

ANTARES

5.25" Single Board Computer

Issue B – July 2010 – ETH_ANTARES_USM

WARRANTY

For Warranty terms and conditions users should contact their local Eurotech Sales Office.

TRADEMARKS

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REVISION HISTORY

<i>Issue no.</i>	<i>PCB</i>	<i>Date</i>	<i>Comments</i>
A		24 th May 2010	First release of manual.
B		23 rd July 2010	Updates and layout changes.

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See [Eurotech Worldwide Presence](#) (on the back cover) for full contact details.

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Important user information

In order to lower the risk of personal injury, electric shock, fire or equipment damage, users must observe the following precautions as well as good technical judgment, whenever this product is installed or used.

All reasonable efforts have been made 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 and to change its contents at any time without obligation to notify any person of such revision or changes.

Safety notices and warnings

The following general safety precautions must be observed during all phases of operation, service, and repair of this equipment. 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 equipment. 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 of. You, as the user of the product, should follow these warnings and all other safety precautions necessary for the safe operation of the equipment in your operating environment.

Installation in cupboards and safes

In the event that the product is placed within a cupboard or safe, together with other heat generating equipment, ensure proper ventilation.

Do not operate in an explosive atmosphere

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.

Alerts that can be found throughout this manual

The following alerts are used within this manual and indicate potentially dangerous situations:



Danger, electrical shock hazard:

Information regarding potential electrical shock hazards:

- Personal injury or death could occur. Also damage to the system, connected peripheral devices, or software could occur if the warnings are not carefully followed.
 - 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 regarding potential hazards:

- Personal injury or death could occur. Also damage to the system, connected peripheral devices, or software could occur if the warnings are not carefully followed.
 - Appropriate safety precautions should always be used, these should meet the requirements set out for the environment that the equipment will be deployed in.
-



Information and/or Notes:

These will highlight important features or instructions that should be observed.

Use an appropriate power supply

Only start the product with a power supply that conforms to the voltage requirements as displayed on the voltage label attached to the system. In case of uncertainty about the required power supply, please contact your local [Eurotech Technical Support Team](#) (see page 6) or the electricity authority.

Use power supplies that are compliant with SELV regulation.

Use certified power cables. The power cable must fit the product, the voltage and the required current.

Position cable with care, Avoid positioning cables in places where they may be trampled on or compressed by objects placed on it. Take particular care of the plug, power-point and outlet of power cable.

Avoid overcharging power-points.


Antistatic precautions

To avoid damage caused by ESD (Electro Static Discharge), always use appropriate antistatic precautions when handling any electronic equipment.

Life support policy

Eurotech products are not authorized for use as critical components in life support devices or systems without the express written approval of Eurotech.

CE notice

The product described in this manual is marked with the  label in accordance with the 1999/5/EC regulation.

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 is issued in compliance with the regulations as 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 symbol to the right has been attached to the equipment or, if this has not been possible, on the packaging, instruction literature and/or the guarantee sheet. By using this symbol, it 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 with local 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 to the environment.

With reference to WEEE, it is compulsory not dispose of the equipment with normal urban refuse, arrangements should be instigated for separate collection and disposal.

Contact your local waste collection body for more detailed recycling information.

In case of illicit disposal, sanctions will be levied on transgressors.

RoHS

This device, including all its components, subassemblies and the consumable materials that are an integral part of the product, has been manufactured in compliance with the European directive 2002/95/EC known as the RoHS directive (Restrictions on 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 [Eurotech Worldwide Presence](#) (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.



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

Device labelling

The ANTARES serial label is affixed to bottom side of board this contains the Eurotech part number which in turn contains information on the version and issue of this product the label also contains a serial number which is unique to each individual ANTARES.

The labels will also display product conformity marking.

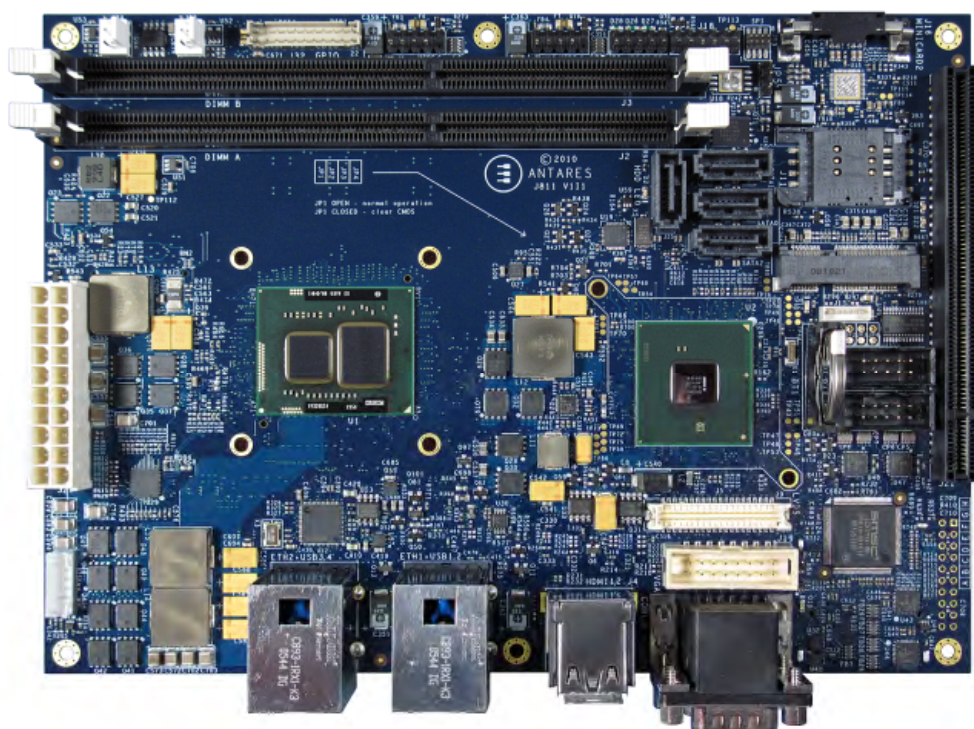
Introduction

The ANTARES is a 5.25" single board computer based on the new Mobile Intel® QM57 Express Chipset. It is designed to offer high performance with low power dissipation. The ANTARES is available with Intel® Core i7 or i5 processor options and is ideal for use in compact spaces with restricted ventilation.

Traditional embedded system requirements are well catered for with features such as:

- Watchdog.
- GPIO.
- Four serial ports
- An integrated SD/MMCFlash port for accessing storage cards.
- Mini PCIe expansion for wireless modules such as Wi-Fi, Bluetooth and cellular modems.

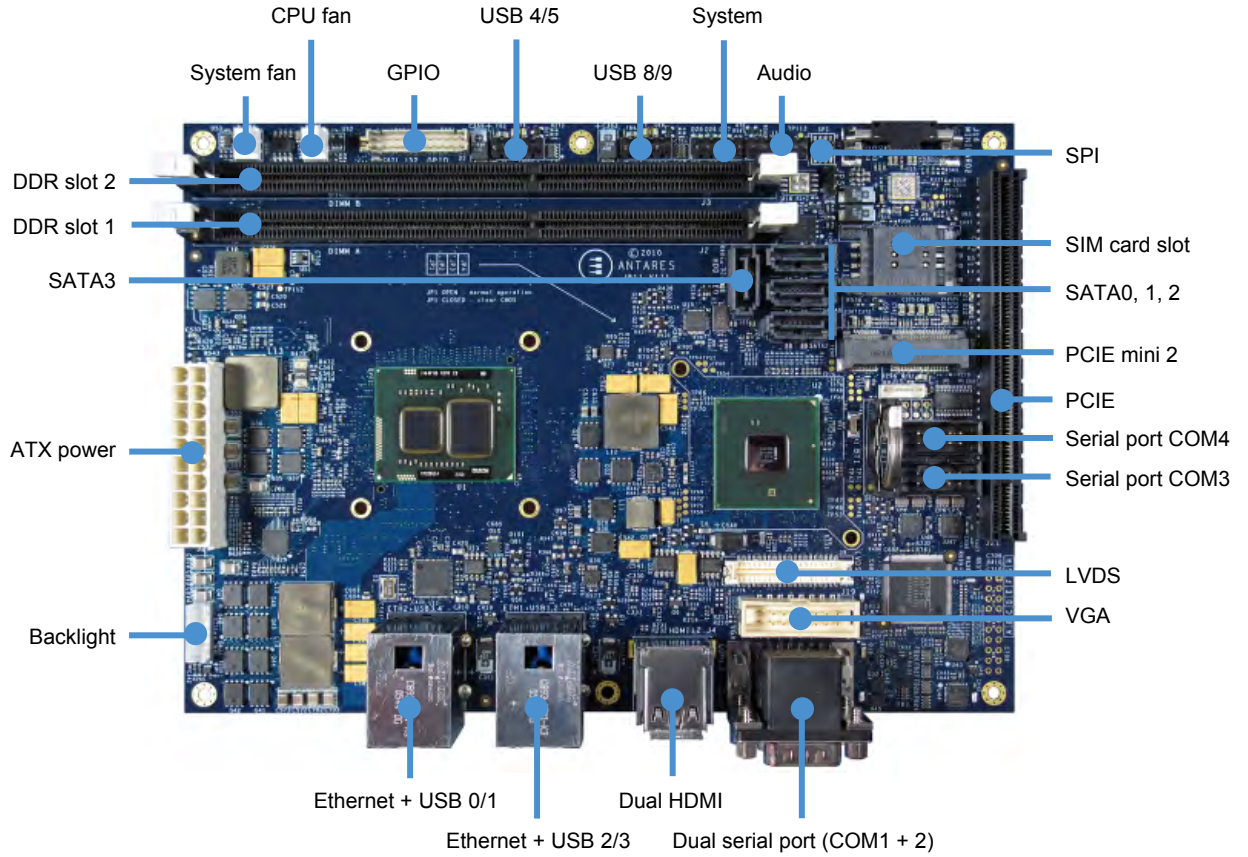
Newer features such as; virtualisation, hyperthreading, remote system management via Intel's AMT feature (available even if the operating system has crashed), and disk encryption capability using Intel's AT-d technology, provide solutions for many of the key issues being considered in newer embedded designs. Coupled to a wide operating temperature range, options for fanless operation, and long term chipset support from Intel's embedded division, the ANTARES is ideal for applications in commercial, industrial and transportation projects requiring high performance computing within a rugged and reliable platform.



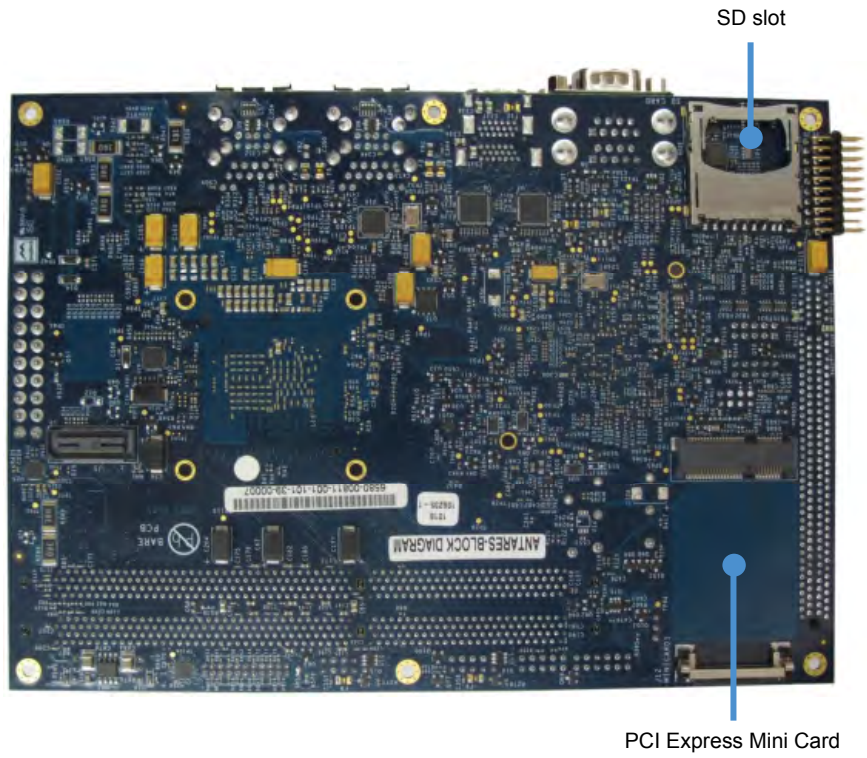
ANTARES 'at a glance'

The ANTARES has a wide variety of peripheral interface connectors.

Front view



Rear view



Technical specification

Chipset

- Mobile Intel® QM57 Express chipset.

The chipset is comprised of a 32nm processor and a 45nm graphics and memory controller, integrated in a multi-chip package used with an Intel QM57 platform controller hub.

Processor/North Bridge

- Intel i5 or i7 processor technology, graphics/memory controller and processor in one multi chip package.

Currently supported SKUs:

Standard

- Intel® Celeron® Processor P4505 (2M Cache, 1.86GHz).
- Intel® Core™ i7-610E Processor (4M Cache, 2.53GHz).
- Intel® Core™ i7-620UE Processor (4M Cache, 1.06GHz).

Non standard (minimum order quantity 100 pieces)

- Intel® Core™ i5-520E Processor (3M Cache, 2.40GHz).
- Intel® Core™ i3-330E Processor (3M Cache, 2.13GHz).
- Intel® Core™ i7-620LE Processor (4M Cache, 2.00GHz).

Processors are available in BGA packages only.

Memory

- Two DDR3 DIMM sockets.
- Dual channel DDR3 400/533MHz.
- Maximum memory: 8GB.
- Non-ECC and ECC memory support.

Ethernet

- Dual Gigabit Ethernet:
 - Intel 82577 provides PXE boot and Intel AMT support.
 - Intel 82574L supporting PXE boot.

USB

- Four USB Type A front panel connectors.
- Four USB on pin headers.
- Four USB to PCI Express Mini card sockets.

Bus expansion

- One PCI Express x4 edge connector allows for PCI riser usage, x1, x2 and x4 support.
- Two PCI Express mini card socket with SIM support:
 - Bottom and top side mounting.
 - One remote mountable SIM card socket and one onboard SIM card socket.

Serial ATA

- 3GB/s transfer speed.
- Four 7-pin SATA connectors for direct cable connect.
- BIOS support for host swap and for eSATA connection.

Graphics

- One LVDS Hirose DF13 pin header.
- One CRT 2.54mm 16-way header.
- Two HDMI 1.3 Type A connectors.
- AVC/VC-1/MPEG-2 hardware acceleration.
- IEGD driver supports up to two simultaneous displays, mobile driver will support up to two simultaneous displays.

TPM

- Atmel AT97SC3204 TPM 1.2 factory fit option.

Watchdog

- Watchdog timer support.

Audio

- HD Audio CODEC with Line In, Line Out and Mic In.

BIOS

- Phoenix TrustedCore BIOS.

SuperIO

- SMSC SCH3114:
 - Supports four serial ports.
 - Hardware monitor.
 - GPIO support.
 - Platform logic.

Flash memory

- SD/MMC card socket.
 - BIOS boot capability.
 - SDHC support for cards up to 32GB.

Serial ports

- Three RS232:
 - One DB9.
 - Two 2.54mm 10-way header.
- One RS232/RS-485/RS-422:
 - One DB9.
 - Software selectable interface.
 - Auto-RTS flow control.

Power supply

- ATX power supply input.

GPIO

- Sixteen GPIO:
 - 5V signalling level.
 - Eight inputs, eight outputs.
 - SMBus interface.

Hardware monitoring

- SuperIO based hardware monitoring of temperatures and voltages.

Thermal solution

- The ULV may provide a fanless option; all other processor SKUs require a fan when operating at TDP levels. A custom heatsink/heatspreader can be used.

Operating temperature

- -20°C to +60°C (-4°F to 140°F).

Mechanical

- 5.25" Format (146mm x 203mm).
- Vertical height optimized to allow use in 1U enclosures.

Supported processor variants

Specification	Intel® Core™ i7-620UE Processor (4M Cache, 1.06GHz)	Intel® Core™ i7-620LE Processor (4M Cache, 2.00GHz)	Intel® Core™ i7-610E Processor (4M Cache, 2.53GHz)	Intel® Core™ i5-520E Processor (3M Cache, 2.40GHz)	Intel® Celeron® Processor P4505 (2M Cache, 1.86GHz)	Intel® Core™ i3-330E Proc. (3M Cache, 2.13GHz)
Processor number	i7-620UE	i7-620LE	i7-610E	i5-520E	P4505	i3-330E
No. of cores	2	2	2	2	2	2
No. of threads	4	4	4	4	2	4
Clock speed	1.06GHz	2GHz	2.53GHz	2.4GHz	1.86GHz	2.13GHz
Max turbo Frequency	2.13GHz	2.8GHz	3.2GHz	2.933GHz		
Cache	4MB Intel® Smart Cache	4MB Intel® Smart Cache	4MB Intel® Smart Cache	3MB Intel® Smart Cache	2MB Intel® Smart Cache	3MB Intel® Smart Cache
Bus/core ratio	8	15	20	18	14	16
Bus type	DMI	DMI	DMI	DMI	DMI	DMI
System bus	2.5GT/s	2.5GT/s	2.5GT/s	2.5GT/s	2.5GT/s	2.5GT/s
Instruction set	64-bit	64-bit	64-bit	64-bit	64-bit	64-bit
Instruction set extensions	SSE 4.1, SSE4.2	SSE4.1, SSE4.2	SSE4.1, SSE4.2	SSE4.1, SSE4.2		SSE4.1, SSE4.2
Embedded options available	Yes	Yes	Yes	Yes	Yes	Yes
Supplemental SKU	No	No	No	No	No	No
Lithography	32nm	32nm	32nm	32nm	32nm	32nm
Max TDP	18W	25W	35W	35W	35W	35W

Memory specifications

Specification	Intel® Core™ i7-620UE Processor (4M Cache, 1.06GHz)	Intel® Core™ i7-620LE Processor (4M Cache, 2.00GHz)	Intel® Core™ i7-610E Processor (4M Cache, 2.53GHz)	Intel® Core™ i5-520E Processor (3M Cache, 2.40GHz)	Intel® Celeron® Processor P4505 (2M Cache, 1.86GHz)	Intel® Core™ i3-330E Proc. (3M Cache, 2.13GHz)
Max. memory size (dependent on mem. type)	8GB	8GB	8GB	8GB	8MB	8GB
Memory types	DDR3-800	DDR3-800/1066	DDR3-800/1066	DDR3-800/1066	DDR3-800/1066	DDR3-800/1066
No. of memory channels	2	2	2	2	2	2

continued...

Specification	Intel® Core™ i7-620UE Processor (4M Cache, 1.06GHz)	Intel® Core™ i7-620LE Processor (4M Cache, 2.00GHz)	Intel® Core™ i7-610E Processor (4M Cache, 2.53GHz)	Intel® Core™ i5-520E Processor (3M Cache, 2.40GHz)	Intel® Celeron® Processor P4505 (2M Cache, 1.86GHz)	Intel® Core™ i3-330E Proc. (3M Cache, 2.13GHz)
Max. memory bandwidth	12.8GB/s	17.1GB/s	17.1GB/s	17.1GB/s	17.1GB/s	17.1GB/s
Physical address extensions	36-bit	36-bit	36-bit	36-bit	36-bit	36-bit
ECC memory supported	Yes	Yes	Yes	Yes	Yes	Yes

Graphics specifications

Specification	Intel® Core™ i7-620UE Processor (4M Cache, 1.06GHz)	Intel® Core™ i7-620LE Processor (4M Cache, 2.00GHz)	Intel® Core™ i7-610E Processor (4M Cache, 2.53GHz)	Intel® Core™ i5-520E Processor (3M Cache, 2.40GHz)	Intel® Celeron® Processor P4505 (2M Cache, 1.86GHz)	Intel® Core™ i3-330E Proc. (3M Cache, 2.13GHz)
Integrated graphics	Yes	Yes	Yes	Yes	Yes	Yes
Intel® HD graphics	Yes	Yes	Yes	Yes	Yes	Yes
Intel® HD graphics with dynamic freq.	Yes	Yes	Yes	Yes	Yes	Yes
Graphics base freq.	166MHz	266MHz	500MHz	500MHz	500MHz	500MHz
Graphics max dynamic freq.	500MHz	566MHz	766MHz	766MHz	667MHz	667MHz
Intel® Flexible Disp. Interface (Intel® FDI)	Yes	Yes	Yes	Yes	Yes	Yes
Intel® Clear Video Tech.	Yes	Yes	Yes	Yes	Yes	Yes
Intel® Clear Video HD Tech.	Yes	Yes	Yes	Yes	No	Yes
Dual display capable	Yes	Yes	Yes	Yes	Yes	Yes

Package specifications

Specification	Intel® Core™ i7-620UE Processor (4M Cache, 1.06GHz)	Intel® Core™ i7-620LE Processor (4M Cache, 2.00GHz)	Intel® Core™ i7-610E Processor (4M Cache, 2.53GHz)	Intel® Core™ i5-520E Processor (3M Cache, 2.40GHz)	Intel® Celeron® Processor P4505 (2M Cache, 1.86GHz)	Intel® Core™ i3-330E Proc. (3M Cache, 2.13GHz)
Max CPU configuration	1	1	1	1	1	1
T _{JUNCTION}	105°C	105°C	105°C	105°C	90°C	90°C for rPGA, 105°C for BGA

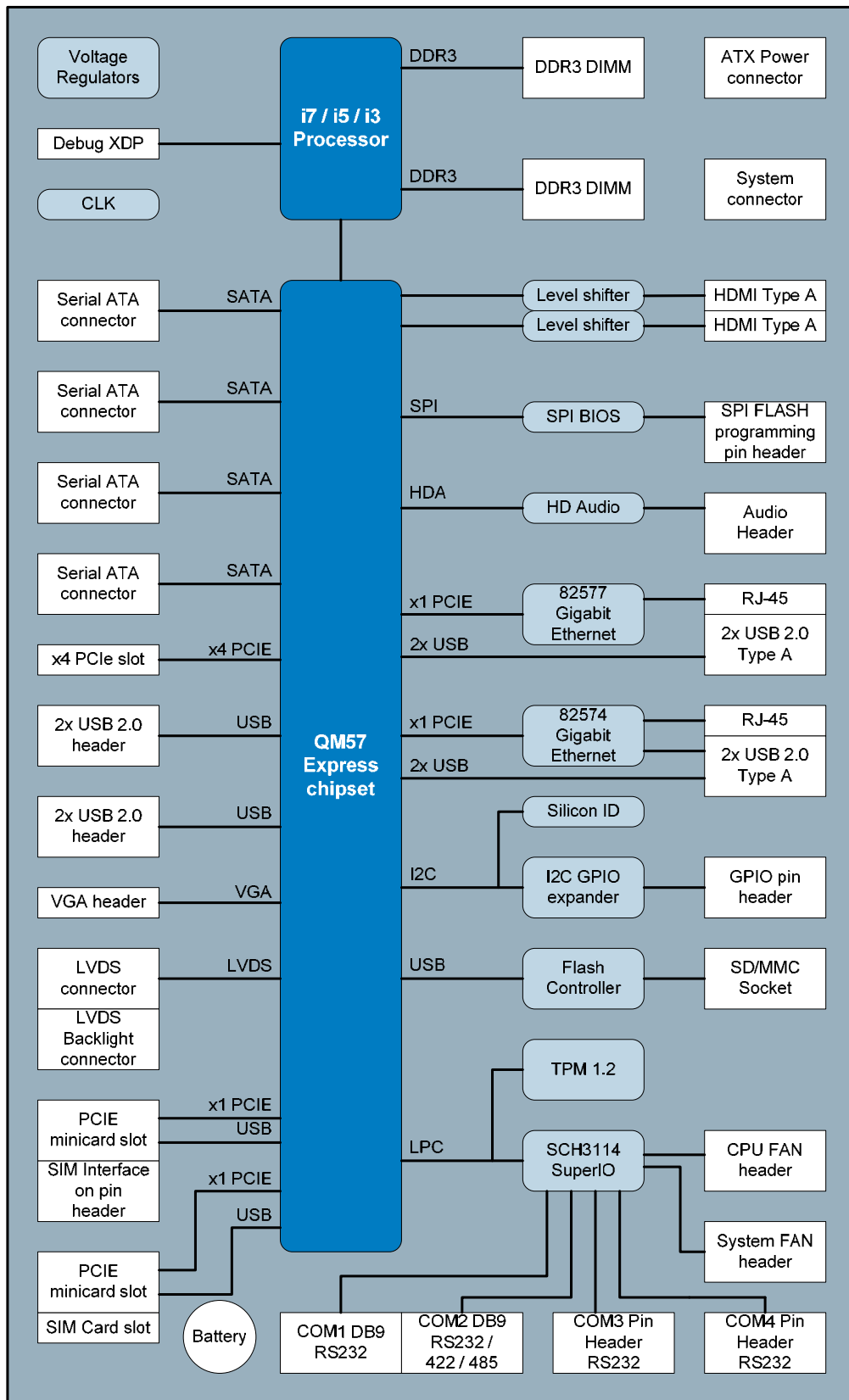
Advance technologies

Specification	Intel® Core™ i7-620UE Processor (4M Cache, 1.06GHz)	Intel® Core™ i7-620LE Processor (4M Cache, 2.00GHz)	Intel® Core™ i7-610E Processor (4M Cache, 2.53GHz)	Intel® Core™ i5-520E Processor (3M Cache, 2.40GHz)	Intel® Celeron® Processor P4505 (2M Cache, 1.86GHz)	Intel® Core™ i3-330E Proc. (3M Cache, 2.13GHz)
Intel® Turbo Boost Technology	Yes	Yes	Yes	Yes	No	No
Intel® Hyper-Threading Technology	Yes	Yes	Yes	Yes	No	Yes
Intel® Virtualization Technology (VT-x)	Yes	Yes	Yes	Yes	Yes	Yes
Intel® Virtualization Technology for directed I/O (VT-d)	Yes	Yes	Yes	Yes	No	No
Intel® Trusted Execution Technology	Yes	Yes	Yes	Yes	No	No
AES new instructions	Yes	Yes	Yes	Yes	No	No
Intel® 64	Yes	Yes	Yes	Yes	Yes	Yes
Idle states	Yes	Yes	Yes	Yes	Yes	Yes
Enhanced Intel® Speedstep Technology	Yes	Yes	Yes	Yes	Yes	Yes

continued...

Specification	Intel® Core™ i7-620UE Processor (4M Cache, 1.06GHz)	Intel® Core™ i7-620LE Processor (4M Cache, 2.00GHz)	Intel® Core™ i7-610E Processor (4M Cache, 2.53GHz)	Intel® Core™ i5-520E Processor (3M Cache, 2.40GHz)	Intel® Celeron® Processor P4505 (2M Cache, 1.86GHz)	Intel® Core™ i3-330E Proc. (3M Cache, 2.13GHz)
Thermal monitoring technologies	Yes	Yes	Yes	Yes	Yes	Yes
Intel® Fast Memory Access	Yes	Yes	Yes	Yes	Yes	Yes
Intel® Flex Memory Access	Yes	Yes	Yes	Yes	Yes	Yes
Execute disable bit	Yes	Yes	Yes	Yes	Yes	Yes

ANTARES block diagram



Power consumption

Light loaded

Hardware: ANTARES board +2.5" HDD+keyboard+mouse+USB stick (FAN on 2.53GHz only).

Software: Windows 7, Burn In Pro.

	Windows 7 Idle				Windows 7 Burn-In Pro			
	1.06GHz RMS	1.06GHz peak	2.53GHz RMS	2.53GHz peak	1.06GHz RMS	1.06GHz peak	2.53GHz RMS	2.53GHz peak
+V3.3S	0.9A	1.05A	0.85A	1.00A	0.95A	1.05A	0.9A	0.95A
+V5S	1.80A	2.9A	1.9A	3.3A	2.9A	3.6A	2.7A	3.7A
+V12S	0.08A	0.8A	0.25A	2.5A	0.5A	1.25A	1.90A	2.90A
+V5A	0.07A	0.1A	0.09A	0.20A	0.07A	0.1A	0.11A	0.35A
+V5 Asus	0.25A	0.35A	0.25A	0.33A	-	-	-	-
P_{Total}	15.2W	2.4A/12V	16.8W	3A/12V	25.6W	2.5A/12V	49.2W	5.2A/12V

Heavy loaded

Hardware: ANTARES board +4G memory+ 2.5" HDD+PCI-E network card+keyboard+mouse+USB stick+ 3G modem connected (FAN on 2.53GHz only).

Software: Windows 7, Burn In Pro.

	Windows 7 Idle				Windows 7 Burn-In Pro			
	1.06GHz RMS	1.06GHz peak	2.53GHz RMS	2.53GHz peak	1.06GHz RMS	1.06GHz peak	2.53GHz RMS	2.53GHz peak
+V3.3S	1.4A	1.90A	1.5A	1.9A	1.4A	1.9A	1.5A	2.0A
+V5S	2.00A	3.40A	2.1A	3.8A	3.2A	4.2A	4.0A	5.5A
+V12S	0.10A	0.80A	0.29A	2.5A	0.52A	1.30A	2.10A	3.0A
+V5A	0.10A	0.11A	0.09A	0.20A	0.10A	0.11A	0.11A	0.32A
+V5 Asus	0.30A	0.37A	0.30A	0.38A	-	-	-	-
P_{Total}	18.0W	2.4A/12V	19.6W	3.5A/12V	29.8W	3.2A/12V	54.2W	5.5A/12V

Software specification

Supported operating systems

The following operating systems are supported:

- Linux Fedora Core 13.
- Microsoft:
 - Windows XP Embedded.
 - Windows 7.

Hardware implementation

Development kits

The ANTARES Development Kit is available in the following variants:

- ANTARES Standard DevKit, with a 8.4" flat panel display & touchscreen.
- ANTARES No-LCD DevKit, with the perspex base only (no display set).

The ANTARES Development Kit comes pre-loaded with the following operating systems:

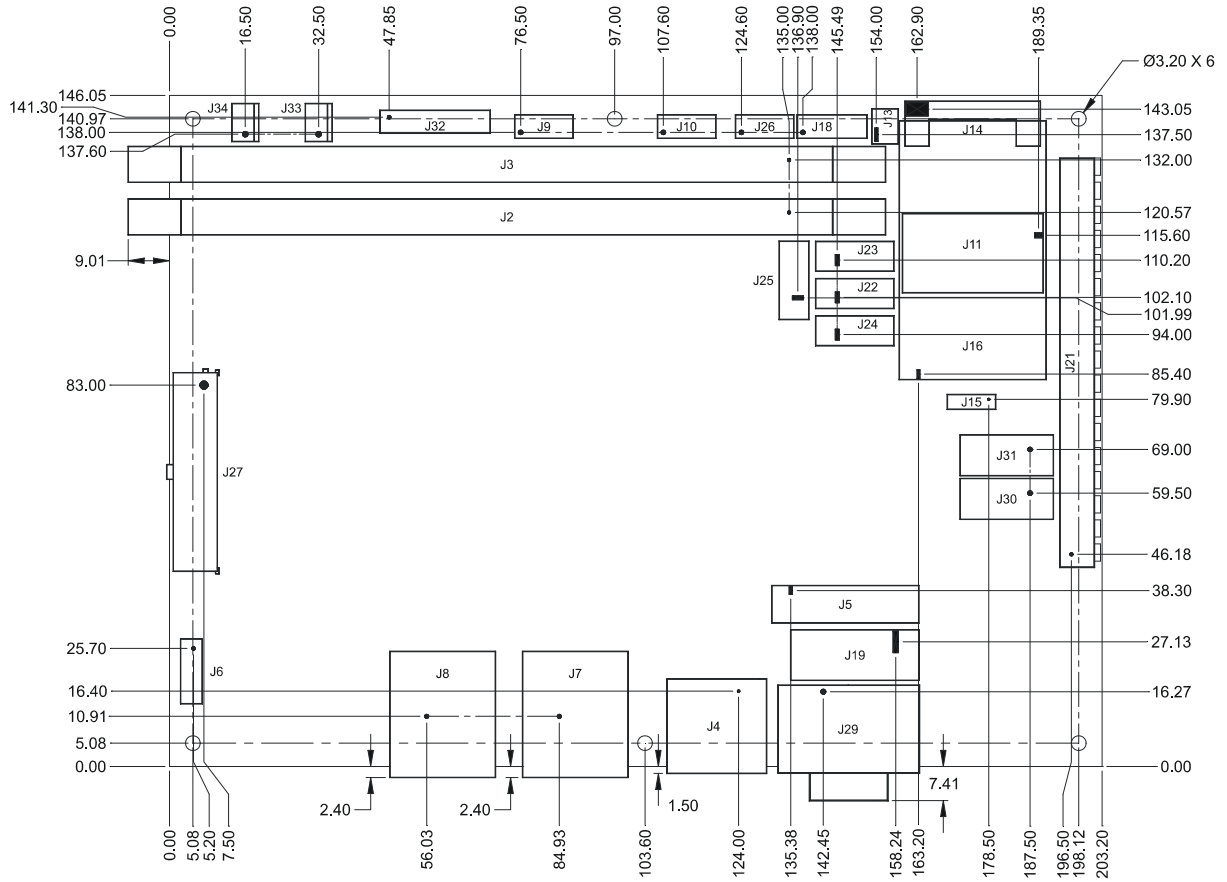
- Windows Embedded Standard.
- Fedora Linux Core 13.

Systems and enclosures

ANTARES is available as a board-only solution or within a 1U high, 19" rackmount enclosure. This provides a ready-to-go platform for embedded and industrial PC applications.

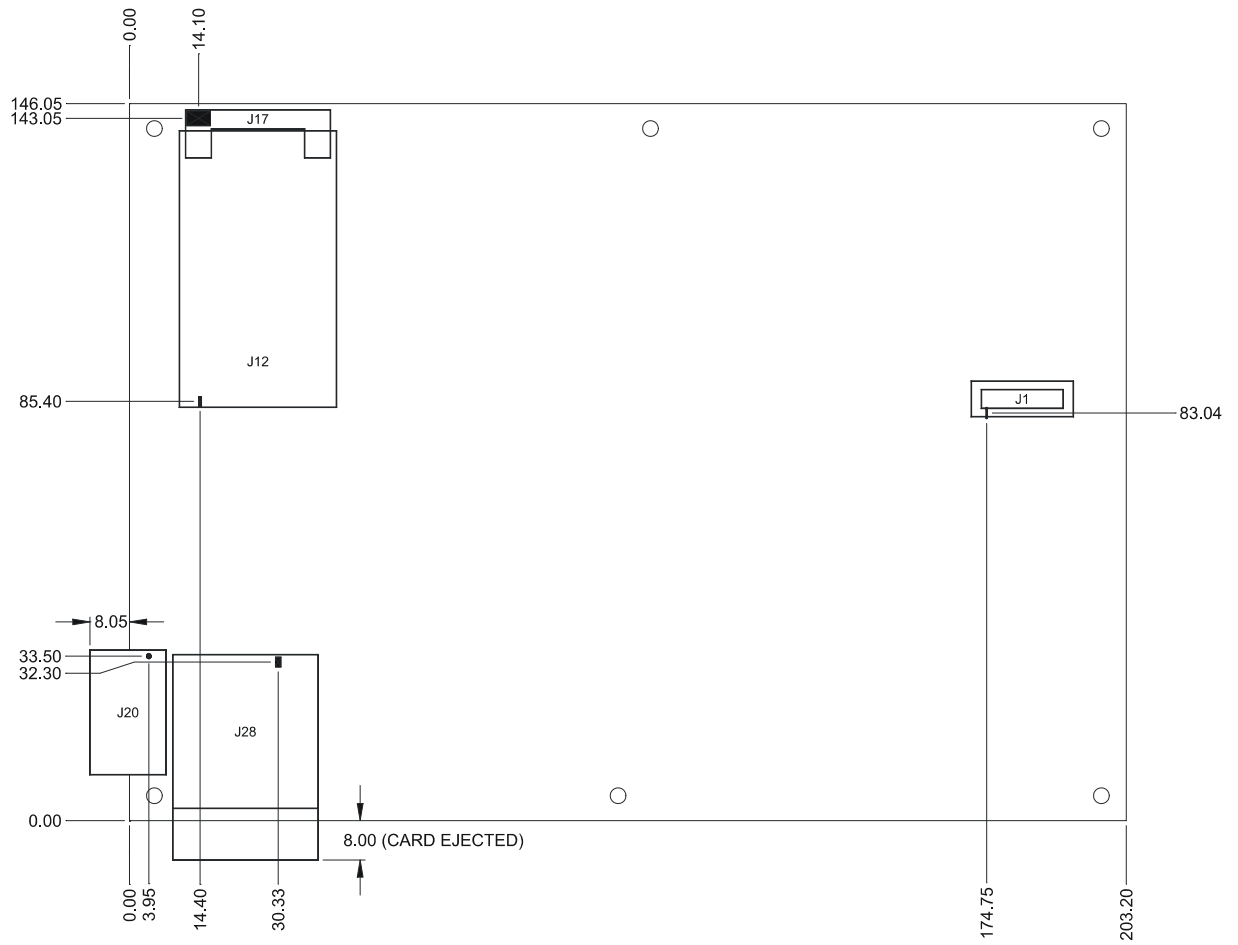
Layout and dimensions

Top view



All connector dimensions are taken from Pin 1.

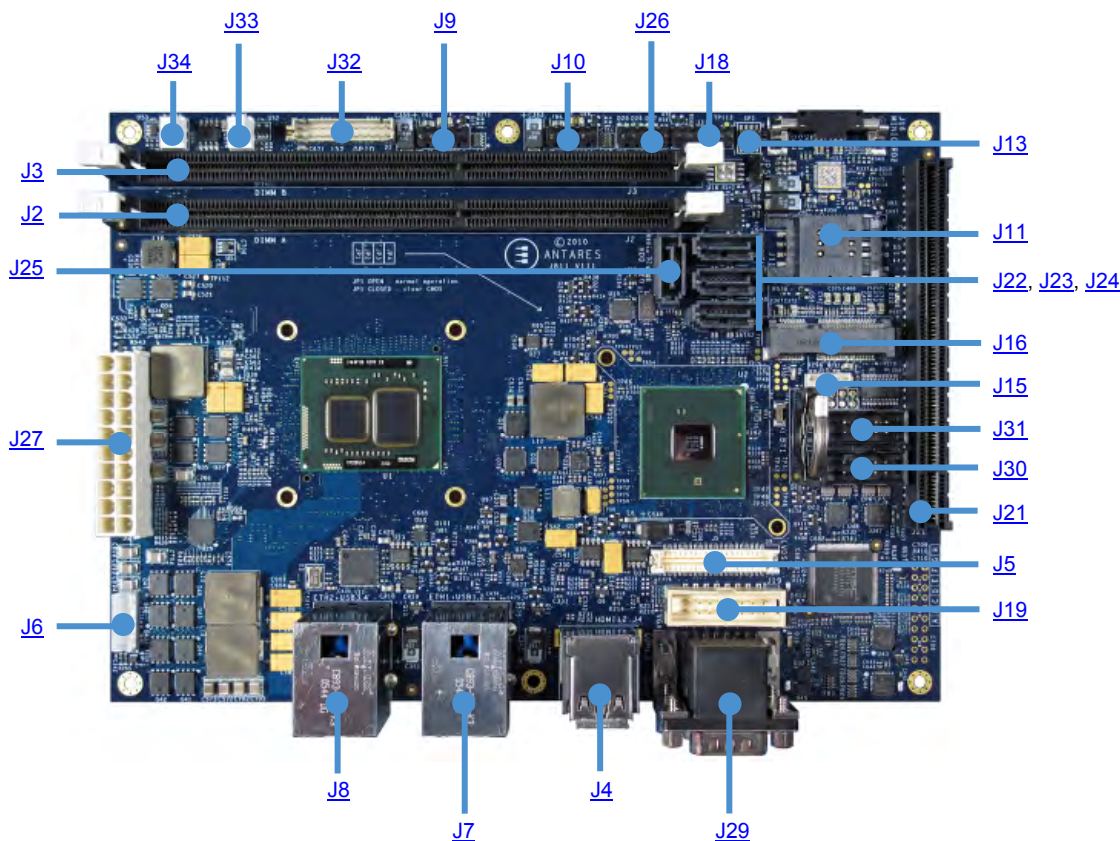
Bottom view



All connector dimensions are taken from Pin 1.

Connectors

The following diagram shows the connectors on the ANTARES. Click on any link for information.



There are 34 connectors on the ANTARES:

Connector	Function	Connector details in section
J1	XDP.	XDP connector , page 25.
J2	DDR3 slot 1.	DDR3 connector slot 1 , page 26.
J3	DDR3 slot 2.	DDR3 connector slot 2 , page 26.
J4	Dual HDMI connector (single HDMI connector – built option).	Dual HDMI connector , page 28.
J5	LVDS connector.	LVDS connector , page 29.
J6	Backlight connector.	Backlight connector , page 29.
J7	LAN and two USB connectors.	LAN and two USB connectors , page 30.
J8	LAN and two USB connectors.	LAN and two USB connectors , page 30.
J9	USB4/5 header.	USB4/5 connectors , page 30.

continued...

Connector	Function	Connector details in section
J10	USB8/9 header.	USB8/9 connectors , page 31 .
J11	SIM card socket.	SIM card connector , page 31 .
J12	PCI Express Mini Card slot 1.	PCI Express Mini Card connector slot 1 , page 32 .
J13	SPI header.	SPI connector , page 33 .
J15	SIM card connector.	SIM card connector , page 33 .
J16	PCI Express Mini Card slot 2.	PCI Express Mini Card connector slot 2 , page 34 .
J18	Audio header.	Audio connector , page 35 .
J19	VGA header.	VGA connector , page 35 .
J20	Port80 header (build option).	Port80 connector , page 35 .
J21	PCIE slot.	PCIE connector , page 36 .
J22	SATA connector.	SATA connector , page 37 .
J23	SATA connector.	SATA connector , page 37 .
J24	SATA connector.	SATA connector , page 37 .
J25	SATA connector.	SATA connector , page 38 .
J26	System header.	System connector , page 38 .
J27	ATX power connector.	ATX power connector , page 38 .
J28	SD slot.	SD connector , page 39 .
J29	Dual serial connector (COM1 and 2).	Dual serial connector (COM1 and 2) , page 39 .
J30	Serial port header (COM3).	Serial port connector (COM3) , page 39 .
J31	Serial port header (COM4).	Serial port connector (COM4) , page 40 .
J32	GPIO header.	GPIO connector , page 40 .
J33	CPU fan connector.	CPU fan connector , page 40 .
J34	System fan connector.	System fan connector , page 40 .

J1 - XDP connector (not fitted)

Connector: Samtec BSH-030-01-L-D-A-TR.

Pin	Signal name	Pin	Signal name
1	GND	2	GND
3	PREQ#	4	CFG8
5	PRDY#	6	CFG9
7	GND	8	GND
9	OBS0	10	CFG0
11	OBS1	12	CFG1
13	GND	14	GND
15	OBS2	16	CFG2
17	OBS3	18	CFG3
19	GND	20	GND
21	CFG17	22	CFG10
23	CFG16	24	CFG11
25	GND	26	GND
27	OBS4	28	CFG4
29	OBS5	30	CFG5
31	GND	32	GND
33	OBS6	34	CFG6
35	OBS7	36	CFG7
37	GND	38	GND
39	CPUPWRGD	40	ITP_CLKP
41	PWRBTN	42	ITP_CLKN
43	VTT (+1.05V)	44	VTT (+1.05V)
45	PWRGD	46	RESET_IN#
47	NC	48	RESET_OUT#
49	GND	50	GND
51	SDA	52	TDO
53	SCL	54	TRST#
55	NC	56	TDI
57	TCK0	58	TMS
59	GND	60	GND

J2 – DDR3 slot 1 and J3 – DDR3 slot 2

The slots are connected to separate channels.

Connector: TYCO 1-1932000-1.

Pin	Signal name	Pin	Signal name	Pin	Signal name	Pin	Signal name
1	VREF	61	A2	121	GND	181	A1
2	GND	62	+1.5V	122	DQ4	182	+1.5V
3	DQ0	63	CLK1P / CLK3P*	123	DQ5	183	+1.5V
4	DQ1	64	CLK1N / CLK3N*	124	GND	184	CLK0P / CLK2P*
5	GND	65	+1.5V	125	DM0	185	CLK0N / CLK2N*
6	DQS0N	66	+1.5V	126	N.C.	186	+1.5V
7	DQS0P	67	VREF	127	GND	187	EXTTS#
8	GND	68	N.C.	128	DQ6	188	A0
9	DQ2	69	+1.5V	129	DQ7	189	+1.5V
10	DQ3	70	A10	130	GND	190	BS1
11	GND	71	BS0	131	DQ12	191	+1.5V
12	DQ8	72	+1.5V	132	DQ13	192	RAS#
13	DQ9	73	WE#	133	GND	193	CS0# / CS2#
14	GND	74	CAS#	134	DM1	194	+1.5V
15	DQS1N	75	+1.5V	135	N.C.	195	ODT0 / ODT2
16	DQS1P	76	CS1# / CS3#	136	GND	196	A13
17	GND	77	ODT1 / ODT3	137	DQ14	197	+1.5V
18	DQ10	78	+1.5V	138	DQ15	198	N.C.
19	DQ11	79	N.C.	139	GND	199	GND
20	GND	80	GND	140	DQ20	200	DQ36
21	DQ16	81	DQ32	141	DQ21	201	DQ37
22	DQ17	82	DQ33	142	GND	202	GND
23	GND	83	GND	143	DM2	203	DM4
24	DQS2N	84	DQS4N	144	N.C.	204	N.C.
25	DQS2P	85	DQS4P	145	GND	205	GND
26	GND	86	GND	146	DQ22	206	DQ38
27	DQ18	87	DQ34	147	DQ23	207	DQ39
28	DQ19	88	DQ35	148	GND	208	GND
29	GND	89	GND	149	DQ28	209	DQ44

continued...

Pin	Signal name	Pin	Signal name	Pin	Signal name	Pin	Signal name
30	DQ24	90	DQ40	150	DQ29	210	DQ45
31	DQ25	91	DQ41	151	GND	211	GND
32	GND	92	GND	152	DM3	212	DM5
33	DQS3N	93	DQS5N	153	N.C.	213	N.C.
34	DQS3P	94	DQS5P	154	GND	214	GND
35	GND	95	GND	155	DQ30	215	DQ46
36	DQ26	96	DQ42	156	DQ31	216	DQ47
37	DQ27	97	DQ43	157	GND	217	GND
38	GND	98	GND	158	ECC4	218	DQ52
39	ECC0	99	DQ48	159	ECC5	219	DQ53
40	ECC1	100	DQ49	160	GND	220	GND
41	GND	101	GND	161	GND	221	DM6
42	DQS8N	102	DQS6N	162	N.C.	222	N.C.
43	DQS8P	103	DQS6P	163	GND	223	GND
44	GND	104	GND	164	ECC6	224	DQ54
45	ECC2	105	DQ50	165	ECC7	225	DQ55
46	ECC3	106	DQ51	166	GND	226	GND
47	GND	107	GND	167	N.C.	227	DQ60
48	+0.75V	108	DQ56	168	DRAMRST#	228	DQ61
49	+0.75V	109	DQ57	169	CKE1 / CKE3	229	GND
50	CKE0 / CKE2	110	GND	170	+1.5V	230	DM7
51	+1.5V	111	DQS7N	171	A15	231	N.C.
52	BS2	112	DQS7P	172	A14	232	GND
53	N.C.	113	GND	173	+1.5V	233	DQ62
54	+1.5V	114	DQ58	174	A12	234	DQ63
55	A11	115	DQ59	175	A9	235	GND
56	A7	116	GND	176	+1.5V	236	+3.3V
57	+1.5V	117	+3.3V / GND*	177	A8	237	GND / +3.3V
58	A5	118	SMB_CLK	178	A6	238	SMB_DATA
59	A4	119	GND	179	+1.5V	239	GND
60	+1.5V	120	+0.75V	180	A3	240	+0.75V

* Slot 0 / Slot 1

J4 – Dual HDMI connector

Connector: TYCO AMP 1888811-1.

Pin	Signal name	Pin	Signal name
1A	HDMID_DATA2_P	1B	HDMIC_DATA2_P
2A	GND	2B	GND
3A	HDMID_DATA2_N	3B	HDMIC_DATA2_N
4A	HDMID_DATA1_P	4B	HDMIC_DATA1_P
5A	GND	5B	GND
6A	HDMID_DATA1_N	6B	HDMIC_DATA1_N
7A	HDMID_DATA0_P	7B	HDMIC_DATA0_P
8A	GND	8B	GND
9A	HDMID_DATA0_N	9B	HDMIC_DATA0_N
10A	HDMID_CLK_P	10B	HDMIC_CLK_P
11A	GND	11B	GND
12A	HDMID_CLK_N	12B	HDMIC_CLK_N
13A	NC	13B	NC
14A	GND	14B	GND
15A	SCL	15B	SCL
16A	SDA	16B	SDA
17A	GND	17B	GND
18A	HDMID_HPD	18B	HPD

J5 – LVDS connector

Connector: Hirose DF13-40DP-1.25V(55).

Pin	Signal name	Pin	Signal name
1	LVDS_VDD +3.3V (build option +5V)	2	LVDS_VDD +3.3V (build option +5V)
3	LVDS_VDD +3.3V (build option +5V)	4	LVDS_VDD +3.3V (build option +5V)
5	GND	6	GND
7	LVDSA_DATA0#	8	LVDSA_DATA1#
9	LVDSA_DATA0	10	LVDSA_DATA1
11	GND	12	GND
13	LVDSA_DATA2#	14	LVDSA_DATA3#
15	LVDSA_DATA2	16	LVDSA_DATA3
17	GND	18	GND
19	LVDSA_CLK#	20	LVDSB_DATA0#
21	LVDSA_CLK	22	LVDSB_DATA0
23	GND	24	GND
25	LVDSB_DATA1#	26	LVDSB_DATA2#
27	LVDSB_DATA1	28	LVDSB_DATA2
29	GND	30	GND
31	LVDSB_DATA3#	32	LVDSB_CLK#
33	LVDSB_DATA3	34	LVDSB_CLK
35	GND	36	GND
37	GND	38	GND
39	LVDS_DDC_CLK	40	LVDS_DDC_DATA

J6 - Backlight connector

Connector: Neltron 2417SJ-06-F4.

Pin	Signal name
1	+12V
2	GND
3	+5V
4	Brightness control
5	Backlight ON/OFF
6	GND

J7- LAN and two USB connectors

Connector: PULSE JW0-0006NL.

J7A LAN

Pin	Signal name
1	TRP1+
2	TRP1-
3	TRP2+
4	TRP3+
5	TRP3-
6	TRP2-
7	TRP4+
8	TRP4-

J7B USB

Pin	Signal name
1	+5V
2	D- (USB port 0)
3	D+ (USB port 0)
4	GND
5	+5V
6	D- (USB port 1)
7	D+ (USB port 1)
8	GND

J8- LAN and two USB connectors

Connector: PULSE JW0-0006NL.

J8A LAN

Pin	Signal name
1	TRP1+
2	TRP1-
3	TRP2+
4	TRP3+
5	TRP3-
6	TRP2-
7	TRP4+
8	TRP4-

J8B USB

Pin	Signal name
1	+5V
2	D- (USB port 2)
3	D+ (USB port 2)
4	GND
5	+5V
6	D- (USB port 3)
7	D+ (USB port 3)
8	GND

J9 – USB4/5 connector

Pin	Signal name	Pin	Signal name
1	+5V	2	+5V
3	D- (USB port 4)	4	D- (USB port 5)
5	D+ (USB port 4)	6	D+ (USB port 5)
7	GND	8	GND
9	Key	10	GND

J10 – USB8/9 connector

Pin	Signal name	Pin	Signal name
1	+5V	2	+5V
3	D- (USB port 8)	4	D- (USB port 9)
5	D+ (USB port 8)	6	D+ (USB port 9)
7	GND	8	GND
9	Key	10	GND

J11 - SIM card socket

The SIM socket is connected to PCIE minicard slot 1.

Connector: JAE SF7W008S1AE900.

Pin	Signal name
C1	VCC
C2	RESET
C3	CLK
C5	GND
C6	VPP
C7	IO
S1	CD1 (default NC)
S2	CD2 (default NC)

J12 - PCI Express Mini Card slot 1



Hot plug is not supported. Please switch off the board when PCIE mini card is being inserted or removed.

Connector: FOXCONN AS0B226-S68N-7F, MINIPCI express, 52.SMT, 0.7, 6.8mm, STD, 25.

Pin	Signal name	Pin	Signal name
1	WAKE#	2	+3.3V
3	N.C.	4	GND
5	N.C.	6	+1.5V
7	CLKREQ#	8	SIM J11 PWR
9	GND	10	SIM J11 DATA
11	REFCLK-	12	SIM J11 CLK
13	REFCLK+	14	SIM J11 RST#
15	GND	16	SIM J11 VPP
17	N.C. (build option J12.CD2)	18	GND
19	N.C. (build option J12.CD1)	20	W_DIS#
21	GND	22	PERST#
23	PCIE_RXD1-	24	+3.3V
25	PCIE_RXD1+	26	GND
27	GND	28	+1.5V
29	GND	30	SMB_CLK
31	PCIE_TXD1-	32	SMB_DATA
33	PCIE_TXD1+	34	GND
35	GND	36	USB_D6-
37	GND	38	USB_D6+
39	+3.3V	40	GND
41	+3.3V	42	LED_WWAN#
43	GND	44	N.C. (build option LED_WLAN#)
45	N.C.	46	N.C. (build option LED_WPAN#)
47	CL_CLK	48	+1.5V
49	CL_DATA	50	GND
51	CL_RST#	52	+3.3V

J13 – SPI connector

Connector: Samtec FTS-104-01-L-DV.

Pin	Signal name	Pin	Signal name
1	SPI_CS# (link selectable: CS#0 or CS#1)	2	+3.3V
3	SPI_SO	4	N.C.
5	SPI_OFF#	6	SPI_CLK
7	GND	8	SPI_SI

J15 - SIM card connector

The SIM card connector is connected to PCIE minicard slot 2.

Connector: Molex 53047-0710.

Pin	Signal name
1	VCC
2	GND
3	RESET
4	CLK
5	IO
6	VCC
7	SW (default NC)

J16 - PCI Express Mini Card slot 2



Hot plug is not supported. Please switch off the board when PCIE mini card is being inserted or removed.

Connector: FOXCONN AS0B226-S68N-7F, MINIPCI Express, 52.SMT, 0.7, 6.8mm, STD, 25.

Pin	Signal name	Pin	Signal name
1	WAKE#	2	+3.3V
3	N.C.	4	GND
5	N.C.	6	+1.5V
7	CLKREQ#	8	SIM J11 PWR
9	GND	10	SIM J11 DATA
11	REFCLK-	12	SIM J11 CLK
13	REFCLK+	14	SIM J11 RST#
15	GND	16	SIM J11 VPP
17	N.C. (build option J12.CD2)	18	GND
19	N.C. (build option J12.CD1)	20	W_DIS#
21	GND	22	PERST#
23	PCIE_RXD1-	24	+3.3V
25	PCIE_RXD1+	26	GND
27	GND	28	+1.5V
29	GND	30	SMB_CLK
31	PCIE_TXD1-	32	SMB_DATA
33	PCIE_TXD1+	34	GND
35	GND	36	USB_D6-
37	GND	38	USB_D6+
39	+3.3V	40	GND
41	+3.3V	42	LED_WWAN#
43	GND	44	N.C. (build option LED_WLAN#)
45	N.C.	46	N.C. (build option LED_WPAN#)
47	CL_CLK	48	+1.5V
49	CL_DATA	50	GND
51	CL_RST#	52	+3.3V

J18 – Audio connector

Connector: OUPIIN 2011-2x6-G-S W/ROHS.

Pin	Signal name	Pin	Signal name
1	HP out left	2	HP out right
3	LINE out left	4	LINE out right
5	GND	6	GND
7	MIC in left	8	MIC in right
9	LINE in left	10	LINE in right
11	S/PDIF	12	GND

J19 – VGA connector

Connector: NELTRON 2316SM-16G.

Pin	Signal name	Pin	Signal name
1	CRT_RED	2	GND
3	CRT_GREEN	4	N.C.
5	CRT_BLUE	6	GND
7	+5V	8	N.C.
9	GND	10	GND
11	GND	12	CRT_HSYNC
13	DDC_DATA	14	CRT_VSYNC
15	DDC_CLK	16	N.C.

J20 – Port80 connector (build option)

Connector: OUPIIN 2011-2X10-G-R.

Pin	Signal name	Pin	Signal name
1	CLK_PCI	2	GND
3	LPC_FRAME#	4	N.C.
5	RESET#	6	+5V
7	LPC_AD3	8	LPC_AD2
9	+3.3V	10	LPC_AD1
11	LPC_AD0	12	GND
13	SMB_CLK	14	SMB_DATA
15	+3.3VA	16	SERIRQ
17	GND	18	CLK_RUN#
19	SUS_STAT#	20	N.C.

J21 – PCIE slot

Connector: FCI 10018783-10003TLF.

Pin	Signal name	Pin	Signal name
B1	+12V	A1	PRSNT1#(GND)
B2	+12V	A2	+12V
B3	+12V	A3	+12V
B4	GND	A4	GND
B5	SMB_CLK	A5	N.C.
B6	SMB_DATA	A6	N.C.
B7	GND	A7	N.C.
B8	+3.3V	A8	N.C.
B9	N.C.	A9	+3.3V
B10	+3.3VA	A10	+3.3V
B11	WAKE#	A11	RESET#
B12	N.C.	A12	GND
B13	GND	A13	REFCLK+
B14	PCIE_TXP5	A14	REFCLK-
B15	PCIE_TXN5	A15	GND
B16	GND	A16	PCIE_RXP5
B17	PRSNT2	A17	PCIE_RXN5
B18	GND	A18	GND
B19	PCIE_TXP6	A19	N.C.
B20	PCIE_TXN6	A20	GND
B21	GND	A21	PCIE_RXP6
B22	GND	A22	PCIE_RXN6
B23	PCIE_TXP7	A23	GND
B24	PCIE_TXN7	A24	GND
B25	GND	A25	PCIE_RXP7
B26	GND	A26	PCIE_RXN7
B27	PCIE_TXP8	A27	GND
B28	PCIE_TXN8	A28	GND
B29	GND	A29	PCIE_RXP8
B30	N.C.	A30	PCIE_RXN8
B31	PRSNT2	A31	GND
B32	GND	A32	N.C.
B33	N.C.	A33	N.C.
B34	N.C.	A34	GND
B35	GND	A35	N.C.
B36	GND	A36	N.C.
B37	N.C.	A37	GND
B38	N.C.	A38	GND
B39	GND	A39	N.C.
B40	GND	A40	N.C.
B41	N.C.	A41	GND

Pin	Signal name	Pin	Signal name
B42	N.C.	A42	GND
B43	GND	A43	N.C.
B44	GND	A44	N.C.
B45	N.C.	A45	GND
B46	N.C.	A46	GND
B47	GND	A47	N.C.
B48	PRSNT2	A48	N.C.
B49	GND	A49	GND
B50	N.C.	A50	N.C.
B51	N.C.	A51	GND
B52	GND	A52	N.C.
B53	GND	A53	N.C.
B54	N.C.	A54	GND
B55	N.C.	A55	GND
B56	GND	A56	N.C.
B57	GND	A57	N.C.
B58	N.C.	A58	GND
B59	N.C.	A59	GND
B60	GND	A60	N.C.
B61	GND	A61	N.C.
B62	N.C.	A62	GND
B63	N.C.	A63	GND
B64	GND	A64	N.C.
B65	GND	A65	N.C.
B66	N.C.	A66	GND
B67	N.C.	A67	GND
B68	GND	A68	N.C.
B69	GND	A69	N.C.
B70	N.C.	A70	GND
B71	N.C.	A71	GND
B72	GND	A72	N.C.
B73	GND	A73	N.C.
B74	N.C.	A74	GND
B75	N.C.	A75	GND
B76	GND	A76	N.C.
B77	GND	A77	N.C.
B78	N.C.	A78	GND
B79	N.C.	A79	GND
B80	GND	A80	N.C.
B81	PRSNT2	A81	N.C.
B82	N.C.	A82	GND

J22 - SATA connector

Connector: Molex 67800-5005.

Pin	Signal name
1	GND
2	TX+ (SATA0)
3	TX- (SATA0)
4	GND
5	RX- (SATA0)
6	RX+ (SATA0)
7	GND

J23 - SATA connector

Connector: Molex 67800-5005.

Pin	Signal name
1	GND
2	TX+ (SATA1)
3	TX- (SATA1)
4	GND
5	RX- (SATA1)
6	RX+ (SATA1)
7	GND

J24 - SATA connector

Connector: Molex 67800-5005.

Pin	Signal name
1	GND
2	TX+ (SATA2)
3	TX- (SATA2)
4	GND
5	RX- (SATA2)
6	RX+ (SATA2)
7	GND

J25 - SATA connector

Connector: Molex 67800-5005.

Pin	Signal name
1	GND
2	TX+ (SATA3)
3	TX- (SATA3)
4	GND
5	RX- (SATA3)
6	RX+ (SATA3)
7	GND

J26 – System connector

Connector: OUPIIN 2011-2x5-G-S W/ROHS.

Pin	Signal name	Pin	Signal name
1	INTRUDER#	2	GND
3	RESET#	4	GND
5	POWER BUTTON	6	GND
7	HDD ACTIVITY LED (Anode)	8	HDD ACTIVITY LED (Cathode)
9	POWER / SLEEP LED (Anode)	10	POWER / SLEEP LED (Cathode)

J27 – ATX power connector

Connector: Molex 87427-2042.

Pin	Signal name	Pin	Signal name
1	+3.3V	2	+3.3V
3	GND	4	+5V
5	GND	6	+5V
7	GND	8	PWOK
9	+5VA (standby)	10	+12V
11	+3.3V	12	N.C.
13	GND	14	PSO#
15	GND	16	GND
17	GND	18	N.C.
19	+5V	20	+5V

J28 – SD slot

Connector: Molex 67840-8001.

Pin	Signal name
1	DAT3
2	CMD
3	GND
4	+3.3V
5	CLK
6	GND
7	DAT0
8	DAT1
9	DAT2

J29 – Dual serial connector (COM1 and 2)

Connector: Kycon K42X-E9P/P-C4NJ.

Pin	Signal name	Pin	Signal name		
				RS232	RS485 RS422
A1	DCD1	B1	DCD2	RX2/TX2-	TX2-
A2	RXD1	B2	RXD2	RX2/TX2+	Tx2+
A3	TXD1	B3	TXD2		RX2+
A4	DTR1	B4	DTR2		RX2-
A5	GND	B5	GND		
A6	DSR1	B6	DSR2		
A7	RTS1	B7	RTS2		
A8	CTS1	B8	CTS2		
A9	RI1	B9	RI2		

J30 – Serial port connector (COM3)

Connector: Oupiin 3012-10-G-S-B W/ROHS.

Pin	Signal name	Pin	Signal name
1	DCD3	2	DSR3
3	RXD3	4	RTS3
5	TXD3	6	CTS3
7	DTR3	8	RI3
9	GND	10	+3.3V

J31 – Serial port connector (COM4)

Connector: Oupiin 3012-10-G-S-B W/ROHS.

Pin	Signal name	Pin	Signal name
1	DCD4	2	DSR4
3	RXD4	4	RTS4
5	TXD4	6	CTS4
7	DTR4	8	RI4
9	GND	10	+3.3V

J32 – GPIO connector

Connector: Neltron 2417SJ-22-PHD.

Pin	Signal name	Pin	Signal name
1	+5V	2	+5V
3	IN0 (GPIO0)	4	IN1 (GPIO1)
5	IN2 (GPIO2)	6	IN3 (GPIO3)
7	IN4 (GPIO4)	8	IN5 (GPIO5)
9	IN6 (GPIO6)	10	IN7 (GPIO7)
11	GND	12	GND
13	OUT0 (GPIO8)	14	OUT1 (GPIO9)
15	OUT2 (GPIO10)	16	OUT3 (GPIO11)
17	OUT4 (GPIO12)	18	OUT5 (GPIO13)
19	OUT6 (GPIO14)	20	OUT7 (GPIO15)
21	SMB_DATA	22	SMB_CLK

J33 – CPU fan connector

Connector: Molex 22-27-2031.

Pin	Signal name
1	GND
2	PWM1 (+12V)
3	FAN_TACH1

J34 – System fan connector

Connector: Molex 22-27-2031.

Pin	Signal name
1	GND
2	PWM2 (+12V)
3	FAN_TACH2

Installation

Installation considerations

The following installation notices and installation considerations should be read and understood before the ANTARES is installed. All installation notices pertaining to the installation of the ANTARES should be strictly adhered to. Failing to adhere to these precautions may lead to severe damage of the ANTARES and injury to the person installing the motherboard.

Installation notices

The installation instructions described in this manual should be carefully followed in order to prevent damage to the ANTARES, ANTARES components and injury to the user.

Before and during the installation please **DO** the following:

- Read the user manual. The user manual provides a complete description of the ANTARES installation instructions and configuration options.
- Wear an electrostatic discharge (ESD) cuff. Electronic components are easily damaged by ESD. Wearing an ESD cuff removes ESD from the body and helps prevent ESD damage.
- Place the ANTARES on an antistatic pad. When installing or configuring the motherboard, place it on an antistatic pad. This helps to prevent potential ESD damage.
- Turn off all power to the ANTARES. When working with the ANTARES, make sure that it is disconnected from all power supplies and that no electricity is being fed into the system.

Before and during the installation of the ANTARES **DO NOT**:

- Remove any of the stickers on the PCB board. These stickers are required for warranty validation.
- Use the product before verifying all the cables and power connectors are properly connected.
- Allow screws to come in contact with the PCB circuit, connector pins, or its components.

Installation Checklist

The following checklist is provided to ensure the ANTARES is properly installed:

- A compatible memory module is properly inserted into the slot.
- The jumpers have been properly configured.
- The ANTARES is inserted into a chassis with adequate ventilation.
- The correct power supply is being used.
- The following devices are properly connected:
 - SATA drives.
 - Power supply.
 - Display output.
 - USB keyboard and mouse.
- Fan and heatsinks are properly installed.

Memory module installation

The ANTARES uses standard DDR3 DIMM ECC or non ECC memory modules. If only one memory module is used, this can be plugged in to either memory slot 1 or 2.

To install a DIMM memory module into a DIMM socket, please follow the steps below:

- 1 Locate the DIMM sockets by placing the ANTARES on an anti-static pad with the solder side facing up.
- 2 Align the DIMM module with the socket. The DIMM module must be oriented in such a way that the notch in the middle of the DIMM module is aligned with the plastic bridge in the socket.
- 3 Insert the DIMM module by pushing it into the socket.

When the DIMM module is plugged in properly, the DIMM socket arms are closed, securing the DIMM in the socket.

Jumper settings

Before the ANTARES is installed in the system, the jumpers must be set in accordance with the desired configuration.



Information:

A jumper is a metal bridge used to close an electrical circuit. It consists of two or three metal pins and a small metal clip (often protected by a plastic cover) that slides over the pins to connect them. To CLOSE/SHORT a jumper means connecting the pins of the jumper with the plastic clip and to OPEN a jumper means removing the plastic clip from a jumper.

Default jumper configuration: no jumpers fitted.

Clear CMOS Jumper

Jumper Label: JP1

If the ANTARES fails to boot due to improper BIOS settings, the clear CMOS jumper clears the CMOS data and resets the system BIOS information. To do this, use the jumper cap to close pins 1 and 2 for a few seconds then remove the jumper and place it back to pin 1.

If the “CMOS Settings Wrong” message is displayed during the boot up process, the fault may be corrected by pressing the F1 button to enter the *CMOS Setup* menu. Do one of the following:

- Enter the correct CMOS setting.
- Load Optimal Defaults.
- Load Failsafe Defaults.

After having done one of the above, save the changes and exit the CMOS Setup menu.

The clear CMOS jumper settings (JP1) are shown in the following table.

Clear CMOS	Description
Short 1 - 2	Clear CMOS setup.
Open 1 - 2	Keep CMOS setup (default).

Chassis installation

Airflow

Airflow is critical to the cooling of the CPU and other on-board components. The chassis used to house the ANTARES must have air vents to allow cool air to move into the system and hot air to move out.

The ANTARES must be installed in a chassis with ventilation holes on the sides allowing airflow to travel through the heat sink surface. In a system with an individual power supply unit, the cooling fan of a power supply can also help generate airflow through the board surface.

Please contact a Eurotech sales representative or visit the Eurotech website to find out more about the available enclosures. See [Eurotech Group Worldwide Presence](#), page [61](#), for contact details.

Audio Breakout Installation

The audio breakout consists of three audio jacks wired to a 12-pin audio connector. One audio jack, Mic In, connects to a microphone. The remaining two audio jacks connect to Line-In and Headphones. To install the audio breakout, please refer to the steps below:

- 1 Locate the audio connector.

The location of the 12-pin audio connector is shown in [Connectors](#), page [23](#).

- 2 Align pin 1 on the on-board connector with pin 1 of the audio cable connector. Pin 1 of the audio cable connector is indicated with a triangle.
- 3 Connect the audio devices.

RS-232 Cable

The RS-232 cable consists of one serial port connector attached to a serial communications cable that is then attached to a D-sub 9 male connector. To install the RS-232 cable, please follow the steps below.

- 1 Locate the connector. The location of the RS-232 connector is shown in [Connectors](#), page [23](#).
- 2 Insert the cable connector into the serial port box header. The red wire in the RS232 cable indicates pin 1. Align pin 1 of the onboard connector with pin 1 of the RS232 cable connector.
- 3 Secure the bracket.
The RS-232 connector has two retention screws that must be secured to a chassis or bracket.
- 4 Connect the serial device.

SATA drive connection

To connect the SATA drives to the connectors, please follow the steps below.

- 1 Locate the connectors. The locations of the SATA drive connectors are shown in [Connectors](#), page [23](#).
- 2 Press the clip on the connector at the end of the SATA cable and insert the cable connector into the on-board SATA drive connector.
- 3 Insert the connector at the other end of the cable to the connector on the back of the SATA drive.
- 4 Connect the SATA power cable by attaching the SATA power connector to the back of the SATA drive.

USB cable

To connect the dual port USB 2.0 cable, please follow the steps below.

- 1 Locate the connectors. The locations of the USB connectors are shown in [Connectors](#), page [23](#).
-



Warning:

If the USB pins are not properly aligned, the USB device can burn out.

- 2 Once the cable connectors are properly aligned with the USB connector on the ANTARES, connect the cable connectors to the on-board connectors.
- 3 Attach the USB connectors to the chassis.

VGA Cable

The VGA cable consists of one VGA port connector attached to a VGA communications cable that is then attached to a D-sub 15 female connector. To install the VGA cable, please follow the steps below.

- 1 Locate the connector. The location of the VGA connector is shown in [Connectors](#), page [23](#).

- 2 Insert the connector into the serial port box header.

The red wire in the VGA cable indicates pin 1. Align pin 1 of the onboard connector with pin 1 of the VGA cable connector.

- 3 Secure the bracket.

The VGA connector has two retention screws that must be secured to a chassis or bracket.

- 4 Connect the VGA monitor.

GPIO mapping

General Purpose Inputs / Outputs (GPIOs)

General Purpose Inputs / Outputs are connected to the PCA9535C I2C GPIO expander. These pins can be controlled and accessed using the Eurotech driver.

The GPIO pin connections are as follows:

J32 GPIO connector	PCA9535C	Description
IN0	P0	General purpose input
IN1	P1	General purpose input
IN2	P2	General purpose input
IN3	P3	General purpose input
IN4	P4	General purpose input
IN5	P5	General purpose input
IN6	P6	General purpose input
IN7	P7	General purpose input
OUT0	P8	General purpose output
OUT1	P9	General purpose output
OUT2	P10	General purpose output
OUT3	P11	General purpose output
OUT4	P12	General purpose output
OUT5	P13	General purpose output
OUT6	P14	General purpose output
OUT7	P15	General purpose output
	INT#	Interrupt pin is connected to QM57 pin GPIO13
	SDA	I2C data pin is connected to system SMBUS data signal
	SCL	I2C clock pin is connected to system SMBUS clock signal



Notes:

- Each Input pin has a 100K pull up resistor connected to a +5V standby voltage rail.
- Each Output pin has a 1K pull up resistor connected to a +5V standby voltage rail.
- The output pins of PCA9535C are open drain.

Watchdog

Hardware watchdog

A MAX6369 hardware watchdog is fitted on the ANTARES board. The watchdog is disabled by default. A watchdog timeout is selectable between 1ms and 60s and is control by QM57 GPIO pins.

The watchdog connections are as follows:

QM57	MAX6369 pin	Description
GPIO14	SET0	Set Zero. Logic input for selecting startup delay and watchdog timeout periods. See table below for timing details. (Pulled up by default).
GPIO28	SET1	Set One. Logic input for selecting startup delay and watchdog timeout periods. See table below for timing details. (Pulled up by default).
GPIO57	SET2	Set Two. Logic input for selecting startup delay and watchdog timeout periods. See table below for timing details. (Pulled down by default).
GPIO8	WDI	Watchdog Input. If WDI remains either high or low for the duration of the watchdog timeout period (tWD), WDO triggers a pulse. The internal watchdog timer clears whenever a WDO is asserted or whenever WDI sees a rising or falling edge. (Pulled up by default).
SYS_RESET#	WDO	Board Reset.

The watchdog timeout settings are as follows:

SET2	SET1	SET0	Time out
0	0	0	1ms
0	0	1	10ms
0	1	0	30ms
0	1	1	Disabled (default)
1	0	0	100ms
1	0	1	1s
1	1	0	10s
1	1	1	60s

BIOS configuration

This section explains how to use the BIOS setup utility to modify BIOS settings and control the special features of your computer.

Control Keys during POST

When you turn on or reset the ANTARES system, the Power On Self Test (POST) routine starts. The function keys available during POST are:

Key	Explanation
Ctrl+S	Intel® Boot Agent setup menu.
F2	Launches the BIOS setup utility.
Ctrl+P	Launches the ME BIOS extension utility – setup for Intel® AMT features.

General use

When you launch the BIOS setup utility, the *Main* menu is displayed (see page [48](#)). The following keys are available while using the BIOS setup utility:

Key	Explanation
+ -	Change value (or select boot device).
← →	Select menu.
↑ ↓	Select item.
Enter	Select item or sub-menu.
Esc	From a top-level menu (e.g. <i>Main</i> , <i>Advanced</i> and <i>Security</i>), this takes you to the <i>Exit</i> menu. From any other screen, this takes you back up to the previous menu.
F1	Displays help about the item currently highlighted, the keys available and the selections that can be made for this item.
F9	Reverts the settings on the current sub-menu to the optimal default settings.
F10	Saves all the changes you have made and closes the setup program.

The top-level menus are summarized in the following table:

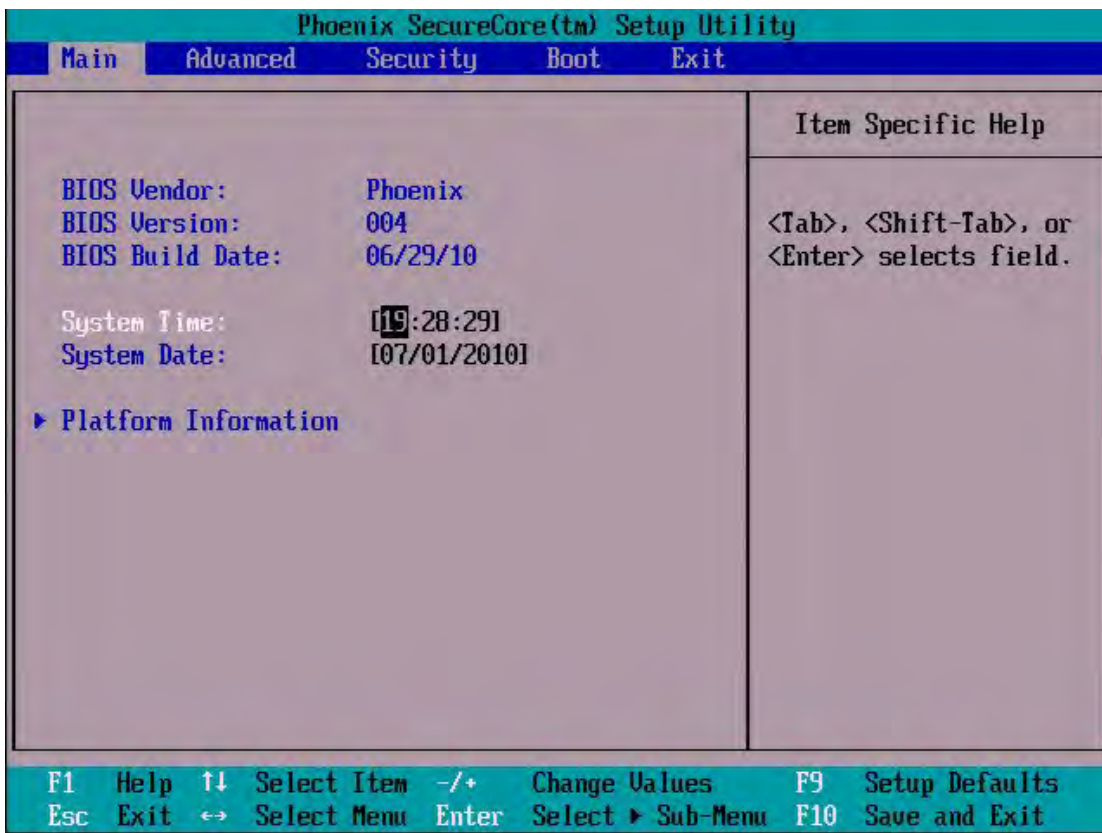
Menu	Explanation
<i>Main</i>	Used for basic system configuration. See page 48 .
<i>Advanced</i>	Used to configure the advanced features available on your system's chipset. See page 49 .
<i>Security</i>	Used to control access to the system. See page 54 .
<i>Boot</i>	Used to specify the order in which devices are used to load the operating system when you turn on the computer. See page 56 .
<i>Exit</i>	Provides options to save or discard changes, exit the PhoenixBIOS setup program and load default values. See page 57 .



Information about the item currently selected is displayed on the right-hand side of the screen.

Main menu

The *Main* menu is used to specify your basic system configuration:

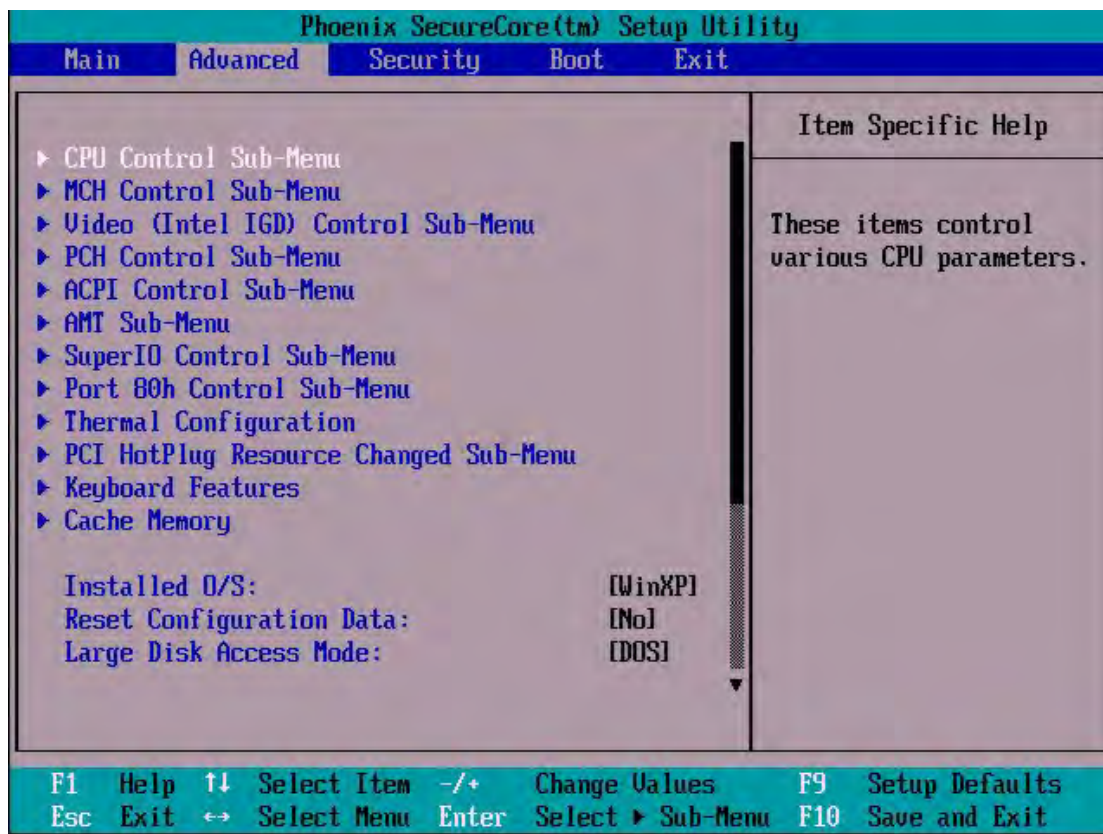


The following fields are available in the *Main* menu:

Field	Explanation
<i>BIOS Vendor&Version</i>	Phoenix® SecureCore BIOS version.
<i>Platform Information</i>	Intel® CPU type and operating frequency detected during boot, VBIOS version, total DDRAM memory amount detected during boot.
<i>System Time, System Date</i>	Used to set the system time and date.

Advanced menu

The *Advanced* menu is used to configure the advanced features available on your system’s chipset. The following screen is displayed:



The following table explains the settings you can select:

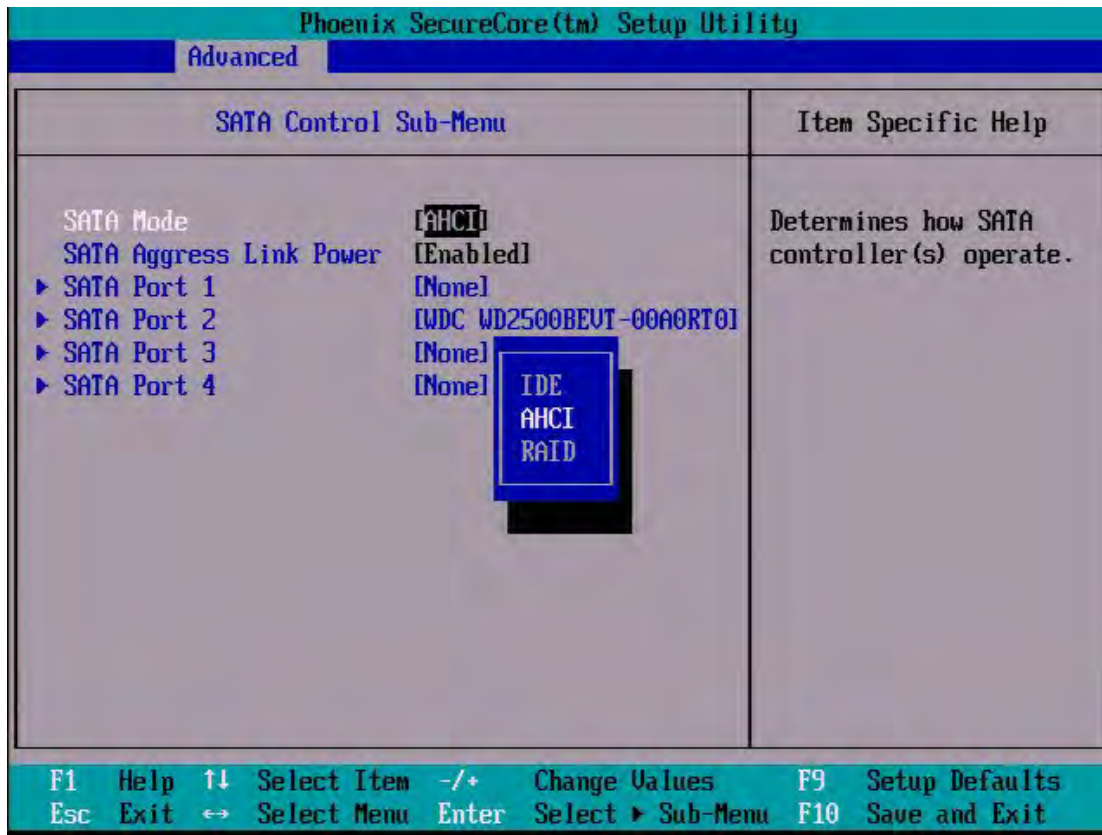
Field	Explanation
<i>CPU Control Sub-Menu</i>	Displays a sub-menu containing options you can use to control how the CPU operates.
<i>MCH Control Sub-Menu</i>	Displays options for controlling the Memory Controller Hub.

Field	Explanation
<i>Video (Intel IGD) Control Sub-Menu</i>	Displays options for configuring the Internal Graphics Device.
<i>PCH Control Sub-Menu</i>	Displays options for controlling the Platform Controller Hub.
<i>ACPI Control Sub-Menu</i>	Displays options for configuring ACPI settings.
<i>AMT Sub-Menu</i>	Displays options for configuring Intel® AMT settings.
<i>SuperIO Control Sub-Menu</i>	Displays options for configuring SuperIO settings, including serial ports, hardware monitor, and fan control.
<i>Port 80 Control Sub-Menu</i>	Displays options for directing the Port 80 cycles (LPC or PCI bus).
<i>Thermal Configuration</i>	Displays options for configuring thermal settings.
<i>PCI Hot-Plug Resource Changed Sub-Menu</i>	Displays options for configuring PCI Hot-Plug slots settings.
<i>Keyboard Features</i>	Displays options for controlling aspects of how the keyboard works.
<i>Cache Memory</i>	Displays options for specifying cache memory settings.
<i>Installed O/S</i>	Choose the operating system that is to be used, e.g. WinXP. ACPI configuration settings are adjusted for each selected OS to provide optimum system performance.
<i>Reset Configuration Data</i>	Used to clear the Extended System Configuration Data (ESCD) area. Select either Yes (to clear the area) or No . When you select Yes , the BIOS reinitializes the ECSD data on the next boot.
<i>Large Disk Access Mode</i>	<p>Indicate whether the operating system you're using is DOS or not. You are offered DOS by default. Change this to Other if you have an operating system other than DOS, e.g. UNIX.</p> <p>If the drive configuration shown in BIOS is incorrect when you attempt to install new software, try changing this setting.</p> <p>A large disk is one with more than 1024 cylinders, 16 heads or 63 tracks per sector.</p>
<i>Disable ACPI _Sx</i>	Used to disable one of the ACPI power states (S1, S2, or S3)

Field	Explanation
<i>Enable memory gap</i>	Used to free up address space for use with an option card. Choose <i>Enabled</i> to create a 1MB extended memory gap in the system RAM, starting at 15MB.
<i>Video Repost</i>	Select if a video repost is to be performed during resume from S3.

SATA Control Sub-Menu

The SATA configuration menu is located under *PCH Control Sub-Menu* in the *Advanced* menu. The following screen is displayed:



The following table explains the settings you can select:

Field	Explanation
<i>SATA Mode</i>	Select SATA controller's operation mode (IDE/AHCI/RAID).
<i>SATA Aggress Link Power</i>	Enable/Disable SATA Aggressive Link Power Management mode.
<i>SATA Port 1/2/3/4</i>	Select various options for installed SATA devices.



For Windows XP configure the SATA controller to IDE mode.

Serial ports control sub-menu

Serial ports configuration menu is located under *SuperIO Control Sub-Menu* in the *Advanced* menu. The following screen is displayed:

Phoenix SecureCore(tm) Setup Utility		
Advanced		
Serial Ports Control Sub-Menu		Item Specific Help
Serial port 1	[Auto]	Enable/Disable Termination Resistor for RS422/RS485 transceiver
Serial port 2	[Auto]	
Mode	[RS422]	
Termination Resistor	[Off]	
Serial port 3	[Auto]	
Serial port 4	[Auto]	

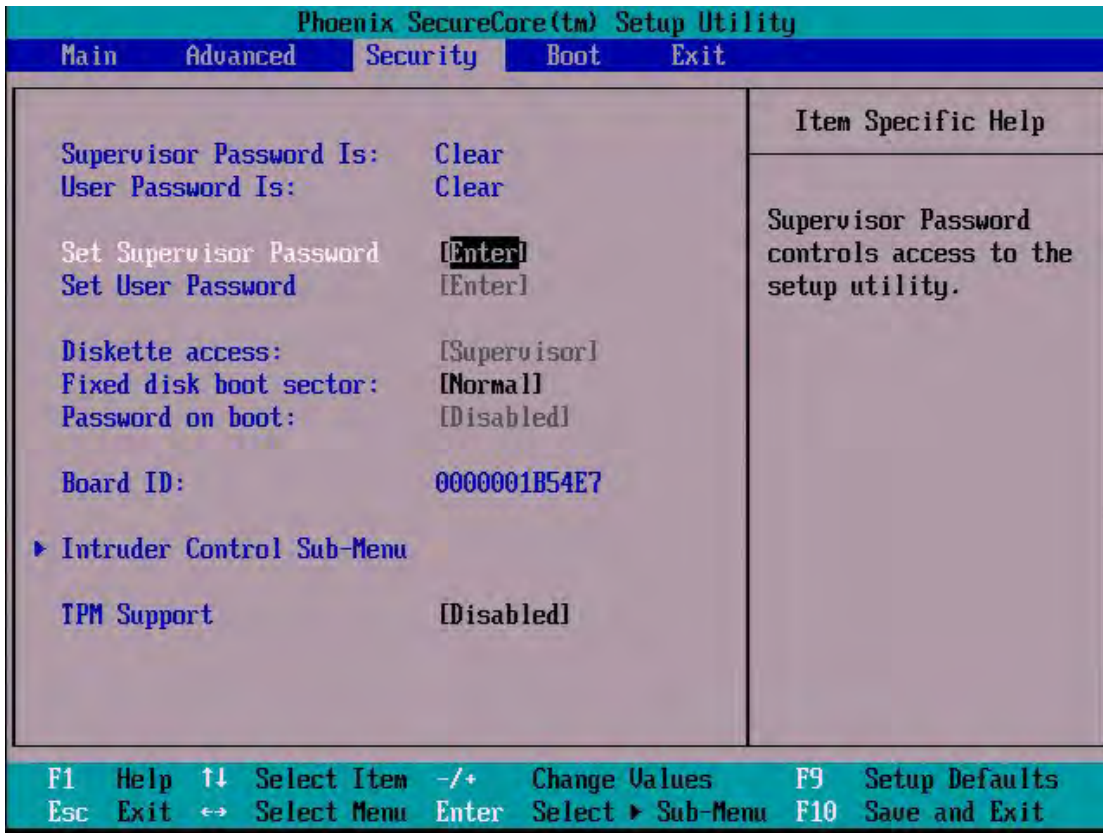
F1	Help	↑↓	Select Item	-/+	Change Values	F9	Setup Defaults
Esc	Exit	↔	Select Menu	Enter	Select ▶ Sub-Menu	F10	Save and Exit

The details you are prompted to specify are explained in the following table:

Field	Explanation
<i>Serial Port 1/3/4</i>	<p>Select the port configuration by selecting one of the following:</p> <ul style="list-style-type: none"> Disabled. The port is turned off, and the resources used by this port are free to be used by other devices (for example, interrupt line can be used for PC/104 add-on boards). Enabled. User can configure the port resources: <ul style="list-style-type: none"> <i>Base I/O Address</i> - Specify the I/O address to be used by this port (2E8, 2F8, 3E8 or 3F8). <i>Interrupt</i> - Specify the interrupt line to be used by this port. Available IRQ lines for ports COM1 and COM2 are IRQ 3 and 4. For ports COM3 and COM4, available interrupt lines are IRQ 5 and 6. Auto. The port is configured automatically by the BIOS or the operating system.
<i>Serial Port 2</i>	<p>Disable/Enable/Auto options are available (see serial port 1 for explanation).</p> <p><i>Mode</i> – Select one of the following transceivers:</p> <ul style="list-style-type: none"> RS232. RS485. Half duplex (Auto-485 controlled). If this option is selected, the new sub-menu is presented: <ul style="list-style-type: none"> <i>Termination</i> – Termination resistor Enable/Disable. RS422. Full duplex point to point. If this option is selected, the new sub-menu is presented: <ul style="list-style-type: none"> <i>Termination</i> – Termination resistor Enable/Disable.

Security menu




The *Security* menu is used to control access to the system.



The following table explains the settings you can select:

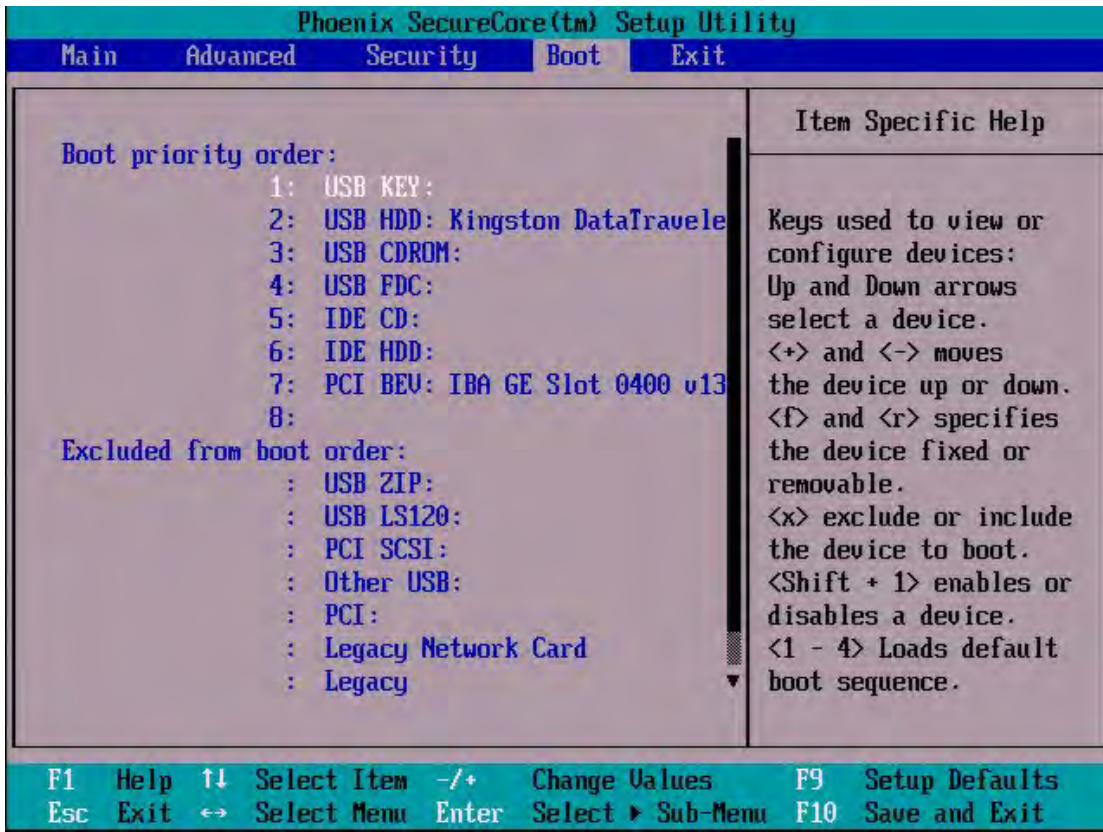
Field	Explanation
<i>Supervisor Password</i>	Indicates whether a supervisor password has been created (Set). Clear indicates that no supervisor password has been created. You can create or change the supervisor password in the <i>Set Supervisor Password</i> field.
<i>User Password</i>	Indicates whether a user password has been created (Set). Clear indicates that no user password has been created. You can create or change the user password in the <i>Set User Password</i> field.
<i>Set Supervisor or Password</i>	Used to specify a password to access system setup. Once you've set a supervisor password, only those who enter this password can view the setup menus in full. To create a supervisor password, press Enter . The Set Supervisor Password dialog is displayed, ready for you to type the new password. This can be up to eight characters long. To change an existing supervisor password, press Enter . The Set Supervisor Password dialog is displayed. Type the current password followed by the new password.

continued...

Field	Explanation
	<p>If you want to remove the supervisor password completely, type the current password and then press Enter in both New Password fields (i.e. leave them blank).</p> <hr/> <p> Existing user passwords cannot be changed if the supervisor password has been cleared or has not yet been set.</p> <hr/>
<i>Set User Password</i>	<p>Used to specify a password that gives restricted access to system setup menus.</p> <p>To create a user password, press Enter. The Set User Password dialog is displayed, ready for you to type the new password. This can be up to eight characters long.</p> <p>To change an existing user password, press Enter. The Set User Password dialog is displayed. Type the current password followed by the new password. If you want to remove the user password, type the current password and then press Enter in both New Password fields (i.e. leave them blank).</p> <hr/> <p> You cannot create or change the user password if no supervisor password has been set.</p> <hr/>
<i>Fixed Disk Boot Sector</i>	<p>Choose whether to write protect the boot sector on the hard disk for protection against viruses. This means that a password must be entered before a user can format or Fdisk the hard disk.</p> <p>Choose either Normal or Write Protect.</p>
<i>Password on boot</i>	<p>Used to force users to enter a password each time the computer is turned on. Choose either Enabled or Disabled.</p> <p>You must have set up a supervisor password for this to take effect.</p> <hr/> <p> If you leave this option Disabled and have set up a supervisor password, access to system setup when the computer is turned on is provided at the user rather than at the supervisor level.</p> <hr/>
<i>Board ID</i>	<p>The 48-bit unique ID, read from the on-board DS2401 device.</p>
<i>Intruder Control Sub-Menu</i>	<p>Used to configure the options related to detection of physical tampering with the computer's chassis.</p>
<i>TPM Support</i>	<p>Trusted Platform Mode Enable/Disable.</p>

Boot menu

The *Boot* menu is used to specify the order of devices from which the computer attempts to load the operating system.

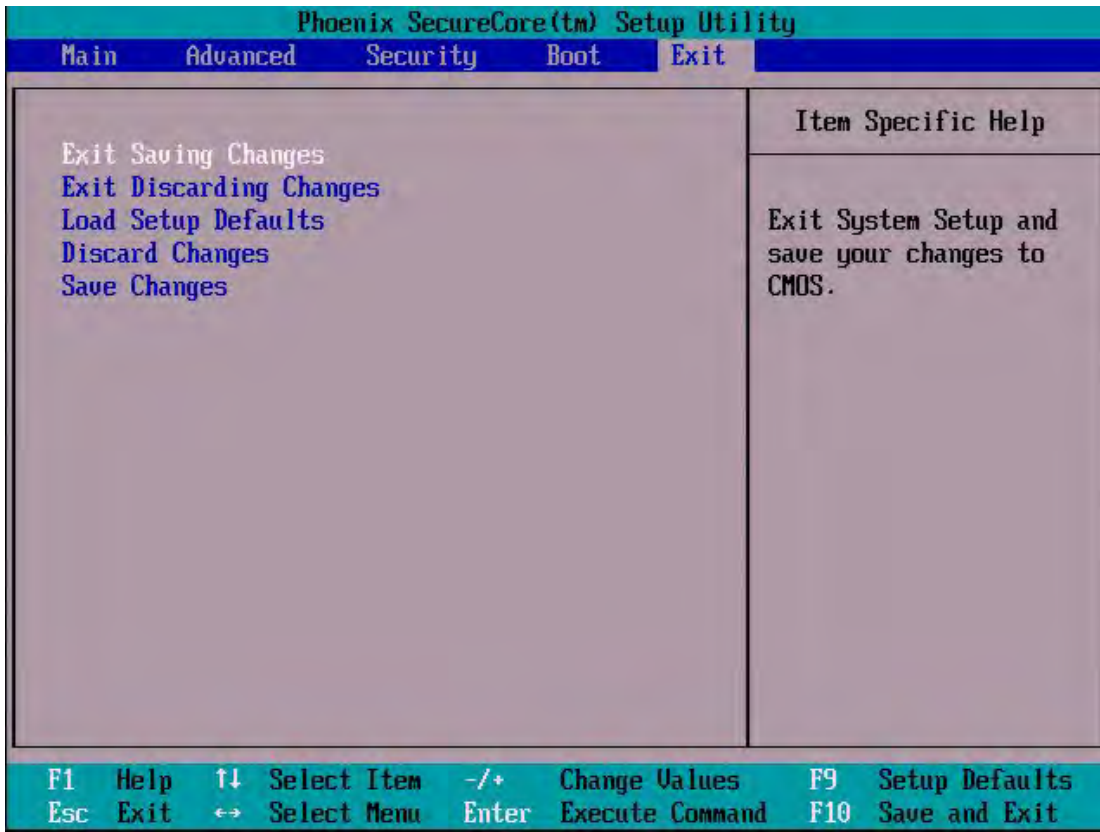


The following table explains the settings you can select:

Field	Explanation
<i>Boot Priority Order</i>	Selects the boot order by device types.
<i>Excluded from boot order</i>	List of devices excluded from boot order.
<i>Boot Options Sub-Menu</i>	Enable/Disable summary and diagnostic screen, quick boot mode and legacy OS boot.

Exit menu

The *Exit* menu provides options for saving changes, discarding changes and exiting the BIOS setup utility.



The following table explains the settings you can select:

Field	Explanation
<i>Exit Saving Changes</i>	Saves any changes you have made, and exits the BIOS setup utility.
<i>Exit Discarding Changes</i>	Exits the BIOS setup utility without saving any of the changes made in the current session.
<i>Load Setup Defaults</i>	Reverts to the original factory-assigned BIOS settings.
<i>Discard Changes</i>	Discards any changes made in the current session. You remain in the PhoenixBIOS setup program.

Appendix A – Reference information

Product information

Product notices, updated drivers, support material: www.eurotech.com

PCI special interest group

PCI Bus specification and list of manufacturers: www.pcisig.org

USB information

Universal Serial Bus (USB) specification and product information: www.usb.org

Intel

Information about Celeron and Core processors and QM57 chipset: www.intel.com

PCI SIG

Information about PCI development: www.pcisig.com

IEEE Specifications

Information about wired and wireless communication: www.ieee.org

Trusted Computing Group

Information about TCG open specifications: www.trustedcomputinggroup.org

Appendix B – RoHS compliance

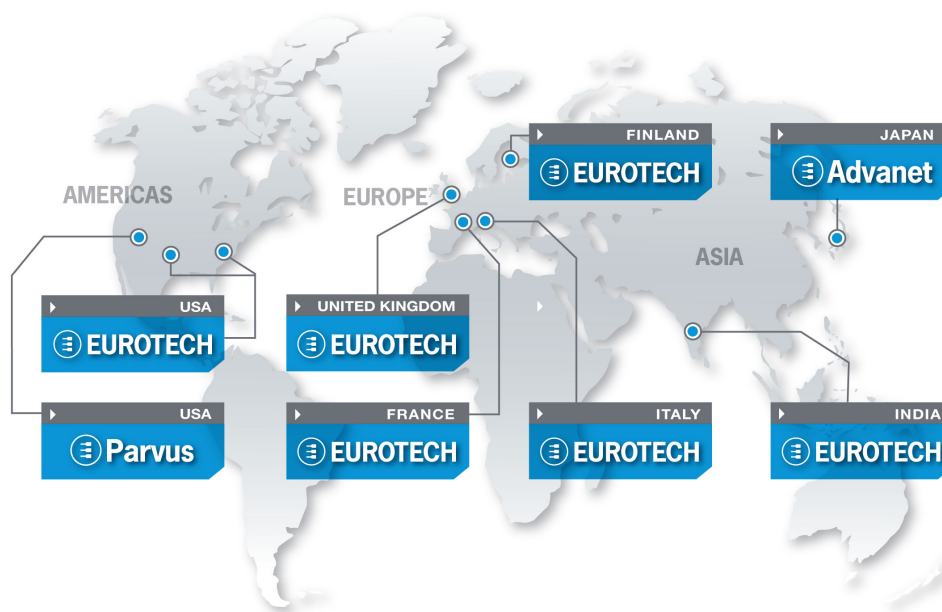


The Restriction of the use of certain Hazardous Substances (RoHS) Directive came into force on 1st July 2006. The ANTARES board is designed using RoHS compliant components, and manufactured to comply with the RoHS Directive.

Eurotech has based its material content knowledge on a combination of information provided by third parties and auditing our suppliers and sub-contractor's operational activities and arrangements. This information is archived within the associated Technical Construction File. Eurotech has taken reasonable steps to provide representative and accurate information, though may not have conducted destructive testing or chemical analysis on incoming components and materials.

Additionally, packaging used by Eurotech for its products complies with the EU Directive 2004/12/EC in that the total concentration of the heavy metals cadmium, hexavalent chromium, lead and mercury do not exceed 100 ppm.

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