

FWA7404 Series Network Appliance

User's Manual

Version: 1.0



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Foreword

To prevent damage to the system board, please handle it with care and follow the measures below, which are generally sufficient to protect your equipment from static electricity discharge:

When handling the board, use a grounded wrist strap designed for static discharge elimination grounded to a metal object before removing the board from the antistatic bag. Handle the board by its edges only; do not touch its components, peripheral chips, memory modules or gold contacts.

When handling processor chips or memory modules, avoid touching their pins or gold edge fingers. Return the Network Appliance system board and peripherals back into the antistatic bag when not in use or not installed in the chassis.

Some circuitry on the system board can continue to operate even though the power is switched off. Under no circumstances should the Lithium battery cell used to power the real-time clock be allowed to be shorted. The battery cell may heat up under these conditions and present a burn hazard.

WARNING!

1. "CAUTION: DANGER OF EXPLOSION IF BATTERY IS INCORRECTLY REPLACED.
REPLACE ONLY WITH SAME OR EQUIVALENT TYPE RECOMMENDED BY THE
MANUFACTURER. DISCARD USED BATTERIES ACCORDING TO THE
MANUFACTURER'S INSTRUCTIONS"
2. This guide is for technically qualified personnel who have experience installing and configuring system boards. Disconnect the system board power supply from its power source before you connect/disconnect cables or install/remove any system board components. Failure to do this can result in personnel injury or equipment damage.
3. Avoid short-circuiting the lithium battery; this can cause it to superheat and cause burns if touched.
4. Do not operate the processor without a thermal solution. Damage to the processor can occur in seconds.
5. Do not block air vents at least minimum 1/2-inch clearance required.
6. In case explosion, you should change battery with same specification.

Chapter 1

Introduction

The FWA7404 series was specifically designed for the network security & management market.

Network Security Applications:

- **Firewall**
- **Virtual Private Network**
- **Proxy Server**
- **Caching Server**

Network Management Applications:

- **Load balancing**
- **Quality of Service**
- **Remote Access Service**

The FWA network appliance product line covers the spectrum from offering platforms designed for :

- **SOHO**
- **SMB**
- **Enterprise**

Each product is designed to address the distinctive requirements of its respective market segment from cost effective entry-level solutions to high throughput and performance-bound systems for the Enterprise level.

Chapter 2 System Specification

Product Description

FWA7404 incorporates VIA VX900 chipset. Currently, the system is available in two models, namely:

Model	VIA Nano™ X2 Dual Core CPU	LAN Bypass	Watchdog Timer
FWA7404	1.2 GHz	Yes	Yes
FWA7404-NB	1.2 GHz	No	Yes

FWA7404 Features

- Supports four Realtek 10/100/1000 LAN ports
- Supports 1.2GHz VIA Nano™ X2 U4300 processor
- DDR3 SO-DIMM x 1, up to 2GB
- Mini PCI-e (USB Signal) slot, Compact Flash socket
- Optional Hardware LAN Bypass function on Eth1 & 2

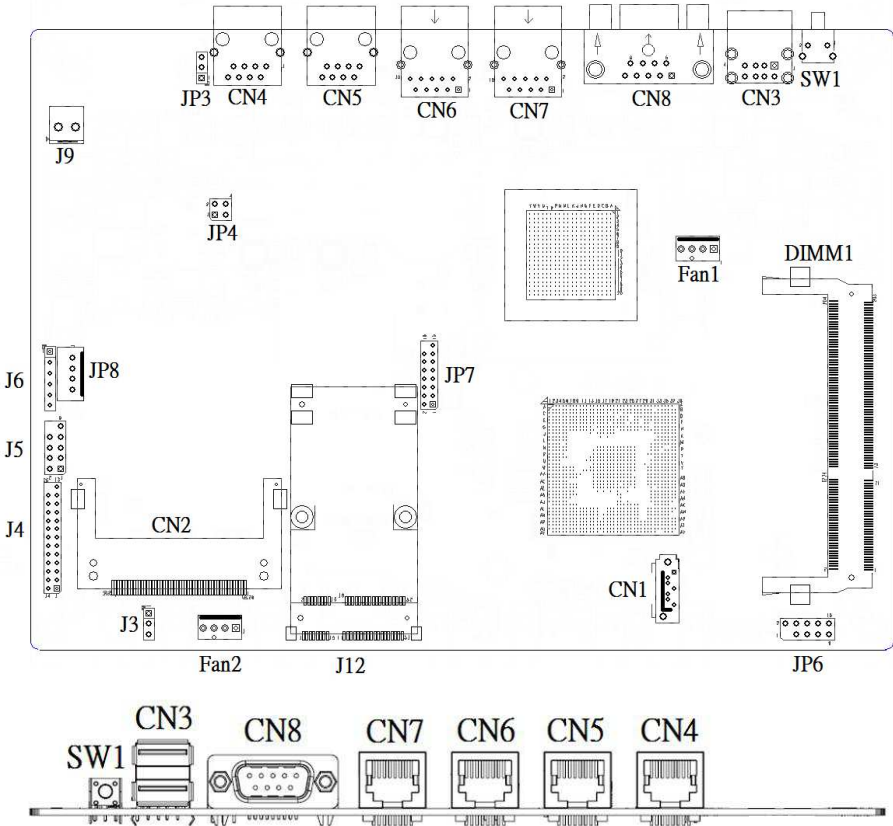
Specifications

Form Factor	Desktop / Table Top Networking Product
CPU	VIA Nano™ X2 U4300 Dual Core @ 1.2 GHz, 13W x86 and x64 (64-bit) capability Bus speeds up to 1066 MHz Hardware Virtualization (VMX) VIA Virtualization (VIA-VT) Enhanced PowerSaver provides fastest performance state switching Multi-processor support: Dual processing (SMP) MMX, SSE, SSE2, SSSE3 and SSE4.1 compatible instructions Two large (64-KB each, 16-way) Level 1 caches per core 1 MB Level 2 victim cache (32-way) with ECC per core (2 MB Total) Two Large TLBs (196 entries each, 12-way)
Chipset	VIA VX900 FSB 400~800 MHz, 4.5W 1.2V Core Voltage 800 / 533 / 400 MHz FSB support PCI-e Gen2 128 bit 2D Graphic Engine
Ethernet controller	Onboard 4X Realtek RT8111E PCIe GbE with RJ45
Memory	Single channel DDR3 up to 1066MHz SO-DIMM Socket x1
Network	4x Realtek RT8111E Gigabit LAN, optional Bypass
Network Bypass	Up to One segments hardware Bypass (ETH 1 & 2) Control by GPIO / Watchdog / Electrical Disconnect (Power Off)
Watchdog Timer	Yes (256 segments, 0, 1, 2...255 sec/min)
Expansion Slot	Mini PCI-e Slot (USB Signal only)
Storage	Onboard CF Socket x1 Optional 2.5" SSD x1
LED Indicators	Power (Green) / Status (Green) / Alarm (Red) LAN: Speed 10Mbps: LED off 100Mbps: Green 1000Mbps: Amber Link / ACT: Green / Green Blinking
Rear Panel	DC +12V inlet RJ45 x4 DB-9 Console Port USB 2.0 x2
USB 2.0	2 ports

VGA	Pin header on board
Power	DC-In +12V, 40W
Dimensions	156 (W) x 225 (D) x 36 (H) mm

Chapter 3
Hardware Configuration

CPU board (IB831) layout

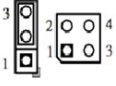
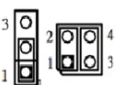
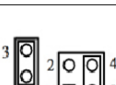


Jumper Setting

J3: Clear CMOS Setting

J3	Setting
 1 2 3	Normal
 1 2 3	Clear CMOS

JP3 & JP4: Bypass LANs & Reboot Setting

JP3, JP4	Jumper Setting	Function	Power Off		Power On		Power On OS Run Software	
			LAN Normal	LAN Bypass	LAN Normal	LAN Bypass	LAN Normal	LAN Bypass
	JP4 Pin 1-2 & 3-4 Open JP3 Pin 2-3 Closed	System LANs bypass function is controlled by Super I/O GP23.		✓		✓	GP23: High Active: Bypass Low Active: Normal	
	JP4 Pin 1-2 & 3-4 Closed JP3 Pin 1-2 Closed	System LANs will be always at normal System will reboot upon the time out of watchdog timer.		✓	✓		LAN Always Normal WDT Reboot System	
	JP4 Pin 1-2 Open & 3-4 Closed JP3 Pin 2-3 Closed	System LANs bypass function is controlled by Super I/O GP23 System will reboot upon the time out of		✓		✓	GP23: High Active: Bypass Low Active: Normal WDT Reboot System	

IB831 Default

FAN1: CPU Fan Power Connector

FAN1 is a 4-pin header for the CPU fan. The fan must be 12V (Max. 1A).



Pin #	Signal Name
1	Ground
2	+12V
3	Rotation detection
4	Rotation control

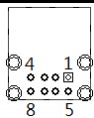
FAN2: System Fan Power Connector

FAN2 is a 4-pin header for system fans. The fan must be 12V (Max. 1A).



Pin #	Signal Name
1	Ground
2	+12V
3	Rotation detection
4	Rotation control

CN3: USB1/2 Ports



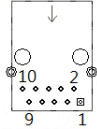
SIGNAL NAME	Pin #	Pin #	Signal Name
+5V	1	5	+5V
D-	2	6	D-
D+	3	7	D+
GND	4	8	GND

CN4, CN5: 10/100 /1000 RJ-45 Ports



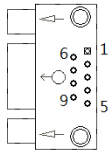
SIGNAL NAME	Pin #	Pin #	Signal Name
TX+	1	2	TX-
RX+	3	4	NC
NC	5	6	RX-
NC	7	8	NC

CN6, CN7: 10/100 /1000 RJ-45 Ports



SIGNAL NAME	Pin #	Pin #	Signal Name
TX+	1	2	TX-
RX+	3	4	RX-
TCT	5	6	RCT
MDI2+	7	8	MDI2-
MDI3+	9	10	MDI3+

CN8: COM1 Serial Port

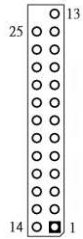


Pin #	Signal Name
1	DCD, Data carrier detect
2	RXD, Receive data
3	TXD, Transmit data
4	DTR, Data terminal ready
5	Ground
6	DSR, Data set ready
7	RTS, Request to send
8	CTS, Clear to send
9	RI, Ring indicator

SW1: System Reset

CN1: Serial ATA Port

J4: Parallel Port



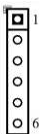
Signal Name	Pin #	Pin #	Signal Name
STB-	1	14	AFD-
PD0	2	15	ERR-
PD1	3	16	INIT-
PD2	4	17	SLIN-
PD3	5	18	Ground
PD4	6	19	Ground
PD5	7	20	Ground
PD6	8	21	Ground
PD7	9	22	Ground
ACK-	10	23	Ground
BUSY	11	24	Ground
PE	12	25	Ground
SLCT	13		

J5: LPC Debug Port



Signal Name	Pin #	Pin #	Signal Name
LAD0	1	2	LRESET
LAD1	3	4	LFRAME#
LAD2	5	6	+3.3V
LAD3	7	8	Ground
PCI CLK1	9		

J6: PS/2 Keyboard and PS/2 Mouse Connectors



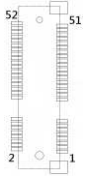
Pin #	Signal Name
1	KBDA
2	KBCL
3	MDA
4	MCL
5	Ground
6	+5VSUS

J9: AT_12V Connector

J9 is a DC-in internal connector supporting +12V.



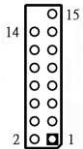
Pin #	Signal Name
1	+12V
2	Ground

J12: Mini PCI-E Connector (top side)

Pin #	Signal	Pin #	Signal	Pin #	Signal
1	WAKE#	19	RSVD4(UIM)	37	GND
2	+3.3Vaux	20	W_DISABLE	38	USB_D+
3	COEX1	21	GND	39	+3.3Vaux
4	GND	22	PERST#	40	GND
5	COEX2	23	PER_N0	41	+3.3Vaux
6	+1.5V	24	+3.3Vaux	42	LED_WWAN#
7	CLKREQ#	25	PER_P0	43	GND
8	UIM_PWR	26	GND	44	LED_WLAN#
9	GND	27	GND	45	RSVD9
10	UIM_DATA	28	+1.5V	46	LED_WPAN#
11	REFCLK-	29	GND	47	RSVD10
12	UIM_CLK	30	SMB_CLK	48	+1.5V
13	REFCLK+	31	PET_N0	49	RSVD11
14	UIM_RESET	32	SMB_DATA	50	GND
15	GND	33	PET_P0	51	RSVD12
16	UIM_CLK	34	GND	52	+3.3Vaux
17	RSVD3(UIM)	35	GND		
18	GND	36	USB_D-		

JP6: SPI Debug Port

SIGNAL NAME	Pin #	Pin #	Signal Name
		2	NC
MSPISS0	3	4	SPIVCC
MSPIDI	5	6	-HOLD
-WP	7	8	MSPICLK
GND	9	10	MSPIDO

JP7: VGA Connector

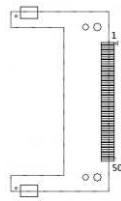
SIGNAL NAME	Pin #	Pin #	Signal Name
DACR	1	2	+5VCRT
DACG	3	4	GND
DACB	5	6	NC
NC	7	8	CRT_SPD
GND	9	10	HSYNC_C
+5VCRT	11	12	VSYNC_C
GND	13	14	CRT_SPCLK
GND	15		

JP8: HDD Power Connector (Output: Max. 2A)

Pin #	Signal Name
1	+5V
2	Ground
3	Ground
4	+12V

Note: +12V power is provided with 2A maximum load.

CN2: Compact Flash Connector (top side)



Pin	Signal	Pin	Signal	Pin	Signal
1	GND	18	A02	35	IOW#
2	D03	19	A01	36	WE#
3	D04	20	A00	37	INTRQ
4	D05	21	D00	38	VCC
5	D06	22	D01	39	CSEL#
6	D07	23	D02	40	NC/VS2
7	CS0#	24	IOCS16#	41	RESET#
8	GND/A10	25	CD2#	42	IORDY
9	ATA_SEL#	26	CD1#	43	NC/NPACK#
10	GND/A09	27	D11	44	VCC/REG#
11	GND/A08	28	D12	45	DASP#
12	GND/A07	29	D13	46	PDJAG#
13	VCC	30	D14	47	D08
14	GND/A06	31	D15	48	D09
15	GND/A05	32	CS1#	49	D10
16	GND/A04	33	GND/VS1#	50	GND
17	GND/A03	34	IOR#		

Chapter 4 Console Mode Information

FWA7404 supports output information via Console in BIOS level.

Prepare a computer as client loaded with an existing OS such Windows XP.
Connect client computer and FWA7404 with NULL Modem cable.
Follow the steps below to configure the Windows Hyper Terminal application setting:

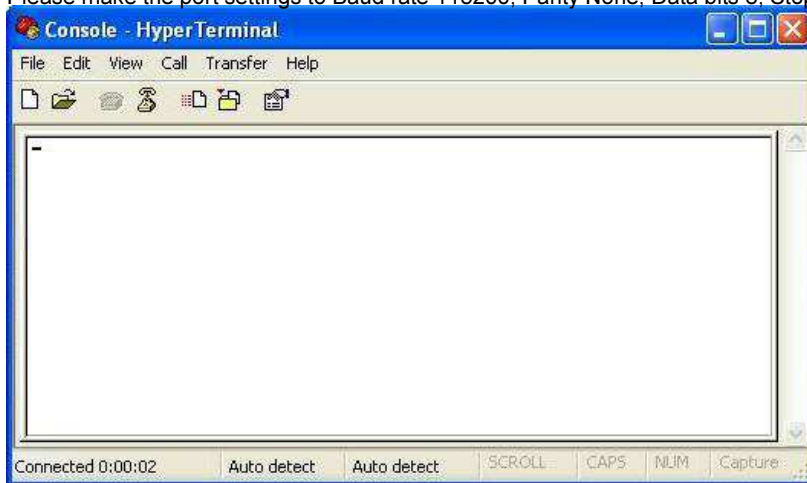
1. For executing the Hyper Terminal, issue command "hypertm".
2. Customize your name for the new connection.



3. Choose the COM port on the client computer for the connection.



4. Please make the port settings to Baud rate 115200, Parity None, Data bits 8, Stop bits 1



5. Power up FWA7404 and the screen will display the BIOS information.
6. Press <Tab> key to enter BIOS setup screen in **Console mode**.
Press key to enter BIOS setup screen in **VGA mode**.

Chapter 5

Open the chassis

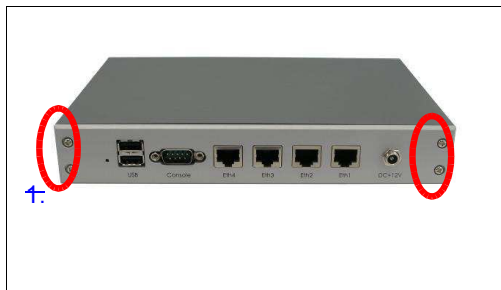


Fig. 5-1 Loosen four screws on back to remove the top lead. Keep the power cable locked on rear panel.



Fig. 5-2 The top lead can be removed from the base stand.

2.



Fig. 5-3 The base stand

Chapter 6

Removing and Installing CompactFlash Card



Fig. 6-1 Insert Compact Flash Card



Fig. 6-2 Push Compact Flash Card into the CF interface

Chapter 7 Installing Memory Module



Fig. 7-1 Insert DDR3 SO-DIMM memory module



Fig. 7-2 Push down the memory module into socket

Chapter 8 Install 2.5" HDD

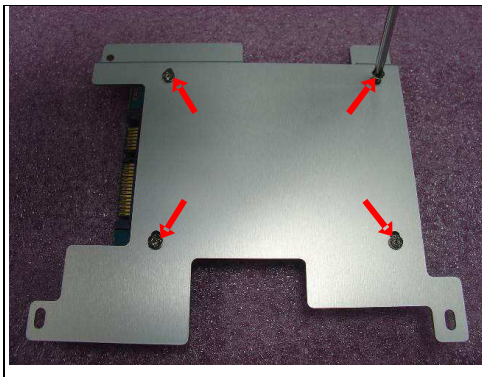


Fig. 8-1 Fasten four screws to lock HDD and bracket together.

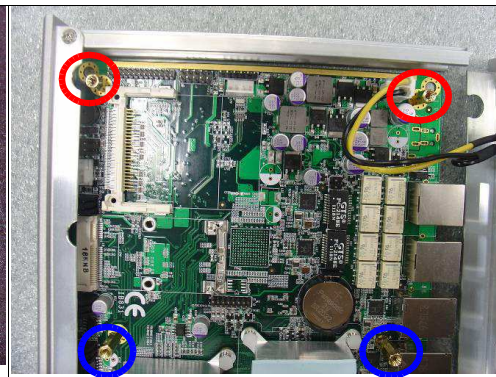


Fig. 8-2 Fasten the four stands-off to lock IB831.
Blue portion for long stands-off.
Red portion for short stands-off.

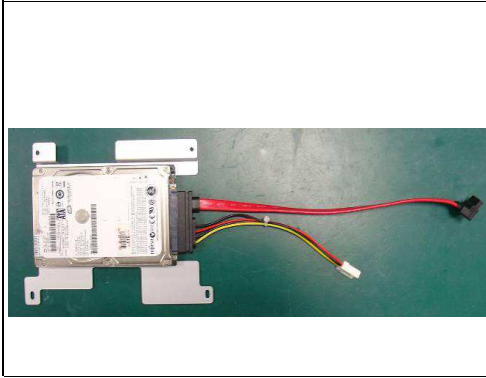


Fig. 8-3 Connect SATA & power cables on 2" HDD

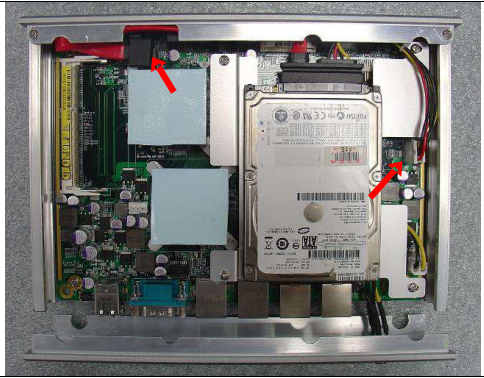


Fig. 8-4 Connect SATA & power cables on IB831.

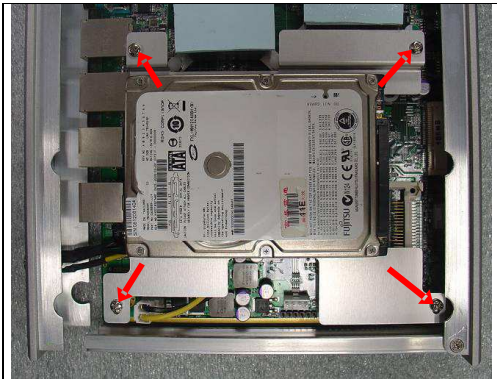


Fig. 8-5 Fix all four screws

Chapter 9 Lock Power Connector



Fig. 9-1 Plug power connector into power jack