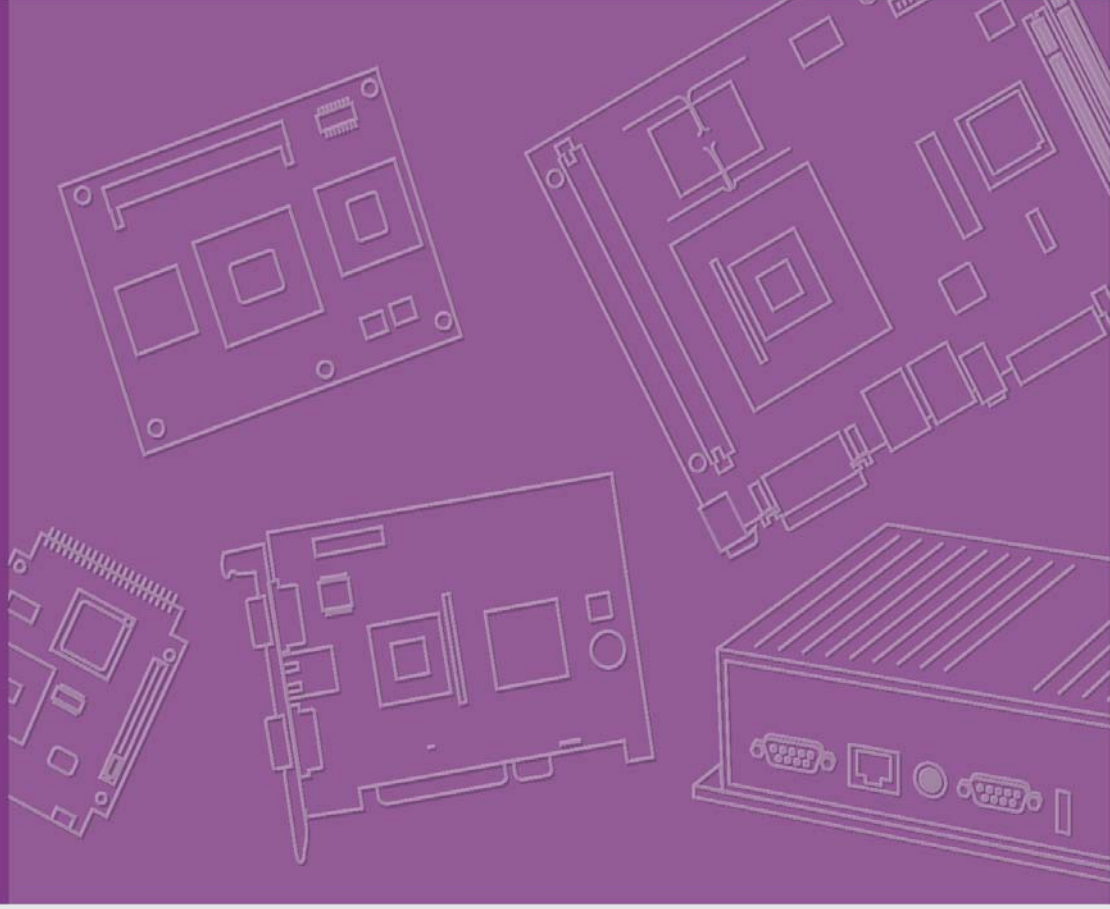

User Manual

ARK-1380

Ultra Compact, Intel® ULV Celeron® M 1 GHz with PC Card Slot, 4 x USB, CRT & LVDS, 1 x LAN, 2 x COM, Fanless Embedded Computer

Trusted ePlatform Services

ADVANTECH

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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.

Part No. 2006138000 Edition 1

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Declaration of Conformity

FCC Class A

This device complies with the requirements in part 15 of the FCC rules: Operation is subject to the following conditions:

1. This device may not cause harmful interference, and
2. This device must accept any interference received, including interference that may cause undesired operation.

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 commercial environment. 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.

Technical Support and Assistance

1. Visit the Advantech web site at www.advantech.com/support where you can find the latest information about the product.
2. Contact your distributor, sales representative, or Advantech'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

Warnings, Cautions and Notes

Caution! *There is a danger of a new battery exploding if it is incorrectly installed. Do not attempt to recharge, force open, or heat the battery. Replace the battery only with the same or equivalent type recommended by the manufacturer. Discard used batteries according to the manufacturer's instructions.*

Packing List

Before installation, please ensure the following items have been shipped:

- Item Part Number
  - 1 ARK-1380 unit
  - 1 Utility CD
  - 1 Registration and 1 year Warranty card Rev. A
  - 2-Pole Phoenix to DC-Jack Power Cable 1700001394
  - DB-9 Male to Mic_In, Ln_Out and Ln_In Audio Cable 1700006011

Ordering Information

Model Number Description

ARK-1380-1S0A1E	Intel ULV Celeron M 1GHz, 2 x Serial ports, PCMCIA,1 x LAN, 4 x USB 2.0, 2 x COM, 1 x VGA, 1 x LVDS,Ultra Compact, Fanless Embedded Box Computer
ARK-1380-2S0A1E	ARK-1380-1S0A1E with 512 MB DDR SDRAM, 1 GB Compact Flash Disk, pre-installed Windows CENET 5.0 Professional Plus and License
ARK-1380-1M0A1E	Intel Celeron M 600MHz, 2 x Serial ports, PCMCAI, 1 x LAN, 4 x USB 2.0, 2 x COM, 1 x VGA, 1 x LVDS, Ultra Compact, Fanless Embedded Computer
ARK-1380-2M0A1E	ARK-1380-1M0A1E with 512 MB DDR SDRAM,1GB Compact Flash Disk, pre-installed Windows XP, Embedded FP2007 OS Image and License

Optional Accessories

1757000222	AC-to-DC Adapter DC19 V/3.42 A 65 W, with Phoenix Power Plug, 0 ~ 40° C for Home and Office Use
1700060202	PS2 Keyboard/Mouse Cable
1960008516	VESA mounting plate
1700001947	Power Cable 2-pin 180 cm, USA type
1700001948	Power Cable 2-pin 180 cm, Europe Type
1700001949	Power Cable 2-pin 180 cm, UK Type
1997001110 1997001120 1997001130 1997001140	Din-Rail Mounting Kit

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Chapter 1

General Introduction

This chapter gives background information on the ARK-1380.

Sections include:

- **Introduction**
- **Specifications**

1.1 Introduction

Advantech provides the smallest compact embedded computers on the market --- the ARK-1300 series. These small, powerful all-in-one fanless systems are designed for rugged and space critical applications in automation control and wireless gateway applications. A solid sealed aluminum case provides vibration and water resistance while also providing a passive cooling solution. The ARK-1380 provides system integrators with a turn-key solution and versatile application development path without breaking the bank or missing time to market deadlines

The ARK-1380 can be used as a standalone system, wall-mounted, DIN-rail mounted or VESA mounted. The system accepts a wide range of power supplies (DC power in) and comes in a footprint of only 189 x 41 x 136.5 mm (7.44" x 1.61" x 5.37"). The rugged cast aluminum case not only provides great protection from EMI, shock/vibration, cold and heat, but also passive cooling for quiet fanless operation.

The ARK-1380 answers this demand by offering 4 x USB 2.0 ports, 1 x LVDS interface, 1 x LAN port and 2 x COM ports; packed into a small rugged unit and powered by an Intel Celeron M processor. Wireless connectivity can be added via the PC card slot for PCMCIA or CardBus cards. It also supports a wide range of input voltages from 9 VDC to 35 VDC. The ARK-1380 Compact Embedded Computer is equipped with a solid state onboard CF card of up to 8 GB, so it easily passes 50 and 5 Grms shock and vibration tests.

1.2 Product Features

1.2.1 General

CPU: Intel Celeron M 1.0 GHz/ Celeron M 600 MHz

System Chipset: 855 GME/852 GM

BIOS: AWARD® 4 Mbit Flash BIOS

System Memory: 200-pin SODIMM socket, support ECC Double Data Rate (DDR) 128 MB to 1 GB, accept 128/256/512/1 GB DDR 266/333 DRAM

Power Management: APM1.2, ACPI support

SSD: Supports CompactFlash® Card TYPE I/II (shared 1st IDE Channel)

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

Expansion Interface: 1 x built-in PC Card that support Card-Bus (Card-32) and 16 bit (PCMCIA 2.1/JEIDA 4.2) cards 5 V and 3.3 V working power

Battery: 3 V/210 mAh

I/O Interface: 1 x KB/mouse, 2 x RS232/422/485 (by BIOS select)

USB: 4 x USB 2.0 compliant Ports

Audio: ALC203 AC97 surround stereo sound and dual output 2.2W amplifier. Supports Line -in, Line-out, Microphone-in

IrDA: N/A

LAN Chipset: Intel 82551QM

Speed: 10/100 Mbps

Interface: 1 x RJ45

Standard: IEEE 802.3u 100Base-T

1.2.2 Display

Chipset: Intel 855GME/852GM integrated chip. (Extreme Graphics 2)

Memory Size: Optimized Shared Memory Architecture, supports up to 64 MB frame buffer using system memory

Resolution: CRT Display mode: pixel resolution up to 1600 x 1200 at 85 Hz and 2048 x 1536 at 75 Hz LCD Display mode: Dual channel LVDS panel supports up to UXGA panel resolution with frequency range from 25 MHz to 112 MHz

LCD Interface: 1 Channel, 1 x 18/36-bit LVDS

LVDS: one Hirose connector supports up to 2 channels LVDS LCD Panel

Dual Independent Display: CRT + LVDS

1.3 Specifications

1.3.1 Functional Specifications

1.3.1.1 Processor

Table 1.1: Processor	
For ARK-1380-1S0A1E and ARK-1380-2S0A1E	
Processor	CPU support ■ Supports 400 MHz Source-Synchronous Processor System Bus ■ Supports Celeron M-1.0GHZ (373) CPU 35 mm *35 mm Micro-FCBGA Package
For ARK-1380-1M0A1E and ARK-1380-2M0A1E	
Processor	CPU support ■ Supports 400 MHz Source-Synchronous Processor System Bus ■ Supports Celeron M-600MHz CPU 35 mm *35 mm Micro-FCBGA Package

1.3.1.2 Chipset

Table 1.2: Chipset	
Memory	Intel 82855GME/ICH4 chip support ■ Supports DDR 200/266/333 SDRAM ■ Supports maximum 1GB DDR SDRAM Socket: SO-DIMM Socket: 1. 200 pin SO-DIMM socket type *1 (internal)
Graphic and Video Controllers	Intel 82855GME/ICH4 chip support **DuoView+™ Capability** ■ Dual display: CRT+LVDS ■ WinXP, Extended desktop support **LVDS Panel Display Interface** ■ Supports panel resolution from VGA through UXGA (1600x1200) ■ Supports 1 x 18/36 bit **CRT** ■ Supports CRT resolutions up to 2048x1536 Analog CRT Connector: D-sub 15-pin 5 mm (Black)

Table 1.2: Chipset	
SSD	Intel 82855GME/ICH4 chip support ■ Supports Compact Flash Card Type I/II Socket: 50 pin Compact Flash Card Type 1 connector (Internal)
HD Audio Link	Intel 82855GME/ICH4 controller chip support ■ AC97 2.0 complain Support Line in, line out, Mic-in Connectors: D-SUB Conn. 9-pin
USB Interface	Intel 82855GME/ICH4 controller chip support ■ Four USB 2.0 ports ■ Legacy keyboard and PS/2 mouse support USB Connector: USB conn 8P 90D(M) x 2
Power Management	Intel 82855GME/ICH4 controller chip support ■ Supports both ACPI (Advanced Configuration and Power Interface) 2.0 and legacy APM V1.2 power management
BIOS	Intel 82855GME/ICH4 chip supports ■ Phoenix 4M bit Flash BIOS, supports Plug & Play, APM 1.2/ACPI 1.1 ■ FWH Type Socket: 32 pin PLCC socket

1.3.1.3 Others (Chipset)

Table 1.3: Others (Chipset)	
Serial Ports	Super I/O: Winbond W83627HF support ■ 2 full function serial ports by Winbond W83627. ■ Supports IRQ Sharing among serial ports on XPE ■ COM1: Supports to RS-232/422/485 and setting by BIOS ■ COM2: Supports to RS-232/422/485 and setting by BIOS ■ COM connector: D-SUB CON. 9P 90D (M) DIP x 2
Thermal Sensor	Super I/O: Winbond W83627HF support ■ Monitor the current CPU temperature ■ Monitor the main power voltage
Keyboard/Mouse Connectors	Super I/O: Winbond W83627HF support ■ PS/2 Keyboard and Mouse interface. ■ PS/2 Connector: MINIDIN 6P Short body W/ Shielding90D (F) DIP x 1
LAN	LAN Connector: Intel 82562GZ support ■ IEEE 802.3 10BASE-T/100BASE-TX compliant physical layer interface ■ IEEE 802.3u Auto-Negotiation support ■ LAN connector: Phone Jack RJ45 8P8C 90D W/LED x 1
Audio	Audio Codec: Realtek ALC203 Amplifier: National LM4863 ■ Compliant with AC97 2.3 specifications ■ Supports up to 20-bit DAC and 18-bit ADC resolution ■ Dual 2.2W Audio Amplifier Plus Stereo Headphone for LINE-OUT ■ Supports MIC and LINE-IN ■ Audio Connector on board: D-SUB Conn. 9P 90D (F) DIP Utra-Slim x 1 ■ Audio Extended Cable x 1
PCI CARDBUS	PCI Card bus Bridge: RICOH R5C485 ■ ACPI and PCI Bus Power Management 1.1 compliant ■ Compliant with PCI Local Bus Specification2.2 ■ Supports Card Bus (Card-32) Card and 16-bit (PCMCIA2.1/JEIDA4.2) Card ■ Bridge function between PCI bus and Card Bus ■ Supports 1 PC Card Socket ■ PCMCIA Socket on board: PCMCIA 68P 90D (F) SMD x 1
Battery Backup	Battery support: CR2032 ■ BATTERY 3V/210 mAh with WIRE x 1

1.3.2 Mechanical Specifications

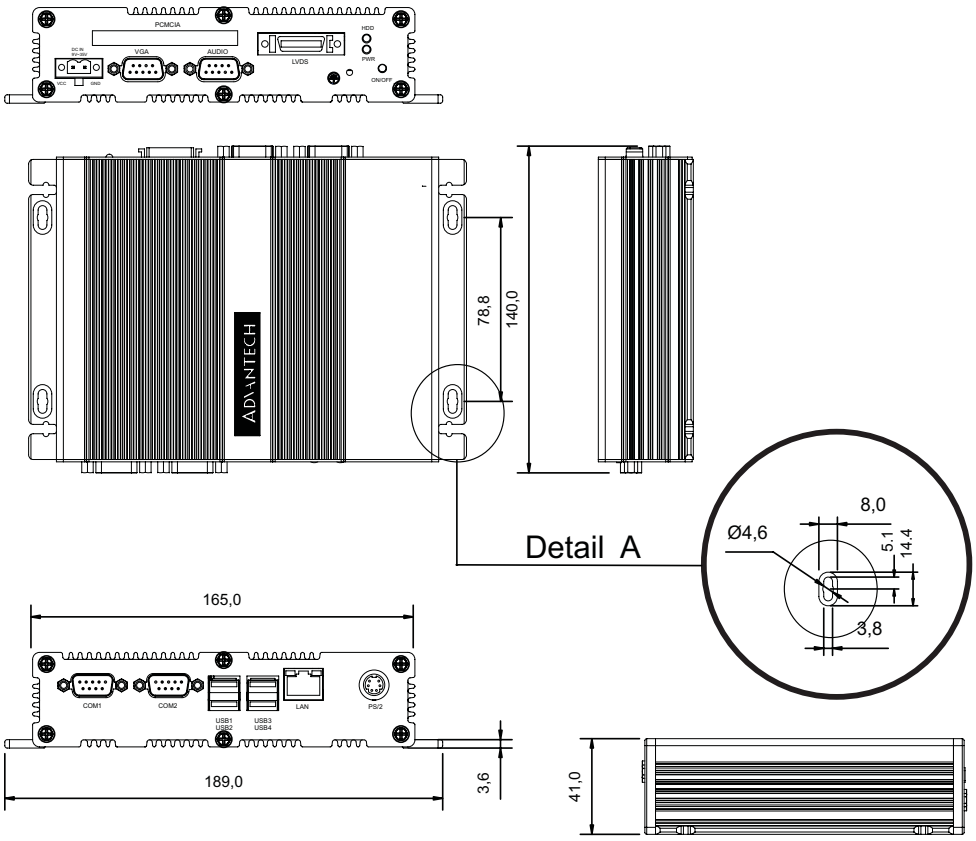


Figure 1.1 Product Specifications

1.3.2.1 Dimension (mm)

(W) 189 x (H) 41 x (D) 136.5 (7.44" x 1.61" x 5.37")

1.3.2.2 Weight (g)

1 Kg

1.3.3 Electrical Specifications

1.3.3.1 Voltage Requirement with Adaptor

9 V-3.8 A ~ 35 V-1 A Adaptor

1.3.3.2 Supply Current

Supply Current (Maximum)	
CPU: Celeron M-1.0G (373), RAM: 333 MHz 512GB DDR SDRAM	
Adaptor	19 V
Dos	NC
BIOS	1.98 A
WINXP Idle	2.18 A
WINXP HCT11.0	NC
WINXP 3DMARK2001SE	NC
WINXP BURN IN TEST	2.2 A

Supply Current (Maximum)	
CPU: Celeron M-600M, RAM: 333 MHz 512GB DDR SDRAM	
Adaptor	19 V
Dos	NC
BIOS	1.81 A
WINXP Idle	2 A
WINXP HCT11.0	NC
WINXP 3DMARK2001SE	NC
WINXP BURN IN TEST	2 A

1.3.3.3 RTC Battery

Nominal Voltage: 3.0 V

Nominal discharge capacity: 210 mAh

1.3.4 Environmental Specifications

1.3.4.1 Operating Temperature

The Intel Celeron is specified for proper operation when the junction temperature is within the specified range of 0° C to 100° C.

The Intel 855GME/852GM chipset temperature runs at a maximum of 100° C. The Intel ICH4 I/O Controller Hub 4 (82801DB) case temperature runs at a maximum of 110° C.

The processor protects itself from catastrophic overheating by use of an internal thermal sensor at a temperature level of approximately 135° C.

Operating temperature: 0° C ~ 60° C

1.3.4.2 Operating Humidity

0% ~ 90% Relative Humidity, non-condensing

1.3.4.3 Storage Temperature

Platinum Phoenix products (40° C ~ 75° C)

Storage temperature: -40 ~ 85° C

1.3.4.4 Storage Relative Humidity

Standard products (0 ~ 60° C)

Relative humidity: 95% @ 60° C

Phoenix products (-20 ~ 80° C)

Relative humidity: 95% @ 60° C

Platinum Phoenix products (-40 ~ 85° C)

Relative humidity: 95% @ 60° C

Chapter 2

H/W Installation

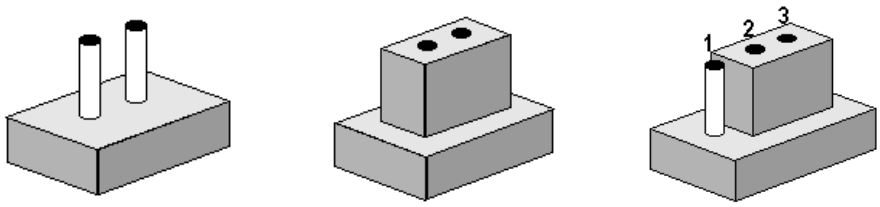
2.1 Introduction

The following two figures show the connectors on the ARK-1380. The following sections give you detailed information about the function of each peripheral.

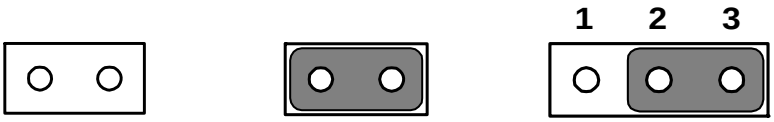
2.2 Jumpers

2.2.1 Jumper Description

You can configure your ARK-1380 to match the needs of your application by setting jumpers. A jumper is the simplest kind of electrical switch. It consists of two metal pins and a small metal clip (often protected by a plastic cover) that slides over the pins to connect them. To “close” a jumper, you connect the pins with the clip. To “open” a jumper you remove the clip. Sometimes a jumper will have three pins, labeled 1, 2, and 3. In this case, you could connect either pins 1 and 2 or pins 2 and 3.



The jumper settings are schematically depicted in this manual as follows.



A pair of needle-nose pliers may be helpful when working with jumpers. If you have any doubts about the best hardware configuration for your application, contact your local distributor or sales representative before you make any changes.

Generally, you simply need a standard cable to make most connections.

2.2.2 Jumper List and Settings

2.2.2.1 LVDS Power

The ARK-1380 embedded box computer provides a jumper - CN14 located on the internal carrier board for selecting an LCD signal power of 5 V or 3.3 V. When you connect your LVDS LCD panel display, you need to set up the CN14 jumper for the LCD power setting selection for your LVDS panel display.

Close Pins	Function
1-2	+5 V*
2-3	+3.3 V
(*): means default setting of the jumper/function.	

2.2.2.2 Clear CMOS

The ARK-1380 embedded box computer provide a jumper - CN29 located on the internal carrier board for selecting the CMOS of Clear or Normal status.

Close Pins	Function
1-2	Clear CMOS
2-3	Normal*
(*): means default setting of the jumper/function.	

2.3 Connectors

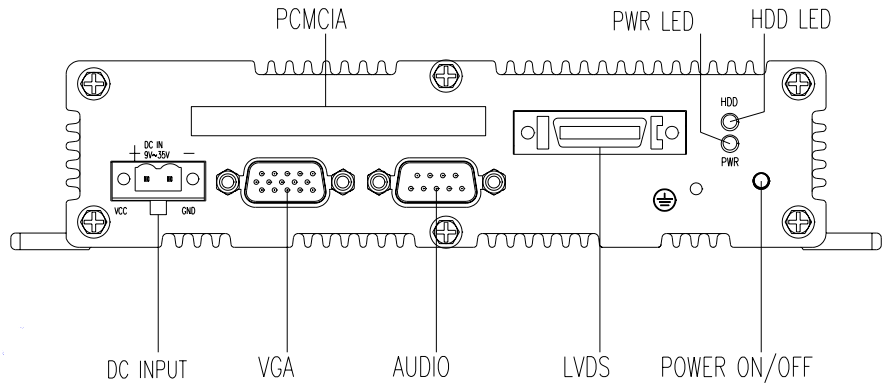


Figure 2.1 ARK-1380 Front I/O Panel

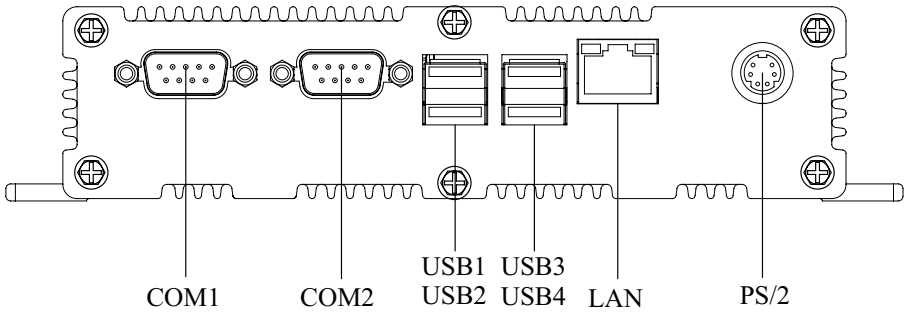


Figure 2.2 ARK-1380 Rear I/O Panel

External

CN4	COM1
CN6	COM2
CN7	VGA Connector
CN8	USB1 & USB2
CN9	USB3 & USB4
CN10	LAN (RJ45)
CN12	Keyboard & Mouse
CN16	Power Connector
CN23	Audio Connector
CN31	LVDS Connector
U27	PCMCIA Socket

Others

SW1	Power On Switch
D25	HD & Power LED

Internal

CN26	CF Socket

2.4 ARK-1380 Front Side External I/O Connectors

2.4.1 COM Connector

The ARK-1380 provides two D-sub 9-pin connectors, which offer RS-232/422/485 serial communication interface ports. Please see the BIOS settings.

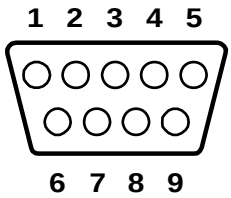


Figure 2.3 COM connector

Table 2.1: COM Standard Serial Port Pin Assignments

	RS-232	RS-422	RS-485
Pin	**Signal Name**	**Signal Name**	**Signal Name**
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

Note: NC represents “No Connection”.

2.4.2 USB Connectors

The ARK-1380 provides four USB interface connectors, which give complete Plug & Play and hot swapping for up to 127 external devices. The USB interface is compliant with USB UHCI, Rev. 2.0. The USB interface can be disabled in the system BIOS setup. Please refer to Table. 2.2 for its pin assignments.

The USB connectors are used for connecting any device that conforms to the USB interface. Many recent digital devices conform to this standard. The USB interface supports Plug and Play, which enables you to connect or disconnect a device whenever you want, without turning off the computer.

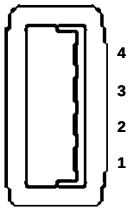


Figure 2.4 USB Connector

Table 2.2: USB Connector

Pin	Signal name	Pin	Signal name
1	VCC	2	USB_data-
3	USB_data+	4	GND

2.4.3 PS2 Keyboard/Mouse Connector

The ARK-1380 provides a PS/2 keyboard/mouse connector. A 6-pin mini-DIN connector is located on the front metal face plate of the ARK-1380. The ARK-1380 comes with an adapter to convert from the 6-pin mini-DIN connector to two 6-pin mini-DIN connectors for PS/2 keyboards and PS/2 mouse connections. Please refer to Table 2.3 for its pin assignments.

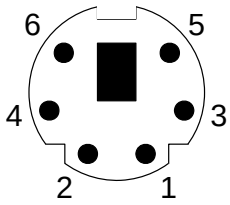


Figure 2.5 PS/2 Connector

Table 2.3: PS/2 Keyboard/Mouse Connector Pin Assignments

Pin	Signal name
1	PS2_KBDAT
2	PS2_MSDAT
3	GND
4	VCC
5	PS2_KBCLK
6	PS2_MSCLK

2.4.4 Ethernet Connector (LAN)

The ARK-1380 is equipped with an Intel 82551QM Ethernet controller that is fully compliant with IEEE 802.3u, 10/100Base-T CSMA/CD standards. The Ethernet port provides a standard RJ-45 jack connector with LED indicators on the front side to show its Active/Link status (Green LED) and Speed status (Yellow LED).

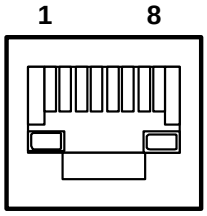


Figure 2.6 Ethernet connector

Table 2.4: RJ-45 Connector Pin Assignments

Pin	10/100BaseT Signal Name
1	TX+
2	TX-
3	RX+
4	NC
5	NC
6	RX-
7	NC
8	NC

2.5 ARK-1380 Rear Side External I/O Connectors

2.5.1 Power ON/OFF Button

The ARK-1380 comes with a Power On/Off button, that support a dual function of Soft Power -On/Off (Instant off or Delay 4 Second), and Suspend.

2.5.2 LED Indicators

There are two LEDs on the ARK-1380 front metal face plate for indicating system status: the PWR LED for power status which flashes in green; and the HDD LED for hard disk and compact flash disk status which flashes in red.

2.5.3 LVDS Connector

The ARK-1380 comes with a D-Sub 26-pin connector that carries LVDS signal output, and can direct connect to an LVDS LCD Display via external cable.

The system also provides a jumper, CN14, on the internal motherboard for selecting the LCD signal power of 5 V or 3.3 V. Please refer to section 2.1.2 for the CN14 jumper table, and Chapter 6, “Full Disassembly Procedure” to set it. Up. The default setting of the CN14 is 5 V.

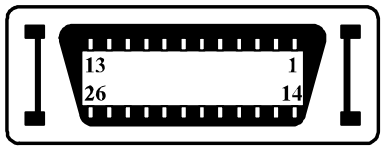


Figure 2.7 LVDS Connector

Table 2.5: LVDS Connector Pin Assignment

Pin	Signal Name	Pin	Signal name
1	CLK2P	14	CLK2M
2	GND	15	A0M
3	A0P	16	A1M
4	A1P	17	A2M
5	A2P	18	CLK1M
6	CLK1P	19	GND
7	VCC_LCD	20	VDD_LCD
8	GND	21	A3M
9	A3P	22	A4M
10	A4P	23	A5M
11	A5P	24	A6M
12	A6P	25	A7M
13	A7P	26	GND

2.5.4 PCMCIA Expansion Slot

The ARK-1380 comes with a PCMCIA slot for PC card expansion.

2.5.5 AUDIO Connector

The ARK-1380 provides a D-sub 9-pin connector, which offers an AC97 stereo audio output port. There are connections for Speaker_Out, Mic_In and Line_In (The connector can be attached to 3 phone jacks by an audio cable, P/N:1700006011, which is an accessory).

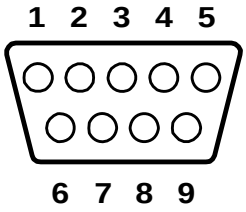


Figure 2.8 Audio connector

Table 2.6: Audio Connector Pin Assignment

Pin	Signal name
1	SPKR
2	GND
3	MIC2
4	LIN_R
5	GND
6	SPKL
7	NC
8	GND
9	LIN_L

2.5.6 VGA Connector

The ARK-1380 provides a high resolution VGA interface connected by a D-sub 15-pin connector to support a VGA CRT monitor. It supports display resolution of up to 1600 x 1200 @ 75-Hz and up to 64 MB shared memory.

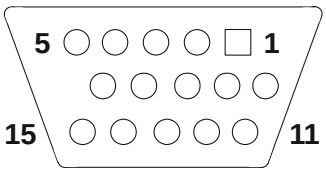


Figure 2.9 VGA connector

Table 2.7: VGA Connector Pin Assignment

Pin	Signal name
1	Red
2	Green
3	Blue
4	NC
5	GND
6	GND
7	GND
8	GND
9	NC
10	GND
11	NC
12	NC
13	H-SYNC
14	V-SYNC
15	NC

2.5.7 Power Input Connector

The ARK-1380 comes with a two pin header that carries and external power input of 9~35 VDC.

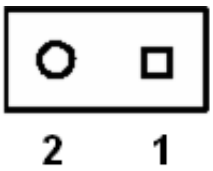


Figure 2.10 Power Input Connector

Table 2.8: Power Connector Pin Assignments

Pin	Signal Name
1	GND
2	+9~35VDC

2.6 Dimension

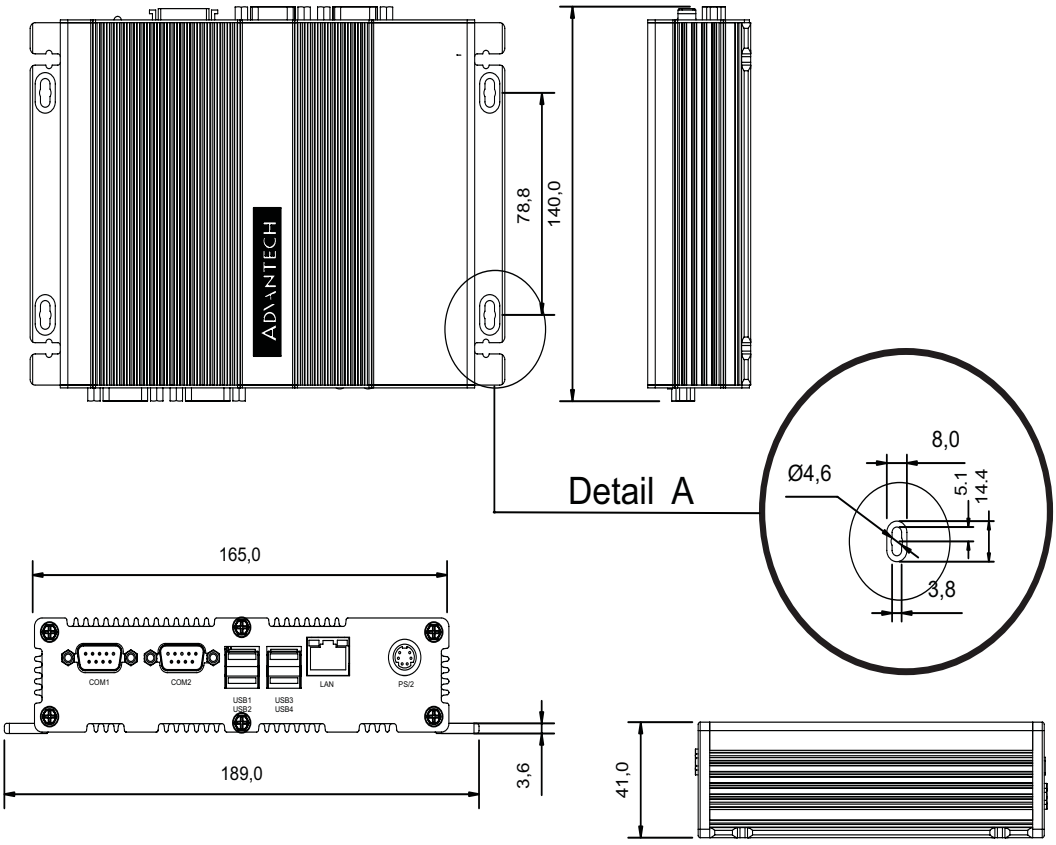


Figure 2.11 Dimension

Chapter 3

BIOS Operation

3.1 BIOS Introduction

Advantech provides AwardBIOS 6.0, a full-featured BIOS that delivers superior performance, compatibility and functionality; used by manufacturers of industrial PC and embedded boards. Its many options and extensions let you customize your products for a wide range of designs and target markets.

The modular, adaptable AwardBIOS 6.0 supports the broadest range of third-party peripherals and all popular chipsets, such as Intel, AMD, nVidia, and VIA. It supports compatible CPUs ranging from 386 through Pentium, AMD Geode, K7 and K8 (including multiple processor platforms), and VIA Eden C3 and C7 CPUs.

You can use Advantech's utilities to select and install features to suit your designs for customer needs.

3.2 BIOS Setup

The ARK-1380 system has built-in AwardBIOS with a CMOS SETUP utility which allows users to configure required settings or to activate certain system features.

The CMOS SETUP saves the configuration in the CMOS RAM of the motherboard. When the power is turned off, the battery on the board supplies the necessary power to the CMOS RAM.

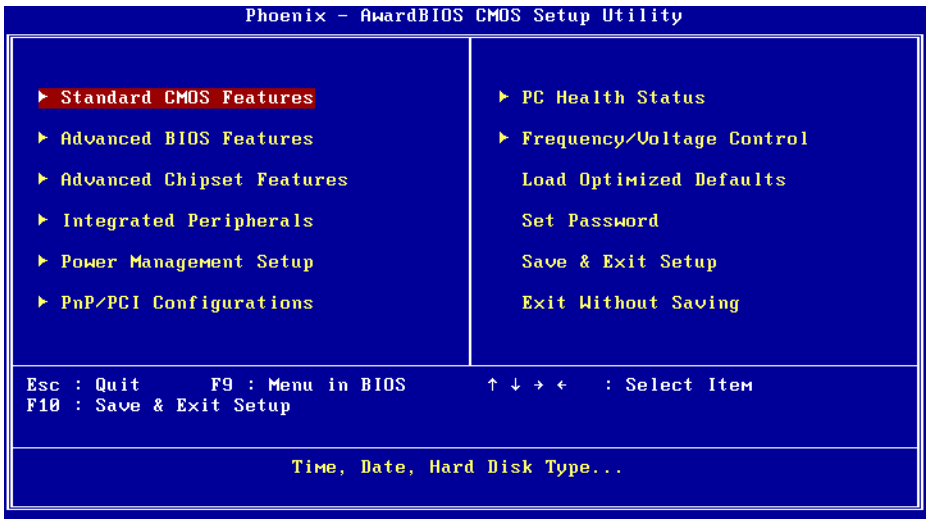
When the power is turned on, press the <Del> key during the BIOS POST (Power-On Self Test) which will take you to the CMOS SETUP screen.

CONTROL KEYS

< ↑ >< ↓ >< ← >< → >	Move to select item
<Enter>	Select Item
<Esc>	Main Menu - Quit without saving changes to CMOS
	Sub Menu - Exit current page and return to Main Menu
<Page Up/+>	Increase numeric value or make changes
<Page Down/->	Decrease numeric value or make changes
<F1>	General help, for Setup Sub Menu
<F2>	Item Help
<F5>	Load Previous Values
<F7>	Load Optimized Default
<F10>	Save all CMOS changes

3.2.1 Main Menu

Press the <Del> key to enter the AwardBIOS CMOS Setup Utility. The Main Menu will appear on the screen. Use the arrow keys to select among the items and press the <Enter> key to accept or enter the sub-menu.



- Standard CMOS Features
  This setup page includes all standard compatible BIOS items.
- Advanced BIOS Features
  This setup page includes all Award BIOS enhanced features.
- Advanced Chipset Features
  This setup page includes all Chipset configuration features.
- Integrated Peripherals
  This setup page includes all onboard peripheral devices.
- Power Management Setup
  This setup page includes all Power Management features.
- PnP/PCI Configurations
  This setup page includes PnP OS and PCI device configuration.
- PC Health Status
  This setup page includes system auto detect, current CPU temperature and main voltage.
- Frequency/Voltage Control
  This setup page includes PCI clock detect control and Spread Spectrum.
- Load Optimized Defaults
  This setup page includes load system optimized value, and system best performance configuration.
- Set Password
  Establish, change or disable password.
- Save & Exit Setup
  Save CMOS value settings to CMOS and exit BIOS setup.
- Exit Without Saving
  Abandon all CMOS value changes and exit BIOS setup.

3.2.2 Standard CMOS Features

- Date

  The date format is <week>, <month>, <day>, <year>.

Week	From Sun to Sat, determined and displayed by BIOS only
Month	From Jan to Dec
Day	From 1 to 31
Year	From 1999 through 2099

- Time

  The time format is <hour> <minute> <second>, based on 24-hour time.

- IDE Primary Master/Slave

  IDE HDD Auto-Detection. Press the 'Enter' key for automatic device detection.

- Video

  Determines that VGA display support type.

EGA/VGA	Support VGA color mode
CGA 40	Support VGA color mode
CGA 80	Support VGA color mode
MONO	Support VGA mono mode

- Halt on

  Determines whether or not the computer stops if an error is detected during power up.

All Errors	Whenever the BIOS detects a non-fatal error the system stops.
No Errors	The system boot doesn't stop for any error.
All, But Keyboard	The system boot doesn't stop for a keyboard error; does stop for all other errors. (Default value)
All, But Diskette	The system boot doesn't stop for a disk error; does stop for all other errors.
All, But Disk/Key	The system boot doesn't not stop for a keyboard or disk error, does stop for all other errors.

- Base Memory [Show Only]

  The BIOS POST determines the amount of base (or conventional) memory installed in the system.

- Extended Memory [Show Only]

  The BIOS POST determines the amount of extended memory (above 1MB in CPU's memory address map) installed in the system.

- Total Memory [Show Only]

  Displays the total system memory size.

3.2.3 Advanced BIOS Features

- Blank Boot [Disabled]
  Allows users to choose a blank screen when the system boots.
- Post Beep [Enabled]
  Allows users to enable a beep sound during POST test status.
- Virus Warning [Disabled]
  Allows users to choose the VIRUS Warning feature for CF boot sector protection.
- CPU L1 & L2 Cache [Enabled]
  Allows user to enable CPU L1 & L2 cache.

Quick Power On Self Test [Enabled]

Speeds up the Power-On Self Test (POST) routine by skipping retesting a second, third and forth time. Setting is enabled by default.

- First / Second / Third / Other Boot Drive

First	**[USB-HDD]**
Second	**[USB-CDROM]**
Third	**[HDD-0]**
Other	**[Enabled]**
HDD-0	Select boot device priority by HDD-0
HDD-1	Select boot device priority by HDD-1
ZIP100	Select boot device priority by ZIP100
USB-FDD	Select boot device priority by USB-FDD
USB-ZIP	Select boot device priority by USB-ZIP
USB-CDROM	Select boot device priority by USB-CDROM
USB-HDD	Select boot device priority by USB-HDD
LAN	Select boot device priority by LAN
Disabled	Disable this boot function

- Boot Up NumLock Status [On]
  Enables users to activate the Number Lock function upon system boot.
- Gate A20 Option [Fast]
  Enables users to switch on/off A20 control at port 92.
- Typematic Rate Setting [Disabled]
  Enables users to set the two typematic controls items.
  - Typematic Rate (Chars/Sec)
    Controls speed of repeated keystrokes at system registers.
    Eight settings are 6, 8, 10, 12, 15, 20, 24 and 30.
  - Typematic Delay (Msec)
    Sets the time interval for displaying the first and second characters. The four delay rate options are 250, 500, 750 and 1000.
- Security Option [Setup]

Setup	When you select “Setup”, the system prompts for the supervisor password at boot up only when the setup utility is invoked
System	When you select “System”, the system prompts for the user password every time you boot up.

- APIC Mode [Enabled]

Sets the operating system to enable APCI Mode.

- MPS Version Control for OS [1.4]
  Sets operating system multiprocessor support version.
- OS Select For DRAM > 64M [Non-OS2]
  Select OS2 only if system is running the OS/2 operating system with more than 64MB of RAM on the system.
- Full Screen LOGO Show [Enabled]
  Show full screen logo during POST, customize Logo picture.
- Small Logo (EPA) Show [Disabled]
  Show EPA logo during system POST.
- Summary Screen Show [Enabled]
  Allows users to choose to display the summary screen on boot up. Options are enable or disable.

3.2.4 Advanced Chipset Features

Note! 

The “Advanced Chipset Features” option controls the configuration of the board’s chipset. It is chipset independent, for controlling chipset register settings and fine tuning system performance. It is strongly recommended that only technical users make changes to the default settings.

- DRAM Timing Selectable [By SPD]
  Enables users to set optimal timings. System default setting is “By SPD” which follows SPD information and ensures the system is running stably and performing optimally.
- CAS Latency Time
  Enables users to set the timing delay in clock cycles before SDRAM starts a read command after receiving it.
- Active to Precharge Delay
  Enables users to control the memory back’s minimum row active time (tRAS).
- DRAM RAS# to CAS# Delay
  Enables users to set the timing of the transition from RAS (row address strobe) to CAS (column address strobe), as both rows and column are separately addressed shortly after the DRAM is refreshed.
- DRAM RAS# Precharge
  Enables users to set the DRAM RAS# precharge timing.
- DRAM Data Integrity Mode [Non-ECC]
  Enables users to set the DRAM Type of Error data correction. System default setting is “Non-ECC” to reference value.
- MGM Core Frequency [Auto Max 266MHz]
  Allows the system BIOS to be cached to allow MGM Core Frequency.
- System BIOS Cacheable [Enabled]
  Allows the system BIOS to be cached to allow faster execution and better performance.
- Video BIOS Cacheable [Disabled]
  Allows the video BIOS to be cached to allow faster execution and better performance.
- AGP Aperture Size (MB) [64]

Enables users to select the size of system memory to support AGP graphic usage. System default setting is “64MB” to reference value.

- On-Chip VGA [Enabled]
  Allows the system BIOS to allow On-Chip VGA.
- On-Chip Frame Buffer Size [32MB]
  Allows users to choose Frame Buffer Size. BIOS default value is set to 32 MB.
- Boot Display [CRT]
  Allows users to choose a screen display type. BIOS default value is set to CRT.
- Panel Scaling [Auto]
  Allows users to choose Panel Scaling type. BIOS default value is set to Auto.
- Panel Resolution [800X600]
  Allows users to choose Panel Resolution. BIOS default value is set to 800 X 600.

3.2.5 Integrated Peripherals

Note! This “Integrated Peripherals” option controls the configuration of the board’s chipset, including IDE, ATA, SATA, USB, AC97, MC97 and Super IO and Sensor devices. It is chipset independent.

- OnChip IDE Device
  Enables users to set the OnChip IDE device status, including enabling IDE devices and setting PIO and DMA access mode.
- Onboard Device
  Enables users to set the Onboard device status, including enabling USB, AC97, MC97 and LAN devices.
- Super I/O Device
  Enables users to set the Super IO device status.
  - Onboard Serial Port 1 [3F8/IRQ4]
    Allows users to change the COM1 address and IRQ. BIOS default value: 3F8/IRQ4.
  - Onboard Serial Port 2 [2F8/IRQ3]
    Allows users to change the COM2 address and IRQ. BIOS default value: 2F8/IRQ3.
  - UART Mode Select [Normal]
    Allows selection for the mode of operation of the serial port.
  - Onboard Parallel Port [378/IRQ7]
    Allows users to change the parallel port address. BIOS default value: 378/IRQ7.
  - Parallel Port Mode [SPP]
    Allows users to change the parallel port mode. The user can choose SPP, EPP, ±ECP and ECP+EPP. Definitions: SPP (Standard Parallel Port), ECP (Extended Capabilities Port) and EPP (Enhanced Parallel Port). BIOS default value: Normal.
  - EPP Mode Select [EPP1.7]
    Allows users to change the EPP Mode for the parallel port.
    BIOS default value: EPP1.7.
  - ECP Mode Use DMA [3]

This item allows the user to change the DMA channel for the parallel port. The BIOS default value is set to 3.

- Onboard Serial Port 1 Mode [RS232]

  Sets the mode of serial port 1. Supports RS232/RS422/RS485. BIOS default value is set to RS232.

- Onboard Serial Port 2 Mode [RS232]

  Sets the Mode of serial port 2. Supports RS232/RS422/RS485. BIOS default value is set to RS232.

3.2.6 Power Management Setup

Note! *The "Power management Setup" option configures the system to most effectively save energy while operating in a manner consistent with your style of computer use.*

- Power-Supply Type [ATX]

  Allows users to select power supply type.

- ACPI Function [Enabled]

  Defines the ACPI (Advanced Configuration and Power Management) feature that makes hardware status information available to the operating system, and communicates to PC and system devices for improving power management.

- ACPI Suspend Type [S1 (POS)]

  Allows users to select sleep state when suspended.

  – S1(POS) Suspend mode is equivalent to a software power down;
  – S3(STR) System shuts down with the exception of a refresh of current to system memory.
  – S1 & S3 Support both modes, software selectable.

- Run VGABIOS if S3 Resume [Auto]

  Allows system to reinitialize VGA BIOS after system resume from ACPI S3 mode.

- Power Management Option [User Define]

  Allows users to select system power saving mode.

  – Min Saving Minimum power management. Suspend Mode=1 hr.
  – Max Saving Maximum power management. Suspend Mode=1 min.
  – User Define Allows users to set each mode individually. Suspend Mode= Disabled or 1 min ~1 hr.

- Video Off Method [DPMS]

  Allows users to determine the manner is which the monitor is blanked.

  – Blank Screen This option only writes blanks to the video buffer.
  – V/H SYNC+Blank This option will cause system to turn off vertical and horizontal synchronization ports and write blanks to the video buffer.
  – DPMS Initial display power management signaling.

- Video Off In Suspend [Yes]

  Allows users to turn off video when system enters suspend mode.

- Suspend Type [Stop Grant]

  Allows users to determine the suspend type.

- Modem use IRQ [3]

Allows users to determine the IRQ which the MODEM can use.

- Suspend Mode [Disabled]
  Allows users to determine the timing of system inactivity. All devices except the CPU will be shut off.
- Soft-Off by PWR-BTTN [Instant-Off]
  Allows users to define the function of the power button.
  - Instant-Off Pressing power button powers off instantly.
  - Delay 4 Sec Pressing power delays power off 4 seconds.
- Power On by Ring [Enabled]
  Allows users resume system by modem.
- USB KB Wake-Up From S3 [Enabled]
  Allows users to wake the system up from power saving mode using a USB keyboard keystroke.
- Resume by Alarm [Disabled]
  Allows users to enable a date/time setting to power on the system
  - Disabled Disable this function.
  - Enabled Enable alarm function to power on system
  - Day (of month) Alarm 1-31
  - Resume Time (HH:MM:SS); Alarm (0-23); (0-59); (0-59)
- PWRON After PWR-Fail [Former-Sts]
  Allows users to select power fail function. The functions depend on chipset design.

3.2.7 PnP/PCI Configurations

Note! *The "PnP/PCI Configurations" option sets up the IRQ and DMA (both PnP and PCI) bus assignments.*

- Reset Configuration Data [Disabled]
  Allows users to clear any PnP configuration data stored in the BIOS.
- Resources Controlled By [Auto (ESCD)]
  - IRQ Resources
    Allows users to respectively assign an interrupt type for IRQ-3, 4, 5, 7, 9, 10, 11, 12, 14, and 15.
  - DMA Resources
    Allows users to respectively assign an interrupt type for DMA, 0, 1, 3, 5, 6, and 7.

3.2.8 PC Health Status

Note! *The "PC Health Status" option controls the thermal, fan and voltage status of the board. It is chipset independent.*

- Shutdown Temperature [Disabled]
  Enables users to set CPU temperature limits, ranging from 60° C to 75° C.

- Current CPU1 Temperature [Show Only]
  Displays current system and CPU temperature.
- Vcc Core / +2.5V / +3.3V / +5V [Show Only]
  Displays current CPU and system board voltage.

3.2.9 Frequency/Voltage Control

Note! *The "Frequency/Voltage Control" option controls the CPU Host and PCI frequency. It is CPU and chipset independent; items will show up if you install a processor which supports this function.*

- Auto Detect PCI Clk [Enabled]
  Enables users to set the PCI Clock by automatic or manual system detection.
- Spread Spectrum [Disabled]
  Enables users to set the spread spectrum modulation.

3.2.10 Load Optimized Defaults

Note! *Load optimized defaults. loads the default system values directly from ROM if the stored record created by the setup program should ever become corrupted (and therefore unusable).*

These defaults will load automatically when you turn the ARK-1380 system on.

3.2.11 Set Password

Note! *To enable this feature, you should first go to the 'Advanced BIOS Features' menu, choose the 'Security Option', and select either 'Setup' or 'System', depending on which aspect you want password protected. 'Setup' requires a password only to enter 'Setup'. 'System' requires the password either to enter 'Setup' or to boot the system. A password may be at most 8 characters long.*

To Establish Password

1. Choose the 'Set Password' option from the CMOS Setup Utility main menu and press the <Enter> key.
2. When you see the 'Enter Password' prompt, enter the desired password and press the <Enter> key.
3. At the 'Confirm Password' prompt, retype the desired password, then press the <Enter> key.
4. Select 'Save to CMOS; and 'EXIT', type <Y>, then press the <Enter> key.

To Change Password

1. Choose the 'Set Password' option from the CMOS Setup Utility main menu and press the <Enter> key.
2. When you see the 'Enter Password' prompt, enter the existing password and press the <Enter> key.

3. You will see a ‘Confirm Password’ prompt. Type the password again, and press the <Enter> key.
4. Select ‘Set Password’ again, and at the “Enter Password” prompt, enter the new password and press the <Enter> key.
5. At the ‘Confirm Password’ prompt, retype the new password, and press the <Enter> key.
6. Select ‘Save to CMOS’ and ‘EXIT’, type <Y>, then press the <Enter> key.

To Disable Password

1. Choose the Set Password option from the CMOS Setup Utility main menu and press the <Enter> key.
2. When you see ‘Enter Password’, enter the existing password and press the <Enter> key.
3. You will see ‘Confirm Password’. Type it again, and press the <Enter> key.
4. Select ‘Set Password’ again, and at the “Enter Password” prompt, please don’t enter anything; just press the <Enter> key.
5. At the ‘Confirm Password’ prompt, again, don’t type in anything; just press the <Enter> key.
6. Select ‘Save to CMOS’ and ‘EXIT’, type <Y>, then press the <Enter> key.

3.2.12 Save & Exit Setup

Note! *Typing “Y” will quit the BIOS Setup Utility and save the user setup value to CMOS.*

Typing “N” will return to the BIOS Setup Utility.

3.2.13 Quit Without Saving

Note! *Typing ”Y” will quit the BIOS Setup Utility without saving to CMOS.*

Typing “N” will return to the BIOS Setup Utility.

Chapter 4

Full Disassembly Procedure

4.1 Introduction

If you want to completely disassemble the ARK-1380, follow the step-by-step procedures below. Users should be aware that Advantech Co., Ltd. takes no responsibility whatsoever for any problems or damage caused by user disassembly of the ARK-1380. Make sure the power cord of the ARK-1380 is unplugged before you start disassembly.

1. Unscrew the 4 screws on the bottom side.

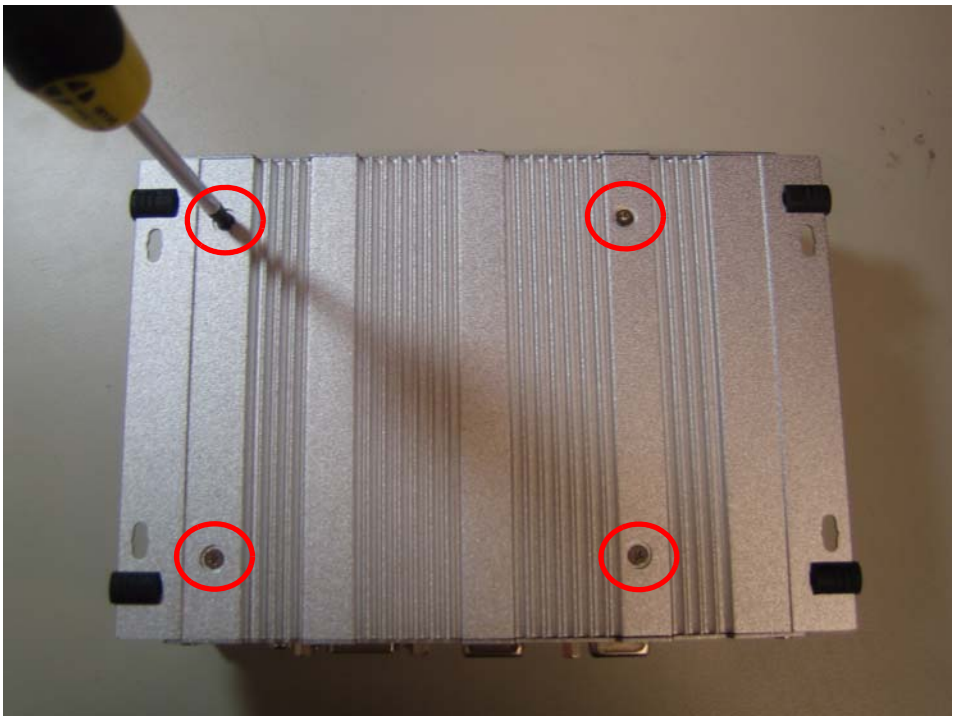


Figure 4.1 Unscrew the 4 screws on the bottom side

2. Unscrew the 6 screws on the front side frame.

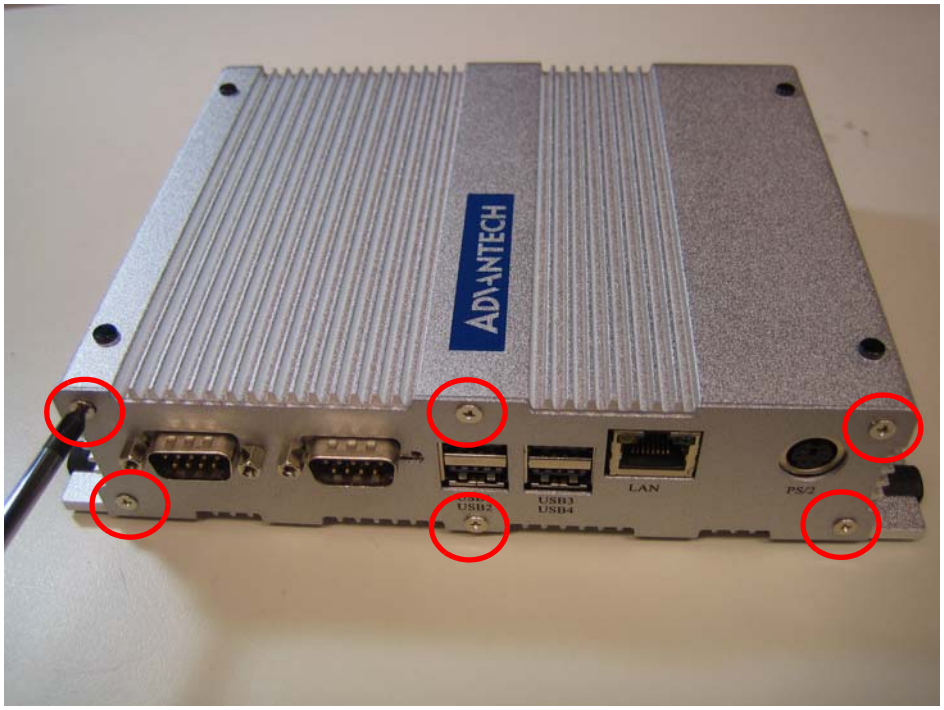


Figure 4.2 Unscrew the 6 screws on the front side frame

3. Unscrew the 4 Hex-bolts on the front face plate.

Figure 4.3 Unscrew the 4 Hex-bolt on the front face plate

4. Unscrew the 6 screws on the rear side frame.

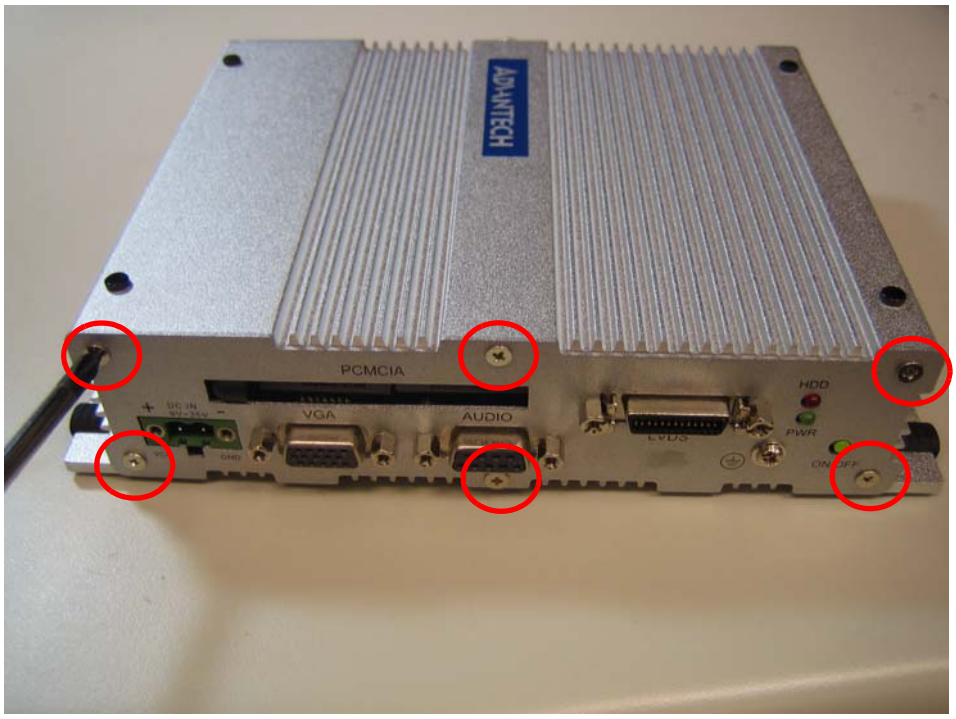


Figure 4.4 Unscrew the 6 screws on the rear side frame

5. Unscrew the 6 Hex-bolts on the rear face plate.

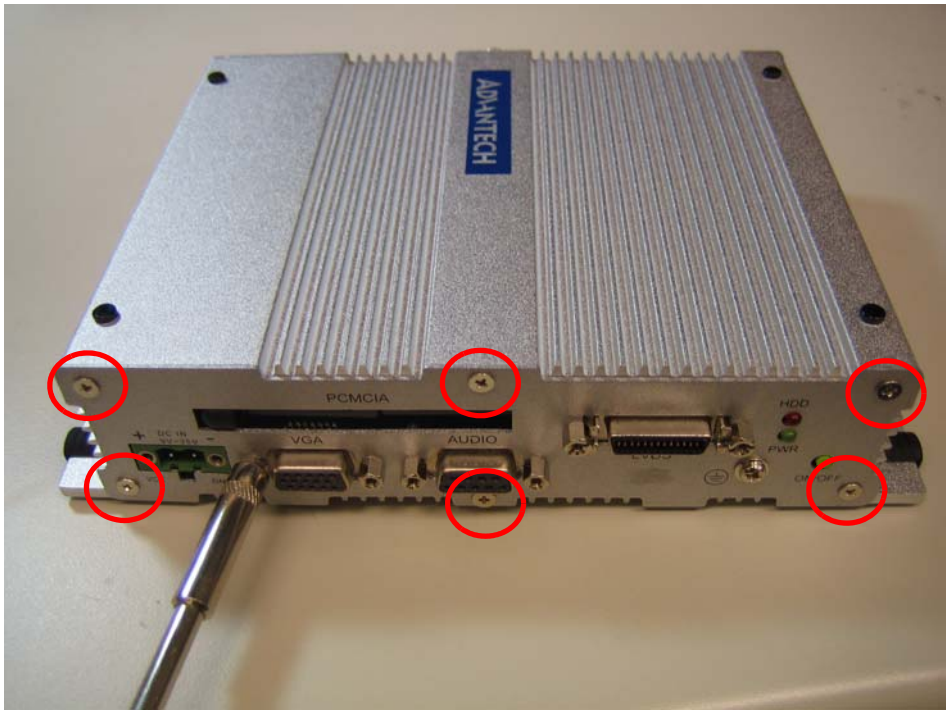


Figure 4.5 Unscrew the 6 Hex-bolt on the rear face plate

6. Pull out the carrier board from the Aluminum case.

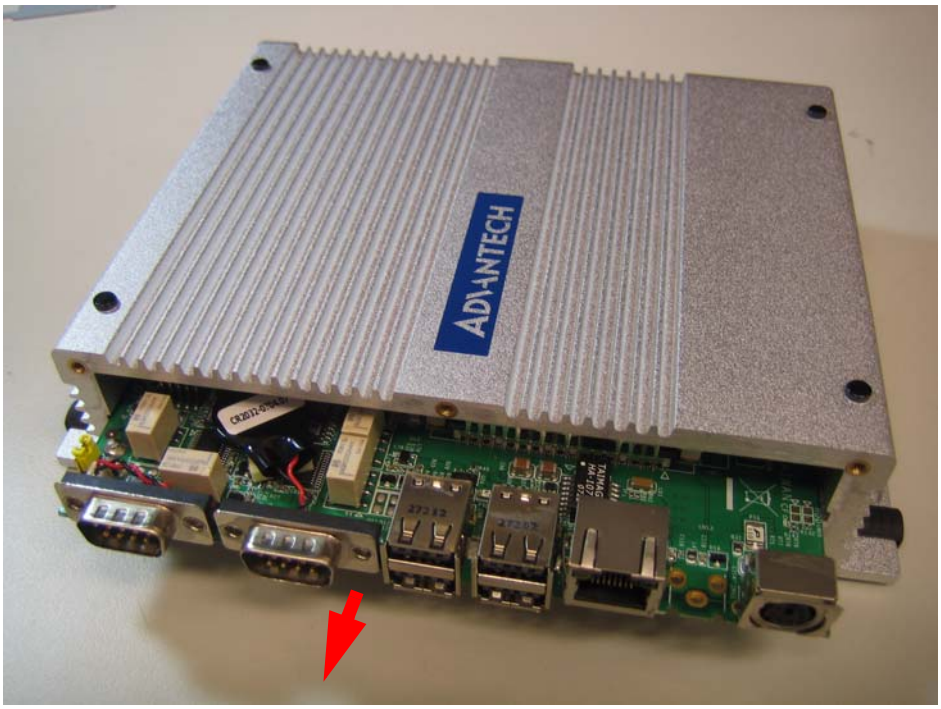


Figure 4.6 Pull out the carrier board from the aluminum case

7. Remove the CF card anti-shock holder.

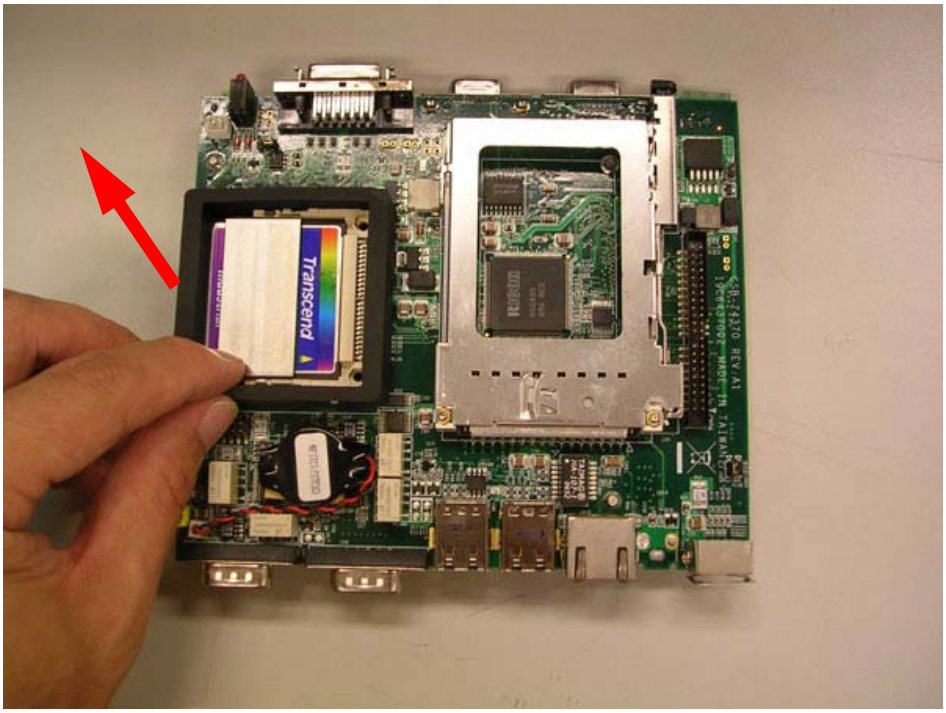


Figure 4.7 Remove the CF card anti-shock holder

8. Remove the CF card.

Figure 4.8 Remove the CF card

9. Turn over the carrier board, remove the DRAM module.

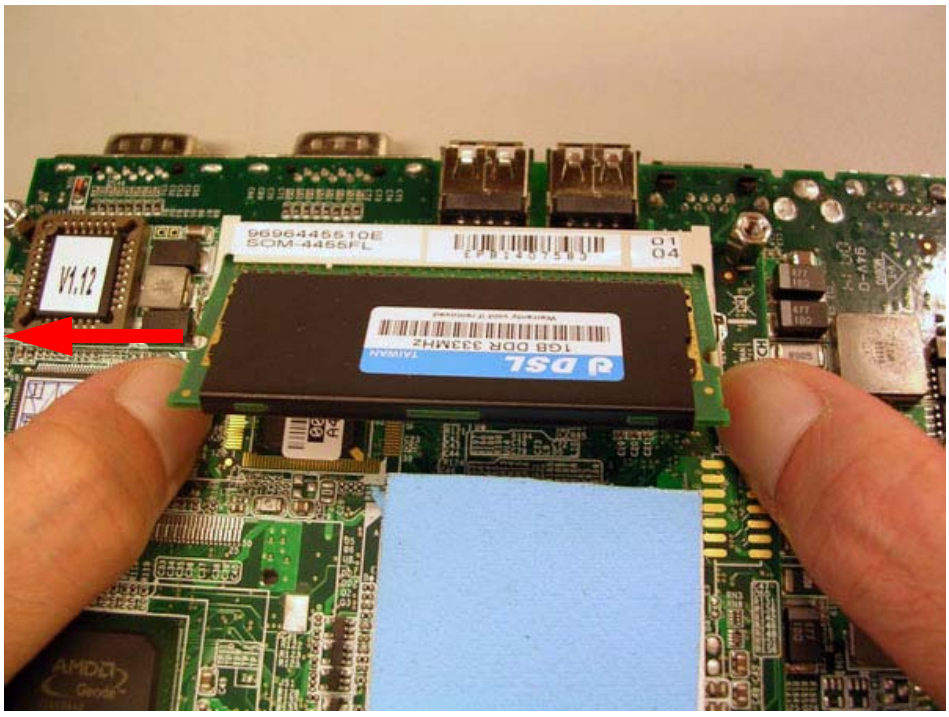


Figure 4.9 Turn over the carrier board and remove the DRAM module

Note! *Before installing the system, please make sure the thermal pad is not broken and be careful of the thermal pad when you insert the board into the system.*

Appendix A

Intel Boot Agent Setup Menu

A.1 Intel Boot Agent Setup Menu

This appendix allows the user to control the ‘Boot Agent Setup’ menu.

1. To boot the system from a LAN application, hold down the ‘Ctrl + S’ keys during system initialization to enter the ‘Boot Agent Setup’ menu.
2. The Intel Boot Agent provides a choice of two network boot protocols (PXE and RPL) that a user can select from the ‘Network Boot Protocol’ item.
3. To show the prompt message, hold down the ‘Ctrl + S’ keys during system initialization to enter the ‘Boot Agent Setup’ menu and select ‘Show Setup Prompt’ item.

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