ADVANTECH

PCI-7031 Intel® Atom™ Dual-Core D510 N450 CPU, PCI Half-size SBC with on-board DDR2/VGA/LVDS/Dual GbE/SATA/COM
Startup Manual

Packing List

Before you begin installing your card, please make sure that the following items have been shipped:

- 1 PCI-7031 Single Board Computer
- 1 CPU Cooler only for D SKU   P/N: 1960046526N001
- 1 PCI-7031 Startup Manual
- 1 CD with Driver, Utility and Manual (in PDF format)
- 2 Serial ATA HDD Data Cable   P/N: 1700003194
- 1 Serial ATA HDD Power Cable   P/N: 1700022749-11
- 1 Printer (parallel) Port Cable Kit   P/N: 1701260301
- 1 Dual COM Ports Cable Kit   P/N: 1700008762
- 1 ATX Feature Cable   P/N: 1700002343
- 1 4-port USB Cable Kit   P/N: 1700014398-11
- 1 Y Cable for PS/2 Keyboard   P/N: 1700060202
  and PS/2 Mouse
- 1 ATX PSU 20-pin to   P/N: 1700000265
  12-pin Cable Kit
- 1 Jumper Pack   P/N: 9689000068
- 1 Warranty Card

If any of these items are missing or damaged, please contact your distributor or sales representative immediately.

Note1: For detailed contents of PCI-7031, please refer to information on the enclosed CD-ROM (in PDF format). Acrobat Reader is required to view any PDF file.

For more information on this and other Advantech products, please visit our website at:

http://www.advantech.com/ePlatform/

For technical support and service, please visit our support website at:

http://support.advantech.com/support/default.aspx

This manual is for the PCI-7031 series Rev. A1

Specifications

Standard SBC functions

- **CPU:** Soldered-down (BGA type) Intel Atom 1.66 GHz D510 dual-core CPU or 1.66 GHz N450 fanless CPU
- **BIOS:** AMI Flash BIOS
- **Chipset:** ICH8M I/O control hub
- **System memory:**
  - N SKU: 1 GB on-board DDR2 667 memory
  - D/DF SKU: Maximum 2 GB DDR2 667 memory by SO-DIMM socket
  Note: PCI-7031 is ONLY compatible with DDR2 memory modules that are assembled with x16 (16-bit) memory chips and NOT compatible with those that are assembled with x 8 (8-bit) memory chips. Using wrong memory modules may cause unexpected system instability.
- **IDE interface:** One channel, supports one ultra ATA 100/66/33 and one CF slot
- **SATA interface:** Supports three SATAII HDD (300 MB/s)
- **Serial ports:** Two dedicated serial RS-232 ports on board, plus four ports RS-422/485 w/ autoflow control by module (Advantech P/N: PCA-COM485-00A1E)
- **Parallel port:** One EPP/ECP parallel port
- **Keyboard/mouse connector:** One standard PS/2 keyboard/mouse connector and one external 6-pin header
- **Watchdog timer:** Timer can be set from 1 to 255 seconds or 1 to 255 minutes
- **USB (2.0):** 7 Universal Serial Bus ports

VGA Interface

- **Chipset:** Embedded Gen3.5+ GFX Core technology
- **Display memory:** 224 MB shared system memory
- **Video output:**
  - Dual display:VGA+LVDS
  - D510 (D &DF SKU):
    VGA: up to 2048x1536@60Hz
    LVDS: 18 bit, 1366x768 or 1280x800
  - N450 (N SKU):
    VGA: up to 1400x1050@60Hz
    LVDS: 18 bit, 1366x768 or 1280x800

Ethernet Interface

- **Chipset:** Dual GbEs, LAN 1: Intel® 82567V; LAN 2: Intel® 82583V
- **Connection:** Onboard RJ-45 connectors

Specifications (cont.)

Mechanical and Environmental

- **Dimensions (L x W):** 185 x 122 mm (7.3" x 4.8")
- **Power supply voltage:** +5 V, +12 V, 5 Vsb, +3.3 V
- **Power requirements:**

PCI-7031D/PCI-7031DF					
Intel Atom D510 (1.66GHz), DDR2 667, 2GB*1					
Voltage (V)	12V	5V	3.3V	5VSB	-12V
Current (A)	0.32	3.59	0.02	0.04	0.03
Total (W)					22.416

PCI-7031N					
Intel Atom N450 (1.66GHz), DDR2 667, 1GB onboard					
Voltage (V)	12V	5V	3.3V	5VSB	-12V
Current (A)	0.16	2.83	0.01	0.04	0.01
Total (W)					16.423

- **Operating temperature:** 0 ~ 60° C (32 ~ 140° F) (operation humidity: 40° C @85% RH, Non-Condensing)
- **Weight:** 0.365 Kg (weight of board)

Jumpers and Connectors

The board has a number of connectors and jumpers that allow you to configure your system to suit your application.

The table below lists the function of each of the connectors and jumpers.

Connectors	
Label	**Function**
JFP1(1-2)	HDD LED connector
JFP1(3-4)	Power LED connector
JFP1(5-6)	Suspend LED connector
JFP1(7-8)	Reset connector
JFP1(9-10)	ATX power switch
JIR1	IR connector
IDE1	IDE connector
CF1	CF Socket
FDD1	FDD connector
LPT1	Parallel port
USB12	USB port 1, 2, pin-header
USB34	USB port 3, 4, pin-header
USB56	USB port 5, 6, pin-header
USB8	USB port 8 on rear I/O bracket
SATA1	Serial ATA1
SATA2	Serial ATA2
SATA3	Serial ATA3
COM12	Serial Port: COM1 COM2

Jumpers and Connectors (cont.)

| KBMS1	PS/2 keyboard and mouse connector
KBMS2	External keyboard and mouse connector
VGA1	VGA connector
LAN12	Dual Gigabit Ethernet connector
ATX1	ATX power connector
CPUFAN1	CPU FAN connector (3-pin)
SYSFAN1	System FAN connector (3-pin)
HDAUD1	High Definition audio connector
GPIO1	GPIO pin header
LPC1	LPC connector
LVDS1	LVDS connector
INV1	Inverter connector

Note: USB7 is reserved and can not be used.

Jumpers	
Label	**Function**
CMOS1	CMOS clear
JLVDS1	3.3 V / 5 V, LVDS voltage selection
JVBR1	LVDS backlight setting
JWDT1	Watchdog timer output selection
ATXF1	ATX feature connector

CMOS1: CMOS clear function	
Closed Pins	**Result**
1-2	Keep CMOS data *
2-3	Clear CMOS

* default setting
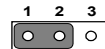
JLVDS1: LCD Power 3.3 V/5 V Selector	
Closed Pins	**Result**
1-2*	3.3 V*
2-3	5 V

* default setting
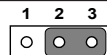
Jumpers and Connectors (cont.)

JVBR: LVDS backlight setting

Closed Pins	Result
1-2 closed (Default)	Linear way to control brightness
2-3 closed	PWM to control brightness

```
1   2   3
○   ○   ○
```

JWDT1: Watchdog timer output option

Closed Pins	Result
1-2	GPIO14
2-3	System reset *

* default setting

```
1   2   3
○   ○   ○
```

ATXF1: AT/ATX mode selection

Closed Pins	Result
1-2 (Default)	AT mode
Connect to backplane with 1700002343	ATX mode

```
1   2   3
○   ○   ○
```

* For DF SKU, jumper setting on ATXF1 is not required, please do not put the jumper.

Software Installation

The CD disc contains a driver installer program that will lead you through the installation of various device drivers needed to take full advantage of your CPU card.

Caution! The computer is provided with a battery-powered real-time clock circuit. There is a danger of explosion if battery is incorrectly replaced. Replace only with same or equivalent type recommended by Advantech. Discard used batteries according to manufacturer's instructions.
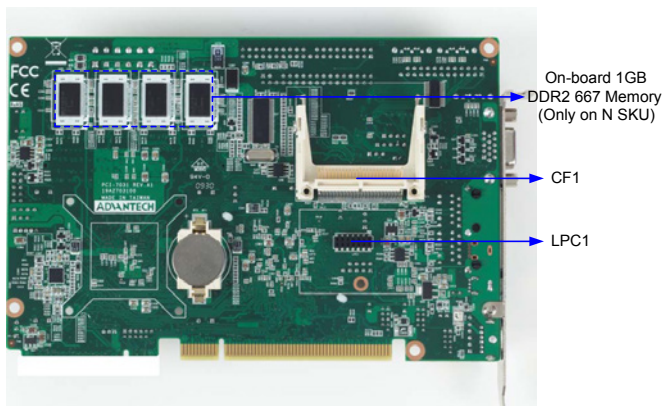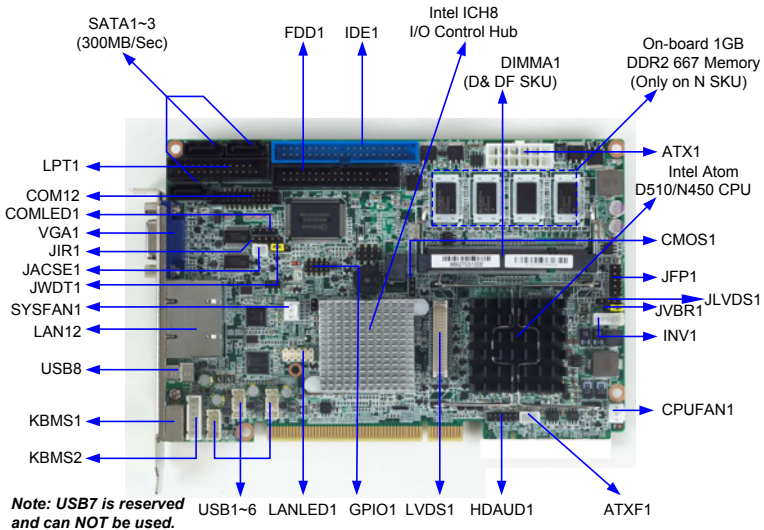
Board Layout

This device complies with the requirements in Part 15 of the FCC rules. Operation is subject to the following two conditions.

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

The locations of all connectors and jumpers:

Figure 1: Board Layout: Jumper and Connector Locations