FWA-3240 Manual

1U Rackmount Intel Tolapai-based Platform
with 4 Front LAN Ports & LCD Display

Advantech Internet Security Platform

CE Notification

The FWA-3240, developed by Advantech Co., Ltd., has passed the CE test for environment specifications when shielded cables are used for external wiring. We recommend the use of shielded cables.

1st Edition Printed in Taiwan March 2006

Product warranty

Advantech warrants to you, the original purchaser, that each of its products will be free from defects in materials and workmanship for two year 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 Advantech, or which have been subject to misuse, abuse, accident or improper installation. Advantech assumes no liability under the terms of this warranty as a consequence of such events.

Because of Advantech's high quality-control standards and rigorous testing, most of our customers never need to use our repair service. If an Advantech 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, Advantech products used, other hardware and software used, etc. Note anything abnormal and list any on-screen 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.

Packing List

Before installation, ensure that the following materials have been received:

One FWA-3240 Internet Security Platform

One box of accessories

One warranty certificate

One CD-ROM for user manual (PDF file) If any of these items are missing or damaged, contact your distributor or sales representative immediately.

Technical Support and Sales Assistance

If you have any technical questions about the FWA-3240 or any other Advantech products, please visit our support website at:

http://www.advantech.com.tw/support

http://www.advantech.com.

For more information about Advantech's products and sales information, please visit:

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General Information

1.1 Introduction

The FWA-3240 incorporates Intel's Tolapai System-on-Chip which combines Intel's QuickAssist Technology and integrates an Intel Pentium M class core, memory controller and I/O controller. The high-performance CPU core supplies the horse power needed to perform deep packet inspection and other complex operations and is particularly optimized for entry to mid-range network security appliances.

Security applications can run existing x86 software applications because of backward code compatible with earlier Intel processors. Most network security platforms already run on Intel x86 processors and can run existing software applications on tolapai because it is backward compatible with earlier Intel processors. Typical appliance workloads which require IP-SEC encryption, acceleration and compression of content can offload processing on to the QuickAssist Integrated Accelerator which increases the effective data throughput and performance and reduces the overall power consumption of a given application.

The FWA-3240 features a low-power design, and supports up to 2 GB DDR2 on one single-channel SO-DIMM. It provides a total of four GbE LANs, three of which are from the Tolapai on-chip MACs (Intel 82574-derived) and the fourth from a PCIe-based Intel 82574 Ethernet controller.

The on-chip MACs are routed to 3 Marvell PHY devices.

The system supports one 2.5" SATA HDD and CompactFlash for OS and/or Internet security applications. The front Panel provides a RS-232 serial port with RJ-45 socket, 2 USB ports and a LCD Module for local system management, maintenance and diagnostics. The system is fully FCC, CE and RoHS compliant.

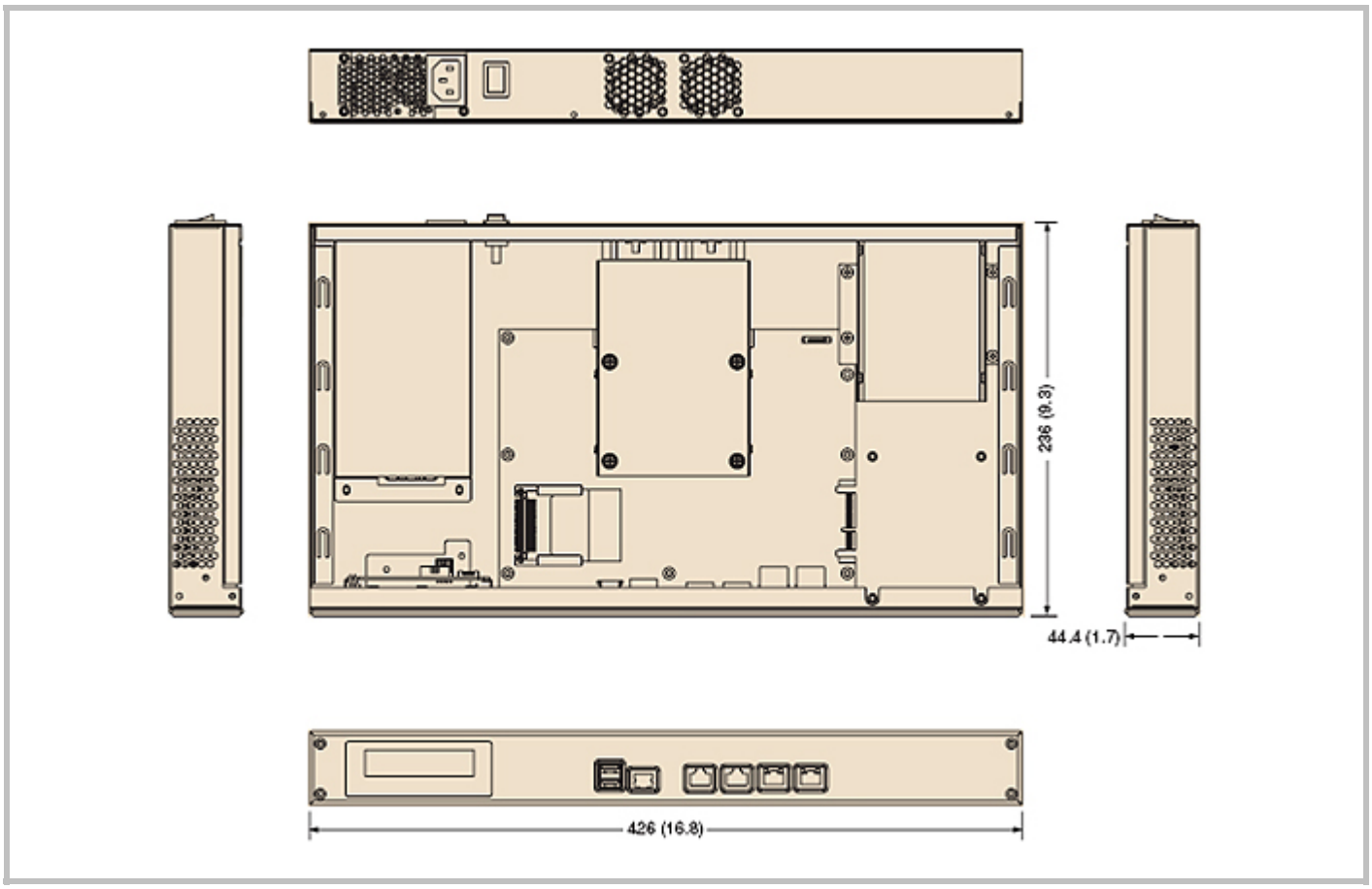
1.2 Features

- 1U Rackmount Network Application Platform
- Intel EP80579 Integrated Processor (Tolapai) solution
- One internal proprietary PCIe x4 expansion slot
- Single channel DDR2 SODIMM support up to 2 GB
- 4 X 10/100/1000 Mbps GbE LAN ports
- Console port for local setting

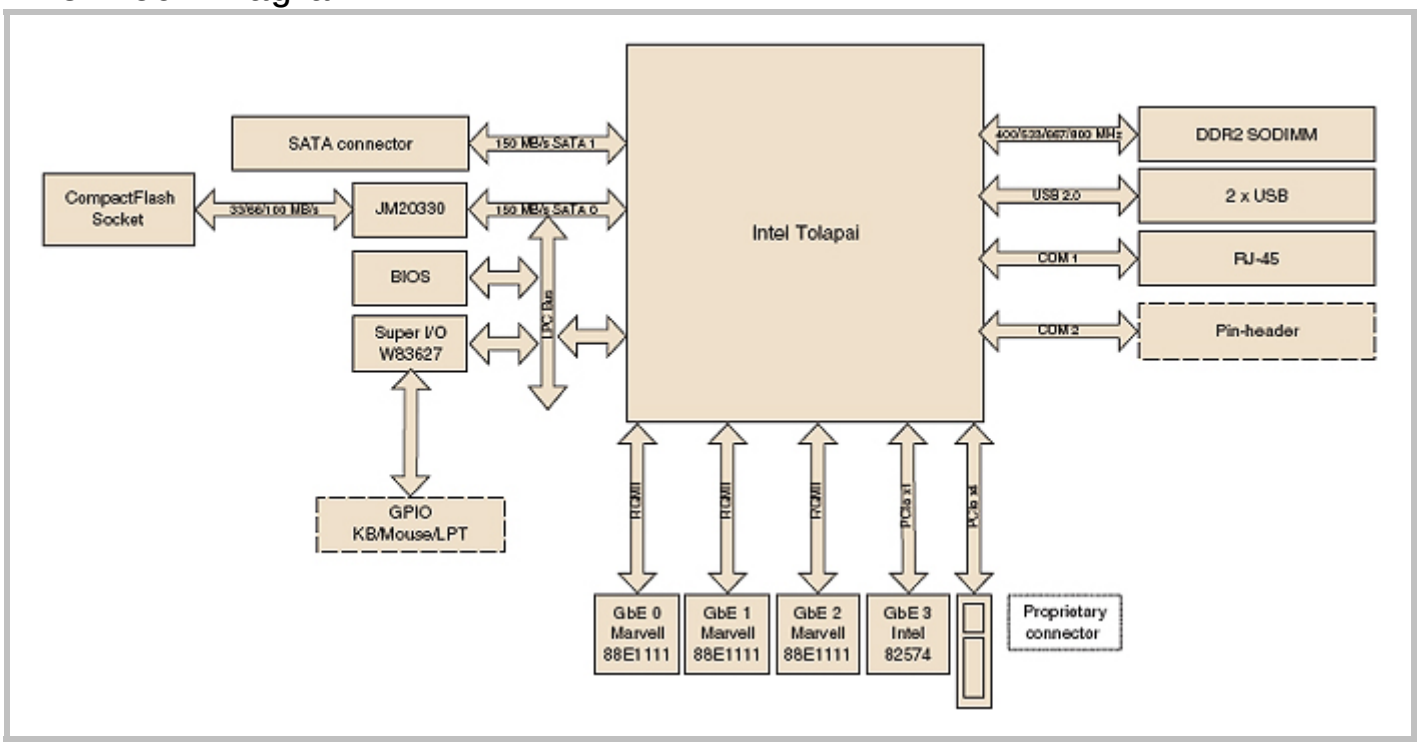
1.3 Specifications

Processor System	CPU & Chipset	Intel EP80579 Integrated Processor (Tolapai) supports 600/1066/1200 MHz processor	
	Max. Speed	1.2 GHz	
	Front Side Bus	400/533 MHz	
	BIOS	Award™ 4Mbit Flash	
Memory	Technology	Single channel DDR2 800/667/533/400 MHz SODIMM	
	Capacity	Up to 2 GB with 1 slot	
Expansion	Onboard Expansion slots	One proprietary internal PCIe x4 connector	
Ethernet	Interface	4 x 10/100/1000 Base-T	
	Controller	Three GbE from Intel EP80579 Integrated Processor + Marvell 88E1111 PHY One GbE from Intel 82574, with bypass function	
Storage	SATA	1 x 2.5" HDD bay Max. data transfer rate at 150 MB/sec	
	Controller	JMicron (SATA to IDE bridge)	
	Compact Flash Socket	1 x CF socket on IDE 0 (Primary)	
Peripheral	USB	2 x USB 2.0	
	Serial	1 x RS-232 with RJ-45 connector	
	LCD Module	16 Characters. 2 lines. 5buttons	
	Pin headers	K/B, Mouse, LPT, COM	
Power	Watt	180 W	
	Input	90 ~ 240V AC, auto range	
Environment		Operating	Non-Operating
	Temperature	0 ~ 40℃ (32 ~ 104℉)	-20 ~ 75℃ (-4 ~ 167℉)
	Humidity	5 ~ 85% @ 40℃ (104℉)	5 ~ 95%
Physical	Dimensions (W x H x D)	426 x 44 x 236 mm (16.8" x 1.7" x 9.3")	
	Weight	4.2kg (9.3lb)	

1.4 Dimensions



1.5 Block Diagram



2

System setup

Setting up your FW-3240 requires only a screwdriver and a small amount of time. Before you begin, you should also gather together all of the device you plan to install, as well as the CPU, RAM, HDD, and etc. The front panel of FWA-3240 includes a LCD display module, four Ethernet ports, aRS-232 console port, and two LEDs where one is power LED and another is HDD LED. On the rear panel, there is a power switch located on the top right hand corner.

2.1 Removing the cover

There are screws which secure the cover to the chassis. They are along the sides, near the top. Remove them, and then slide the cover to the rear of the chassis.

Figure 2-1: Remove top cover

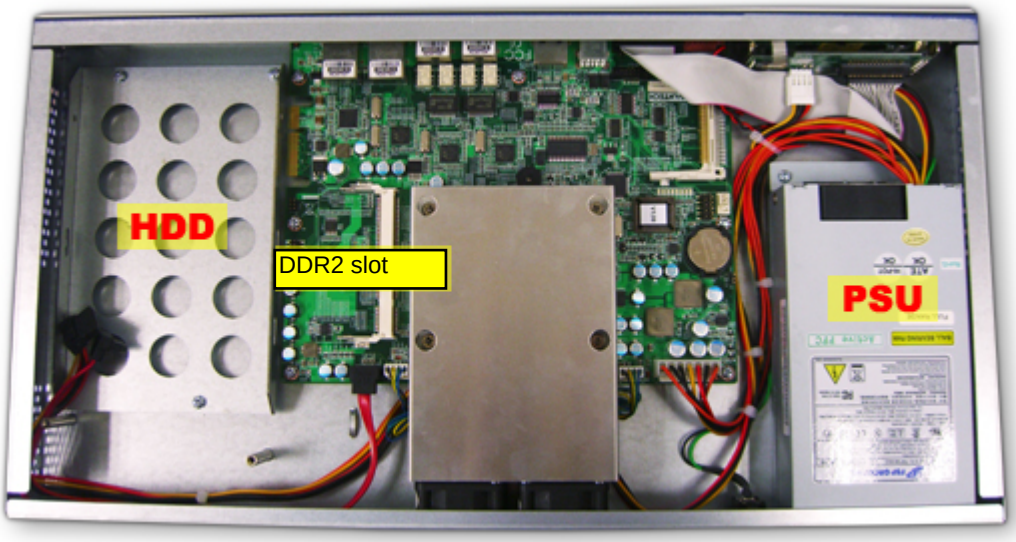
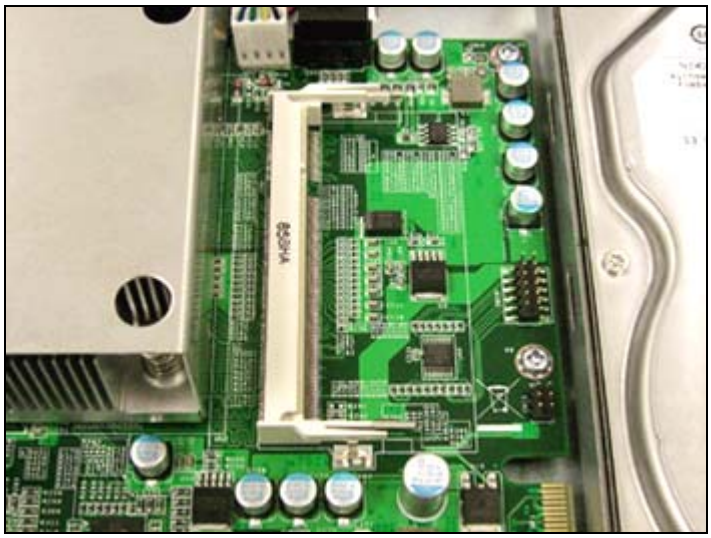


Figure 2-2: Inside of FWA-3240

2.2 Installing Memory Module

1. Unlock a DIMM socket by. Align the notch of the DIMM memory module to match on the socket and insert the DIMM into the socket until the DIMM is properly seated.
2. Press the DIMM inward to lock the DIMM memory module. Installing memory module is completed.



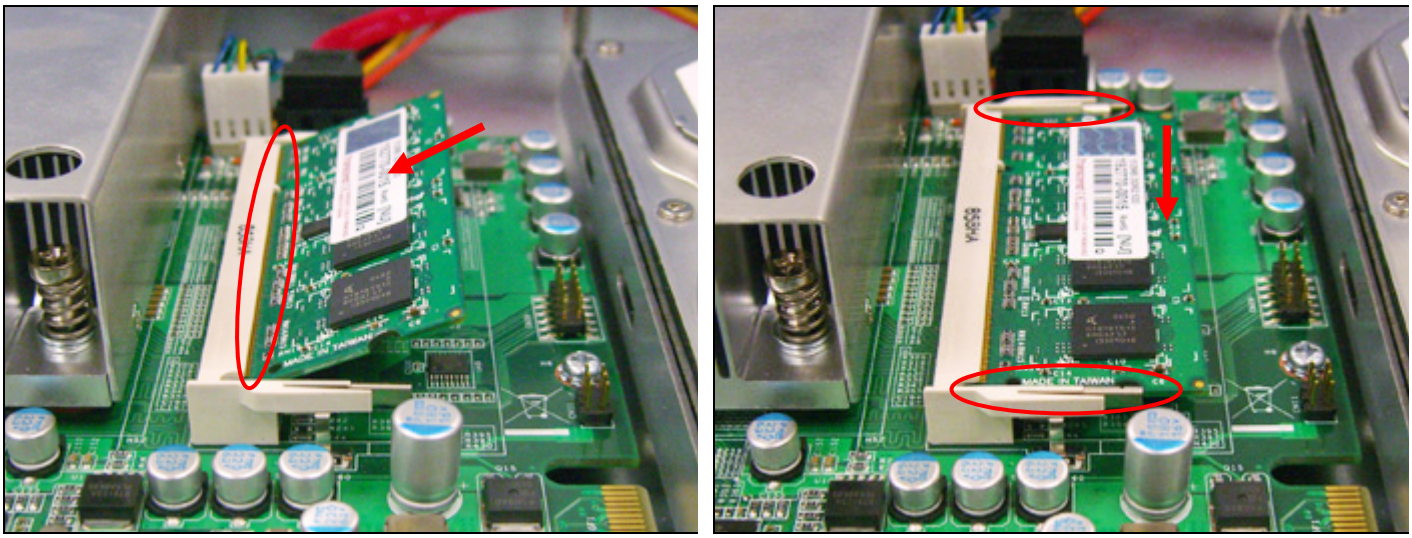


Figure 2-3: Install RAM module

2.3 Installing Hard Disk Drive

1. Unscrew each side of the HDD supporting frame on the chassis and pull it out.
2. Put the HDD above the HDD supporting frame and position the screws accordingly.
3. Screw each side of the HDD supporting frame to fix on the chassis.
4. Connect the SATA cable included in the accessory box to the connector on the HDD. Connect power connector to the HDD. Installing Hard Disk Drive is completed.

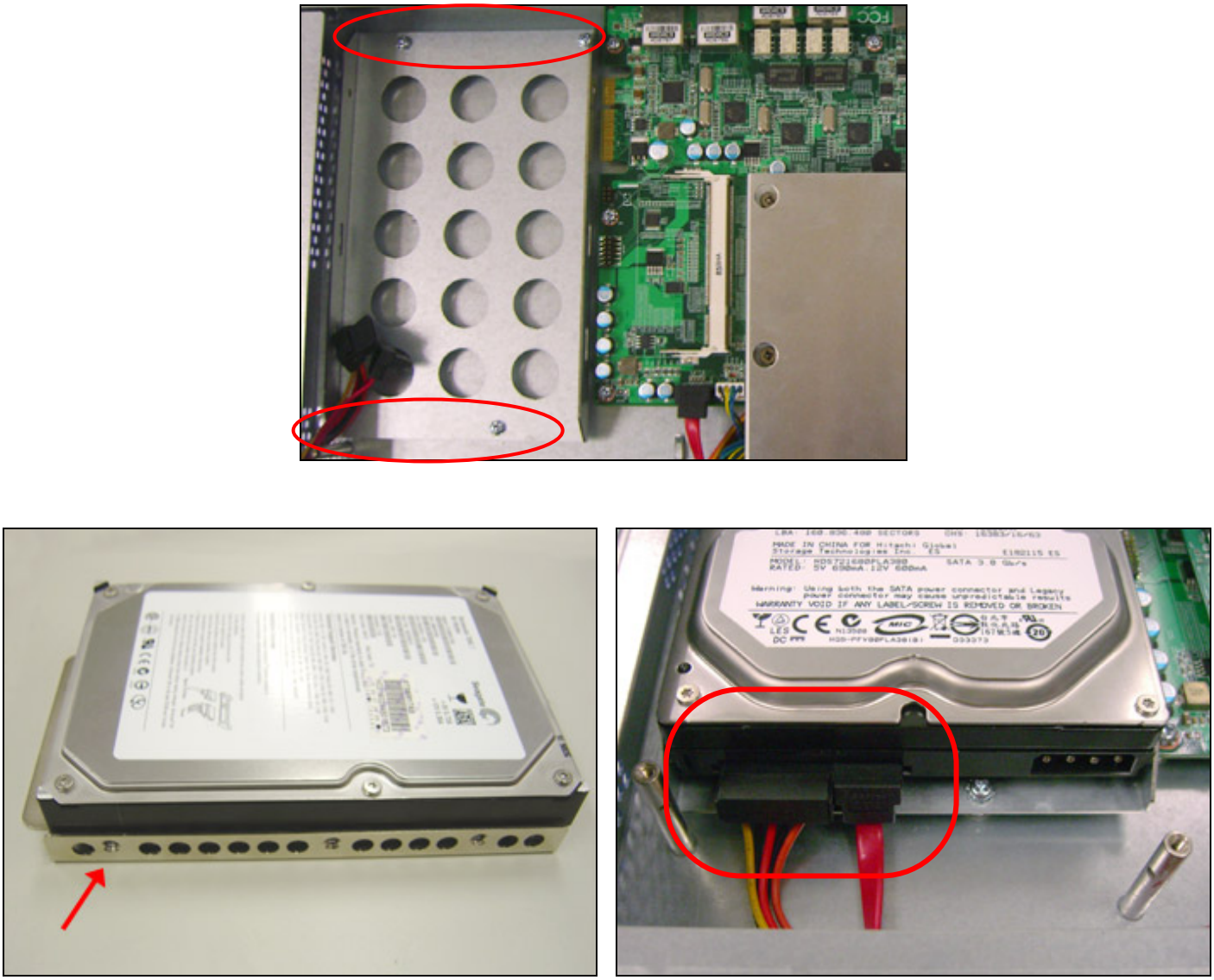


Figure 2-4: Install HDD

2.4 Installing Compact Flash

1. Position a CompactFlash disk accordingly in the CompactFlash disk socket and push it inward. Installing CompactFlash disk is completed.

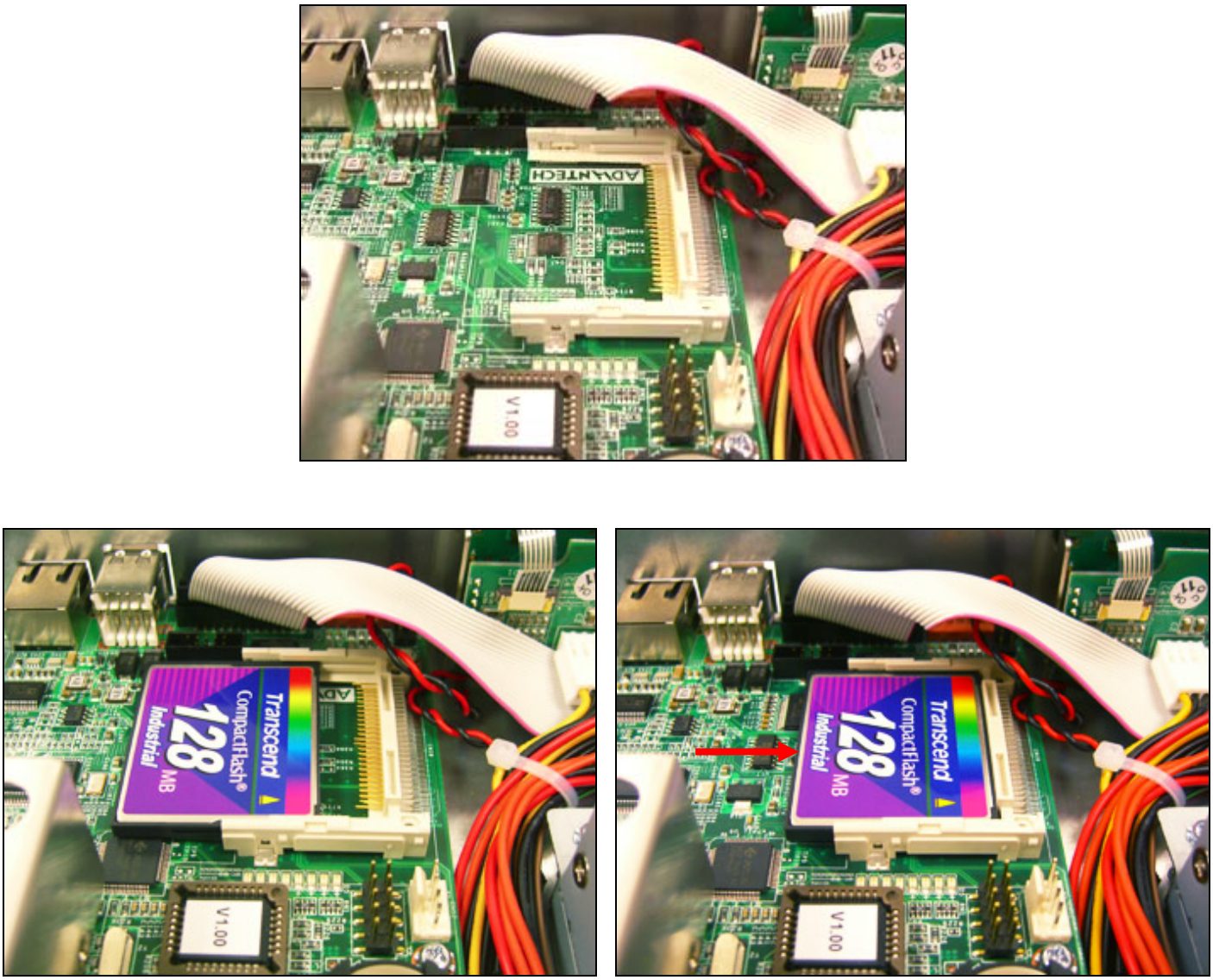


Figure 2-5: Install CF card

3

Hardware Overview

3.1 System Block Diagram

3.1.1 NAMB-3240 Main Board Block Diagram

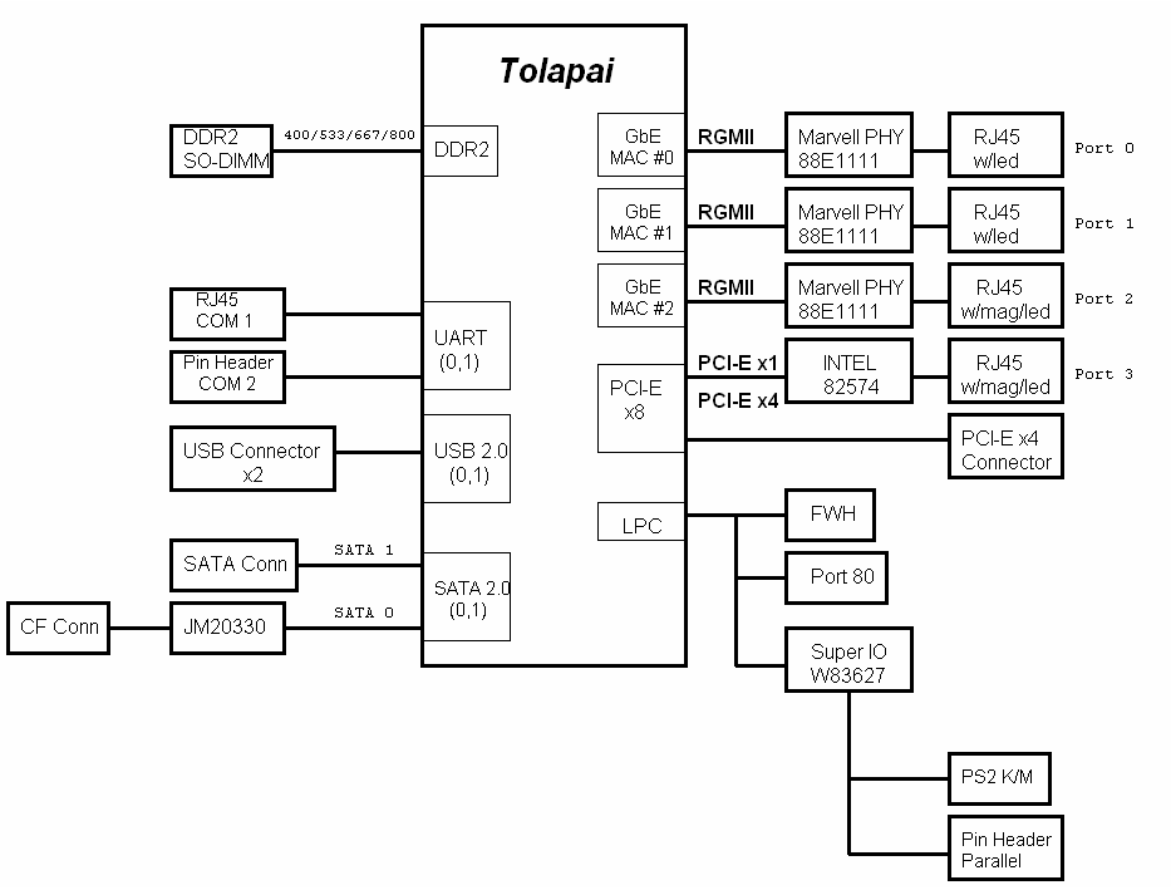


Figure 3-1: NAMB-3240 Main Board Block Diagram

3.2 Feature Summary

3.2.1 NAMB-3240 Main Board hardware function

Table 3-1: Overview of the NAMB-3240 major hardware function

Integrated chipset (CPU + NB + SB chipset)	● Tolapai 65nm packed in 1088-Ball FCBGA, 3.75cm x 3.75cm Processor with 256K L2 Cache, FSB 400/533 600MHz/1.0 Ghz/2.0 Ghz
Memory	● One DIMM socket supporting DDR2 SODIMM technology memory. ● 200-pin DDR2-533, DDR2-667 and DDR2-800 can be used. ● Up to 2GB memory capacity
Expansion Slots	● One full-length/180degree PCI Express x4 slot.
Storage	● One 3Gbit/s SATA port ● One CF Socket
System Management	● W83793G hardware monitor chip
LAN	● One 10/100/1000 Intel® 82574L Controller ● Three 10/100/1000 RGMII Marvell PHYs
Super IO	● Winbond W83627HG - LPC interface - Support PS2 interface - Support one Paraell port interface
Internal connector	● One DDR2 SODIMM socket ● One CF 40-pin connector ● One SATA-2 connector ● AT-12V Standard on the first 5 pins
Board Size	● 8.4” x 6.5", 6-layer design

4

Hardware Jumper Guide

4.1 PCA Placement

4.1.1 Main Board Placement

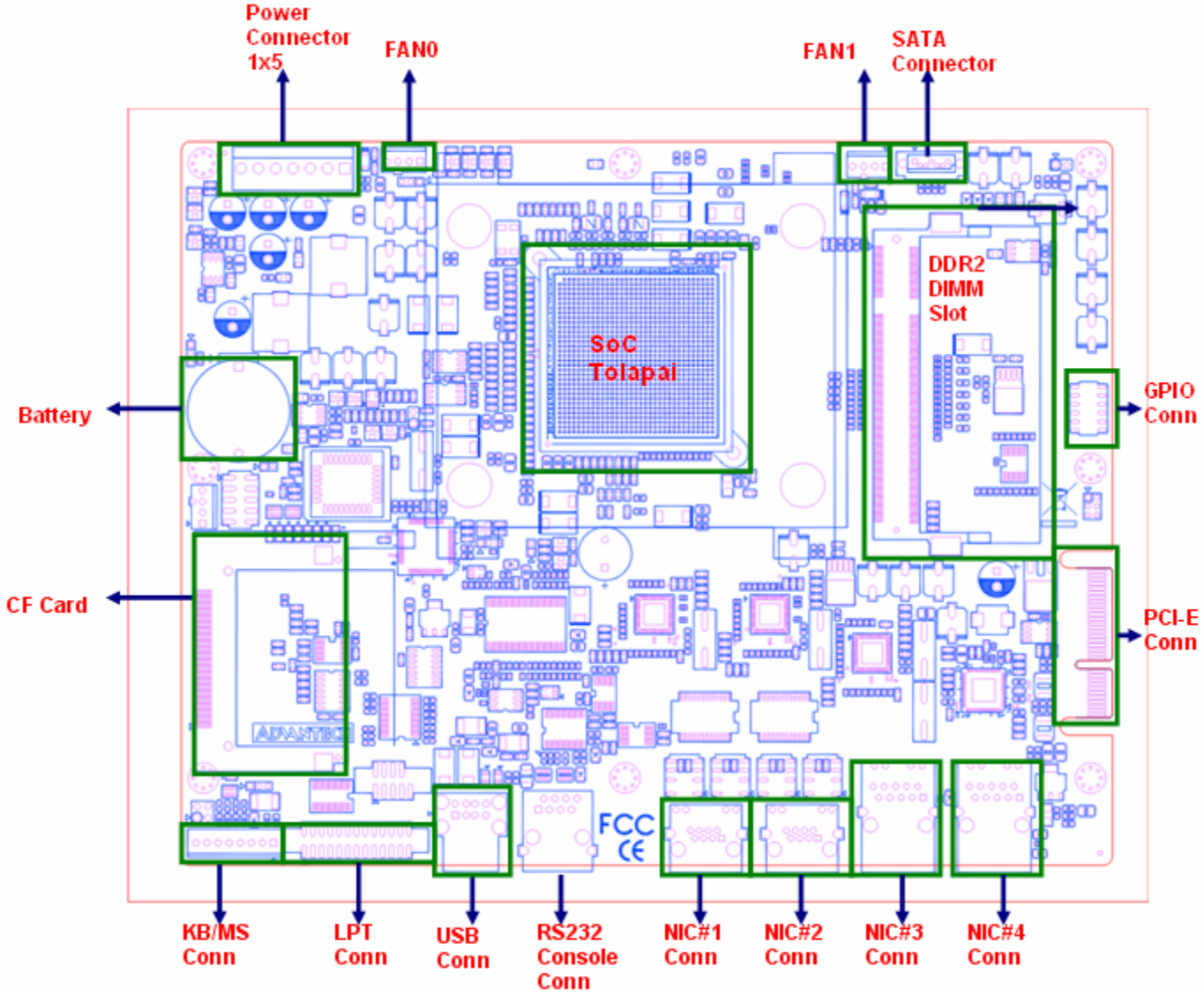


Figure 4-1: NAMB-3240 Placement

4.2 Connector

4.2.1 Power Supply Connector Pin-out

The motherboard shall accommodate power connectors as described in the AT Specifications. The main connector shall be 7-pin connector as specified in the AT-12V Power Supply Design Guide as referenced above.

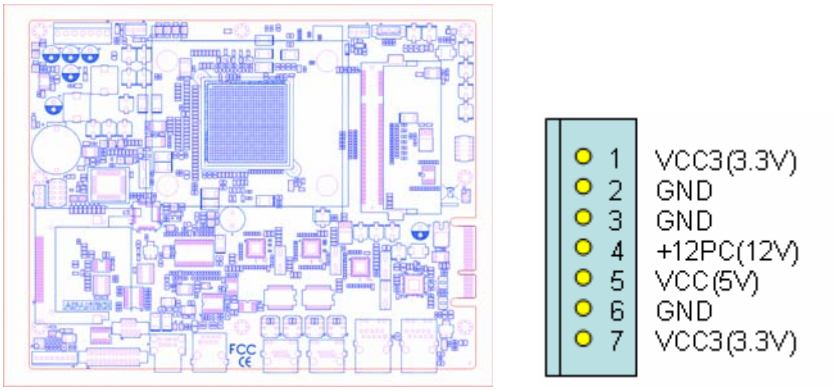


Figure 4-2: Power Supply Connector 1x7Pin(CN2)

4.2.2 Clear CMOS Header

Use a three pin header. for Clear CMOS data

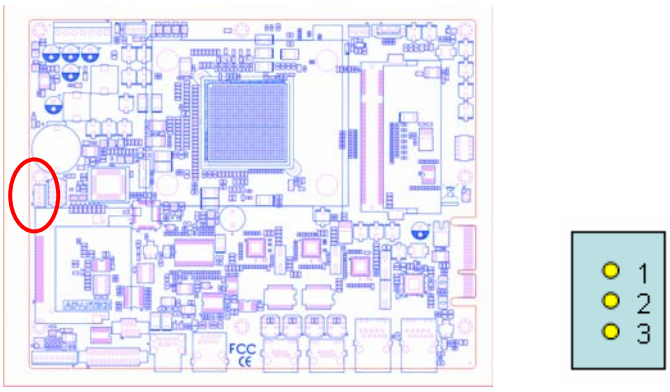


Figure 4-3: CMOS Header 3Pin(CN9)

Table 4-1: Clear CMOS Jumper Definition

Jumper	Circuit	Comment
1-2 Installed	Pull up	Pull up to VBAT 3.3V, Normal status (Default)
2-3 Installed	Pull down	Pull to ground to clear CMOS
No install	Invalid	Invalid

4.2.3 Fan Header

The number of fans in each platform may be different. Locations of the fan headers shall accommodate circulation of fresh air from the front of the chassis. The fan header shall be type MOLEX 22-23-2051 with pin out outlined below.

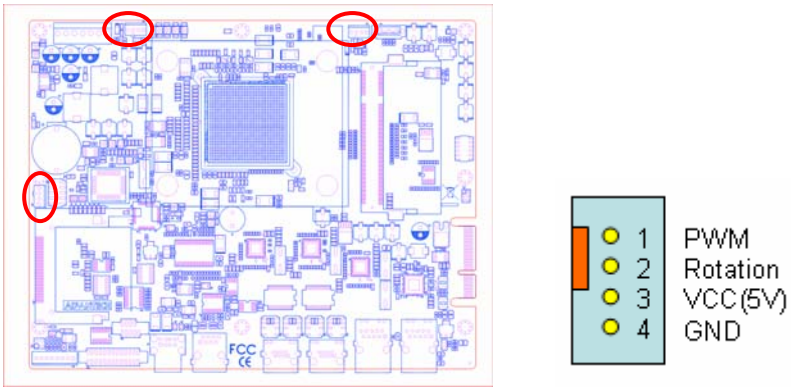


Figure 4-4: FAN Header 4Pin(CN1,CN2,CN12)

4.2.4 CF Header

25 X 2 Pin header

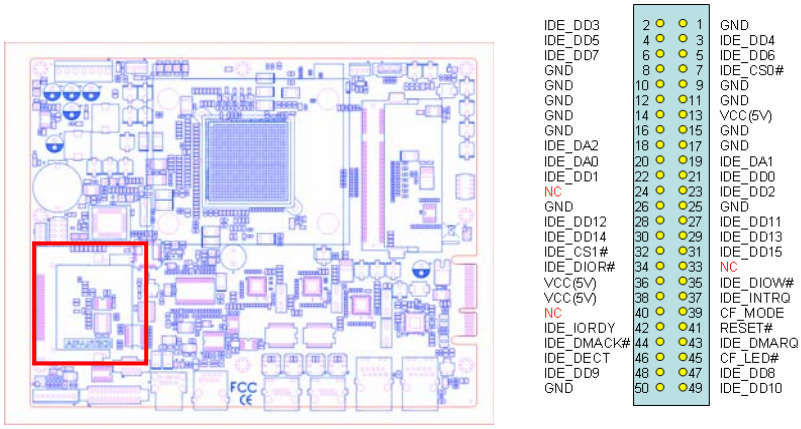
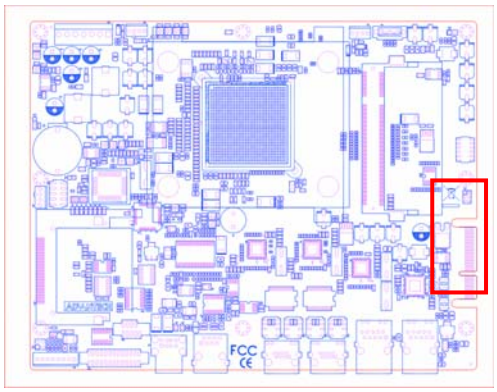


Figure 4-5: CF Header 50Pin(CN18)

4.2.5 PCI Express Golden Finger



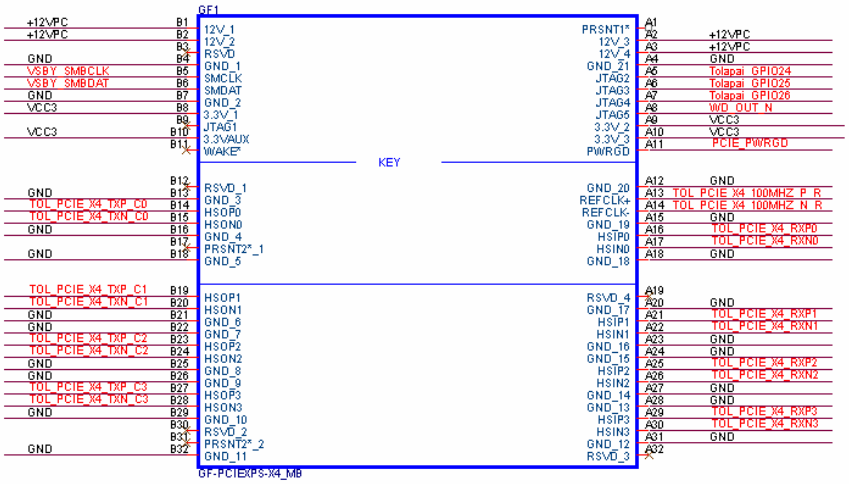
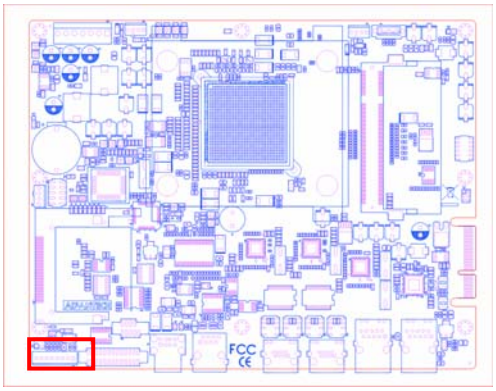


Figure 4-6: PCI Express Slot 64Pin(GF1)

4.2.6 KB/MS Header



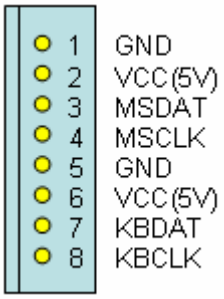


Figure 4-7: KB/MS Connector 1x8Pin(CN28)

4.2.7 LPT Header

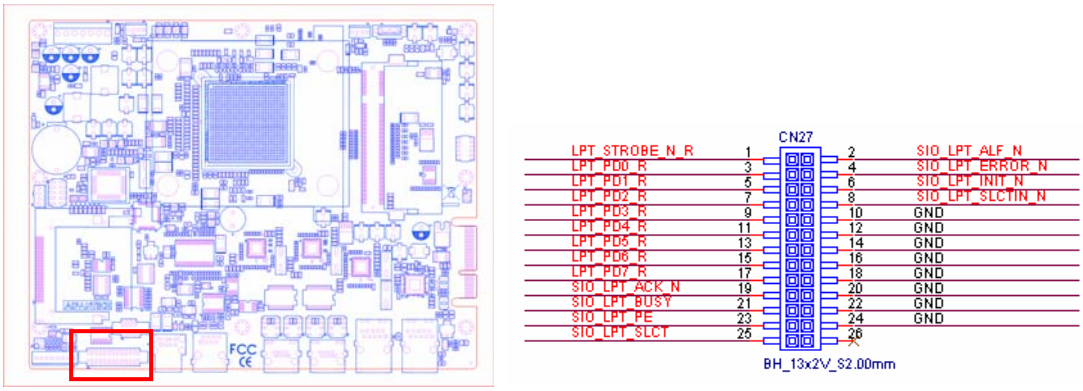
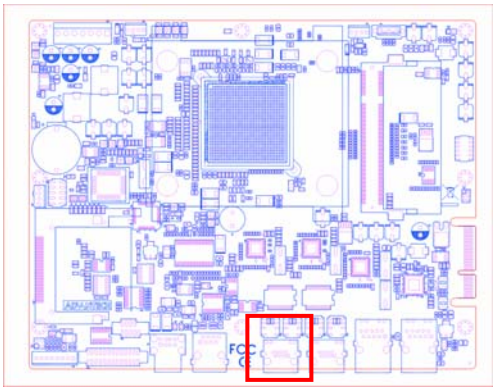
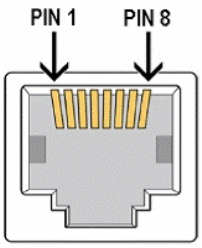


Figure 4-8: LPT Header 2x13Pin(CN27)

4.2.8 Console Connector



Console access to the Linktropy 4500 is through the RJ-45 interface on the front panel labeled "CONSOLE." An RJ-45 to DB-9 cable is included with the unit to connect the device to a standard PC serial port. The pin-out for the RJ-45 interface is shown below:



Pin	Definition	Pin	Definition
1	CTS/RTS	2	DTR
3	TxD	4	GND
5	GND	6	RxD
7	DSR	8	CTS/RTS

Figure 4-9: RJ45 Connector(CN23), the default baud rate is 19200.

4.2.9 External Serial Port Header

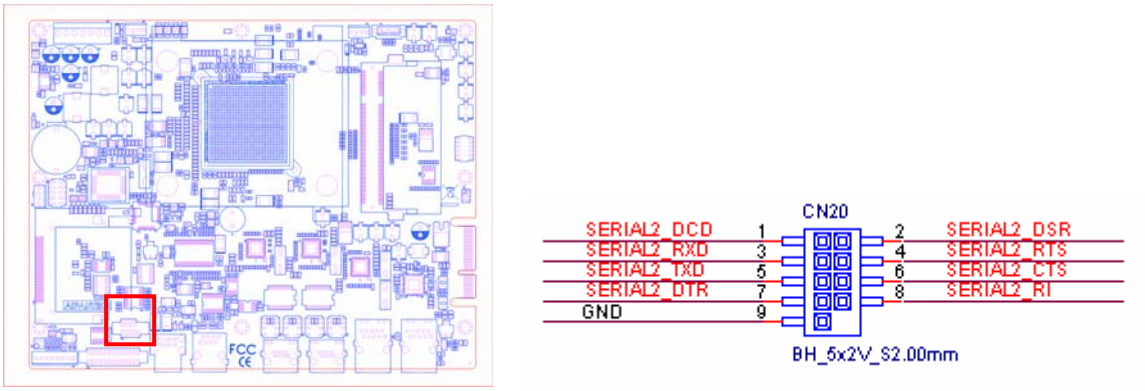


Figure 4-10: External Serial Pin Header(CN20)

4.2.10 USB Connector

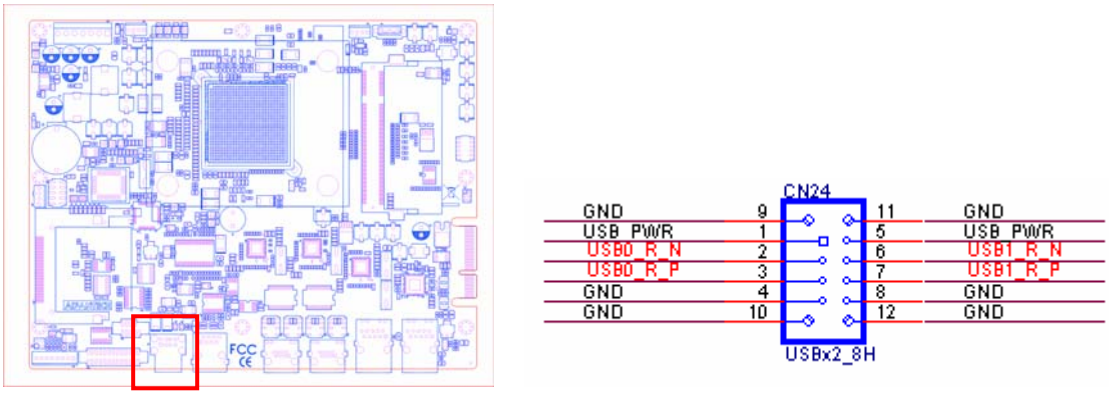
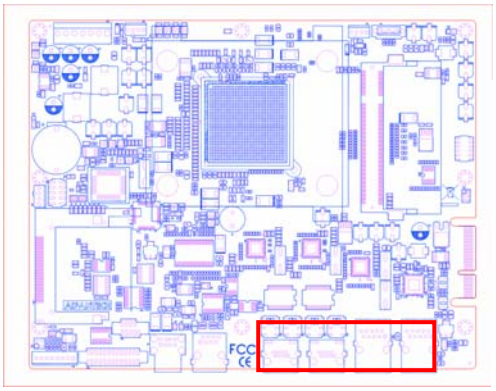
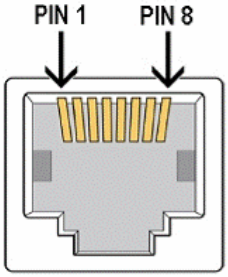


Figure 4-11: USB Connector(CN24)

4.2.11 LAN Port





LED status:

GbE Link: Green (Left)

FE Link: Amber (Left)

Action Link: Green/Blink (Right)

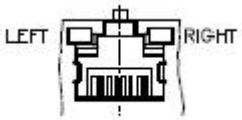
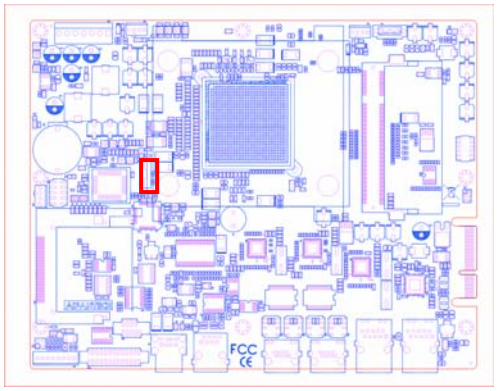
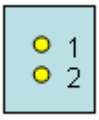


Figure 4-12: RJ45 for LAN Connectors (CN25,CN26,CN21 from Tolapai, CN22 from 82574L)
Tolapai 's LAN LED issues notice: Link LED wasn't work correctly and plan to fix on next version.

4.2.12 System Reset Header

2 X 1 Pin 2.54mm header

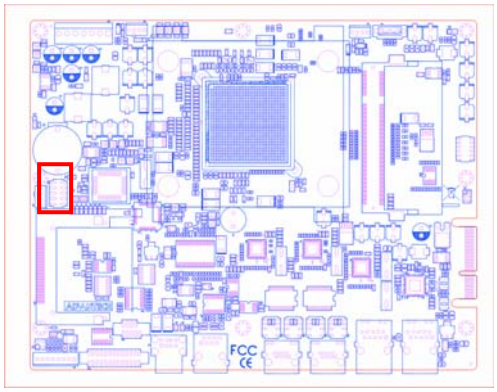




Pin	Comment
1	Pull up to VCC5
2	Connect to ground

Figure 4-13: System Reset Header(CN7)

4.2.13 Debug Port Header



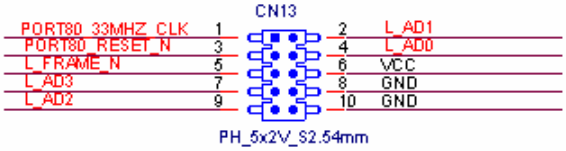


Figure 4-14: Debug Port(CN13)

4.2.14 External GPIO Header

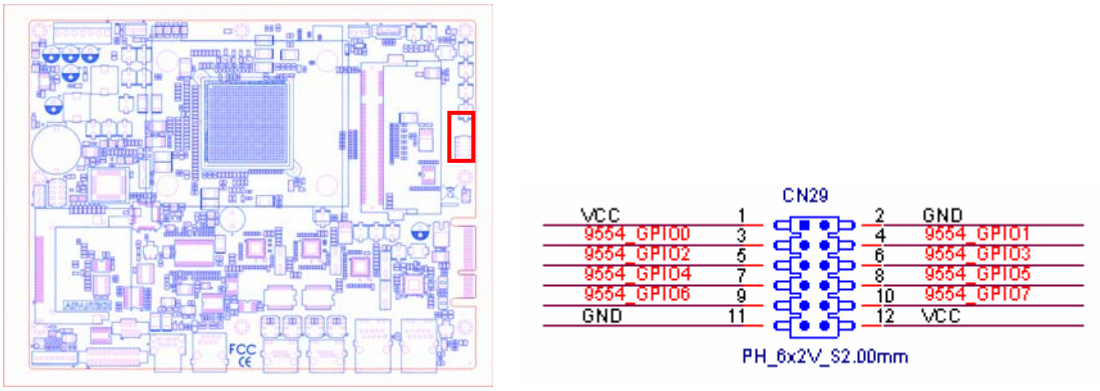


Figure 4-15: External GPIO Header(CN29)

4.2.15 LED Header

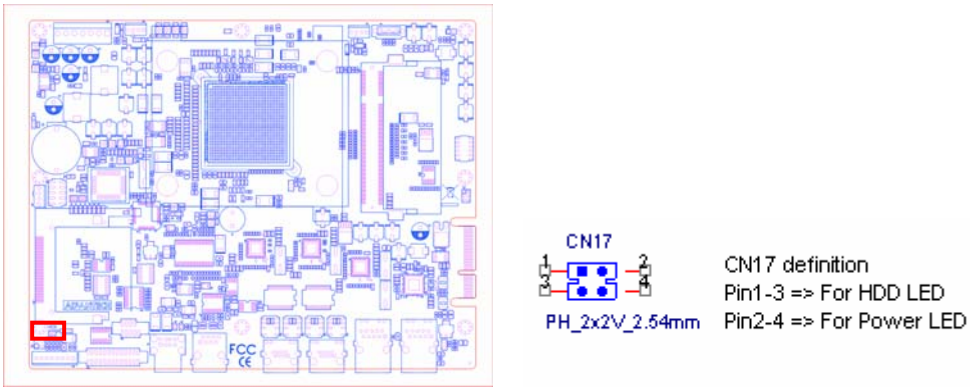


Figure 4-16: LED Header(CN17)

4.3 General-Purpose IO (GPIO) Assignments and Descriptions

4.3.1 Tolapai GPIO

Table 4-2: Tolapai GPIO Definition

Signals Name	I/O Type	Tolerance	Function	Comments
GPIO0	I	3.3V	GPI	NA
GPIO1	I	3.3V	GPI	NA
GP2_PIRQE#	I	3.3V	GPI	NA
GP3_PIRQF#	I	3.3V	GPI	NA
GP4_PIRQG#	I	3.3V	GPI	NA
GP5_PIRQH#	I	3.3V	GPI	NA
GPIO6	I	3.3V	GPI	NA
GPIO7	I	3.3V	GPI	NA
GPIO8	I	3.3V	GPI	NA
GPIO9	I	3.3V	GPI	NA
GPIO10	I	3.3V	GPI	NA
GP11_SMBALERT#	I		SMBALERT#	NA
GPIO12	I	3.3V	GPI	NA
GPIO13	I	3.3V	GPI	NA
GPIO14	I	3.3V	GPI	NA
GPIO15	I	3.3V	GPI	NA
GPIO16	I/O	3.3V	GPIO	NC
GPIO17	I/O	3.3V	GPIO	Boot options
GPIO18	I/O	3.3V	GPIO	NC
GPIO19	I/O	3.3V	GPIO	NC
GPIO20	I/O	3.3V	GPIO	NA
GPIO21	I/O	3.3V	GPIO	NC
GPIO23	I/O	3.3V	GPIO	NC
GPIO24	I/O	3.3V	GPIO	Connect to PCIE Slot
GPIO25	I/O	3.3V	GPIO	Connect to PCIE Slot
GP26_SATA0GP	I		SATA0GP	NA
GPIO27	I/O	3.3V	GPIO	Connect to PCIE Slot
GPIO28	I/O	3.3V	GPIO	Connect to PCIE Slot
GP29_SATA1GP	I	3.3V	SATA1GP	NA
GPIO30	I	3.3V	GPI	NA
GPIO31	I	3.3V	GPI	NA
GPIO33	I/O	3.3V	GPIO	Boot options
GPIO34	I/O	3.3V	GPIO	NA
GPIO40	I	3.3V	GPI	IERR
GP41_LDRQ[1]#	I	3.3V	LDRQ[1]#	LDRQ[1]#
GPIO48	O	3.3V	GPO	NC

4.3.2 Super I/O GPIO

Table 4-3: Super I/O GPIO Definition

Signals Name	I/O Type	Tolerance	Function	Comments
GP10	I/O	5V	GPO	Port80 LED
GP11	I/O	5V	GPO	Port80 LED
GP12	I/O	5V	GPO	Port80 LED
GP13	I/O	5V	GPO	Port80 LED
GP14	I/O	5V	GPO	Port80 LED
GP15	I/O	5V	GPO	Port80 LED
GP16	I/O	5V	GPO	Port80 LED
GP17	I/O	5V	GPO	Port80 LED
GP20	I/O	5V	GPI	NA
GP21/SCL	I/O	5V	SCL	SCL
GP22/SDA	I/O	5V	SDA	SDA
GP23/PLED	I/O	5V		NC
GP24/WDTO	I/O	5V	WDTO	Connect to LAN Bypass
GP25/IRRX	I/O	5V	IRRX	NC
GP26/IRTX	I/O	5V	IRTX	NC
GP30/SLP_SX#	I/O	5V	SLP_SX#	From Tolapai SLP_S3#
GP31/PWRCTL#	I/O	5V	PWRCTL#	NC
GP32/PWROK	I/O	5V	PWROK	
GP33/RSMRST#	I/O	5V	RSMRST#	Connect to Tolapai
GP34/CIRRX	I/O	5V	GPIO	NC
GP35/SUSLED	I/O	5V	GPIO	NC

4.3.3 PCA9554 GPIO

Table 4-4: PCA9554 Pin Definition

Signals Name	I/O Type	Tolerance	Function	Comments
GPIO0	I/O	5V	GPI	Connect CN29 Pin3
GPIO1	I/O	5V	GPI	Connect CN29 Pin4
GPIO2	I/O	5V	GPI	Connect CN29 Pin5
GPIO3	I/O I	5V	GPI	Connect CN29 Pin6
GPIO4	I/O I	5V	GPI	Connect CN29 Pin7
GPIO5	I/O	5V	GPI	Connect CN29 Pin8
GPIO6	I/O	5V	GPI	Connect CN29 Pin9
GPIO7	I/O	5V	GPI	Connect CN29 Pin10

Table: Memory compatibility test table

Brand	PHY num	Size	Speed	Type	ECC	REG	Vendor PN	Memory chip	Criteria	Measurement	Judgment
Apacer	4	2GB	667	DDR2	NO	NO	78.A2G75.AT5	7XE22 D9HNQ	No error & PASS more than 3 times in test utility.	PASS	**PASS**
	4	1GB	667	DDR2	NO	NO	78.02G75.AT2	8AE12 D9HNQ 7XE22 D9HNQ		PASS	**PASS**
	4	512MB	533	DDR2	NO	NO	76.9325G.B12	0702SP TAIWAN		PASS	**PASS**
Transcend	4	2GB	800	DDR2	NO	NO	202411-0183	PSC A3R1GE3CFF 804RAB47		PASS	**PASS**
	4	2GB	667	DDR2	NO	NO	190938-0099	7PE11 D9HNL		PASS	**PASS**
	4	1GB	800	DDR2	NO	NO	198309-0033	8AE22 D9HNP		PASS	**PASS**
	4	512MB	533	DDR2	NO	NO	195474-0081	SEC 719 ZCE6 K4T51083QC		PASS	**PASS**
	4	1GB	667	DDR2	NO	NO	190938-0038	7PE11 D9HNL		PASS	**PASS**
ATP	4	1GB	800	DDR2	NO	NO	AZ28K64B8BJE7S	SEC 816 HCE7 K4T1G084QQ		PASS	**PASS**
	4	2GB	800	DDR2	NO	NO	AZ56K64E8BJE7S	SEC 816 HCE7 K4T1G084QQ		PASS	**PASS**