶ **Serial Port Console Redirection**

Figure 3.11

27
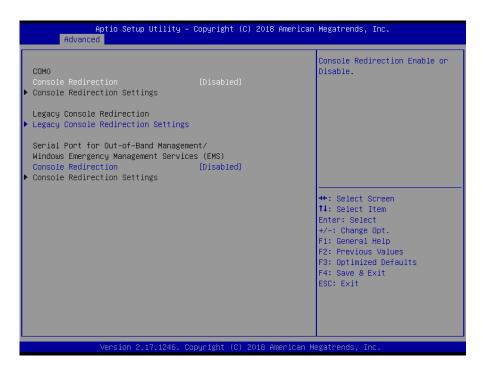
Console Redirection

Use this item to Serial Port Console Redirection

Press <Esc> to return to the Advanced Menu page.

▶ **CPU Configuration**

This item in the menu shows the information of the CPU.

Figure 3.12

Socket 0 CPU Information

This item contains detailed information about the CPU, including the CPU manufacturer, model,

frequency, L1 cache size, and L2 cache size.

CPU Speed

This item shows the processor speed.

64-bit

This item shows whether 64-bit operations are supported.

Limit CPUID Maximum

CPUID refers to CPU information, including model number, CPU family, cache size, clock speed and

brand, as well as transistor number, pin type, size, etc. In the BIOS setup options of the Intel platform, it

is usually Limit CPUID MAX to 3. The meaning is: limit the execution of the CPUID instruction to

return a value greater than 3. Because return values greater than 3 may cause some operating system wrong, generally set this option to [Disabled] on Windows systems for better overclocking. The default value is [Disabled].

Execute Disabled Bit

The Execution Disable bit is a hardware feature of the Intel CPU that enables the CPU to avoid certain malicious attacks based on buffer overflow viruses. In addition, the execution of the prohibition bit requires Windows XP SP2, Windows Server 2003 SP1 and other OS to work properly. The implementation principle is that the processor divides several areas in memory, some areas can execute application code, while others do not allow. The setting items are Disabled/Enabled, and the default is Enabled.

Intel Virtualization Technology

Intel Virtualization is the system hypothesis technology used in Intel's CPU. It enables multiple OS to run on a single PC. VT technology will play a very important role in various types of processors (including dual-core processors). This technology enables the processor to have and/or virtualization technology. With Virtualization Technology, we can run two operating systems simultaneously on the same machine.

Power Technology

This item sets the way of Power management.

▶ **PPM Configuration**

Figure 3.13

CPU C state Report

Whether to enable the CPU power status report, the setting values are: [Disabled], [Enabled]. When set to Enabled, the option Max CPU C-state appears and the Max CPU C-state value can be set.

▶**SATA Configuration**

This item in the menu shows the mode of serial ATA configuration options.
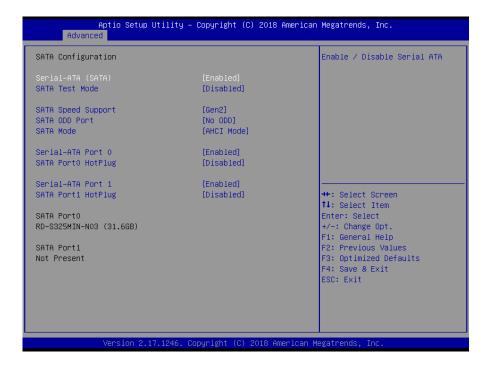
Figure 3.14

Serial-ATA(SATA)

This item allows you to enable or disable serial-ATA.

SATA Speed Support

This item shows the speed of support SATA.

Press <Esc> to return to the Advanced Menu page.

SATA ODD Port

This item indicates which SATA port is set as the optical drive port.

SATA Mode

This item is used to set the operating mode of the SATA.

Serial-ATA Port 0

This item shows whether to shut down Serial-ATA Port 0.

SATA Port 0 Hotplug

This item shows whether supports SATA Port 0 Hotplug.

Serial-ATA Port 1

This item shows whether to shut down Serial-ATA Port 1.

SATA Port 1 Hotplug

This item shows whether supports SATA Port 1 Hotplug.

▶ **CSM Configuration**

Figure 3.15

CSM Support

Compatibility Support Module, which is a compatibility support module, is a special module of UEFI and provides compatibility support for systems that do not support UEFI.

GateA20 Active

This item indicates whether to disable GA20 through the BIOS server or keep the activation status all the time.

Option ROM Messages

This item shows the display mode of option ROM Message.

Boot option filter

This item indicates the boot priority of controlling EFI or Legacy OpROM.

Network

This item is used to set the EFI network card OpROM boot or the traditional network card OpROM boot or priority boot.

Storage

This item is used to set the EFI storage OpROM boot or the traditional storage OpROM boot.

Video

This item is used to set EFI display OpROM startup or traditional display OpROM startup.

Other PCI devices

This item is used to set the EFI PCI device OpROM boot or the traditional PCI device OpROM boot

▶ **USB Configuration**

Use this item to show the information of USB configuration.
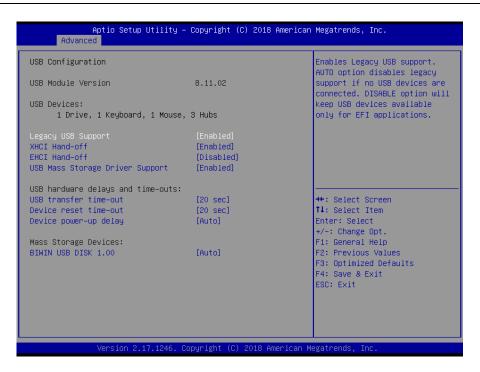
Figure 3.16

Legacy USB Support

This item is used to set the USB interface support. If you need to support USB devices under DOS, such as U disk, USB keyboard, etc., set this item to [Enabled] or [Auto]. Otherwise, select [Disabled].

USB 2.0 (EHCI) Support

[Enabled]: Allows USB EHCI transport protocol with a maximum transfer rate of 480Mpbs

[Disabled]: Disable the USB2.0 interface, the traditional transfer rate is 12Mpbs.

USB 2.0 Controller Mode

This item sets USB 2.0 device works in full speed mode (FullSpeed) or high speed mode (HiSpeed).

EHCI Hand-off

This option is used to determine whether to cut the USB port into USB 2.0 mode before entering the OS. Set to Disable, It will operate in USB 1.1 compatibility mode before giving ownership to the OS.

USB Mass Storage Driver Support

USB mass storage device support switch.

USB Transfer time-out

This item Sets the timeout period for control, batch, and interrupt transmission. The default is 20 seconds.

Device reset time-out

This item sets boot command timeout of the large capacity USB disk. The default is 20 seconds.

Device Power-up Delay

33

This item sets the maximum delay time that the USB device reports to the primary controller.

Mass Storage Devices

This item is used to set the specific type of connected USB device. The setting value is [Auto][Floppy][Forced FDD][Hard Disk][CD-ROM], the default is Auto.

3.2.4 Chipset Menu

The chipset menu items allow you to change the settings for the North Bridge chipset, South Bridge chipset and other system.
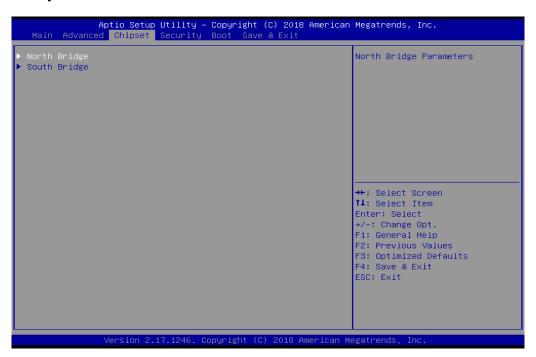
Figure 3.17

▶**North Bridge**

Scroll to this item and press <Enter> and view the following screen:

```
          Aptio Setup Utility - Copyright (C) 2018 American Megatrends, Inc.
             Chipset

      GOP Configuration                                    Enable GOP Driver will unload
      GOP Driver                      [Enabled]            VBIOS; Disbale it will load
                                                           VBIOS
      Intel IGD Configuration

      Integrated Graphics Device      [Enabled]

      IGD Turbo Enable                [Enabled]
      Primary Display                 [IGD]
      GFX Boost                       [Disabled]
      PAVC                            [LITE Mode]
      DVMT Pre-Allocated              [64M]
      DVMT Total Gfx Mem              [256MB]
      Aperture Size                   [256MB]             →←: Select Screen
      DOP CG                          [Enabled]           ↑↓: Select Item
      GTT Size                        [2MB]               Enter: Select
      IGD Thermal                     [Disabled]          +/-: Change Opt.
      Spread Spectrum clock           [Disabled]          F1: General Help
                                                          F2: Previous Values
      ISP Enable/Disable              [Enabled]           F3: Optimized Defaults
      ISP PCI Device Selection        [Disabled]          F4: Save & Exit
                                                          ESC: Exit
      Vcc, Vnn Configuration for Power state2:
      Vcc_Vnn Config for Power state2     [Disabled]



            Version 2.17.1246. Copyright (C) 2018 American Megatrends, Inc.
```

<p align="center">Figure 3.18</p>

Integrated Graphics Device

This item indicates whether integrated graphics is enabled.

Primary Display

This item shows the main output display device when the system starts up.

DVMT pre-AIIocated

This item sets the memory size pre-assigned to the motherboard integrated graphics in DVMT mode.

DVMT Total Gfx Mem

This item shows how much dynamic memory is allocated to the integrated graphic in total.

LCD Control

JHCTECH User's Manual
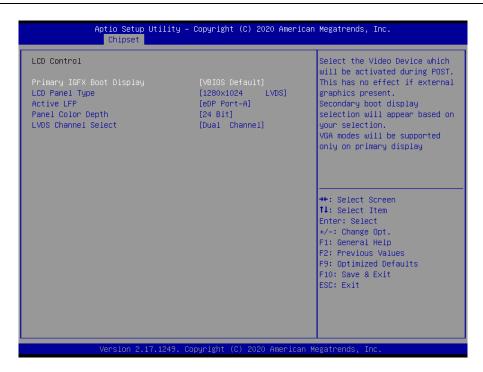
Figure 3.19

Primary IGFX Boot Display

This item sets IGFX main display device on POST stage, not affected by external graphics card, options are LVDS, CRT, HDMI. It defaults by VBIOS.

Secondary IGFX Boot Display

This item sets IGFX second display device on POST stage.

LCD Panel Type

This item sets resolution of the motherboard LVDS screen.

Press <Esc> to return to the Chipset Menu page.

▶**South Bridge**

Scroll to this item and press <Enter> and view the following screen:

36

Figure 3.20

Restore AC Power Loss

This item sets the power-on status after power-on. If Power Off is selected, you need to press the power

button to power on after power-on. If Power On is selected, it will be powered on directly after power-on.

If Last State is selected after power-on, it will be restored to the state before power-off.

order to use this feature.

Press <Esc> to return to the Chipset Menu page.

3.2.5 Boot Menu

This page enables you to set the keyboard NumLock state and devices boot sequence.
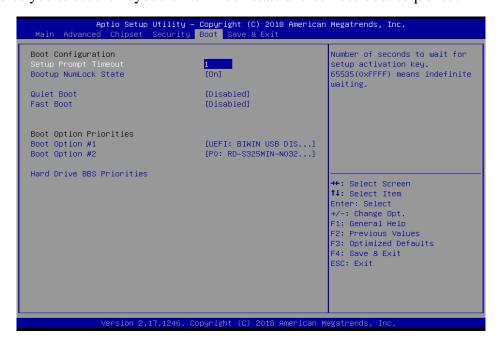
Figure 3.21

Setup Prompt Timeout

This item sets the wait time for the Setup shortcut. If you do not press the Setup shortcut within the set time, it will continue to boot.

Bootup Numlock State

This item determines if the NumLock key is active or inactive at system start-up time. The default value is On, which is a digital lock on when the system starts. Set to Off, the keypad is in cursor control state at startup.

Show Full Logo

This item shows the vendor logo on the startup screen.

[Enabled]: Display static LOGO screen at startup;

[Disabled]: Display self-test information at start.

Boot Option #1/#2

These items show the boot priorities.

#1 is the highest priority boot device in the boot option.

Hard Drive BBS Priorities

Figure 3.22

This item sets the hard disk that can be used as the boot device. If there are multiple hard disks, you should select the priority of these hard disks in the item. The highest priority hard disk will be displayed in Boot Option #1.

3.2.6 Security Menu

Scroll to this item and press <Enter> and view the following screen:

```
            Aptio Setup Utility – Copyright (C) 2018 American Megatrends, Inc.
                            Security

   System Mode                          Setup              Secure Boot can be enabled if
   Secure Boot                          Not Active         1.System running in User mode
                                                           with enrolled Platform Key(PK)
   Secure Boot                          [Disabled]         2.CSM function is disabled
   Secure Boot Mode                     [Custom]
 ▶ Key Management

                                                           →←: Select Screen
                                                           ↑↓: Select Item
                                                           Enter: Select
                                                           +/-: Change Opt.
                                                           F1: General Help
                                                           F2: Previous Values
                                                           F3: Optimized Defaults
                                                           F4: Save & Exit
                                                           ESC: Exit

            Version 2.17.1246. Copyright (C) 2018 American Megatrends, Inc.
```
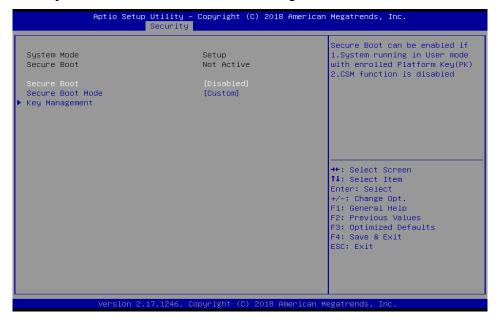
Figure 3.23

3.2.7 Save & Exit Menu

This page enables you to exit system setup after saving or without saving the changes.

```
            Aptio Setup Utility – Copyright (C) 2018 American Megatrends, Inc.
     Main  Advanced  Chipset  Security  Boot  Save & Exit

   Save Changes and Reset                                  Attempts to Launch EFI Shell
   Discard Changes and Reset                               application (Shell.efi) from
   Restore Defaults                                        one of the available
                                                           filesystem devices
   Boot Override
   P0: RD-S325MIN-N0322
   BIWIN USB DISK 1.00
   UEFI: BIWIN USB DISK 1.00

   Launch EFI Shell from filesystem device
 ▶ Reset System with ME disable ModeMEUD000

                                                           →←: Select Screen
                                                           ↑↓: Select Item
                                                           Enter: Select
                                                           +/-: Change Opt.
                                                           F1: General Help
                                                           F2: Previous Values
                                                           F3: Optimized Defaults
                                                           F4: Save & Exit
                                                           ESC: Exit

            Version 2.17.1246. Copyright (C) 2018 American Megatrends, Inc.
```
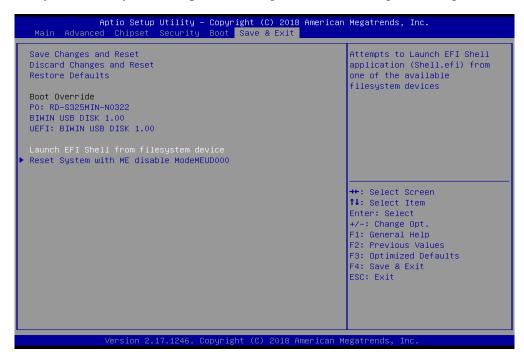
Figure 3.24

Save Changes and Exit

This item enables you to save the changes that you have made and exit.

Discard Changes and Exit

This item enables you to discard any changes that you have made and exit.

Restore Defaults

This item enables you to restore the system defaults.
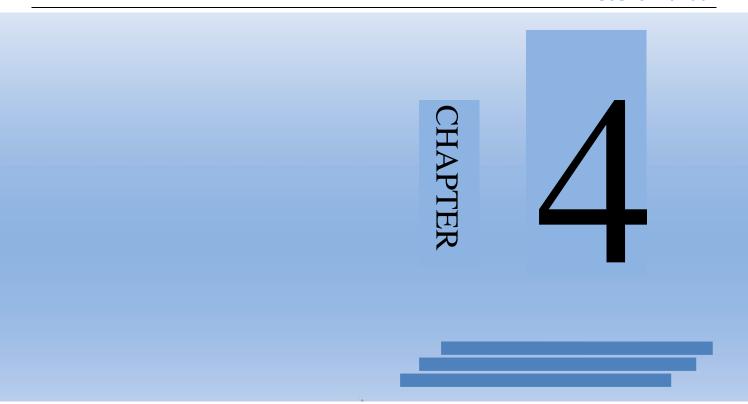
3.3 Updating the BIOS

The BIOS (Basic Input and Output System) Setup Utility displays the system's configuration status and provides you with options to set system parameters. The parameters are stored in battery-backed-up CMOS RAM that saves this information when the power is turned off. When the system is turned back on, the system is configured with the values you stored in CMOS.

The BIOS provides the underlying driver for hardware resources and is the bridge between hardware and operating system. Now hardware and various applications are constantly updated. When your system encounters problems, such as the system does not support the latest published CPU, you need to upgrade your BIOS.

NOTE：

1. Only upgrade the BIOS if you encounter problems and need to.

2. To upgrade the BIOS, please use the BIOS read/write program attached to our driver CD or download the updated version of the program from the relevant website.

3. Do not turn off the power or reboot the system during the upgrade process, so your BIOS data will be damaged and the system may not boot.

4. After the refresh is complete, you need to manually optimize the LOAD Default.

5. To prevent accidents, please backup the current BIOS data first.

CHAPTER 4

Driver Installation

The WPPC-H1780T/WPPC-H1580T comes with a CD-ROM that contains all drivers and utilities that meet your needs.

4.1 About the Software DVD-ROM/CD-ROM

The support software DVD-ROM/CD-ROM that is included in the motherboard package contains all the drivers and utility programs needed to properly run the bundled products. Below you can find a brief description of each software program, and the location for your motherboard version. More information on some programs is available in a README file, located in the same directory as the software. Before installing any software, always inspect the folder for files named README.TXT or something similar. These files may contain important information that is not included in this manual.

 Never try to install all software from folder that is not specified for use with your motherboard.

4.2 Auto-installing under Windows 8/10

The Auto-install DVD-ROM/CD-ROM makes it easy for you to install the drivers and software for your motherboard.

If the Auto-install DVD-ROM/CD-ROM does not work on your system, you can still install drivers through the file manager for your OS (for example, Windows Explorer). Refer to the Utility Folder Installation Notes later in this chapter.

The support software DVD-ROM/CD-ROM disk loads automatically under Windows 8/10. When you insert the DVD-ROM/CD-ROM disk in the DVD-ROM/CD-ROM drive, the autorun feature will automatically bring up the install screen. The screen has three buttons on it, Setup, Browse CD and Exit.

If the opening screen does not appear; double-click the file "setup.exe" in the root directory.

Drivers Tab

Table 4.1: Drivers Tab	
Setup	Click the Setup button to run the software installation program. Select from the menu which software you want to install.
Browse CD	The Browse CD button is the standard Windows command that allows you to open Windows Explorer and show the contents of the support disk.
	Before installing the software from Windows Explorer, look for a file named README.TXT or something similar. This file may contain important information to help you install the software correctly.
	Some software is installed in separate folders for different operating systems, such as Windows 7/8/10. Always go to the correct folder for the kind of OS you are using.
	In install the software, execute a file named SETUP.EXE by double-clicking the file and then following the instructions on the screen.
	The Exit button closes the Auto Setup window.
Exit	

Utilities Tab

Lists the software utilities that are available on the disk.

Information Tab

Displays the path for all software and drivers available on the disk.

Running Setup

Follow these instructions to install device drivers and software for the motherboard:

1. Click Setup. The installation program begins:

The following screens are examples only. The screens and driver lists will be different according to the motherboard you are installing.

2. Click Next. The following screen appears:
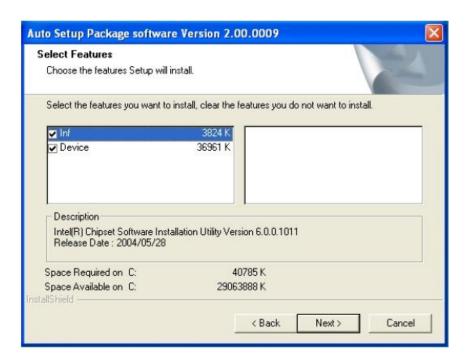
Figure 4.1

3. Check the box next to the items you want to install. The default options are recom-mended.

4. Click Next run the Installation Wizard. An item installation screen appears:

Figure 4.2

5.Follow the instructions on the screen to install the items.

Drivers and software are automatically installed in sequence. Follow the onscreen instructions, confirm

commands and allow the computer to restart a few times to complete the installation.

Windows 8/10 will show the following screen after system restart, you must select "Desktop" in the

bottom left to install the next driver.

Figure 4.3

Windows 8/10 will appear below UAC (User Account Control) message after the system restart. You must select "Allow" to install the next driver.

Continue this process to complete the drivers installation.

Figure 4.4

4.3 Manual Installation

Insert the disk in the DVD-ROM/CD-ROM drive and locate the PATH.DOC file in the root directory. This file contains the information needed to locate the drivers for your motherboard.
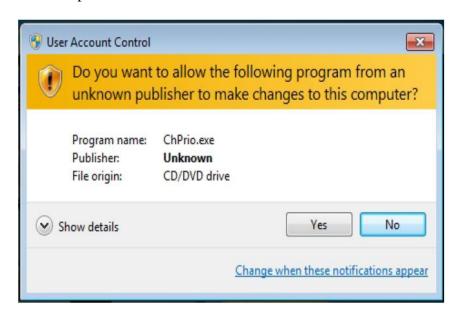
Look for the chipset and motherboard model; then browse to the directory and path to begin installing the drivers. Most drivers have a setup program (SETUP.EXE) that automatically detects your operating system before installation. Other drivers have the setup program located in the operating system subfolder.

If the driver you want to install does not have a setup program, browse to the operating system subfolder and locate the readme text file (README.TXT or README.DOC) for information on installing the driver or software for your operating system.

4.4 CPU TEMP LED driver

The KMDA-2602 provides temperature showing in LEDs, economic and reliable. Users can monitor the working state of the CPU according to the display of the LED. Please perform the following operations，making LEDs work normally.

      Find the CPU temperature test tool folder and open it, as shown below;

      Run the exe application；

NOTE: Please add the .exe application to the startup item to ensure that the program can run when power on.

715_Core_Temp	2018/4/2 10:46	应用程序	127 KB
jhctech.dll	2018/3/13 14:09	应用程序扩展	34 KB
WinRing0.dll	2016/10/23 11:33	应用程序扩展	64 KB
WinRing0.sys	2016/10/23 11:33	系统文件	15 KB

Figure 4.5

4.5 Utility Software Reference

All the utility software available from this page is Windows compliant. They are provided only for the convenience of the customer. The following software is fur-nished under license and may only be used or copied in accordance with the terms of the license. These software(s) are subject to change at anytime without prior notice. Please refer to the support disk for available software.

CHAPTER

5

47

SYSTEM RESOURCE

5.1 WDT and GPIO

5.1.1 WDT

/* ==

1   * void jhctech_init();

2   * function description: library initializated, This function must be called before calling other

functions

3   * parameter description：

4   * creation date：

5   *

==*/

void jhctech_init();

/* ==

1   * void jhctech_init();

2   * function description：library release，Pair with jhctech_init, release the library's occupied

resources when not needed

3   * parameter description：

4   * creation date：

5   *

==*/

void jhctech_deinit();

/* ==

5.1.2 GPIO

/* ==

1   * BYTE I715_MB_gpio_input(WORD port)

2   * function description：read the motherboard GPIO input level

3   * parameter description：

Return value：Return a byte (8 bit), each bit of the 8 bit corresponding to the level state of a GPIO pin.

Return value	Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
GPIO pin	PIN8	PIN7	PIN6	PIN5	PIN4	PIN3	PIN2	PIN1

parameter：Port Fill in the motherboard GPIO port, which is a fixed value designed by the manufacturer

4   * creation date：

5   *

===-*/

BYTE I715_MB_gpio_input(WORD port);

/* ===

1   * void I715_MB_gpio_output(WORD port, BYTE value);

2   * function description：high and low level output of the motherboard

3   * parameter description：

parameter：

Port Fill in the motherboard GPIO port, which is a fixed value designed by the manufacturer

Value 8 bits of a byte, each bit controls a GPIO pin output value

Bit =1, means output high level

Bit =0, means output low level

value	Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
GPIO pin	PIN8	PIN7	PIN6	PIN5	PIN4	PIN3	PIN2	PIN1

4   * creation date：

5   *

==*/

   void I715_MB_gpio_output(WORD port,BYTE value);

/* ==

1   * void I715_MB_gpio_init();

2   * function description：Motherboard gpio initialization function, need to be called once before use

3   * parameter description：

4   * creation date：

5   *

==*/

   void I715_MB_gpio_init();

void I715_MB_gpio_init();

/*==

1   * void I715_watchdog_set(int time);

2   * function description：WDT function

3   * parameter：Time sets the dog feed time, the time value is 0-255,

   Setting 0 means to turn off the watchdog

4   * creation date：

5   *

==*/

void I715_watchdog_set(int time);

/* ==

1   * void I715_2nd_gpio_mode(int port,int mode);

2   * function description：subcard input and output mode settings

3   * parameter description：

   parameter：port fill in GPIO number，1 or 2

      mode 8 bits of a byte, each bit controls input and output mode of a GPIO pin

      bit = 1, Corresponding pin as input

      bit = 0, Corresponding pin as output

mode	Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
GPIO pin	PIN8	PIN7	PIN6	PIN5	PIN4	PIN3	PIN2	PIN1

Note ：The output value is valid only when the pin is in output mode.

4　* creation date：

5　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　*

===-*/

void I715_2nd_gpio_mode(int port,int mode);

/*==

1　* void I715_2nd_gpio_output(int port,int level);

2　* function description：subcard output high and low level

3　*parameter descirption：

parameter：port fill in GPIO number of the subcard, 1 or 2

level 8 bits of a byte, each bit controls a GPIO pin output value,

Bit =1, means output high level

Bit =0, means output low level

level	Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
GPIO pin	PIN8	PIN7	PIN6	PIN5	PIN4	PIN3	PIN2	PIN1

description：The output value is valid only when the pin is in output mod

4　* creation date：

5　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　*

=== */

void I715_2nd_gpio_output(int port,int level);

/*===

1   * int I715_2nd_gpio_input(int port);

2   * function description：read the motherboard GPIO input level

3   * parameter description：

Return value：return a byte (8 bit), each bit of the 8 bit corresponding to the level state of a GPIO pin

Value=1, means high level

Value=0, means low level

Return value	Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
GPIO pin	PIN8	PIN7	PIN6	PIN5	PIN4	PIN3	PIN2	PIN1

parameter：port fill in subcard GPIO number, 1 or 2

descripiton：The read value is valid only when the pin is in input mode

4   * creation date：

5   *

===*/

int I715_2nd_gpio_input(int port);