ANTARES 1U ICE
Industrial Compact Enclosure

DIGITAL TECHNOLOGIES FOR A BETTER WORLD

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EUROTECH

WARRANTY

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

TRADEMARKS

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REVISION HISTORY

Issue no.	PCB	Date	Comments
A		24th May 2010	First release of manual.
B		23rd July 2010	Minor updates

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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 cable in a place where it 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.

Internal battery

The ANTARES SBC is fitted with a 3V Lithium battery that is used to maintain the ANTARES's real time clock and static RAM while the main supply is removed. The battery is fitted in a socket to allow easy replacement. The battery has a service life of 5 years at +25°C (77°F).

Safe battery use

Lithium batteries that are found to be damaged, leaking, corroded or flat (low or no voltage) must be disposed of in a safe manner following the relevant COSHH regulations.

Damaged, leaking, or corroded batteries (especially lithium batteries) must only be handled with caution. Use non-conductive tools and wear suitable protection, e.g. safety glasses, rubber gloves, etc.

All faulty batteries must be segregated in a suitable, clearly marked non-conductive container. They must be periodically disposed of by a recognized company specializing in the disposal of poisonous waste, who comply with 'The Disposal of Poisonous Waste Regulations Act.'

Replace with the same or equivalent type recommended by the manufacturer.

Dispose of batteries according to the manufacturer's instructions.

Do not attempt to recharge, disassemble, heat above 100°C (212°F), or incinerate the Lithium battery.

Antistatic precautions

To avoid damage caused by ESD (Electro Static Discharge), always use appropriate antistatic precautions when handing 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 $C\epsilon$ 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 to 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 it 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 1U ICE serial label is affixed to the enclosure 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 1U ICE.

The labels will also display product conformity marking.

Introduction

The ANTARES 1U ICE system serves as a high performance, compact 19" rack mount ruggedized PC system for applications in IT systems, machine control, and kiosk solutions. The ANTARES 1U ICE is powered by a high performance single board computer designed and manufactured by Eurotech. The motherboard and system components are designed for long life support with standard CPU options from the Intel Core i7 620UE 1.06GHz for quiet PCs, the Celeron P4505 1.86GHz and up to powerful server grade systems fitted with the Intel Core i7 610E 2.53GHz. Non-standard options Intel i7-620LE 2.00GHz, Intel i3-330E 2.13GHz, Intel i5-520E 2.40GHz are available on request.

This ruggedized system has a full compliment of PC features including DVD Multi Writer, dual Ethernet (supporting 10/100/1000baseT), USB ports, HDMI ports, SD card socket, serial ports and a number of additional features for creating secure systems, optional VGA/3.5mm Audio ports. The system can also be fitted with two PCI express add-on cards.

The system is available with options for multiple video outputs, integrated wireless modules (with location for external antenna) and complete operation from solid-state SD storage cards. Two Mini PCI Express card sockets are available on the ANTARES Single Board Computer (SBC).

The front panel LCD display can be used for user-defined configuration and control for deeply 'embedded systems' which do not have access to a display. For applications in secure locations, the ANTARES 1U ICE includes an integrated tamper detection switch to monitor and record access to the system. Please refer to the ANTARES user manual for detailed information about the performance and operation of the ANTARES SBC.

ANTARES 1U ICE specification

The ANTARES 1U ICE includes the following standard features:

- 1U 19" standard 'ruggedized' enclosure.
- Intel i7 620UE 1.06GHz, Intel i7-610E 2.53GHz, Celeron P4505 1.86GHz processor performance options as standard.
- Intel i7 620UE 1.06GHz for fan-less systems.
- Intel i7-620LE 2.00GHz, Intel i3-330E 2.13GHz, Intel i5-520E 2.40GHz non-standard available on request.
- Up to Intel 610E 2.53GHz for server performance.
- Low profile processor fan fitted as standard.
- Up to 8GB system DRAM.
- Up to two independent video (output via CRT, two HDMI & LVDS; LVDS requires a separate cable assembly).
- Options for CRT/Audio. Contact Eurotech's sales team for details (see Eurotech Worldwide Presence, page 23).
- Two 10/100/1000 baseT Ethernet ports
- SD card socket under cover at rear.
- Two serial ports.
- Six USB 2.0 compliant ports (two on front, four on rear).
- Front panel 256 x 64 pixel LCD display.
- Auto-ranging 90-265V, 47-63Hz AC, Flex-ATX PSU.
- DC power input option also available on request. Contact Eurotech's sales team for details (see page Eurotech Worldwide Presence, page 23).
- Two PCI Express expansion slots via an internal flexible riser.
- Two Mini PCI Express card sockets are available on the ANTARES Single Board Computer (SBC).
- Internal DVD/CDRW. Speeds: 24x CD-R writing, 24x CD-RW writing, 24x CD-ROM reading, 8x DVD-ROM reading.
- A mix of 2.5" and 3.5" hard disk drive options available.
- Operating temperature: +5°C to +50°C (41°F to 122°F).
- EMC conformity: CE/FCC compliant (see page 21).
- Safety compliance: UL, cUL, CB (power supply).

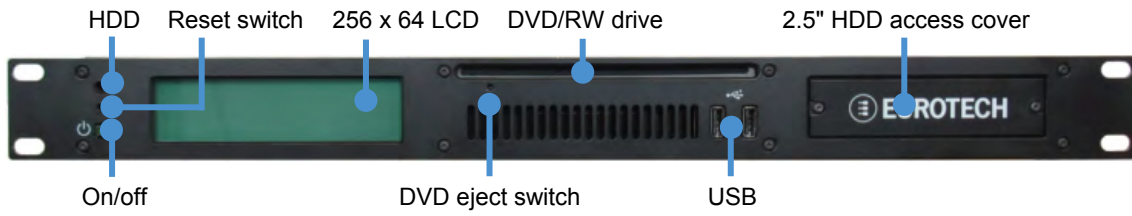Factory build options available on request include:

- Other CPU options with/without CPU fan.
- System without HDD – using solid state SD card only.

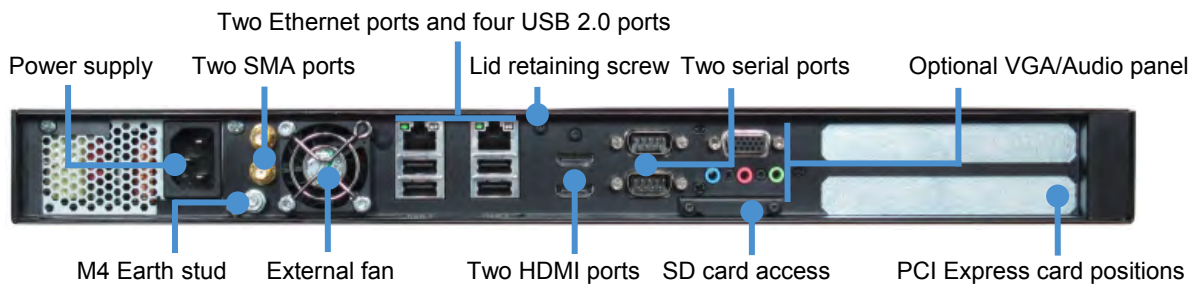Please contact our Sales team for price and availability - see Eurotech Worldwide Presence, page 23.

ANTARES ICE 'at a glance'

Front panel view

HDD   Reset switch   256 x 64 LCD   DVD/RW drive   2.5" HDD access cover

On/off   DVD eject switch   USB

Rear panel views

Two Ethernet ports and four USB 2.0 ports

Power supply   Two SMA ports   Lid retaining screw   Two serial ports   Optional VGA/Audio panel

M4 Earth stud   External fan   Two HDMI ports   SD card access   PCI Express card positions

Features of the ANTARES ICE

The 1U high 19" Rack Mount enclosure offers a wide range of features. These are summarised below.

Front panel

- HDD activity indicator.
- Reset switch access hole.
- On/off momentary switch.
- LCD – 256x64.
- DVD/RW drive slot (SATA).
- DVD eject access hole.
- Two USB 2.0 type A ports.
- Access cover to 2.5" drive caddy with two removable HDD (SATA).

A variety of panels can be implemented with the ANTARES ICE. For example, a plain solid front panel may be used if there is no requirement for drives. Alternatively a front panel with a recessed area around the display that accepts customised membranes may be preferred.

Rear panel

- Position for AC or DC power supply unit.
- M4 Earth stud.
- Two SMA ports (cabled internally to rear panel).
- External fan (pulling air out of unit).
- Two Ethernet ports (RJ45).
- Four USB 2.0 type A ports.
- Two HDMI 1.3 ports.
- Two serial ports – 9 way 'D' type.
- SD card access (retaining cover shown).
- Two PCI Express card positions.
- Optional panel – (VGA plus three stereo audio jack sockets) that can be used for DB9, eSATA or wireless antennas.
- Lid retaining screw.

Additional features

Two Mini PCI Express card sockets are available on the ANTARES Single Board Computer (SBC). An access panel on the underside of the enclosure allows insertion/removal from the socket. Removal of the enclosure lid provides access to the socket on the top side of the SBC.

Connectors

The ANTARES provides a range of connectors to connect external devices:
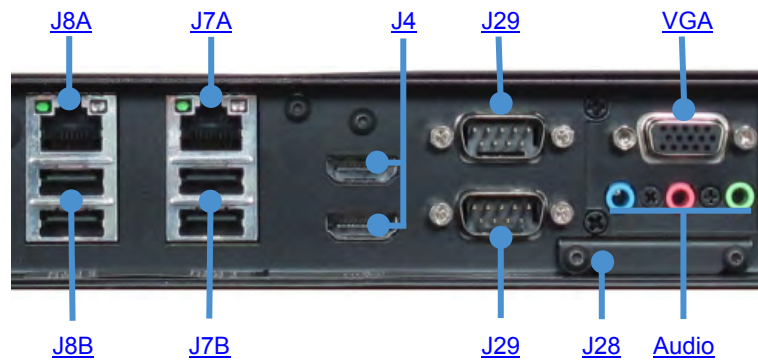
The connectors available from the back panel are:

Connector	Function	See …
J4	HDMI 1 and 2	Page 12.
J7A, J8A	LAN 1, LAN 2	Page 13.
J7B, J8B	USB 1 and 2, USB 3 and 4	Page 13.
J28	SD card reader	Page 13.
J29	Serial ports 1 and 2	Page 14.
VGA	VGA	Page 14.
Audio	Audio	Page 15.

J4 (HDMI ports 1 and 2)

HDMI socket

Pin	Signal name
1	TMDS_DATA2_P
2	GND
3	TMDS_DATA2_N
4	TMDS_DATA1_P
5	GND
6	TMDS_DATA1_N
7	TMDS_DATA0_P
8	GND
9	TMDS_DATA0_N
10	TMDS_CLK_P
11	GND
12	TMDS_CLK_N
13	No Connect
14	GND
15	SCL (DDC CLOCK)
16	SDA (DDC DATA)
17	GND
18	+5V
19	HPD
20	SHELL
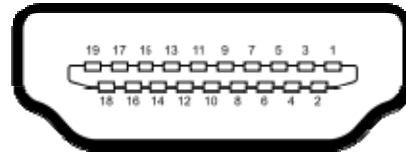
J7A and J8A (LAN 1 and 2)

RJ-45 10/100/1000Mb/s.

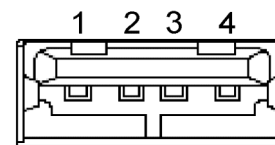| Pin	Signal name (10/100/1000)
1	MD0+
2	MD0-
3	MD1+
4	MD2+
5	MD2-
6	MD1-
7	MD3+
8	MD3-
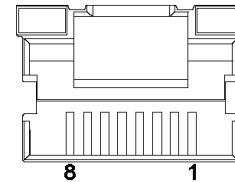
For a Gigabit Ethernet (10/100/1000) connection the network cable should be a CAT5 or above and include all four pairs.

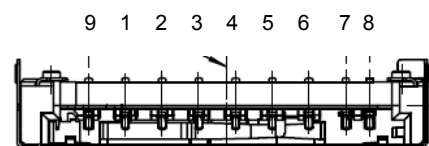### J7B (USB ports 1 and 2) and J8B (USB ports 3 and 4)

USB type A connector.

Pin	Signal name
1	VBUS
2	Data-
3	Data+
4	Ground

J28 SD card reader

SD card socket – Molex 67840-8001.

Pin	Signal name
1	Connector data line 3
2	Command/response line
3	GND
4	Power supply
5	Clock
6	GND
7	Connector data line 0
8	Connector data line 1
9	Connector data line 2

J29 – COM1 and COM2 RS232 serial ports

DB9 male.

Pin	Signal name	Pin	Signal name
1	Data Carrier Detect (DCD)	2	Receive Data (RX)
3	Transmit Data (TX)	4	Data Terminal Ready (DTR)
5	Ground	6	Data Set ready (DSR)
7	Request To Send (RTS)	8	Clear To Send (CTS)
9	Ring Indicator (RI)		
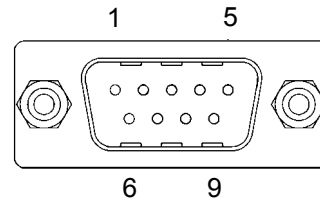
VGA CRT connector

DB15 female.

Pin	Signal name	Pin	Signal name
1	Red	2	Green
3	Blue	4	No connect
5	Ground	6	Ground
7	Ground	8	Ground
9	+5V (fused)	10	Ground
11	No Connect	12	DDCSDA
13	HSYNC	14	VSYNC
15	DDCSCL		
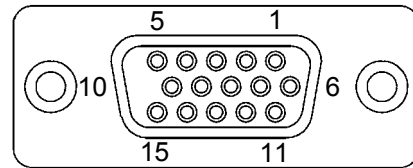
Audio (LINE IN, MIC and Headphones)

The audio connector pin is made up of the following parts:
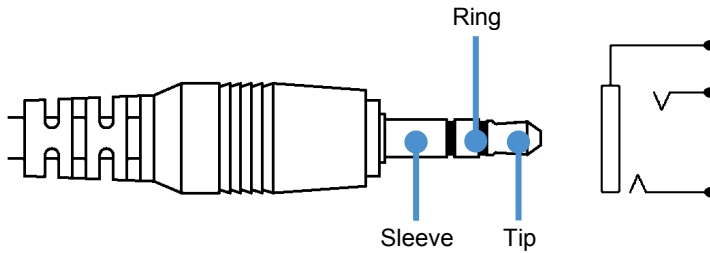
The pin settings for each connector are as follows:

LINE IN - 3.5mm audio jack
PC99 colour: light blue.

Pin part	Signal name 2.1 mode
Tip	Line in left
Ring	Line in right
Sleeve	Ground

MIC - 3.5mm audio jack
PC99 colour: pink.

Pin part	Signal name 2.1 mode
Tip	Microphone In
Ring	No Connect
Sleeve	Ground

Headphones - 3.5mm audio jack
PC99 colour: green.

Pin part	Signal name 2.1 mode
Tip	Line out left
Ring	Line out right
Sleeve	Ground

Internal configuration

The following diagram shows the construction of the ANTARES ICE:

PCI Express card carrier   Mini PCI Express access panel   ANTARES SBC   AC power supply

3.5" SATA HDD slot

DVD/RW SATA drive   2 x 2.5" SATA HDD slot, or
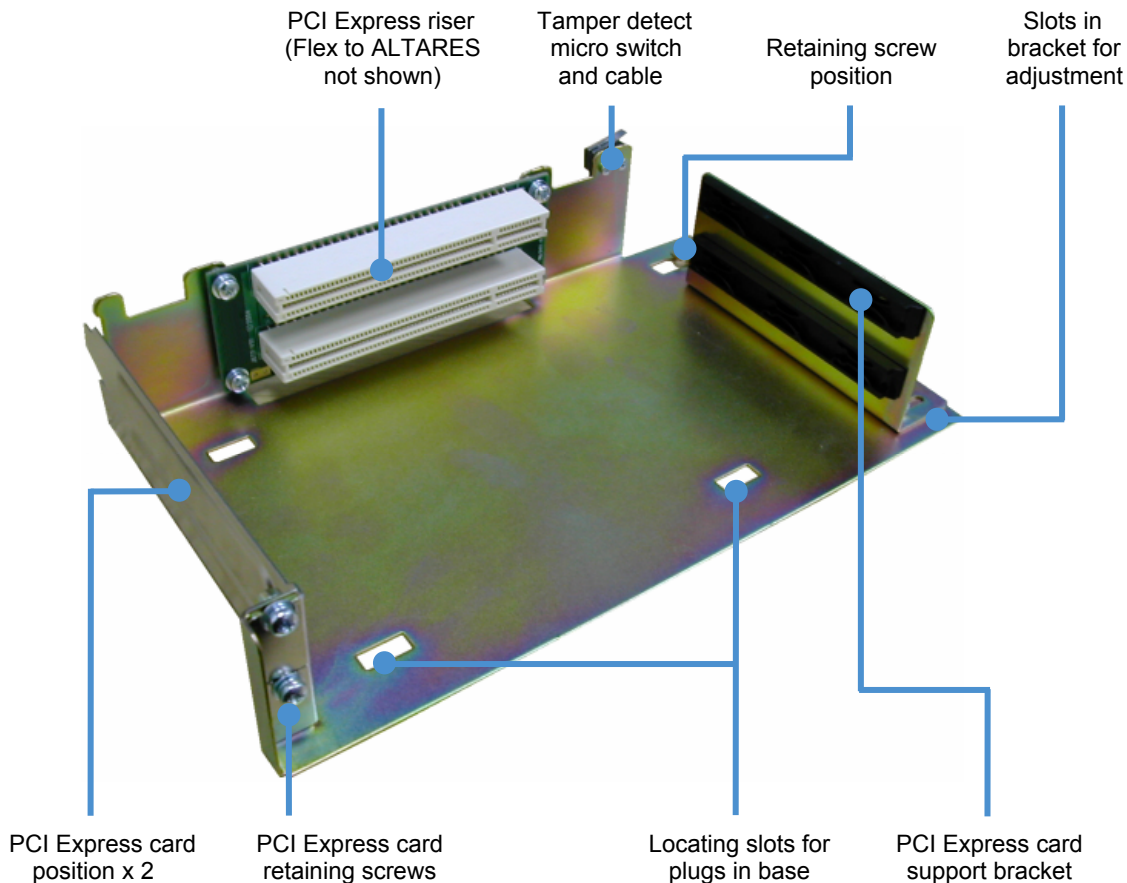   1 x 3.5" SATA HDD slot

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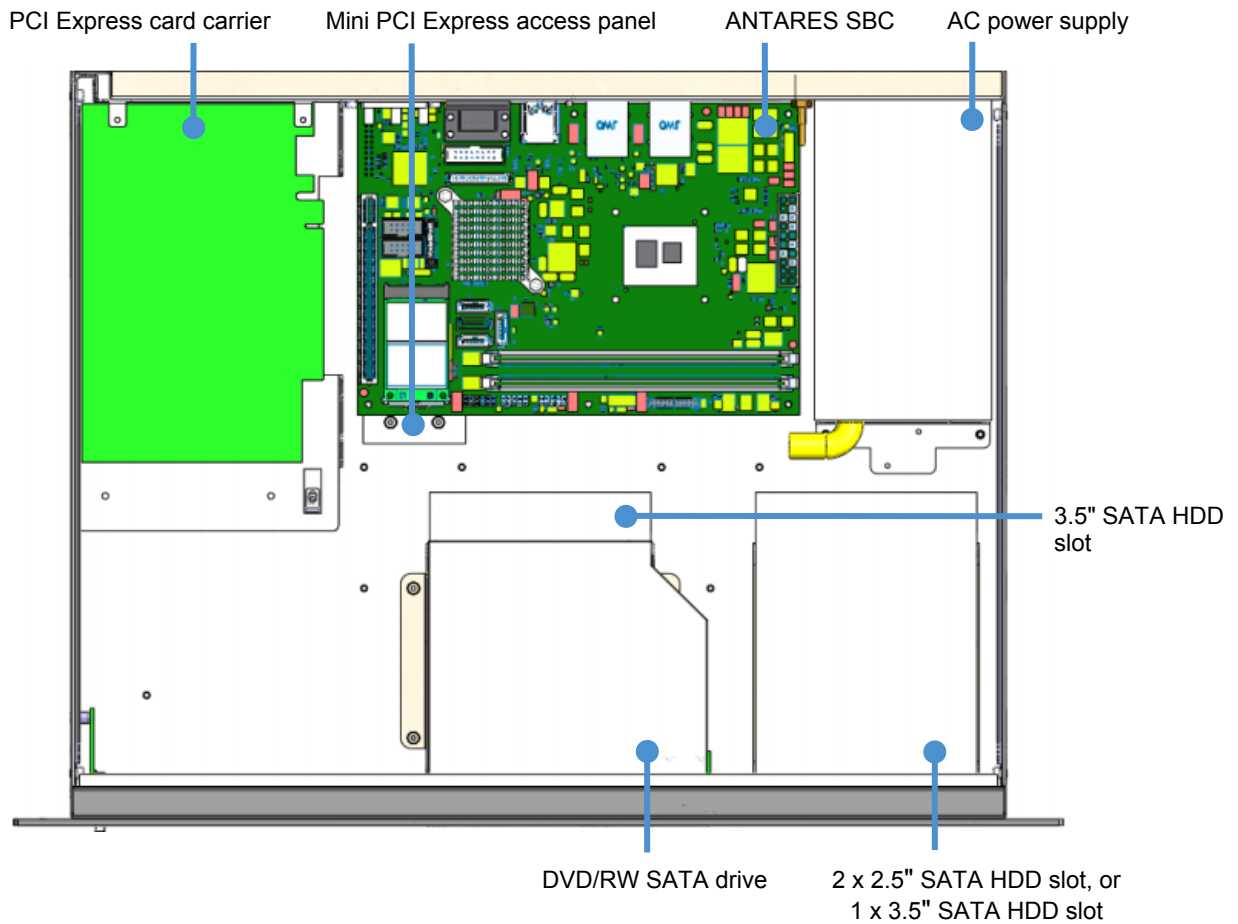
i   The internal components of the unit must only be accessed by suitably qualified personnel using anti-static equipment. The power supply must be switched off and the AC input cable unplugged.

Refer to **Error! Reference source not found.** before proceeding any further.

Removing and fitting the PCI Express card module

The PCI Express module contains the following components:

PCI Express riser (Flex to ALTARES not shown) — Tamper detect micro switch and cable — Retaining screw position — Slots in bracket for adjustment

PCI Express card position x 2 — PCI Express card retaining screws — Locating slots for plugs in base — PCI Express card support bracket

To remove the PCI Express module, follow these steps:

1   Remove any cables attached to installed PCI Express expansion cards.

2   Unplug the flexible riser connection to the ANTARES SBC.

⚠️ Take care to pull on the plug-in connector rather than the flexible cable. Connected peripheral devices, or software could be damaged if the warnings are not carefully followed.

3   Disconnect the tamper detect cable from front panel breakout board assembly.

The PCI Express module is retained in the enclosure by formed lugs on the base, and one retaining screw.

4   Unscrew the retainer and slide the PCI Express Module back to clear the lugs on the base, and lift out.

⚠️ Be careful of the tamper detect switch and cable when the PCI Express module is removed.

To fit a PCI Express card, follow these steps:

1   Remove the blanking plate.

2   Plug the card into the riser.

3   Adjust and fix the support bracket to suit.

4   Tighten the retaining screw.

To re-fit the PCI Express Module, reverse the above procedure.

Tamper detect switch

The tamper detect feature is triggered by the opening and closing of the lid. It is affected by a switch mounted on the PCI Express module:

Tamper detect
switch
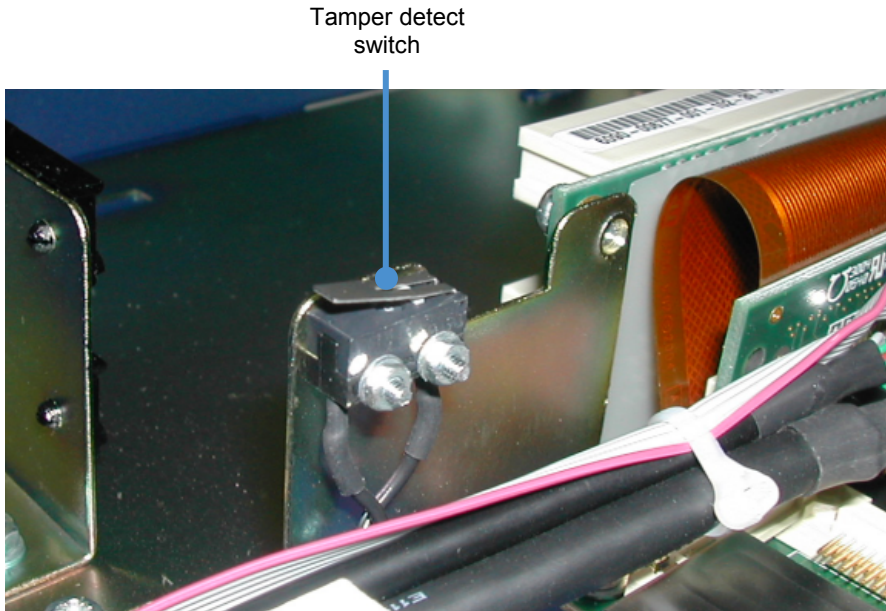
A tamper detection input is included within the real time clock circuitry of the ANTARES that operates in all power modes. The status of the tamper detection bit is battery backed in static RAM. Using a normally open switch, a tamper is detected when the switch contacts close.

The BIOS security setup screen provides two options for enabling a case open warning. It also provides a secure chassis mode that requires the supervisor password to be entered and the chassis intrusion detection to be disabled before the board will boot to an operating system. Both options are disabled by default; refer to the ANTARES user manual for details.

Pin	Signal name
1	+12V
2	Ground
3	TPB0-
4	TPB0+
5	TPA0-
6	TPA0+

Dimensions
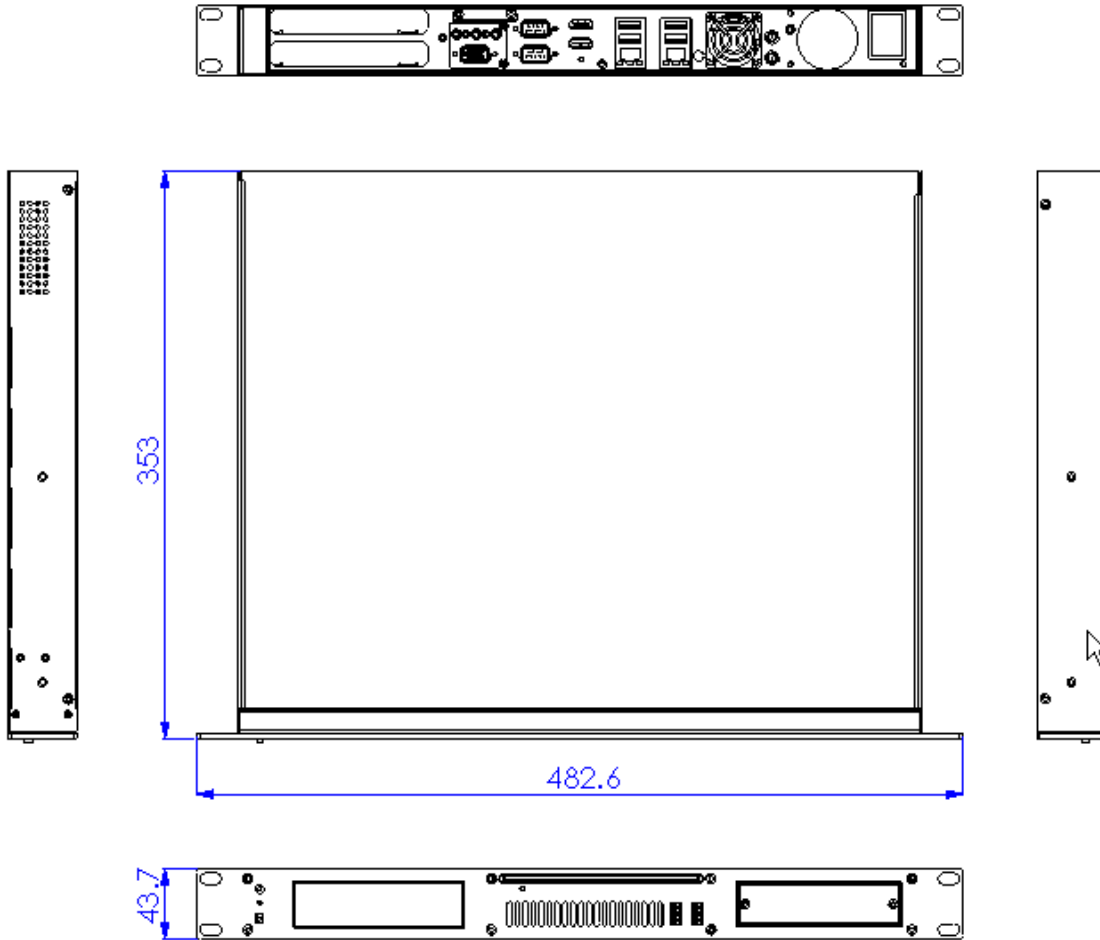
The unit complies with standard (IEC 60297 and IEC 60917) 19" Rack Mounting dimensions and fits into a standard rack cabinet.

> *i*   The rear of the unit must be supported when rack mounted.

Weight

The weight of the unit depends on the configuration used and the optional items chosen when ordering. The unit nominal weight is approximately 6kg (13.2lbs).

EMC conformity

EMC

The European Directive 89/336/EEC, on Electro-magnetic Compatibility (EMC), requires that, generated electro-magnetic disturbance must, be in accordance with European Harmonized Standards, for Electro-Magnetic Emissions and Immunity.

Generic emissions and immunity standards

Emissions: EN55022:

- Conducted Emissions   EN55022, A1, A2 Class B
- Radiated Emissions   EN55022, A1, A2 Class B

Immunity: EN55024:

- Electrostatic Discharge Immunity   EN61000-4-2
- Radiated RF Immunity   EN61000-4-3
- Transient Immunity   EN61000-4-4
- Surges   EN61000-4-5
- Conducted Immunity   EN61000-4-6
- AC Voltage Dips   EN61000-4-11
- Mains Harmonics   EN61000-3-2

FCC Verification: **Part 15B, Class B**

i   This equipment has been tested and found to comply with the limits for a Class B, digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at their own expense.

Mobile communication

Complies with the Radio and Telecommunications Terminal Equipment Directive 1999/5/EC.

Shock and vibration

**Shock test**

In accordance with MIL-STD-810F, Method 516.5:

Pulse Shape:	Terminal Peak Sawtooth.
Peak Acceleration:	40g.
Pulse Duration:	11ms.
No. of shocks:	3 in each direction of 3 mutually perpendicular axes.

Random vibration test

In accordance with MIL-STD-810F, Method 514.5, Category 20, Figure 514.5C-1:

Frequency Range:	10Hz to 500Hz.
Severity:	1.04g (vertical axis).
	0.204g (transverse axis).
	0.74g (longitudinal axis).
Duration:	2 hours in each axis.

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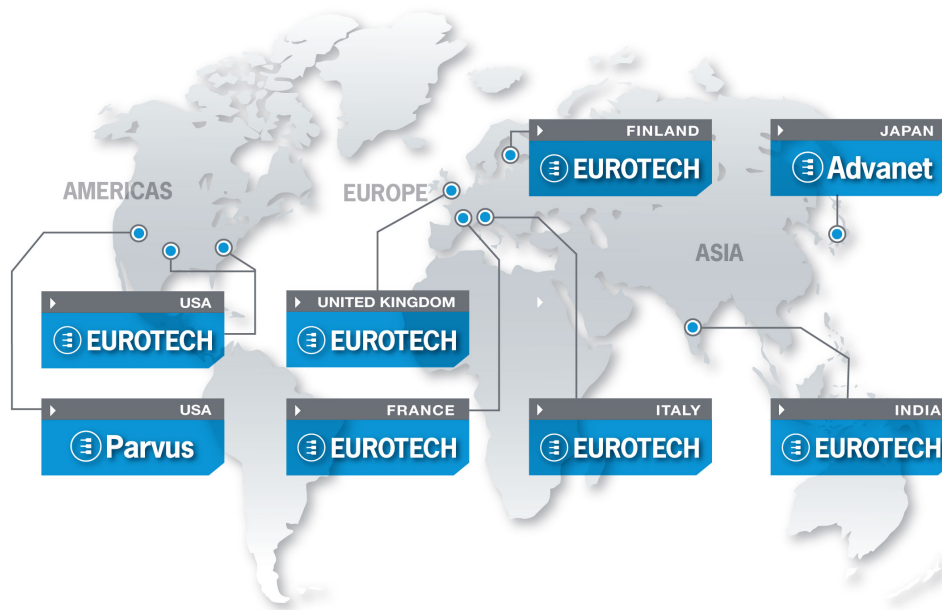
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