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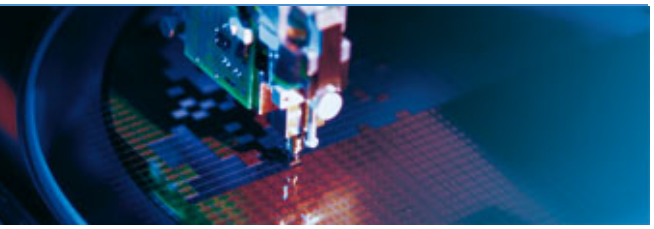
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USER MANUAL





CPU-1474/84

Rugged Pentium M/Celeron M PC/104-Plus CPU Module with Gigabit Ethernet and 4 USB 2.0 ports

Rev 2.0 – April 2011 – CPU-1474/84_UserMan_En_2.0

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Revision history

Revision	Description	Date
1.0	First release	February 2008
1.1	• Updated layout • Updated J20 pinout • Inserted warning & note on page 27	November 2008
2.0	Complete manual review	April 2011

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Important user information

Please carefully read and understand the instructions in this manual before using the CPU-1474/84.

Whenever you have any doubt regarding the operation of this device, consult this manual or contact the Eurotech Technical Support Team.

Keep this manual for future reference.

In order to lower the risk of personal injury, electric shock, fire or damage to equipment, you must observe the following precautions, as well as using good technical judgment, whenever installing or using the device.

Eurotech Spa. (Eurotech) has made every effort to ensure the accuracy of this document; however, Eurotech assumes no liability resulting from any error/omission in this document, or from the use of the information contained herein.

Eurotech reserves the right to revise this document or to make changes to its content at any time without any obligation to notify any person of such revision or changes.

Alerts that can be found throughout this manual

The following alerts indicate potentially dangerous situations:

SYMBOL	MEANING
	**DANGER!** Information highlighting potential electrical shock hazards: • Personal injury or death could occur. • Damage to the system, connected peripheral devices, or software could occur. Appropriate safety precautions should always be used; these should meet the requirements set out for the environment that the equipment will be deployed in.
	**WARNING!** Information highlighting potential hazards: • Personal injury or death could occur. • Damage to the system, connected peripheral devices, or software could occur. Appropriate safety precautions should always be used; these should meet the requirements set out for the environment that the equipment will be deployed in.
	**NOTE** These will highlight important features or instructions.

Safety notices and warnings

Observe the following safety precautions during all phases of operation, service, and repair of the device. Failure to comply with these precautions or with specific warnings elsewhere in this manual violates safety standards of design, manufacture, and intended use of the device.

Eurotech assumes no liability for the customer's failure to comply with these requirements.

The safety precautions listed below represent warnings of certain dangers of which Eurotech is aware. You, as the user of the device, should follow these warnings and all other safety precautions necessary for the safe operation of the device in your operating environment.

Do not operate in an explosive atmosphere



WARNING!
Do not operate the equipment in the presence of flammable gases or fumes. Operation of any electrical equipment in such an environment constitutes a definite safety hazard.

Antistatic precautions



WARNING!
To avoid ESD (Electro Static Discharge) damage, always use appropriate antistatic precautions when handing any electronic equipment.

Connection to power supply or other devices



DANGER!
Before applying power to the system, thoroughly review all installation, operation, and safety instructions.
Failure to install the system power supply correctly or to follow all operating instructions correctly may create an electrical shock hazard, which can result in personal injury or loss of life, and/or damage to equipment or other property

- To avoid injuries, always disconnect power and discharge circuits before touching them.
- Only start the device with a power supply that meets the requirements stated on the voltage label. In case of uncertainties about the required power supply, please contact the Eurotech Technical Support Team or the electricity authority
- Before connecting other equipment carefully read any supplied instructions
- Always disconnect the power before connecting or disconnecting cables
- Do not perform connections with wet hands
- Check any power cords for damage before use
- Use certified power cables. The power cable must meet the requirements (voltage and current) of the device.
- Position cables with care. Avoid positioning cables in places where they may be trampled on or compressed by objects placed on them. Take particular care of the plug, power-point and outlet of power cable
- Avoid overcharging any power outlets
- Only apply power to the device or connected equipment after checking that all the above conditions have been met

Installation



WARNING!

- Verify that the mounting location can withstand the added loads caused by the addition of the device, it should be firmly secured so that it will not cause any potentially hazardous situations (e.g. falling down due to vibration or shock)
- Do not operate the device near heat sources or flames.



NOTE:
If the device must be moved from one place to another with different ambient temperatures, ensure sufficient time for the temperature of the device to stabilize before repowering.

Ventilation



WARNING!
Ensure adequate ventilation to avoid overheating, Eurotech suggests the following steps:

- When installing the device within a cabinet, rack or other enclosed space, be sure to leave sufficient space to allow adequate air circulation
- Do not block any ventilation openings

Maintenance



DANGER!

- Never open, dismantle or repair the device!
- For your maintenance or repair requirement please contact a qualified Eurotech engineer.

If the device does not function correctly and you are unable to find a solution, feel free to contact the Eurotech Technical Support Team.

If the equipment does not work properly, especially if smells unusual, unplug it immediately and contact Technical Support Eurotech (see third and fourth cover of this manual for details).

Cleaning



WARNING!
When cleaning the device, remember to:

- Ensure sufficient ESD protection during the cleaning process.
- Remove any power from the device.
- When cleaning an enclosed system or peripheral use a dry cloth on the external casing.
- With single boards, use only a low power air brush or soft bristled paintbrush.
- Do not use detergents, aerosol sprays, solvents or abrasive sponges.

Life support policy



WARNING!
Do not use Eurotech products as critical components of life support devices or systems without the express written approval of Eurotech Spa.

Warranty

Please contact your local Eurotech Sales Office for detailed warranty terms and conditions.
Refer to the back covers of this manual for full contact details.

CE notice

This product has the CE labelling in accordance with the 1999/5/EC regulations.
Eurotech shall not be liable for use of its products with equipment (i.e. power supplies, personal computers, etc.) that are not CE marked.

WEEE

The information below complies with the regulations set out in the 2002/96/EC directive, subsequently superseded by 2003/108/EC. It refers electrical and electronic equipment and the waste management of such products.
When disposing of a device, including all of its components, subassemblies and materials that are an integral part of the product, you should consider the WEEE directive.

The use of the following symbol, attached to the equipment, packaging, instruction literature, or the guarantee sheet, states that the device has been marketed after August 13th 2005, and implies that you must separate all of its components when possible, and dispose of them in accordance withal waste disposal legislations:



- Because of the substances present in the equipment, improper use or disposal of the refuse can cause damage to human health and the environment.
- With reference to WEEE, it is compulsory not to dispose of the equipment with normal urban refuse; an arrangement for separate collection and disposal is essential.
- To avoid any possible legal implications contact the local waste collection body for full recycling information.

RoHS

This device, including all the components, subassemblies and the consumable materials that are an integral part of the product, have been manufactured in compliance with the European directive 2002/95/EC known as the RoHS directive (Restrictions of the use of certain Hazardous Substances). This directive targets the reduction of certain hazardous substances previously used in electrical and electronic equipment (EEE).

Technical assistance

For any technical questions, or if you cannot isolate a problem with your device, or for any enquiry about repair and returns policies, feel free to contact your local Eurotech Technical Support Team.
See the back cover for full contact details.

Transportation

When transporting any module or system, for any reason, it should be packed using anti-static material and placed in a sturdy box with enough packing material to adequately cushion it.

Warning:
Any product returned to Eurotech that is damaged due to inappropriate packaging will not be covered by the warranty!

Product labelling



Product serial number
On the external side of the PCI Bus connector you will find a label displaying the device serial number (i.e.: 148400223; this example refers to the entire CPU device: CPU-1484).



Carrier module serial number
On the inner side of the PCI Bus connector you will find a label displaying the carrier module serial number (i.e.: 370600878; this example refers to the carrier section, Gigabit or USB).



Processor module serial number
On the top of the thermal interface you will find a label displaying the processor module serial number (i.e.: 890600037; this example refers to the processor module section).

Figure 1. Labels location

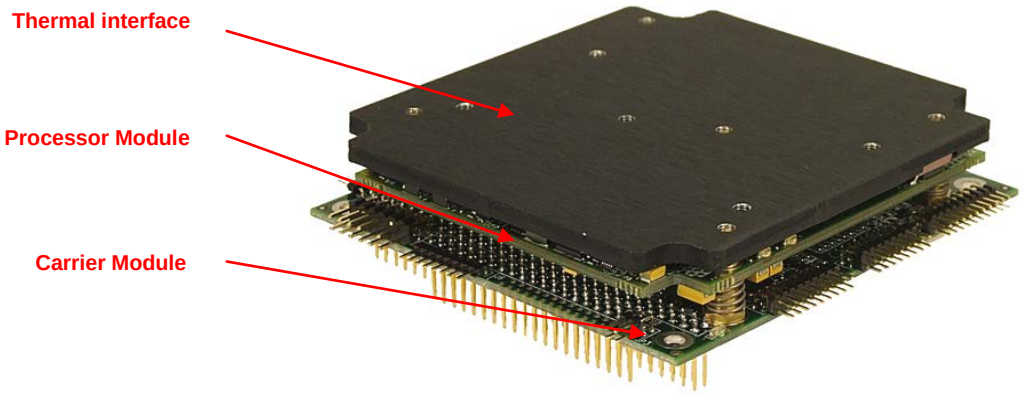
Product overview

The CPU-1474 and CPU-1484 are two embedded RoHS compliant boards based on a processor module combined with a PC/104-Plus form factor carrier module.

In the CPU-1474 the processor module features the Intel® Celeron® M 1 GHz processor
In the CPU-1484 the processor module features the Intel® Pentium® M 1.4 GHz processor.

Both the CPU-1474 and CPU-1484 feature an Intel® i855GME chipset and come with 512 MB DDR, 266 MHz (PC2100), soldered on-board.

The carrier module implements all the connections to the external world (including Gigabit Ethernet and 4 USB 2.0 ports), except for the LCD connection that is available on the processor module.



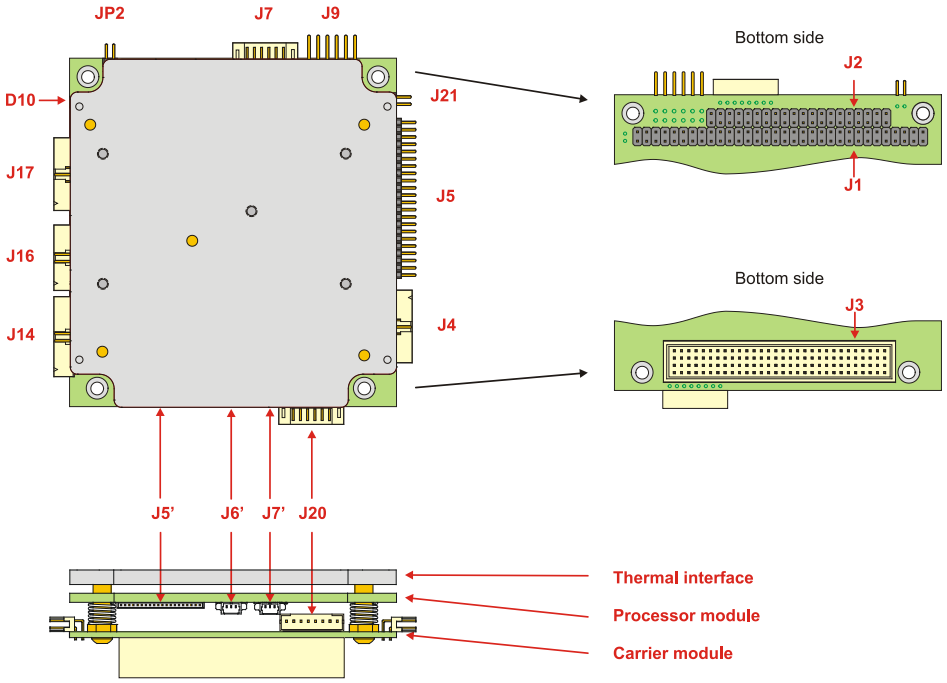
Product definition

Feature	Description
Processor	**CPU-1474:** Intel® Celeron® M 1 GHz, 512 KB L2 cache, 400 MHz FSB **CPU-1484:** Intel® Pentium® M 1.4 GHz, 2MB L2 cache, 400 MHz FSB
Chipset	Intel® i855GME
Memory	512MB DDR, 266 MHz (PC2100), soldered on-board
BIOS Flash	1MB Flash EPROM
Interfaces	• IDE Controller Ultra DMA • Serial ports: o 1x RS-232 o 1x RS-232/422/485 (Selectable in BIOS) • 4x USB 2.0 ports • Gigabit Ethernet (1000 Mbps) • Ethernet (10/100 Mbps) • Video Controllers: o Analog VGA output o Digital LVDS output • Auxiliary Power Input • AC97 audio • Keyboard and Mouse
Architecture	PC/104-Plus compliant
Bus	• PC/104-Plus (PCI) • PC/104 (ISA)
Supported flat panel modes	Several flat panel display modes are supported up to a resolution of: 1024x768 at 60 Hz, 24 bits per pixel
Watchdog	2 to 255 seconds / minutes
Power Supply	Nominal: 5.00 V (with tolerance +/-5%)
Power Consumption	**CPU-1474:** • Typical: 9.5 W • Maximum: 13.5 W **CPU-1484:** • Typical: 14.5 W • Maximum: 18.5 W
Supported Operating Systems:	• Windows CE® • Windows XP Embedded® • Linux®
Options	• Custom BIOS with embedded features • Extended operating temperature range (- 40 to +85 °C) • Custom carrier • Conformal coating • Custom connectors
RoHS	Fully RoHS (2002/95/CE) Compliant

Related products available:

Product	Reference document
ACS-9092-00: Two 2-Port USB Adaptors	Technical Datasheet Td0001
ACS-9095-05: 10/100 Ethernet Adaptor	Technical Datasheet Td0004
CBL-1454-00: Cable-Set for the CPU-1454, CPU-1464, CPU-1474 & CPU-1484	Technical Datasheet Td0026
ACS-9096-00: Gigabit Ethernet Adaptor	Technical Datasheet Td0027
ACS-9093-01: AC97 Audio CODEC	Technical Datasheet Td0028
ACS-9031-00: Digital LCD/TFT LVDS Adapter Kit	Technical Datasheet Td0036

Product Layout



Processor module connectors

Conn #	Usage	Type	Pins	Format	Pitch (mm)	Manufacturer	Part Number
J5'	LVDS	SIL	20	20x1	1.00	Hirose	DF19G-20P-1H(56)
J6'	LVDS Clock / Data	SIL	3	3x1	1.25	Molex	53261-0371
J7'	Reserved	SIL	3	3x1	1.25	Molex	53261-0371

Carrier module connectors, jumpers and LED indicators

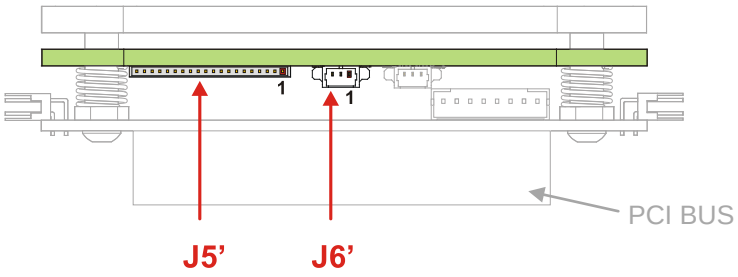
Conn #	Usage	Type	Pins	Format	Pitch (mm)	Manufacturer	Part Number
J1	ISA Bus (bottom side only)	Strip	64	32x2	2.54	Ept	972-32011-21
J2	ISA Bus (bottom side only)	Strip	40	20x2	2.54	Ept	972-20011-21
J3	PCI Bus (bottom side only)	Strip	120	30x4	2.00	Ept	272-30000-31
J3	PCI Bus (bottom side only)	Shroud	-	-	-	Ept	264-17302
J4	Multifunction and VGA	Minitek	18	9x2	2.00	Fci	98464-F61-18ULF
J5	IDE	Strip	44	22x2	2.00	Adimpex	IR002644-R
J7	USB 2.0 ports 2 and 3	SIL	8	8x1	2.00	JST	S8B-PH-K-S(LF)(SN)
J9	Auxiliary power	Strip	12	6x2	2.54	Adimpex	ISO08880-R
J14	USB 2.0 ports 0 and 1; Audio-CODEC	Minitek	20	10x2	2.00	Fci	98464-F61-20ULF
J16	Gigabit Ethernet	Minitek	16	8x2	2.00	Fci	98464-F61-16ULF
J17	Serial Ports 1 and 2	Minitek	18	9x2	2.00	Fci	98464-F61-18ULF
J20	Fast Ethernet	SIL	8	8x1	2.00	JST	S8B-PH-K-S(LF)(SN)
J21	IDE LED	Strip	2	2x1	2.00	Adimpex	IR002540-R

Jumper #	Usage
JP2	Reserved. Default: open

LED #	Usage	Type
D10	Vcc +3.3 V present	Green LED

Processor module connectors

The processor module features the J5’ and J6’ connectors for interfacing TFT-LCD displays. J5’ and J6’ are located on the bottom side of the processor module



J5’: LVDS video output for TFT-LCD displays

Pin #	Signal	Function
1	Vcc +3.3V	Power supply to LCD
2	Vcc +3.3V	Power supply to LCD
3	GND	Ground
4	GND	Ground
5	LVDS_A0M	Negative LVDS differential data output 0
6	LVDS_A0P	Positive LVDS differential data output 0
7	GND	Ground
8	LVDS_A1M	Negative LVDS differential data output 1
9	LVDS_A1P	Positive LVDS differential data output 1
10	GND	Ground
11	LVDS_A2M	Negative LVDS differential data output 2
12	LVDS_A2P	Positive LVDS differential data output 2
13	GND	Ground
14	LVDS_CLK1M	Negative LVDS differential clock output
15	LVDS_CLK1P	Positive LVDS differential clock output
16	GND	Ground
17	LVDS_A3M	Negative LVDS differential data output 3
18	LVDS_A3P	Positive LVDS differential data output 3
19	DDCPCLK	Panel DDC Clock
20	DDCPDATA	Panel DDC Data

J6’: LVDS Clock/Data

Pin #	Signal	Function
1	DDCPCLK	Panel DDC Clock
2	DDCPDATA	Panel DDC Data
3	GND	Ground

Carrier module connectors

J1, J2 and J3: Buses for PC/104-Plus connectivity

The ISA Bus (J1 and J2) and the PCI Bus (J3) connectors are located on the bottom side of the carrier module only. They are designed to allow the connection of the product on the top position of the stack.

ISA BUS

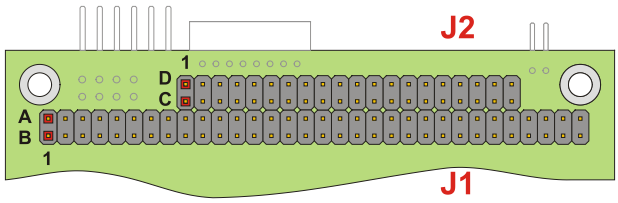


Figure 2. J1 and J2 connector layout (bottom side)

J1			
Pin #	Signal	Pin #	Signal
B1	GND	A1	IOCHK#
B2	RSTDRV	A2	SD7
B3	VDD	A3	SD6
B4	IRQ9	A4	SD5
B5	-5V	A5	SD4
B6	DRQ2	A6	SD3
B7	-12V	A7	SD2
B8	ZEROWS#	A8	SD1
B9	+12V	A9	SD0
B10	GND/KEY	A10	IOCHRDY
B11	SMEMW#	A11	AEN
B12	SMEMR#	A12	SA19
B13	IOW#	A13	SA18
B14	IOR#	A14	SA17
B15	DACK3#	A15	SA16
B16	DRQ3	A16	SA15
B17	DACK1#	A17	SA14
B18	DRQ1	A18	SA13
B19	REFRESH#	A19	SA12
B20	SYSCLK	A20	SA11
B21	IRQ7	A21	SA10
B22	IRQ6	A22	SA9
B23	IRQ5	A23	SA8
B24	IRQ4	A24	SA7
B25	IRQ3	A25	SA6
B26	DACK2#	A26	SA5
B27	TC	A27	SA4
B28	BALE	A28	SA3
B29	VDD	A29	SA2
B30	OSC	A30	SA1
B31	GND	A31	SA0
B32	GND	A32	GND

J2			
Pin #	Signal	Pin #	Signal
C1	GND	D1	GND
C2	SBHE#	D2	MEMCS16#
C3	LA23	D3	IOCS16#
C4	LA22	D4	IRQ10
C5	LA21	D5	IRQ11
C6	LA20	D6	IRQ12
C7	LA19	D7	IRQ15
C8	LA18	D8	IRQ14/ROMCS#
C9	LA17	D9	DACK0#
C10	MEMR#	D10	DRQ0
C11	MEMW#	D11	DACK5#
C12	SD8	D12	DRQ5
C13	SD9	D13	DACK6#
C14	SD10	D14	DRQ6
C15	SD11	D15	DACK7#
C16	SD12	D16	DRQ7
C17	SD13	D17	VDD
C18	SD14	D18	MASTER#
C19	SD15	D19	GND
C20	GND/KEY	D20	GND

Table 1. J1 and J2 connector pinout (bottom side)

PCI BUS

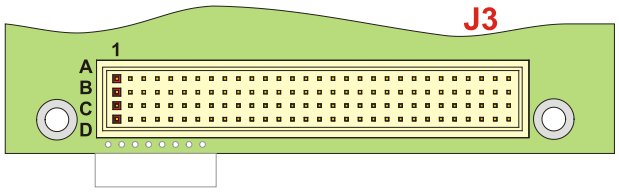


Figure 3. J3 connector layout (bottom side)

Pin #	Signal	Pin #	Signal	Pin #	Signal	Pin #	Signal
D1	AD0	**C1**	VDD	**B1**	NC	**A1**	GND
D2	VDD	**C2**	AD1	**B2**	AD2	**A2**	VDD (JPR1)
D3	AD3	**C3**	AD4	**B3**	GND	**A3**	AD5
D4	AD6	**C4**	GND	**B4**	AD7	**A4**	C/BEO#
D5	GND	**C5**	AD8	**B5**	AD9	**A5**	GND
D6	M66EN	**C6**	AD10	**B6**	VDD(JPR1)	**A6**	AD11
D7	AD12	**C7**	GND	**B7**	AD13	**A7**	AD14
D8	NC (JPR1)	**C8**	AD15	**B8**	C/BE1#	**A8**	NC (JPR1)
D9	PAR	**C9**	NC	**B9**	GND	**A9**	SERR#
D10	NC	**C10**	NC (JPR1)	**B10**	PERR#	**A10**	GND
D11	GND	**C11**	PLOCK#	**B11**	NC (JPR1)	**A11**	STOP#
D12	DEVSEL#	**C12**	GND	**B12**	TRDY#	**A12**	NC (JPR1)
D13	NC (JPR1)	**C13**	IRDY#	**B13**	GND	**A13**	FRAME#
D14	C/BE2#	**C14**	NC (JPR1)	**B14**	AD16	**A14**	GND
D15	GND	**C15**	AD17	**B15**	NC (JPR1)	**A15**	AD18
D16	AD19	**C16**	GND	**B16**	AD20	**A16**	AD21
D17	NC (JPR1)	**C17**	AD22	**B17**	AD23	**A17**	NC (JPR1)
D18	IDSEL2 (AD18)	**C18**	IDSEL1 (AD17)	**B18**	GND	**A18**	IDSEL0 (AD16)
D19	IDSEL3 (AD19)	**C19**	VDD (JPR1)	**B19**	C/BE3#	**A19**	AD24
D20	GND	**C20**	AD25	**B20**	AD26	**A20**	GND
D21	AD27	**C21**	AD28	**B21**	VDD	**A21**	AD29
D22	AD31	**C22**	GND	**B22**	AD30	**A22**	VDD
D23	VDD(JPR1)	**C23**	REQ1#	**B23**	GND	**A23**	REQ0#
D24	GNT0#	**C24**	VDD	**B24**	REQ2#	**A24**	GND
D25	GND	**C25**	GNT2#	**B25**	VDD(JPR1)	**A25**	GNT1#
D26	CLK1	**C26**	GND	**B26**	CLK0	**A26**	VDD
D27	GND	**C27**	CLK3	**B27**	VDD	**A27**	CLK2
D28	RST#	**C28**	VDD	**B28**	INTD#	**A28**	GND
D29	INTC#	**C29**	INTB#	**B29**	INTA#	**A29**	+12V
D30	GND	**C30**	GNT3#	**B30**	REQ3#	**A30**	-12V

Table 2. J3 connector pinout (bottom side)

J4: Multifunction and VGA

The VGA output can drive a progressive scan analog monitor with pixel resolution up to 1600x1200 at 85-Hz refresh and up to 2048x1536 at 75-Hz refresh.

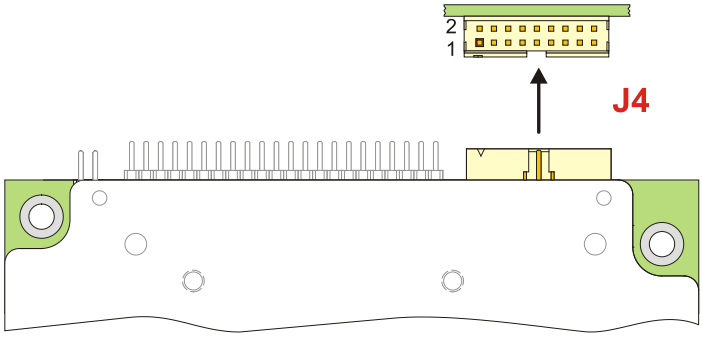


Figure 4. J4 connector layout

Pin #	Signal	Function	Pin #	Signal	Function
1	GND_SRV	Multifunction	**2**	VDD_SRV (+5V)	Multifunction
3	KBDAT		**4**	KBCLK	
5	MSDAT		**6**	MSCLK	
7	BAT_IN		**8**	SPKR	
9	RES_PB_IN		**10**	GND_VGA	VGA
11	HSYNC	VGA	**12**	VSYNC	
13	RED_VGA		**14**	GREEN_VGA	
15	DDC1_SCL		**16**	DDC0_SDA	
17	GNDA_VGA		**18**	BLUE_VGA	

Table 3. J4 connector pinout

J4: Multifunction section

This section of the J4 connector implements the following functions:

Keyboard section: connection interface for an AT compatible keyboard

Pin #	Signal	Function
1	GND	Ground signal
2	+5V	Power supply
3	KBDAT	Keyboard data
4	KBCLK	Keyboard clock

Mouse section: connection interface for a Ps/2 compatible mouse

Pin #	Signal	Function
1	GND	Ground signal
2	+5V	Power supply
5	MSDAT	Mouse data
6	MSCLK	Mouse clock

System reset

Connecting pin #9 to ground will perform a hardware reset of the CPU-1474/84.

You can use an external push-button (normally open) to manually reset the system.

The reset signal is “de-bounced” on-board.

External battery

An external (backup) battery is required to preserve Real Time Clock data when the CPU-1474/84 is powered down.

Pin #7 allows the connection of an external battery.

The battery voltage must be between 3.0 V and 3.9 V.

Typical power consumption with the module off is 7 uA.

Speaker

A transistor that supplies 0.1W to an external speaker controls the signal output available on Pin #8.

A transistor amplifier buffers the speaker signal. Use a small general-purpose 2” or 3” permanent magnet speaker with an 8-Ohm voice coil. The audio output is based on two signals: one come from the output of Timer 2, and the other come from I/O port 61h compliant with the AT Standard.

The Eurotech multifunction adaptor

The Eurotech multifunction adaptor simplifies the connection of keyboard and mouse to the CPU-1474/84

Furthermore it includes the following features:

- backup battery
- speaker
- reset button.

Please refer to the Technical Datasheet Td0026 (http://www.eurotech.com/DLA/AN/Td0026.pdf) for further information.

J5: IDE

J5 provides an interface for up to two Integrated Device Electronics (IDE) hard disk drives.

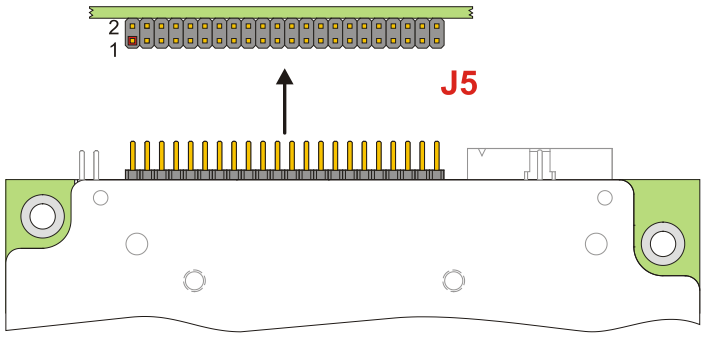


Figure 5. J5 connector layout

Pin #	Signal	Pin #	Signal
1	RESET #	**2**	GND
3	DD7	**4**	DD8
5	DD6	**6**	DD9
7	DD5	**8**	DD10
9	DD4	**10**	DD11
11	DD3	**12**	DD12
13	DD2	**14**	DD13
15	DD1	**16**	DD14
17	DD0	**18**	DD15
19	GND	**20**	[KEY]
21	DMARQ	**22**	GND
23	DIOW #	**24**	GND
25	DIOR #	**26**	GND
27	IORDY	**28**	CSEL
29	DMACK #	**30**	GND
31	INTRQ	**32**	IOCS16 #
33	DA1	**34**	PDIAG #
35	DA0	**36**	DA2
37	CS1#	**38**	CS3#
39	DASP #	**40**	GND
41	VDD (+5V)	**42**	VDD (+5V)
43	GND	**44**	NC

Table 4. J5 Connector pinout

To install the hard disk, perform the following operations:

1. **Install the hardware**
   Connect the hard disk to the module using a data cable, and then connect the hard disk to the power supply according to the device's specifications. Make sure that pin 1 of connector J5 and pin 1 of the drive or drives are correctly connected. Pin 1 of the interface cable is usually indicated by a stripe along the edge of the cable. If two hard disks need to be connected, they must be configured for common operation (i.e. master/slave or cable select connection)
2. **Configure the IDE BIOS setup**
   Hard disk parameters can be configured using the Setup program. If the hard disk is connected to the module without the correct setup configuration (BIOS or Hardware), a time-out of a few minutes may occur
3. **Perform a software initialization (for specific operating systems)**
   Refer to the OS documentation

The Eurotech CBL-1454-00 cable set

The Eurotech CBL-1454-00 cable set contains the right IDE cable that allows you to connect up to 2 IDE devices to a Eurotech CPU module.

Please refer to the Technical Datasheet Td0026 (http://www.eurotech.com/DLA/AN/Td0026.pdf) for further information.

J21: IDE LED

J21 allows you to connect a LED for signalling activity on the IDE BUS.

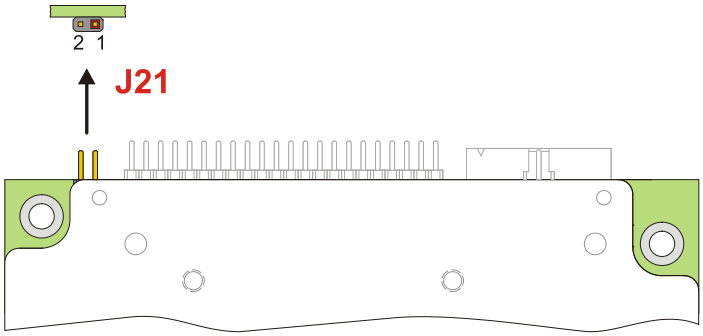


Figure 6. J21 connector layout

Pin	Signal
1	IDE LED anode
2	IDE LED cathode

Table 5. J21 Connector pinout

J7: USB 2.0 ports 2 and 3

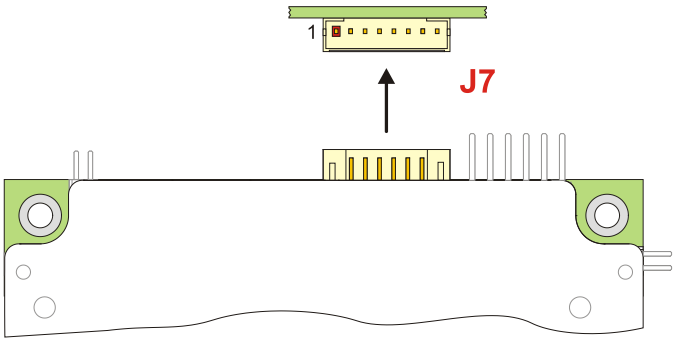


Figure 7. J7 connector layout

Pin #	Signal	Function
1	VDD_USB2	USB 2
2	USB2-	
3	USB2+	
4	GND_USB_2	
5	VDD_USB_3	USB 3
6	USB3-	
7	USB3+	
8	GND_USB_3	

Table 6. J7 Connector pinout

WARNING!
USB Ports 0, 1, 2 and 3 have 2A current limiters. It should be noted that the maximum combined power should be kept below 2A.

The Eurotech USB adaptor

To simplify connections between the USB ports of the CPU module and USB peripheral devices we suggest using the Eurotech ACS-9092-00 Adaptor.

Please refer to the Technical Datasheet Td0001 (http://www.eurotech.com/DLA/AN/Td0001.pdf) for further information.

J9: Auxiliary power

J9 is an auxiliary power connector and can be used to power the module as an alternative to the PC/104-Plus bus.

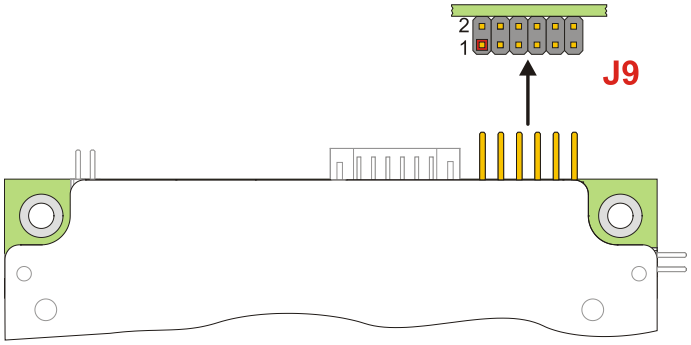


Figure 8. J9 connector layout

Pin #	Signal	Pin #	Signal
1	GND	**2**	VDD
3	N.C.	**4**	+12v
5	-5V	**6**	-12V
7	GND	**8**	VDD
9	N.C.	**10**	PWRBTN#
11	+5VSB(1)	**12**	PSON#(2)

(1) +5VSB: +5 Volts-Always from the ATX Power supply
(2) PSON#: Power-On command to ATX Power supply

Table 7. J9 Connector pinout

Power button (input)

If the soft power management is enabled, a low signal in this pin turns the system on or off.

NOTE:
The VSB (Volt Stand-By) voltage is useful for Power management applications only

NOTE:
The +12VDC and -5VDC voltages are neither used nor generated by the CPU-1451/61 module: they are only conveyed on the PC/104-Plus bus (connector J1) and can be used by other devices or modules that are stacked onto the CPU module

WARNING!
WARNING! IMPROPER CONNECTION OF THE POWER SUPPLY WILL RESULT IN SERIOUS DAMAGE TO THE MODULE.

J14: USB 2.0 Ports 0 and 1, and Audio-CODEC

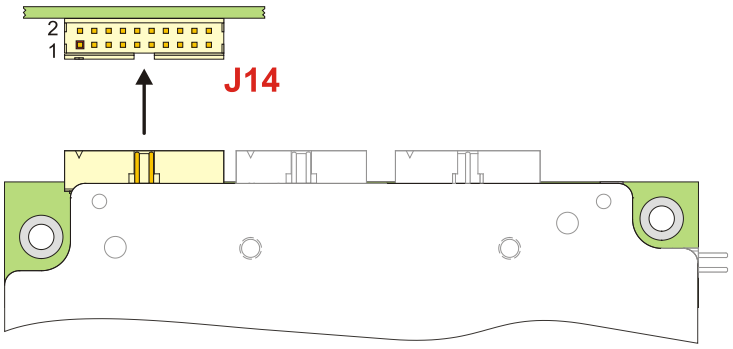


Figure 9. J14 connector layout

Pin #	Signal	Function	Pin #	Signal	Function
1	SPKR	Audio Codec	**2**	SDIN1	Audio Codec
3	SDOUT		**4**	CDC_EN#	
5	GND	Ground signal	**6**	GND	Ground signal
7	SDIN0	Audio Codec	**8**	BITCLK	Audio Codec
9	RST		**10**	SYNC	
11	GND	Ground signal	**12**	USB Over Current 1#	USB 1
13	USB0-	USB 0	**14**	USB1-	USB 1
15	USB0+		**16**	USB1+	
17	GND	Ground signal	**18**	VDD	Power supply
19	GND		**20**	VDD	

Table 8. J14 Connector pinout

WARNING!
USB Ports 0, 1, 2 and 3 have 2A current limiters. It should be noted that the maximum combined power should be kept below 2A.

The Eurotech USB & AC97-Audio CODEC adaptor

To simplify connections between the USB ports and AC97 audio ports of the CPU module and the peripheral devices we suggest using the Eurotech Adaptors.

Please refer to the Technical Datasheet Td0001 (http://www.eurotech.com/DLA/AN/Td0001.pdf) for further information about the USB adaptor

Please refer to the Technical Datasheet Td0028 (http://www.eurotech.com/DLA/AN/Td0028.pdf) for further information about the audio adaptor

J16: Gigabit Ethernet

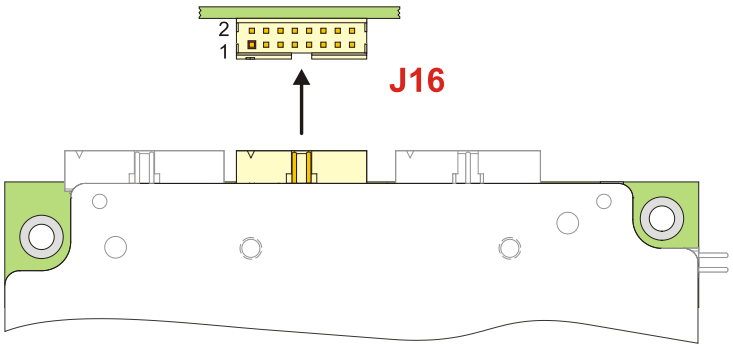


Figure 1. J14 connector layout

Pin #	Signal	Pin #	Signal
1	MX-1	**2**	MX+1
3	MX-2	**4**	MX+2
5	MX-3	**6**	MX+3
7	MX-4	**8**	MX+4
9	GND	**10**	Not Connected
11	GND	**12**	Not Connected
13	Link LED	**14**	Activity LED
15	Link 100 LED	**16**	Link 1000 LED

Table 9. J14 Connector pinout

The Eurotech Gigabit Ethernet adaptor

To simplify connections between the Gigabit Ethernet port of the CPU module and the network cable we suggest using the Eurotech ACS-9096-00 Adaptor.

Please refer to the Technical Datasheet Td0027 (http://www.eurotech.com/DLA/AN/Td0027.pdf) for further information.

NOTE:
To make a Gigabit Ethernet connection use only Category 6 (or superior quality) cables.

J17: Serial ports 1 and 2

J17 makes available the following serial ports:

- Serial 1, RS232 only (called Serial A in the BIOS)
- Serial 2, RS232 / RS422 / RS485, software selectable from BIOS (called Serial B in the BIOS)

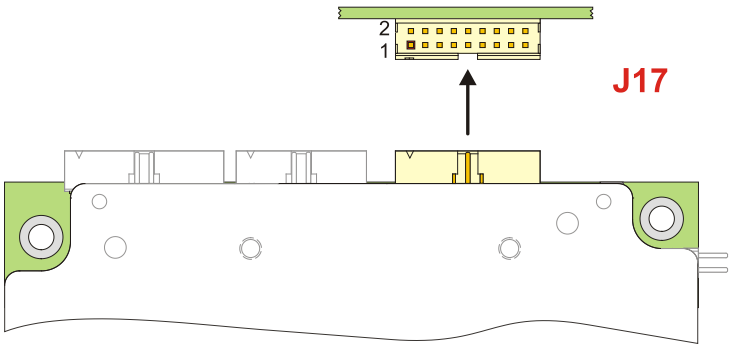


Figure 2. J17 connector layout

Pin #	Signal	Function	Pin #	Signal	Function
1	DCD1	Serial 1	**2**	DSR1	Serial 1
3	RX1		**4**	RTS1	
5	TX1		**6**	CTS1	
7	DTR1		**8**	RI1	
9	GND	Ground signal	**10**	DCD2	Serial 2
11	DSR2	Serial 2	**12**	RX2	
13	RTS2		**14**	TX2	
15	CTS2		**16**	DTR2	
17	RI2		**18**	GND	Ground signal

Table 10. J17 Connector pinout: RS232 mode

RS422				RS485			
Pin #	Signal	Function	In/out	Signal	Function	In/out	Pin #
10	-TX	Transmit data	Out	-TX/-RX	Transmit/Receive data	In / Out	**10**
11	--	Not connected	--	--	Not connected	--	**11**
12	+TX	Transmit Data	Out	+TX/+RX	Transmit/Receive data	In / Out	**12**
13	--	Not connected	--	--	Not connected	--	**13**
14	-RX	Receive Data	In	--	Not connected	--	**14**
15	--	Not connected	--	--	Not connected	--	**15**
16	+RX	Receive Data	In	--	Not connected	--	**16**
17	--	Not connected	--	--	Not connected	--	**17**
18	Ground	Signal ground	--	Ground	Signal ground	--	**18**

Table 11. J17 connector pinout - Serial Port 2 - RS422 / RS485 modes

NOTE:
If the serial port is used in RS485 mode, the bi-directional line must be controlled via software, using the Data Terminal Ready (DTR) signal of the serial controller. This signal is defined by bit 0 of the UART Modem Control Register (MCR) and the bi-directional line is controlled as follows:

- - bit 0 of the MCR register = 0 means RS485 line receiving
- - bit 0 of the MCR register = 1 means RS485 line transmitting

The I/O address of the MCR is "Serial port Base address"+4H

J20: Fast Ethernet

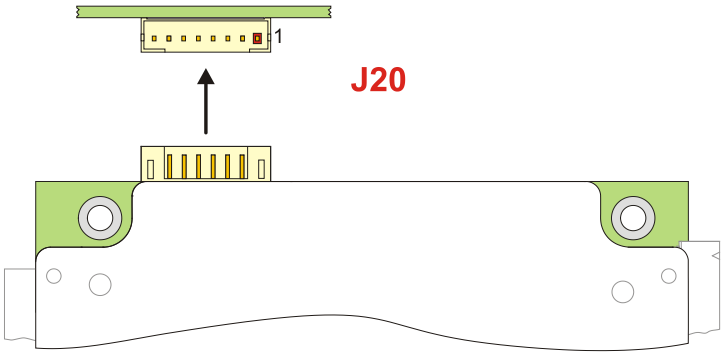


Figure 3. J17 connector layout

Pin #	Signal
1	TX-
2	TX+
3	GND
4	LINK LED
5	RX-
6	RX+
7	ACTIVITY LED
8	+3.3V

Table 12. J17 Connector pinout: RS232 mode

The Eurotech Ethernet transceiver

You need to use an Ethernet transceiver before establish an Ethernet connection between the CPU module and the network cable.

The Eurotech ACS-9095-05 is an Ethernet transceiver ready-to-use, and can be connected directly to J20.

Please refer to the Technical Datasheet Td0004 (http://www.eurotech.com/DLA/AN/Td0004.pdf) for further information.

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Install the CPU-1474/84

Stacking the CPU-1474/84 with other PC/104 and PC/104-Plus devices

The ISA and PCI Bus connectors of the CPU-1474/84 are located on the bottom side of the Carrier module only, and are designed to allow the connection on the top position of the stack formed by other PC/104 and/or PC/104-Plus devices.

We recommend following the procedure below to ensure that stacking of the modules does not damage connectors or components.

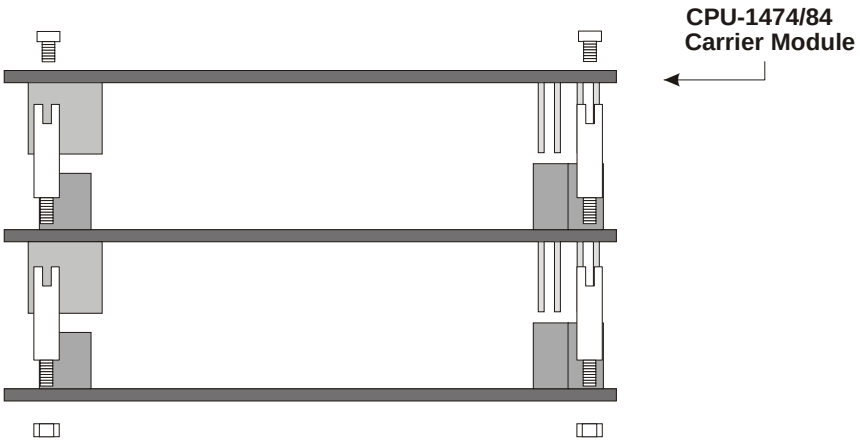


WARNING!
Always use appropriate antistatic precautions when handling the boards.

1. Turn off all power to the PC/104 device and its peripherals.
2. Select and install standoffs to properly position the module on the PC/104 stack.
3. Remove the module from its antistatic bag.
4. Check that keying pins in the bus connector are properly positioned.
5. Check the stacking order; make sure an XT bus card are not placed between two AT bus cards as this will interrupt the AT bus signals.
6. Hold the module by its edges and orient it so that the bus connector pins line up with the matching connector on the stack.
7. Using even pressure press the module onto the PC/104 stack.

The figure below shows a module stack with the CPU-1474/84 on the top of two PC/104-Plus modules.

If standard PC/104 modules are used in the stack, they must be the lowest modules because they will normally not include the PCI bus. An adapter module must be used.



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Configure the CPU-1474/84: the Setup Utility

The CPU-1474/84 features a Phoenix BIOS Setup utility that allows you to modify the BIOS settings.

WARNING!
The BIOS Setup data may be lost if power is removed for any reason during the POST (Power On Self Test) procedure.

NOTE:
If the BIOS has been set to LCD only, and no display is visible - maybe due to a configuration error - users can press the 'F3' key during the power-on sequence to force the CRT+LCD configuration.

The Setup program uses a number of menus for making changes and enabling various features.

NOTE:
The menus shown here are from a typical system. The actual menus displayed may differ depending on the hardware and features installed.

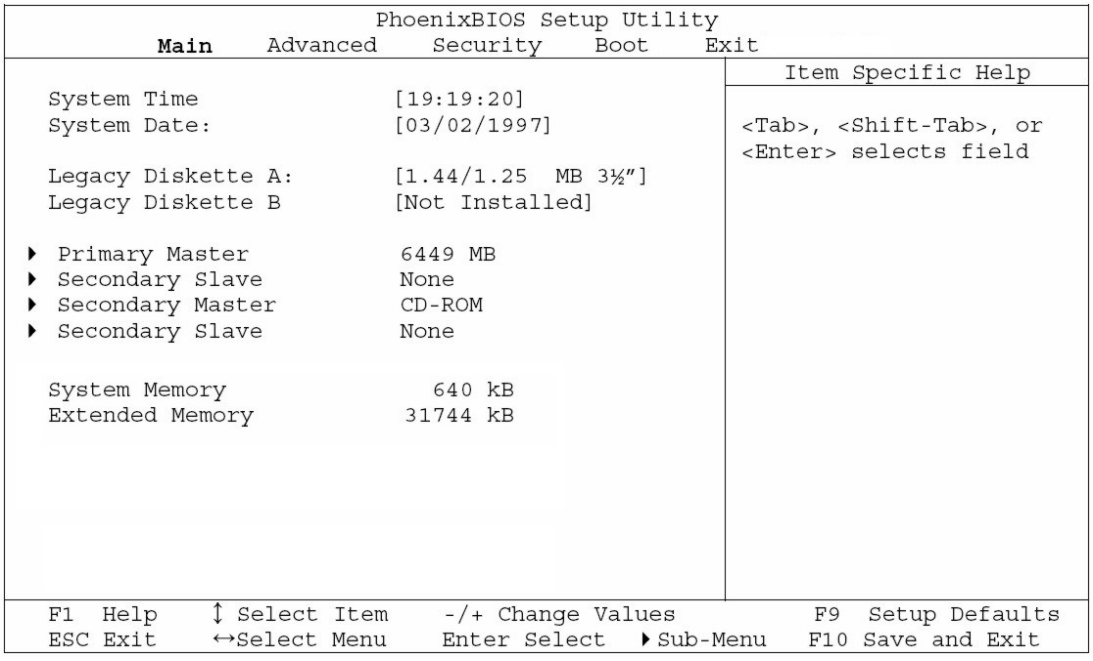
The Main menu

To start the Phoenix BIOS Setup utility:

1. Turn on or reboot your system. The Phoenix BIOS will display the following message:

```
Press <F2> to enter SETUP
```

2. Press <F2> to display the Main menu, as shown below:



The menu bar

The menu bar at the top of the window lists these selections:

Selection	Function
Main	Use this menu for basic system configuration
Advanced	Use this menu to set the Advanced Features available on your system's chipset.
Security	Use this menu to set User and Supervisor Passwords and the Backup and Virus-Check reminders.
Boot	Use this menu to configure the boot priority order or to exclude a device from the boot order.
Exit	Exits the current menu.

Use the left and right arrow keys to make a selection.

See The Exit menu paragraph on page 38 for a description on exiting the Main Menu.

The legend bar

Use the keys listed in the legend bar on the bottom of the screen to make your selections or exit the current menu. The chart below describes the legend keys and their alternates:

Key	Function
<F1> or <Alt-H>	General Help window (See below).
<Esc>	Exit this menu
↔ arrow keys	Select a different menu
↕ arrow keys	Move cursor up and down
<Tab> or <Shift-Tab>	Cycle cursor up and down
<Home> or <End>	Move cursor to top or bottom of window
<PgUp> or <PgDn>	Move cursor to next or previous page.
<F5> or <->	Select the Previous Value for the field.
<F6> or <+> or <Space>	Select the Next Value for the field.
<F9>	Load the Default Configuration values for this menu.
<F10>	Save and exit.
<Enter>	Execute Command or Select P Submenu.
<Alt-R>	Refresh screen.

To select an item: use the arrow keys to move the cursor to the field you want.

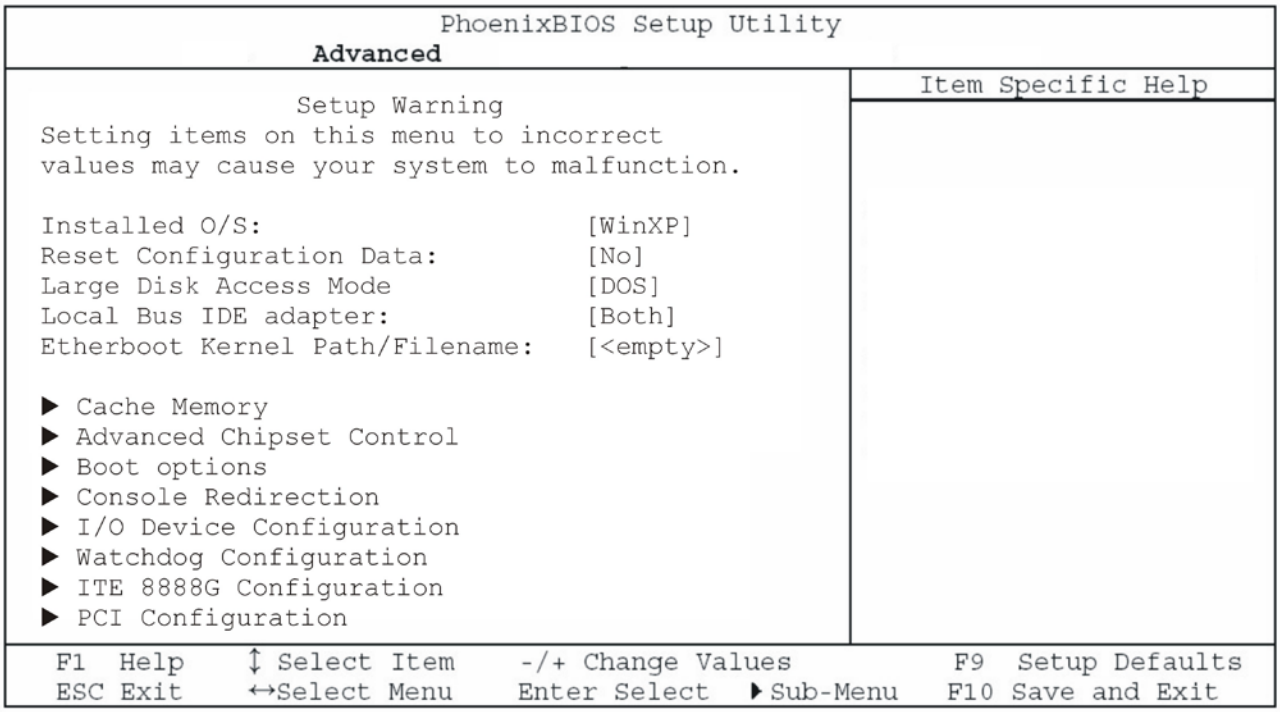
Then use the + and - keys to select a value for that field. The Save Values commands in the Exit Menu save the values currently displayed in all the menus.

To display a sub menu: use the arrow keys to move the cursor to the sub menu you want. Then press **<Enter>**.

A pointer (▶) marks all sub menus.

The Advanced menu

Selecting "Advanced" from menu bar on the Main Menu displays a menu like this:



Use the legend keys to make your selections and exit to the Main Menu.
The chart below describes the legend keys and their alternates:

Feature	Options	Description
Installed O/S:	• Other • Win98 • WinME • Win2000 • WinXP	Write protects the boot sector on the hard disk for virus protection. Requires a password to format or Fdisk the hard disk.
Reset Configuration Data	• Yes • No	Yes erases all configuration data in a section of memory for **ESCD** (Extended System Configuration Data) which stores the configuration settings for non-PnP plug-in devices. Select Yes when required to restore the manufacturer's defaults.
Large Disk Access Mode	• Other • DOS	Select DOS if you have DOS. Select Other if you have another operating system such as UNIX. A large disk is one that has more than 1024 cylinders, more than 16 heads, or more than 63 tracks per sector.
Local Bus IDE adapter	• Disabled • Primary • Secondary • Both	Enable the integrated local bus IDE adapter
Etherboot Kernel Path/Filename		Allows you to enter the path / filename of the Etherboot kernel on server

Cache Memory

The chart below describes the legend keys and their alternates:

Feature	Options	Description
Memory Cache:	• Disabled • Enabled	Sets the state of the memory cache
Cache System BIOS area: **Cache Video BIOS area:**	• Uncached • Write protect	Controls caching of system BIOS area
Cache Base 0-512k: **Cache Base 512k-640k:** **Cache Extended Memory Area:**	• Uncached • Write Through • Write Protect • Write Back	Controls caching of base memory
Cache A000 – AFFF: **…** **Cache EC00 – EFFF:**	• Disabled • USWC Caching • Write Through • Write Protect • Write Back	Controls caching of memory

Advanced Chipset Control

CPU Control

Feature	Options	Description
Thermal Control Circuit:	• TM1 • TM2	Enables the thermal control circuit (TCC) portion of the Thermal Monitor feature of the CPU. TM1 = 50% duty cycle TM2 = Geyserville III

Video (Intel IGD) Control Sub-Menu

Feature	Options	Description
Default Primary Video Adapter	• PCI • AGP	Select the video card that, if installed, is used for the boot display device.
MDA seek	• Disabled • Enabled	Enable/Disable Seek of MDA Video adapter during boot
IGD – Device 2: **IGD – Device 2, function 1:**	• Disabled • Enabled	Enable/Disable the Internal graphics Device by setting item to the desired value
IGD – Memory Size	• UMA = 1MB • UMA = 8MB • UMA = 16MB • UMA = 32MB	Select the amount of Main Memory that the Internal graphics device will use.
IGD – Boot type:	• VBIOS Default • CRT • LCD • CRT-LCD	Select the Video Device that will be activated during POST
IGD – LCD Panel Type:	• List of available items	Select the LCD Panel used by the Internal graphics device by selecting the appropriate setup item.
IGD – Panel Scaling:	• Auto • Force scaling • Off	Select the LCD panel scaling option used by the Internal Graphics Device
IGD – Portrait Mode:	• Auto • Disabled • Enabled	Control Portrait Mode of the Internal Graphics device.
IGD – ACPI LCD Address:	• 0x110 • 0x400	Select the Address to be used for the LCD

ICH Control: Integrated Device Control

Feature	Options	Description
• **USB (All ports):** • **USB (Port 1 and 2):** • **USB (Port 2 only):** • **USB 2.0:**	• Disabled • Enabled	Enables/Disables the USB features
• **IDE controller:** • **AC97 Audio** • **AC97 Modem** o **AC97 Modem PME**	• Disabled • Enabled	Enables/Disables the IDE & AC97 features
• **LAN controller** o **LAN BootROM:**	• Disabled • Enabled	Enables/Disables the LAN features

ICH Control: Other "ICH Control" keys and their alternates

Feature	Options	Description
CPU Sleep:	• Disabled • Enabled	Enable/Disable the CPU_SLP# signal to reduce CPU Power
Deeper Sleep in S1M:	• Disabled • Enabled	Will cause the ICH4M to use the C4 sequence instead of the standard sequence when entering an S1M state
PCI Clock Run:	• Disabled • Enabled	If enabled, the CLKRUN# logic will stop the clocks

ACPI Control

Feature	Options	Description
Enable ACPI (debug only):	• No • Yes	Enable/Disable Advance Configuration and Power Interface BIOS
Disable ACPI _Sx:	• None • S1 • S3	Selects the ACPI power state to disable
APIC – IO APIC Mode:	• Disabled • Enabled	Enable/Disable the IO APIC Mode
HPET – High Performance Event Timer:	• Disabled • Enabled	Enable/Disable the HPET Mode
Native IDE Support:	• Disabled • Enabled	Enable/Disable the native IDE Support

Boot options

Keyboard Features

Feature	Options	Description
Numlock:	• Auto • On • Off	Selects power-on state for NumLock
Keyboard auto-repeat rate:	• List of available items	Selects key repeat rate
Keyboard auto-repeat delay:	• ¼ sec • ½ sec • ¾ sec • 1 sec	Selects delay before key repeat

Other "Boot Options"

Feature	Options	Description
POST Errors:	• Disabled • Enabled	Pauses and displays SETUP entry or resume boot prompt if error occurs on boot. If disabled, system always attempt to boot
SETUP prompt:	• Disabled • Enabled	Displays SETUP entry prompt on boot; Disabled doesn't prevent setup entry
Legacy USB Support:	• Disabled • Enabled	Enables support for legacy Universal Serial Bus
Summary screen:	• Disabled • Enabled	Displays system configuration on boot
QuickBoot Mode	• Disabled • Enabled	Allows the system to skip certain tests while booting

Console Redirection

Feature	Options	Description
Com Port Address	• Disabled • On-Board COM A • On-Board COM B	If enabled, it will use a port on the motherboard
Baud Rate	• List of available rates	Enables the specified baud rate
Console Type	• List of available types	Enables the specified console type
Flow Control	• None • XON/XOFF • CTS/RTS	Enables Flow Control
Console connection:	• Direct • Via modem	Indicates whether the console is connected directly to the system or a modem is used to connect
Continue C.R. after POST	• Off • On	Enables console redirection after OS has loaded

I/O Device Configuration

Feature	Options	Description
• **Serial Port A (Serial 1)**	• Disabled / Enabled / Auto	Configure Serial Port A (Serial 1)
o **Base I/O address:**	• List of available addresses	Set the base I/O address for Serial Port A (Serial 1)
o **Interrupt:**	• List of available IRQs	Set the base interrupt for Serial Port A (Serial 1)
• **Serial Port B (Serial 2)**	• Disabled / Enabled / Auto	Configure Serial Port B (Serial 2)
o **Mode:**	• RS232 / RS485 / RS422 / Off	Set the mode for Serial Port B (Serial 2)
o **Base I/O address:**	• List of available addresses	Set the base I/O address for Serial Port B (Serial 2)
o **Interrupt:**	• List of available IRQs	Set the base interrupt for Serial Port B (Serial 2)
• **Parallel Port:**	• Disabled / Enabled / Auto	Configure Parallel Port
o **Mode:**	• List of available modes	Set the mode for Parallel Port
o **Base I/O address:**	• List of available addresses	Set the base I/O address for Parallel Port
o **Interrupt:**	• List of available IRQs	Set the base interrupt for Parallel Port
• **Floppy disk controller:**	• Disabled / Enabled / Auto	Configure the Floppy disk controller
Base I/O address:	• Primary / Secondary	Set the base I/O address for the Floppy disk controller

Watchdog Configuration

Feature	Options	Description
Watchdog	• Disabled • Enabled	Enables /Disables the Watchdog timer
Timeout	• Adjust the value	Adjust the timeout value
Time Unit	• Seconds • Minutes	Select the time unit to be used for the watchdog timer

ITE 8888G Configuration

Feature	Options	Description
• **I/O 0 Space:** • **I/O 1 Space:** • **I/O 2 Space:** • **I/O 3 Space:** • **I/O 4 Space:** • **I/O 5 Space:**	• Disabled • Enabled	Enables/Disables the ISA I/O space
• **Memory 0 Space:** • **Memory 1 Space:** • **Memory 2 Space:** • **Memory 3 Space:**	• Disabled • Enabled	Enables/Disables the ISA memory space

PCI Configuration

PCI Device, Slot #1 to #4

Feature	Options	Description
Option ROM Scan	• Disabled • Enabled	Initialize device expansion ROM
Enable Master	• Disabled • Enabled	Enable selected device as a PCI bus master
Latency Timer	• List of available values	Minimum guaranteed time slice allotted for bus master in units of PCI bus clocks

PCI/PNP ISA IRQ Resource Exclusion

Feature	Options	Description
• **IRQ 3:** **…** • **IRQ 11:**	• Available • Reserved	Reserves the specified IRQ for use by legacy ISA devices

PCI/PNP ISA DMA Resource Exclusion

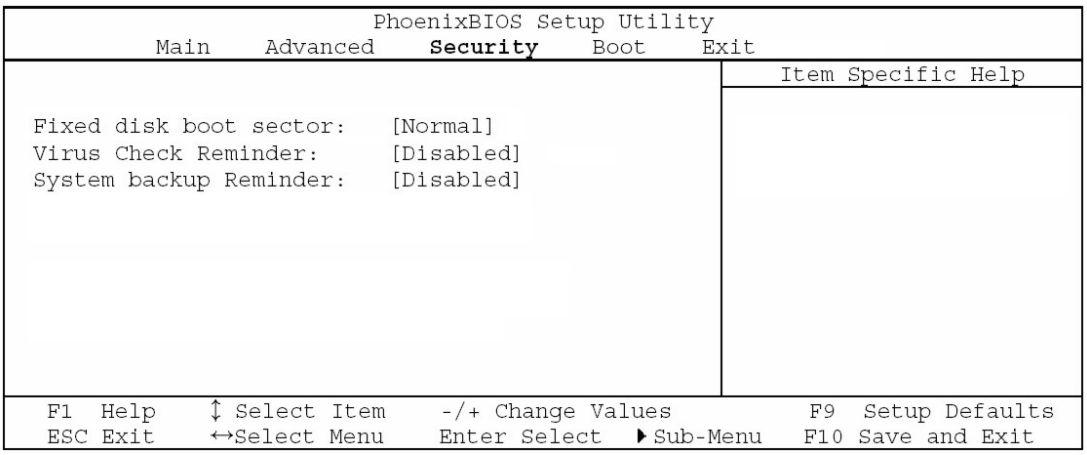
Feature	Options	Description
• **DMA 0:** **…** • **DMA 7:**	• Available • Reserved	Reserves the specified DMA channel for use by non-Plug-and-Play ISA devices

PCI/PNP ISA UMB Region Exclusion

Feature	Options	Description
• **C800 - CBFF:** **…** • **DC00 – DFFF:**	• Available • Reserved	Reserves the specified block of upper memory for use by legacy ISA devices

The Security menu

Selecting "Security" from the Main Menu displays a menu like this:



Use the legend keys to make your selections and exit to the Main Menu.
Use the following chart to configure the system-security and anti-virus options:

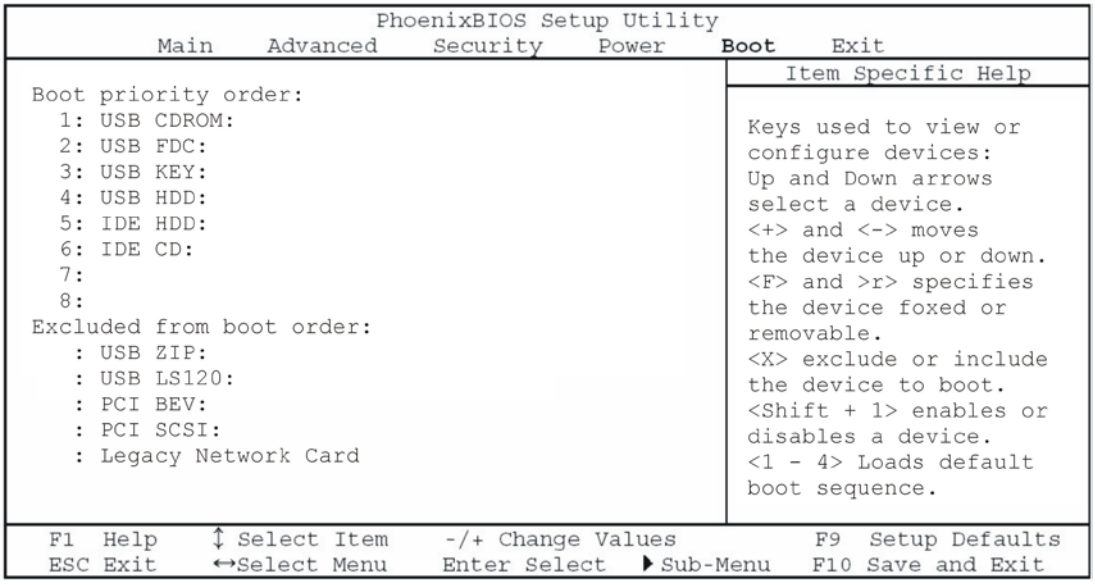
Feature	Options	Description
• **Fixed disk boot sector**	• Normal • Write Protect	Write protects the boot sector on the hard disk for virus protection. Requires a password to format or Fdisk the hard disk.
• **System backup reminder** • **Virus check reminder**	• Disabled • Daily • Weekly • Monthly	Displays a message during boot up asking (Y/N) if you have backed up the system or scanned it for viruses. Message returns on each boot until you respond with "Y". Daily displays the message on the first boot of the day, Weekly on the first boot after Sunday, and Monthly on the first boot of the month.

The Boot menu

After you turn on your CPU-1474/84, it will attempt to load the operating system from the device of your choice. If it cannot find the operating system on that device, it will attempt to load it from one or more other devices in the order specified in the Boot Menu. Boot devices (i.e., with access to an operating system) can include: hard drives, floppy drives, CD ROMs, removable devices and network cards.

NOTE:
Specifying any device as a boot device on the Boot Menu requires the availability of an operating system on that device

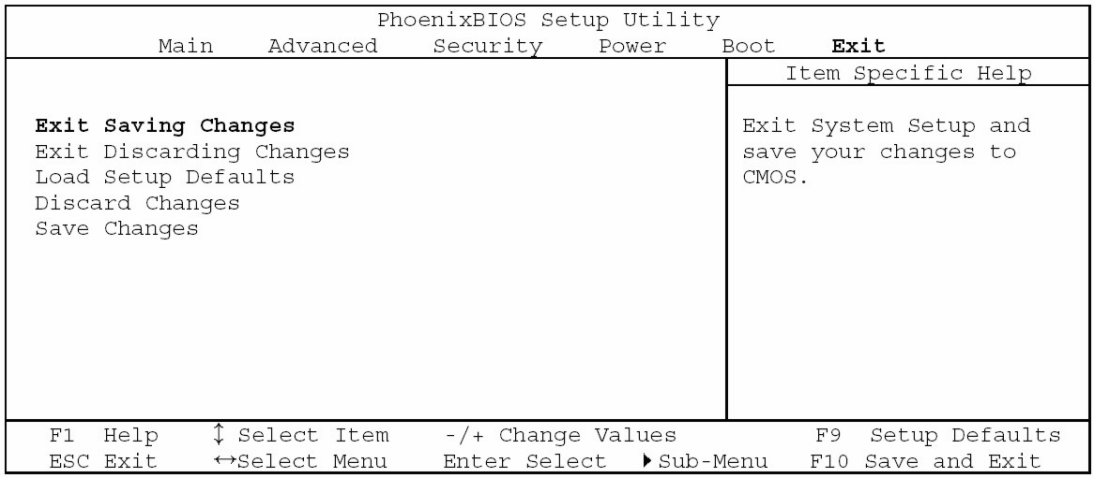
Selecting "Boot" from the Main Menu displays a menu like this:



Use this menu to arrange to specify the priority of the devices from which the BIOS will attempt to boot the Operating System.

The Exit menu

Selecting "Exit" from the menu bar displays this menu:



The following sections describe each of the options on this menu. Note that <Esc> does not exit this menu. You must select one of the items from the menu or menu bar to exit.

Exit Saving Changes

After making your selections on the Setup menus, always select either "Saving Values" or "Save Changes." Both procedures store the selections displayed in the menus in **CMOS** (short for "battery-backed CMOS RAM") a special section of memory that stays on after you turn your system off. The next time you boot your CPU-1474/84, the BIOS configures your system according to the Setup selections stored in CMOS.

After you save your selections, the program displays this message:

```
Values have been saved to CMOS!
Press <space> to continue
```

If you attempt to exit without saving, the program asks if you want to save before exiting.

During boot up, *Phoenix* BIOS attempts to load the values saved in CMOS. If those values cause the system boot to fail, reboot and press **<F2>** to enter Setup.

In Setup, you can get the Default Values (as described below) or try to change the selections that caused the boot to fail.

Exit Discarding Changes

Use this option to exit Setup without storing in CMOS any new selections you may have made. The selections previously in effect remain in effect.

Load Setup Defaults

To display the default values for all the Setup menus, select "Load Setup Defaults" from the Main Menu. The program displays this message:

```
ROM Default values have been loaded!
Press <space> to continue
```

If, during boot up, the BIOS program detects a problem in the integrity of values stored in CMOS, it displays these messages:

```
System CMOS checksum bad - run SETUP
Press <F1> to resume, <F2> to Setup
```

The CMOS values have been corrupted or modified incorrectly, perhaps by an application program that changes data stored in CMOS.

Press **<F1>** to resume the boot or **<F2>** to run Setup with the ROM default values already loaded into the menus. You can make other changes before saving the values to CMOS.

Discard Changes

If, during a Setup Session, you change your mind about changes you have made and have not yet saved the values to CMOS, you can restore the values you previously saved to CMOS.

Selecting “Discard Changes” on the Exit menu updates all the selections and displays this message:

CMOS values have been loaded!

Press <space> to continue

Save Changes

Selecting “Save Changes” saves all the selections without exiting Setup. You can return to the other menus if you want to review and change your selections.

(This page has been intentionally left blank)

Configure the Watchdog timer

The Watchdog Timer is a computer hardware countdown that triggers the board reset if the main program, due to some fault condition, such as a hang, neglects to regularly refresh the watchdog. The intention is to bring the system back from the unresponsive state into normal operation.



NOTE:
In the CPU-1474/84 the watchdog is a part of the on–board SUPER I/O device *PC87364*

The Super I/O registers allow you to manage time-outs in order of seconds or minutes, depending on the Super I/O programming.

EXAMPLE: How to change the Super I/O (SPIO) *PC87364* Watchdog registers:

```
SPIO Watchdog base address:
      IO_SPIO_WDT_BASE       EQU     0840h


SPIOM_M_WD_ON MACRO
      ; Configure Watchdog Mask Register...
        MOV   DX,IO_SPIO_WDT_BASE+00001h
        IN    AL,DX
        AND   AL,11110000b
        OUT   DX,AL
      ; Set Time Unit to Seconds...
        MOV   DX,IO_SPIO_WDT_BASE+002h
        IN    AL,DX
        AND   AL,NOT 10000100b
        OUT   DX,AL
        OR    AL,10000000b
        OUT   DX,AL
        OR    AL,00000100b
        OUT   DX,AL
      ; Set Timeout to 2 Seconds...
        MOV   DX,IO_SPIO_WDT_BASE
        MOV   AL,2
        OUT   DX,AL
ENDM
```

(continued…)

```
SPIOM_M_WD_OFF MACRO
      ; Set Timeout to 0 Seconds...
        MOV   DX,IO_SPIO_WDT_BASE
        MOV   AL,0
        OUT   DX,AL
ENDM

SPIOM_M_WD_REFRESH MACRO
      ; Set Timeout to 2 Seconds ...
        MOV   DX,IO_SPIO_WDT_BASE
        MOV   AL,2
        OUT   DX,AL
ENDM
```

NOTE:
For further information about the Watchdog programming, refer to *"PC87364 128-Pin LPC SuperI/O"* manual by National Semiconductor

Physical characteristics



WARNING!
Operations beyond the following operating conditions are not recommended.
Stressing the device beyond the maximum ratings may affect device reliability and cause permanent damages.
This module is not warranted against damage caused by overheating due to improper or insufficient cooling or airflow.

Operating characteristics

Electrical operating characteristics

Characteristic	CPU-1474	CPU-1484
Power supply (VDD)	Nominal: 5.00 V (with tolerance +/-5%)	Nominal: 5.00 V (with tolerance +/-5%)
Power consumption	Typical: 9.5 W Maximum: 13.5 W	Typical: 14.5 W Maximum: 18.5 W

Backup battery characteristics

There is no configuration data saved by the BIOS into the CMOS Real Time Clock. Therefore, the CPU module does not need a battery, except in the case of applications needing to retrain the date and time at power-off.

Characteristic	CPU-1474/84
Battery Voltage	Nominal: 3.6V Minimum: 3.0V Maximum: 3.9V



NOTE:
Setup data is stored into the BIOS Flash EPROM; it is therefore impossible to lose the setup data due to a lack of backup-battery supply

Environmental specifications

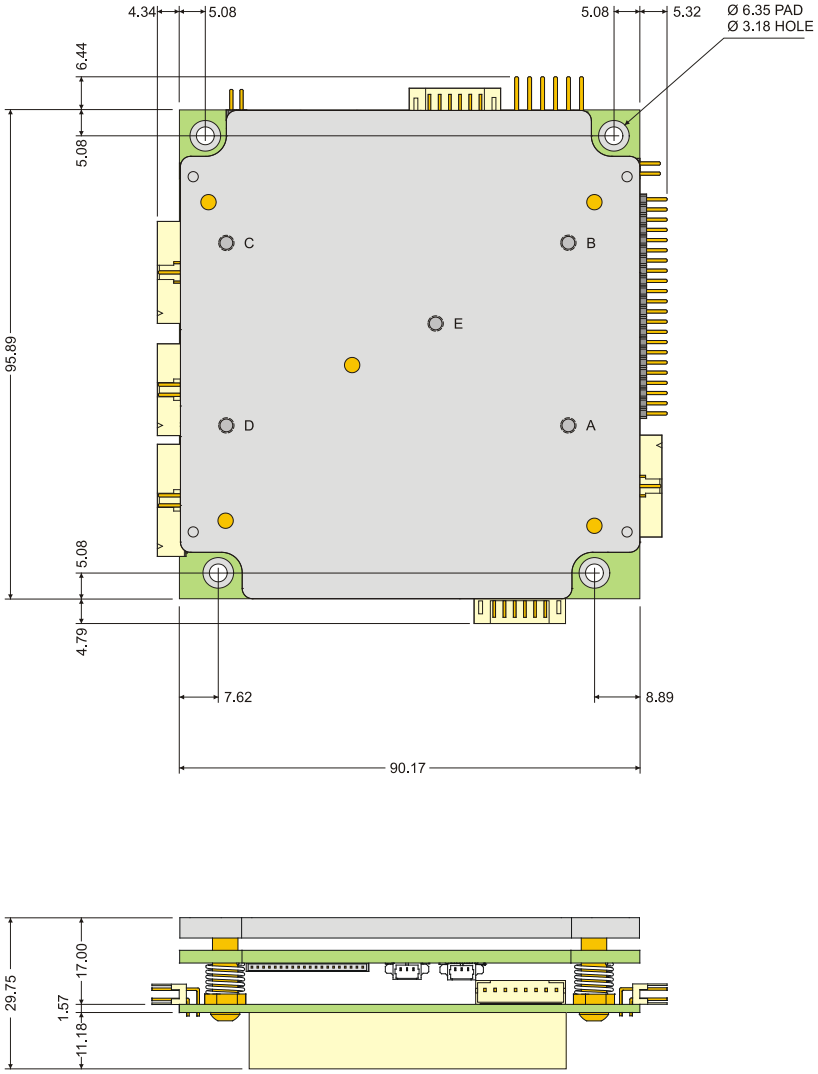
Characteristic	Minimum	Maximum
Operating temperature range	0 °C	+60 °C
Storage temperature range	-40 °C	+85 °C
Relative Humidity	<95% at 40°C non-condensing	

MTBF (Mean Time Between Failures)

CPU Module	Hours	Condition
CPU-1474	>199000	GB-25
CPU-1484	>177000	GB-25

Mechanical characteristics

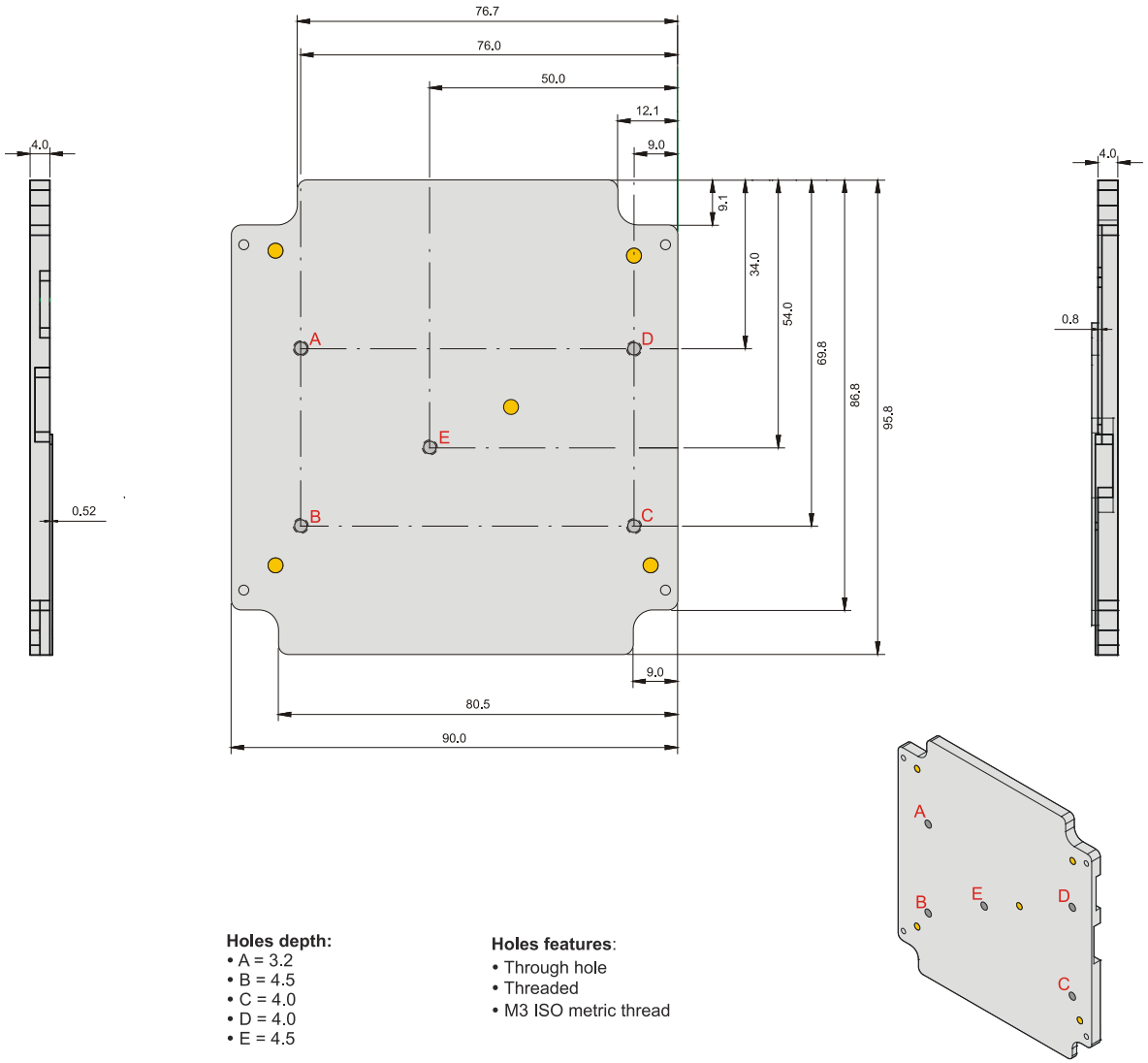
CPU-1474/84 dimensions (in millimetres)



NOTE:
For further information about the mechanical dimensions of ISA and PCI buses please refer to the PC/104 consortium site (www.pc104.org)

Thermal interface dimensions (in millimetres)

The thermal interface provides 5 holes (A to E) which allow you to install an auxiliary heat sink when required.



Holes depth:
- A = 3.2
- B = 4.5
- C = 4.0
- D = 4.0
- E = 4.5

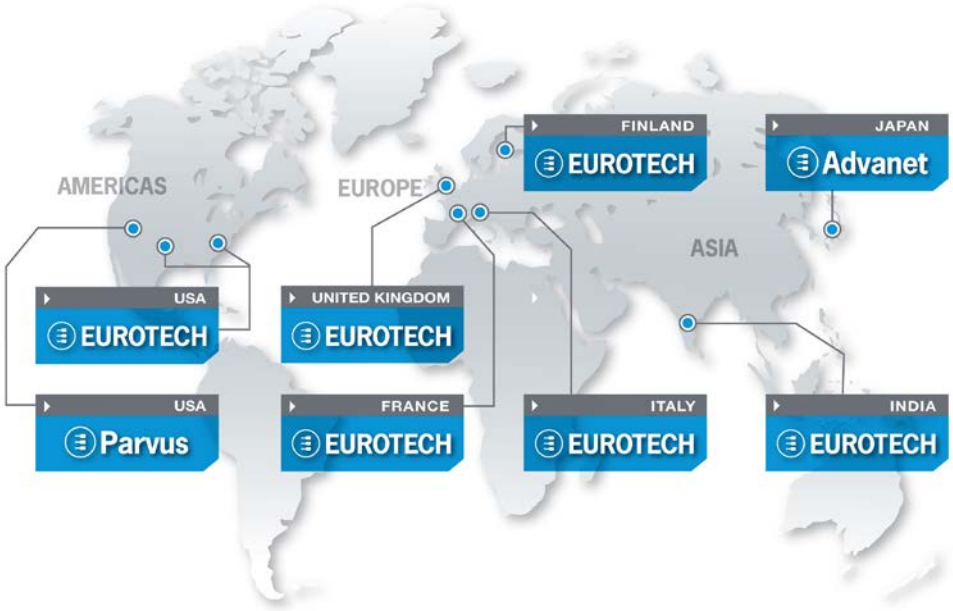
Holes features:
- Through hole
- Threaded
- M3 ISO metric thread

Appendix: Note about memory and I/O maps

For further information about memory and I/O maps refer to the *BIOS_Firmware* section of the CPU-1474 and CPU-1484 download areas:

- http://www.eurotech.com/en/download/CPU-1474
- http://www.eurotech.com/en/download/CPU-1484

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