



**AVILA
NETWORK COMPUTER**

**Operating Manual
For
GW2348-2 Network Processor**

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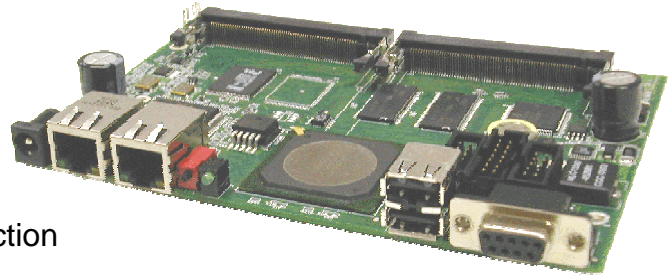
1. INTRODUCTION

1.1. Product Description

The GW2348-2 is a member of the Gateworks Avila Network Processor family. The GW2348-2 meets the requirements for enterprise and residential network applications. This single board network processor consists of an Intel® IXP420 XScale® processor operating at 266MHz, 32Mbytes of SDRAM, and 8Mbytes of Flash. Peripherals include two Type III Mini-PCI slots, two 10/100 Base-TX Ethernet channels, RS232 serial port, digital I/O, serial EEPROM, voltage and temperature monitor, and watchdog timer. Power is through either the 2.5mm barrel jack or the Ethernet connector to a wide range DC/DC supply. Software support includes Linux and VxWorks® operating systems.

1.2. Standard Features

- ◆ Intel® XScale® IXP420 266MHz Processor
- ◆ 32Mbytes SDRAM
- ◆ 8Mbytes Flash
- ◆ Two Type III Mini-PCI Sockets
- ◆ Two 10/100 Base-TX Ethernet Ports
- ◆ RS-232 Serial Port
- ◆ General Purpose Digital I/O
- ◆ 1Kbyte Serial EEPROM
- ◆ Voltage and Temperature Monitor
- ◆ Watchdog Timer
- ◆ Passive Power Over Ethernet
- ◆ Reverse Voltage and Transient Protection
- ◆ 9-48VDC Input Voltage Range
- ◆ 9W available for Mini-PCI Sockets
- ◆ 3W Typical Operating Power
- ◆ 0°C to 70°C Operating Temperature
- ◆ Software Support for Linux and VxWorks
- ◆ 1 Year Warranty



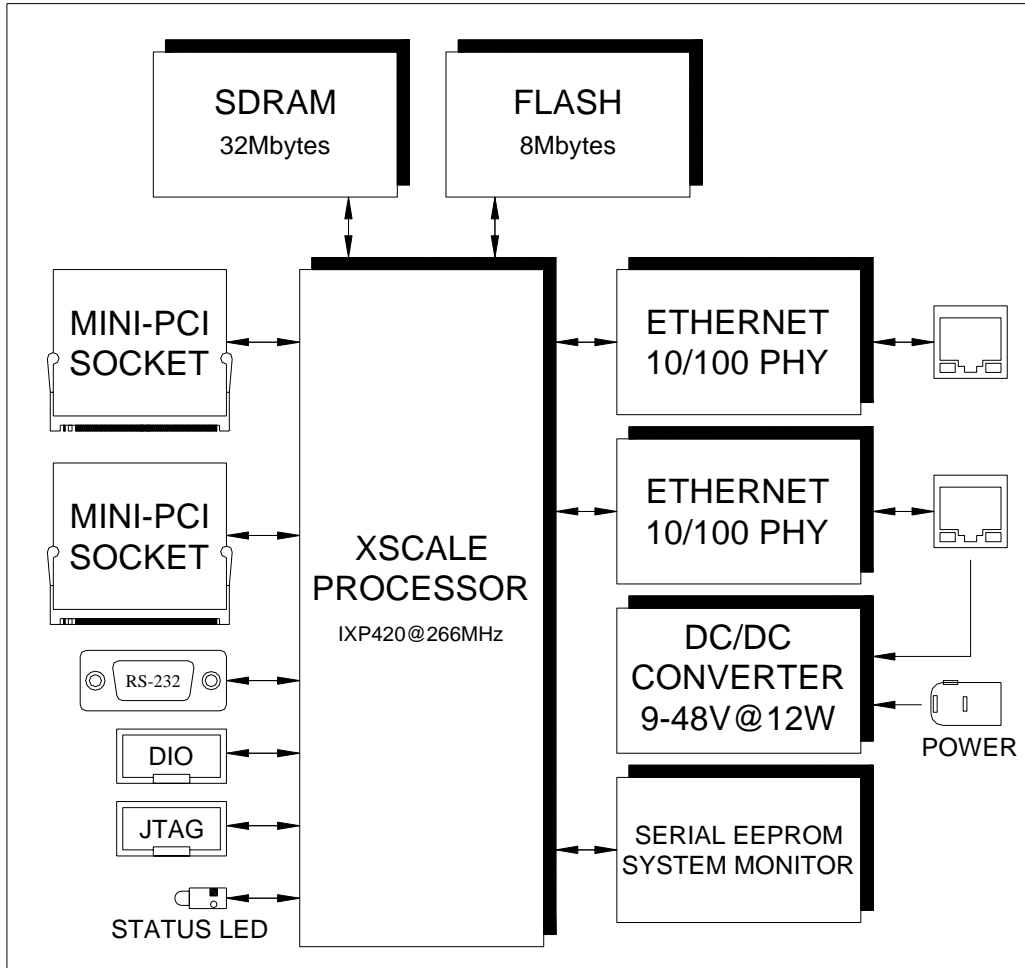
1.3. Ordering Options – Standard Configuration*

Order Code	Processor	SDRAM	Flash	Mini-PCI
GW2348-2	IXP420 @266MHz	32Mbytes	8Mbytes	2

* Contact factory for different configurations of CPU, DRAM, Flash, and support peripherals

1.4. Functional Blocks

The functional block diagram for the GW2348-2 network processor is shown below followed by a detailed description of each major functional block.



GW2348-2 Functional Block Diagram

Processor

The Intel® Xscale® network processor line includes the IXP420, IXP422 and IXP425 processors. The features common to these processors are listed below. The primary difference between these processors is support for encryption, operating speed, operating temperature and cost. See the following table below for the differences between the processor families. The factory default GW2348-2 includes the IXP420 processor.

- StrongARM Version 5TE Compliant
- Network processing engines to offload Ethernet filtering
- 32-bit SDRAM interface operating at 133MHz
- 32-bit PCI interface operating at 33MHz for Mini-PCI support
- 16-bit Expansion interface for Flash support
- Two 802.3 MII/RMII interfaces for Ethernet PHY support
- USB 1.1 device controller
- Two serial ports
- Four internal timers
- Internal bus performance monitoring unit
- General purpose Input/Outputs
- Watchdog Timer

Feature	IXP420	IXP422	IXP425
Speed (MHz)	266, 400, 533	266	266, 400, 533
Hardware Encryption	No	Yes	Yes
Extended Temperature	266 only	No	266, 400, 533
Cost	Low	Mid	High

IXP42x Processor Feature Comparison

SDRAM

The DRAM resides in two synchronous DRAM devices soldered directly to the board. This architecture supports SDRAM memory capacities from 32Mbytes up to 128Mbytes. The 32-bit SDRAM interface operates at 133MHz. The factory default GW2348-2 includes 32Mbytes of SDRAM.

Flash

The Flash resides in one or two J3 Intel StrataFlash® devices soldered directly to the board. This architecture supports Flash memory capacities from 4Mbytes up to 32Mbytes. The factory default GW2348-2 includes 8Mbytes of Flash in a single device.

Mini-PCI Sockets

Mini-PCI is a small form factor PCI card that uses the same signal protocol, electrical specifications, and configuration definitions as conventional PCI. The

GW2348-2 includes two Mini-PCI sockets. The GW2348-2 increases the Mini-PCI power specification from a maximum of 2.5W to a total of 9W for both sockets. This permits each socket to operate at 4.5W for supporting high power radios.

Ethernet

The GW2348-2 supports two Ethernet ports using an Intel LXT973 PHY Transceiver. Both channels operates in a 100BASE-TX or 10BASE-T configuration and support auto MDI/MDIX for automatically switching twisted pair inputs and outputs. Additional features include full-duplex operation for both 10Mbps and 100Mbps configurations as well as support for auto-negotiation. The Ethernet ports are available through standard RJ45 connectors. The connectors have two integrated status lights. The green status light indicates link and activity. The light is on for link and blinking for activity. The yellow status light indicates speed. The light is on for 100Mbps and off for 10Mbps.

EEPROM

The Atmel AT24C08AN is an Electrically Erasable Programmable Read Only Memory (EEPROM) with 8Kbits of storage. The 8kbits of storage is organized in a 1048 x 8-bit configuration. Additional features include 1,000,000 erase/write cycles and a 100-year minimum data retention time. Data is transmitted to and from the EEPROM over the processor I2C bus. The I2C clock frequency is 0 to 400KHz. The I2C base address is A0 hex for writes and A1 hex for reads.

Temperature and Voltage Monitor

The Analog Devices AD7418 provides temperature and voltage monitoring capability. The GW2348-2 operating temperature is monitored through this device. The temperature accuracy is $\pm 1^{\circ}\text{C}$ at 25°C and $\pm 2^{\circ}\text{C}$ over the entire temperature range of -40°C to $+125^{\circ}\text{C}$. The GW2348-2 input voltage is also monitored through this device. A resistor divider is used on the A/D input to scale the input voltage down. Multiple the A/D voltage reading by 23.1 to get the actual input voltage. Data is transmitted to and from the Temperature and Voltage Monitor over the processor I2C bus. The I2C clock frequency is 0 to 400KHz. The I2C base address is 50 hex for writes and 51 hex for reads.

Serial I/O

The GW2348-2 includes an RS232 serial I/O port. The serial port is available through a 9-pin female D-shell connector. The serial port is 16550-compliant UART with additional depth for both transmit and receive buffers. The interface supports transfer rates from 1200bps up to 120Kbps.

Digital I/O

The IXP processor includes a 16 bits of digital I/O. Some of these signals are used for controlling and monitoring the status of devices local to the GW2348-2 and some of them are available through a header for application use. The function of each digital I/O signal is described in Section 2, Configuration and Installation.

JTAG Programming Port

The JTAG programming port is available to facilitate program download directly into Flash memory. This requires the GW16012 JTAG Programmer. See section 2.6 for instructions on using the Gateworks JTAG Programmer.

Status LEDs

The GW2348-2 includes two surface mount status LEDs labeled D19 and D20. Status LED D19 is connected to general purpose I/O 5 (GPIO5) of the IXP processor. Status LED D20 is connected to general purpose I/O 3 (GPIO3). Both LEDs are available to the application programmer.

DC/DC Converter

A switching DC/DC converter supplies power to the GW2348-2. This allows support for a wide input voltage range and higher power radios with high efficiency operation. The DC/DC has a minimum input voltage of 9VDC and a maximum of 48VDC. **DO NOT EXCEED THE 48VDC INPUT MAXIMUM OR DAMAGE MAY OCCUR TO THE BOARD.** The input power is supplied through a power connector or through the RJ45 Ethernet connector in a power over Ethernet configuration. The voltage drop due to the resistance of the Ethernet cable between the GW2348-2 and the power injector must be considered when selecting the power supply operating voltage. The input is protected against reverse voltage connection and transient voltage spikes.

2. CONFIGURATION AND INSTALLATION

The following section gives memory, interrupt, I2C and digital I/O mappings specific to the GW2348-2. See the *Intel IXP4XX Product Line and IXC1100 Control Plane Processors Developer's Manual* for more information on these interfaces.

2.1. Memory Mapping

The memory map and Expansion bus chip select mapping for the GW2348-2 is shown below.

Memory Address	Size	Description
0000_0000 – 0FFF_FFFF	256Mbyte	Flash Memory (32Mbyte max)
0100_0000 – 2FFF_FFFF	756Mbyte	SDRAM Memory (128 Mbyte max)
3000_0000 – 3FFF_FFFF		Reserved
4000_0000 – 47FF_FFFF		Reserved
4800_0000 – 4FFF_FFFF	128Mbyte	PCI Bus
5000_0000 – 5FFF_FFFF	256Mbyte	Expansion Bus
6000_0000 – 63FF_FFFF	64Mbyte	Queue Manager
6400_0000 – BFFF_FFFF		Reserved
C000_0000 – C3FF_FFFF	64Mbyte	PCI Controller Configuration and Status
C400_0000 – C7FF_FFFF	64Mbyte	Expansion Bus Configuration
C800_0000 – C800_0FFF	1Kbyte	High Speed Serial
C800_1000 – C800_1FFF	1Kbyte	Console Serial
C800_2000 – C800_2FFF	1Kbyte	Performance Monitor
C800_3000 – C800_3FFF	1Kbyte	Interrupt Controller
C800_4000 – C800_4FFF	1Kbyte	GPIO Controller
C800_5000 – C800_5FFF	1Kbyte	Timers
C800_6000 – C800_6FFF	1Kbyte	WAN/HSS Network Processor A
C800_7000 – C800_7FFF	1Kbyte	Ethernet Network Processor B
C800_8000 – C800_8FFF	1Kbyte	Ethernet Network Processor C
C800_9000 – C800_9FFF	1Kbyte	Ethernet MAC A
C800_A000 – C800_AFFF	1Kbyte	Ethernet MAC B
C800_B000 – C800_BFFF	1Kbyte	USB Device Controller (not supported)
C800_C000 – C800_FFFF		Reserved
C801_0000 – CBFF_FFFF		Reserved
CC00_C000 – CC00_00FF	256byte	SDRAM Configuration Registers
CC00_0100 – FFFF_FFFF		Reserved

Note: The bottom 256Mbytes is configurable through bit 31 of the EXP_CONFIG0 register.

Memory Map

Chip Select	Description
CS0	Flash Memory (U3)
CS1-CS7	Not Used

Expansion Bus Chip Selects

2.2. PCI Device Mapping

The GW2348-2 PCI device mapping is listed below.

Bus Number	Device Number	Fcn Number	IRQ Number	Description
00	01	0	28	Mini-PCI Slot (J3)
00	02	0	27	Mini-PCI Slot (J1)

PCI Device Map

2.3. Interrupt Mapping

The IXP42X processor supports 32 interrupts, which originate from either internal processor blocks or dedicated GPIO pins. The interrupt mapping is shown below.

Interrupt	Function
0	WAN/HSS NPE
1	Ethernet NPE B
2	Ethernet NPE C
3	Queue Manager (1-32)
4	Queue Manager (33-64)
5	General Purpose Timer 0
6	GPIO(0) – GPIO Header (J8)
7	GPIO(1) – GPIO Header (J8)
8	PCI Interrupt
9	PCI DMA Channel 1
10	PCI DMA Channel 2
11	General Purpose Timer 1
12	Device USB – Not Supported
13	Console Serial
14	Timestamp Timer
15	High-Speed Serial
16	Watchdog Timer
17	Performance Monitoring Unit
18	Performance Monitoring Unit
19	GPIO(2) – GPIO Header (J8)
20	GPIO(3) – GPIO Header (J8)
21	GPIO(4) – GPIO Header (J8)
22	GPIO(5) – Reserved for Serial Transceiver Control
23	GPIO(6) – Reserved for I2C Bus SCL
24	GPIO(7) – Reserved for I2C Bus SDA
25	GPIO(8) – Reserved for Unpopulated Mini-PCI Socket
26	GPIO(9) – Mini-PCI Socket J1 INTB
27	GPIO(10) – Mini-PCI Socket J1 INTA or Mini-PCI Socket J3 INTB
28	GPIO(11) – Mini-PCI Socket J3 INTA or Optional USB Host
29	GPIO(12) – Compact Flash Socket
30	SW Interrupt 0
31	SW Interrupt 1

Interrupt Map

2.4. Digital I/O Mapping

The GW2348-2 uses the IXP420 Processor digital I/O for controlling and monitoring the status of various devices. The IXP420 processor includes three 16-bit registers for configuring, initializing, and using the digital I/O. The output enable register (GPOER) configures each bit as an input or output. The data output register (GPOUTR) controls the digital I/O configured as outputs. The input register (GPINR) reads the digital I/O configured as inputs. See the *Intel IXP4XX Product Line and IXC1100 Control Plane Processors Developer's Manual – Chapter 13*. The digital I/O bit mapping is shown below.

GPIO Bit	Direction	Description
0	In or Out	Digital I/O Header J8 pin 1
1	In or Out	Digital I/O Header J8 pin 3
2	In or Out	Digital I/O Header J8 pin 5
3	In or Out	Digital I/O Header J8 pin 7 or
	Out	Status LED D20
4	In or Out	Digital I/O Header J8 pin 9
5	Out	RS232 Serial Port Driver Enable or
	Out	Status LED D19
6	Out	I2C Bus SCL
7	Bidirectional	I2C Bus SDA
8	In	Unpopulated Mini-PCI Interrupt
9	In	Mini-PCI Interrupt – See IRQ Map Section 2.3
10	In	Mini-PCI Interrupt – See IRQ Map Section 2.3
11	In	Mini-PCI Interrupt – See IRQ Map Section 2.3
12	In	Unpopulated Compact Flash Interrupt
13	Out	PCI Reset
14	Out	Unpopulated Watchdog Timer Strobe
15	Out	Expansion Bus Clock

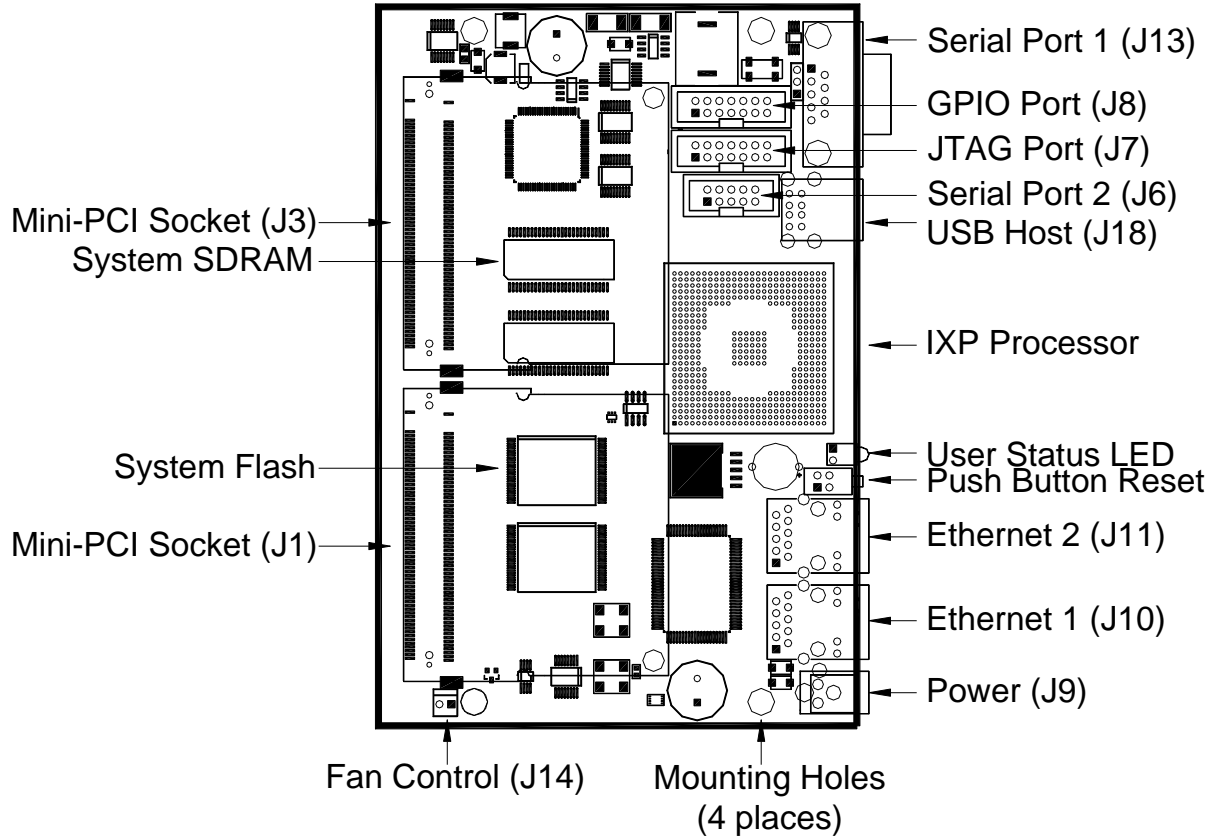
Digital I/O Map

2.5. Interface Connectors

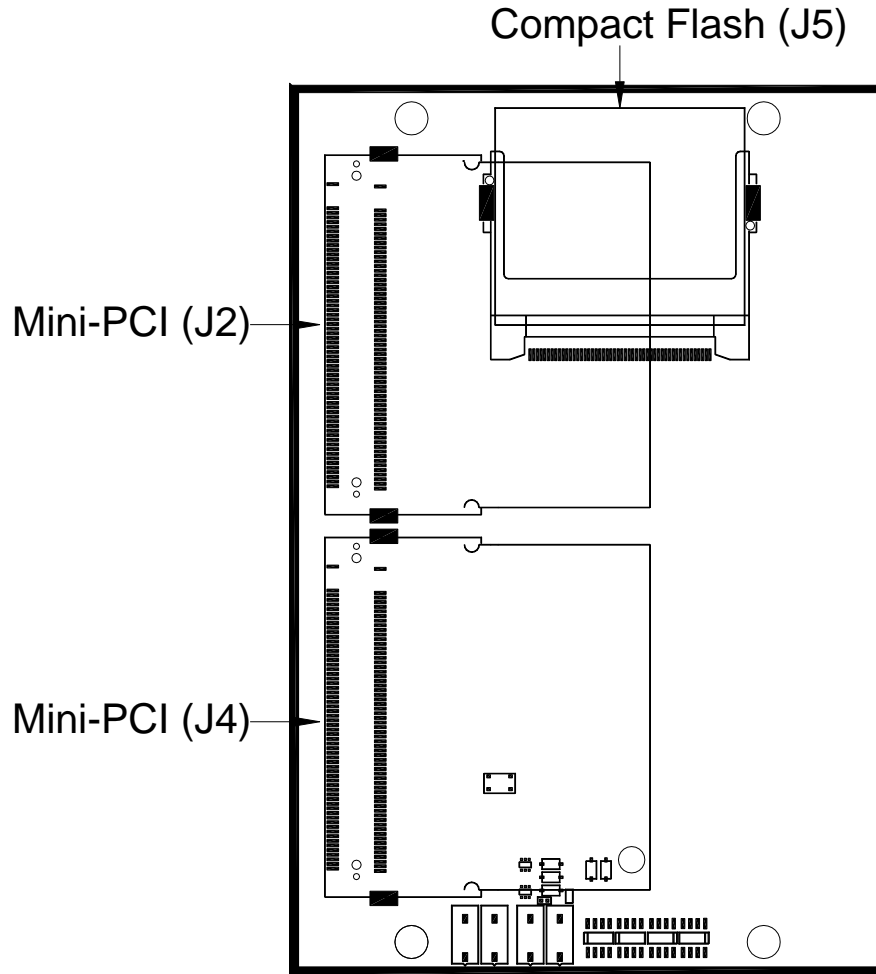
The GW2348-2 interface connector pin assignments and signal descriptions are included in the following sections. The connectors are listed in the table below and the connector locations are shown in the following diagrams.

Connector	Populated	Function
J1	Yes	Mini-PCI Socket Top Side
J2	No	Mini-PCI Socket Bottom Side
J3	Yes	Mini-PCI Socket Top Side
J4	No	Mini-PCI Socket Bottom Side
J5	No	Compact Flash Socket Bottom Side
J6	No	COM2 Serial Port
J7	Yes	JTAG Port
J8	Yes	Digital I/O
J9	Yes	2.5mm Barrel Jack Power
J10	Yes	Ethernet1
J11	Yes	Ethernet2
J12	–	Not Used
J13	Yes	COM1 Serial Port
J14	No	Fan Controller
J15	–	Not Used
J16	No	Auxiliary Power
J17	No	Auxiliary Power
J18	No	Optional Dual USB Host Connector
J19	No	High Speed Serial Mezzanine

Connectors



Top Side Component Locations



Bottom Side Component Locations

Mini-PCI Sockets (J1, J3)

There are two Mini-PCI sockets for expanding the peripheral support with high-speed PCI devices. The GW2348-2 supports standard 3.3V Mini-PCI cards. Support is not provided for audio, modem, and networking sideband signaling as defined in the Mini-PCI specification. The GW2348-2 Mini-PCI socket signaling is illustrated in the following table. The power supply provides a total of 9W of 3.3V power to the Mini-PCI sockets for supporting high power radios.

Pin	Signal	Connect	Pin	Signal	Connect	Pin	Signal	Connect
1	TIP	NC	44	AD26	AD26	87	AD7	AD7
2	RING	NC	45	CBE3#	CBE3#	88	VCC3	VCC3
3	LANRXP	NC	46	AD24	AD24	89	VCC3	VCC3
4	LANTXP	NC	47	AD23	AD23	90	AD6	AD6
5	LANRXN	NC	48	IDSEL	IDSEL	91	AD5	AD5
6	LANTXN	NC	49	Ground	Ground	92	AD4	AD4
7	LANRSV	NC	50	Ground	Ground	93	Reserved	Reserved
8	LANRSV	NC	51	AD21	AD21	94	AD2	AD2
9	LANRSV	NC	52	AD22	AD22	95	AD3	AD3
10	LANRSV	NC	53	AD19	AD19	96	AD0	AD0
11	LANGNP	NC	54	AD20	AD20	97	VCC5	NC
12	LANRNN	NC	55	Ground	Ground	98	Reserved	Reserved
13	LANYEP	NC	56	PAR	PAR	99	AD1	AD1
14	LANYEN	NC	57	AD17	AD17	100	Reserved	Reserved
15	CHSGND	CHSGND	58	AD18	AD18	101	Ground	Ground
16	Reserved	Reserved	59	CBE2#	CBE2#	102	Ground	Ground
17	INTB#	INTB#	60	AD16	AD16	103	ACSYNC	NC
18	VCC5	NC	61	IRDY#	IRDY#	104	M66EN	NC
19	VCC3	VCC3	62	Ground	Ground	105	ACDIN	NC
20	INTA#	INT#	63	VCC3	VCC3	106	ACDOUT	NC
21	Reserved	Reserved	64	FRAME#	FRAME#	107	ACCLK	NC
22	Reserved	Reserved	65	CLKRUN#	Pull Down	108	ACID0	NC
23	Ground	Ground	66	TRDY#	TRDY#	109	ACID1	NC
24	VCC3AX	VCC3	67	SERR#	SERR#	110	ACRST	NC
25	CLK	CLK	68	STOP#	STOP#	111	AMON	NC
26	RST#	RST#	69	Ground	Ground	112	Reserved	Reserved
27	Ground	Ground	70	VCC3	VCC3	113	AGND	NC
28	VCC3	VCC3	71	PERR#	PERR#	114	Ground	Ground
29	REQ#	REQ#	72	DEVSEL#	DEVSEL#	115	AOUT	NC
30	GNT#	GNT#	73	CBE1#	CBE1#	116	AIN	NC
31	VCC3	VCC3	74	Ground	Ground	117	AGND	NC
32	Ground	Ground	75	AD14	AD14	118	AINGND	NC
33	AD31	AD31	76	AD15	AD15	119	AGND	NC
34	PME#	NC	77	Ground	Ground	120	AGND	NC
35	AD29	AD29	78	AD13	AD13	121	Reserved	Reserved
36	RSVD	RSVD	79	AD12	AD12	122	MPCIACT	NC
37	Ground	Ground	80	AD11	AD11	123	VCC5AX	NC
38	AD30	AD30	81	AD10	AD10	124	VCC3AX	VCC3
39	AD27	AD27	82	Ground	Ground	125	CHSGND	CHSGND
40	VCC3	VCC3	83	Ground	Ground	126	CHSGND	CHSGND
41	AD25	AD25	84	AD9	AD9	127	NC	NC
42	AD28	AD28	85	AD8	AD8	128	NC	NC
43	Reserved	Reserved	86	CBE0#	CBE0#			

Mini-PCI Connector

JTAG Port Header (J7)

The JTAG programming port is available through a 14-pin header in a 2x7 configuration with 0.1-inch pin spacing. The mating connector is an AMP/Tyco 746288-2, available from Digi-Key as part number AKN14A-ND. The primary purpose for the JTAG Port is to facilitate program download into Flash memory. This feature requires the GW16012 JTAG Programmer. The JTAG programming port also includes a three-wire configuration of Serial Port 1. This feature requires the GW16027 JTAG Serial Adapter to convert the 3.3V serial port signals to standard RS232 levels.

Pin	Signal	Pin	Signal
1	3.3V	2	COM1 RXD (3.3V)
3	JTAG RST	4	Ground
5	JTAG TDI	6	Ground
7	JTAG TMS	8	Ground
9	JTAG TCK	10	Ground
11	JTAG TDO	12	Board Reset
13	COM1 TXD (3.3V)	14	Ground

JTAG Port Header

Digital I/O Header (J8)

The digital I/O is available through a 10-pin header in a 2x5 configuration with 0.1-inch pin spacing. The mating connector is an AMP/Tyco 746288-1, available from Digi-Key as part number AKN10A-ND. Note that GPIO3 is shared with the status LED as described in Section 2, Digital I/O Mapping.

Pin	Signal	Pin	Signal
1	GPIO0	2	Ground
3	GPIO1	4	Ground
5	GPIO2	6	Ground
7	GPIO3	8	Ground
9	GPIO4	10	Ground

Digital I/O Header

Power Connector (J9)

Power is applied to the GW2348-2 through a standard 2.5mm x 5.5mm barrel jack or through the ENET1 Ethernet Connector. The input voltage range is 9VDC minimum and 48VDC maximum. The power jack should have the positive input voltage on the inner sleeve and ground on the outer sleeve. The mating connector is a G/S SR2048A, available from Jameco as part number 190537CJ. The schematic symbol representing this configuration is shown below.



Power Connector

Ethernet Connectors (J10, J11)

The GW2348-2 contains two 10/100 Base-TX Ethernet channels. Both Ethernet channels are available through standard 8-pin RJ45 connectors. The ENET1 Ethernet connector supports passive power over Ethernet. This enables the GW2348-2 operating voltage to be provided through the Ethernet connector rather than the input power connector. The input voltage requirements are given in Section 3, Specifications.

Pin	Signal	Standard Wire Color
1	TX+	WHITE/ORANGE
2	TX-	ORANGE
3	RX+	WHITE/GREEN
4	PoE + V	BLUE
5	PoE +V	WHITE/BLUE
6	RX-	GREEN
7	GND	WHITE/BROWN
8	GND	BROWN

Ethernet Connector J10

Pin	Signal	Standard Wire Color
1	TX+	WHITE/ORANGE
2	TX-	ORANGE
3	RX+	WHITE/GREEN
4	No Connect	
5	No Connect	
6	RX-	GREEN
7	No Connect	
8	No Connect	

Ethernet Connector J11

COM1 Serial Port Connector (J13)

The COM1 serial port connector is an industry standard female 9-pin D-shell connector with the pin assignment given in the table below. The DCE pin assignments permit a direct connection to a standard PC DTE port running terminal emulation software. The mating connector for insulation displacement ribbon cable is CW Industries CWR-280-09-000, available from Digi-Key as part number CMM09G-ND.

Pin Number	Signal
1	No Connect
2	Transmit Data
3	Receive Data
4	No Connect
5	Ground
6	No Connect
7	Clear To Send
8	Request To Send
9	No Connect

COM1 Serial Port Connector

2.6. JTAG Programming

The GW2348-2 Flash memory is programmed through the JTAG port. Gateworks offers a low cost GW16012 JTAG programmer that enables the developer to program or recover the Flash image through a standard PC parallel port. Gateworks also offers a GW16013 JTAG gang programmer for simultaneously programming up to 16 GW2348-2 processors in a production environment.

The following are the steps required to use the GW16012 JTAG programmer.

1. Connect the GW16012 JTAG programmer to a PC parallel port using the standard DB25 cable included with programmer.
2. Connect the 10-pin IDC female from the GW16012 dongle to the GW2348-2 JTAG connector.
3. Create a bootable DOS floppy with the FLASH.EXE program and the binary image. The FLASH.EXE program is a DOS program, which must be run from a DOS prompt, it cannot be run from a Windows DOS box. The development kit CDROM contains both the FLASH.EXE program and the default factory programmed image.
4. Insert the DOS bootable floppy, with the FLASH.EXE program and binary image into the PC's floppy drive and boot to DOS.
5. Run the FLASH.EXE program with the following syntax
CC:> flash *image.bin* {p} {v} where p=program, v=verify and *image.bin* is the binary image.

Examples:

```
C:> flash gw2348.bin p
```

Program the Flash with the gw2348.bin image

```
C:> flash gw2348.bin v
Verify that the Flash matches the gw2348.bin image
C:> flash gw2348.bin pv
Program and verify the Flash with the gw2348.bin image
```

2.7. Getting Started

The GW2348-2 is factory configured with Redboot v2.01 and a uCLinux port programmed into Flash memory. The software is configured to use either serial port for a serial console. To get started, connect a serial cable from to another computer running a terminal software application such as Windows HyperTerminal. Configure the terminal program for 115,200 baud, 8 data bits, 1 stop bit, no parity and no flow control. Apply power and watch for Redboot and Linux output on the serial console.

It is also possible to communicate to the GW2348-2 using a telnet session over Ethernet. First, connect the J10 Ethernet port on the GW2348-2 to the Ethernet port on a Host Computer using either a standard or a crossover cable. The default telnet address for the GW2348-2 is 192.168.3.2. Second, configure the Host Computer IP address to be on the same subnet (i.e. 192.168.3.99). Third, switch to Host Computer to a command prompt and type C:>telnet 192.168.3.2. The GW2348-2 console information will now be routed to the Host Computer display.

2.8. Manufactures Website Links / Support Mailing List

The section provides links to hardware and software related web sites. An email mailing list is also available for Avila board support issues. To subscribe send an empty email to: ***avila-subscribe@lists.unixstudios.net*** then confirm with a reply email. You can then post and view messages on the mailing list.

Hardware

Processor - Intel IXP420 and IXP425

<http://developer.intel.com/design/network/products/npfamily/ixp425.htm>

Flash - Intel TE28F320J3, TE28F640J3, TE28F640J3

<http://developer.intel.com/design/flcomp/prodbref/298044.htm>

Ethernet PHY - Intel LXT973

<http://developer.intel.com/design/network/products/lan/PHYs/lxt973.htm>

Serial EEPROM - Philips Semiconductor PCF8594

<http://www.semiconductors.philips.com/>

Temperature and Voltage Monitor - Analog Devices AD7418

<http://www.analog.com/>

Software

Linux

<http://www.linux.org/>

RedBoot

<http://sources.redhat.com/redboot/>

RedHat - Linux

<http://www.redhat.com/>

uCLinux

<http://www.uclinux.org/>

MontaVista - Linux

<http://www.mvista.com/pro/downloads/ixp425.html>

VxWorks - Windriver

<http://www.windriver.com/partnerships/eval-cd/details.html?pgmid=IntelIXDP425t22>

Intel IXP4xx Software - VxWorks, Windows CE.NET, Linux

<http://developer.intel.com/design/network/products/npfamily/ixp425swr1.htm>

3. SPECIFICATIONS

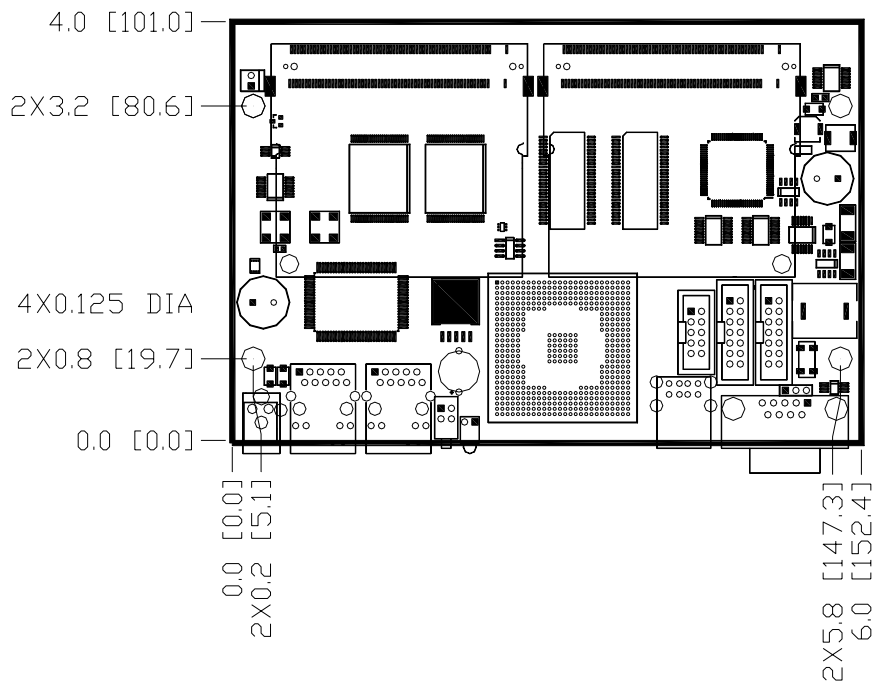
3.1. Electrical

Parameter	Specification	
	Min	Max
Operating Voltage		
Input Voltage	9VDC	48VDC

Parameter	Specification	
	Typ	
Operating Current		
Input Current (no Mini-PCI cards)	0.13A @ 24VDC	

3.2. Mechanical

Parameter	Specification
Dimensions, Length x Width	4.0 x 6.0 in (101.6 x 152.4mm)
Dimensions, Height	0.9 in (22.9mm)
Weight	5 ounces (142g)



Mechanical Dimensions

3.3. Environmental

Parameter	Specification
Operating Temperature	0 to +70 °C
Storage Temperature	-40 to +85 °C
Non-condensing Relative Humidity	Less than 95% at 40 °C

4. CUSTOMER SUPPORT

4.1. Product Revision History

Revision A – Prototype Release (ECO 1000534 dated 12/05)

The GW2348-2 is initially released at revision A and the printed circuit board at revision 01210048-01.

4.2. Technical Assistance

Gateworks technical support staff is available to assist you with questions that you may have. Please contact Gateworks using one of the methods shown below.

Phone: (805) 781-2000

Fax: (805) 781-2001

Email: support@gateworks.com

Website: <http://www.gateworks.com>

4.3. Warranty

Standard hardware warranty period is one year from date of purchase.

Gateworks will, solely at its option, repair or replace products, which prove to be defective in materials or workmanship, provided they are returned to a Gateworks authorized repair center. Shipment to Gateworks is at the customer's expense. Gateworks pays return shipment by ground.

Products, which in Gateworks opinion, have been subject to misuse, abuse, neglect or unauthorized alteration or repair are excluded from this warranty.

Products not manufactured by Gateworks are limited to the warranty provided by the original manufacturer and should be returned to the manufacturer in case of defect. Software is licensed AS IS. If for any reason, you are dissatisfied with the software return to Gateworks within 90 days for a full refund.

The liability of Gateworks under this agreement is limited to a refund of the purchase price of the product. In no event shall Gateworks be liable for loss of profits or other damage.

4.4. Return for Repair

You must obtain a Returned Material Authorization (RMA) number before sending any product to Gateworks. Please contact Gateworks using one of the methods shown below to obtain an RMA number. Please be ready with your name, telephone number, company name, company address, shipping address, invoicing address, product number, and a technical description of the problem. A service charge will be applied to units that are out of warranty. Please pack the unit being returned in anti-static material and ship in a sturdy cardboard box with

adequate packing material. Mark the RMA number clearly on the outside of the box before returning.

Phone: (805) 781-2000

Fax: (805) 781-2001

Email: support@gateworks.com

Website: <http://www.gateworks.com>

Address: 3026 South Higuera, San Luis Obispo, CA 93401

4.5. Life Support Policy

Gateworks products are not authorized for use as critical components in life support devices or systems without the express written approval of the president of Gateworks Corporation. Refer to the following for definitions of critical components and life support devices.

1. A critical component is any component of a life support device or system whose failure to perform can be expected to cause the failure of the life support device or system, affect its safety, or limit its effectiveness.
2. Life support devices or systems are devices or systems which support or sustain life, and whose failure to perform, when properly used in accordance with instructions for use provided in the labeling, can be reasonably expected to result in a significant injury to the user.

4.6. Trademarks

All brand names or product names mentioned are trademarks or registered trademarks of their respective owners.

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