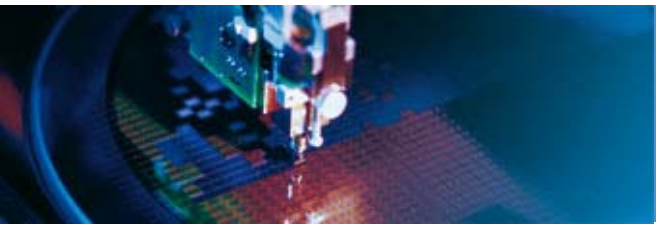
USER MANUAL



ISIS Development Kit

PC/104-Plus single board computer

Rev. 3.0 - July 2009 - ETH_ISIS-DEVKIT_USM

DIGITAL TECHNOLOGIES FOR A BETTER WORLD

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Disclaimer

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Warranty

This product is supplied with a 3 year limited warranty. The product warranty covers failure of any Eurotech manufactured product caused by manufacturing defects. The warranty on all third party manufactured products utilised by Eurotech is limited to 1 year. Eurotech will make all reasonable effort to repair the product or replace it with an identical variant. Eurotech reserves the right to replace the returned product with an alternative variant or an equivalent fit, form and functional product. Delivery charges will apply to all returned products. Please check www.eurotech.com for information about Product Return Forms.

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Revision history

Issue no.	*PCB*	*Date*	*Comments*
Draft		8th October 2008	Draft release of Manual.
A		18th December 2008	First full release of Manual.
B		26th May 2009	Minor updates.
C		20th July 2009	Second release of the ISIS Development Kit.

For contact details, see page 28.

Contents

Handling your board safely

Anti-static handling

This board contains CMOS devices that could be damaged in the event of static electricity being discharged through them. At all times, please observe anti-static precautions when handling the board. This includes storing the board in appropriate anti-static packaging and wearing a wrist strap when handling the board.

Battery

The ISIS-Breakout board contains a lithium non-rechargeable battery. Do not short circuit the battery or place on a metal surface where the battery terminals could be shorted. When disposing of the board or battery, take appropriate care. Do not incinerate, crush or otherwise damage the battery. The battery is inserted in a socket and can be replaced with a 3.0V Lithium CR2032 Coin Cell.

Packaging

Please ensure that, should a board need to be returned to Eurotech, it is adequately packed, preferably in the original packing material.

Electromagnetic compatibility (EMC)

The ISIS is classified as a component with regard to the European Community EMC regulations and it is the user's responsibility to ensure that systems using the board are compliant with the appropriate EMC standards.

RoHS compliance

The European RoHS Directive (Restriction on the use of certain Hazardous Substances – Directive 2002/95/EC) limits the amount of 6 specific substances within the composition of the product.

A full *RoHS Compliance Materials Declaration Form* for the ISIS is included as Appendix B – RoHS Compliance, page 27. Further information regarding RoHS compliance is available on the Eurotech web site at www.eurotech.com.

Conventions

The following symbols are used in this guide:

Symbol	Explanation
	Note - information that requires your attention.
	Warning - proceeding with a course of action may damage your equipment or result in loss of data.

Introduction

The ISIS development kit offers a ready-to-run, rapid application development environment which saves valuable engineering time.

The ISIS Development kit is available in the following variants:

- ISIS Standard DevKit, assembled with a 8.4” Flat Panel Display and touchscreen.
- ISIS NO-LCD DevKit, assembled with the perspex base only (No display set).

Both variants of the DevKit contain the ISIS carrier board, the CPU module and its heat sink, an I/O breakout board and an audio board.

The ISIS development kit supports the following features:

- PC/104-Plus (PCI bus).
- PC/104 (ISA bus).
- PCI Express Mini Card socket.
- 10/100 Ethernet with MDI/MDI-X support.
- 24-bit LVDS (8.4" 800x600 FDP).
- Analogue VGA interface.
- Intel High Definition Audio.
- One parallel ATA (IDE) port.
- Four USB 2.0 ports.
- Bootable PATA NAND Flash.
- GPS receiver (optional).
- One RS232/485/422 serial port.
- Touchscreen controller (Eurotech’s TSC1).
- PS/2 mouse and keyboard.
- One SDIO socket.
- Eight GPIO’s.
- I^2C/SMBus.

ISIS development kit

ISIS Development Kit features

CPU module

Processor

- Intel ATOM processor (13mmx14mm BGA):

  Z530, 1.6GHz, TDP: 2W, or
  Z510, 1.1GHz, TDP: 2W.

Chipset

- Intel System Controller Hub (22mmx22mm BGA):

  US15W, TDP: 2.3W.

System memory

- DDR2 SDRAM: up to 1GB (400/533 MHz).

BIOS

- InsydeH2O.
- SPI Flash (proprietary).

TPM

- Atmel Trusted Platform Module device, TCG v1.2 compatible.

ISIS PC/104+ carrier board

Expansion buses

- PC/104-Plus (32-bit PCI).
- PC/104 (16-bit ISA).
- PCI Express Mini Card socket.
- SDIO socket (4-bit).
- I^2C/SMBus.
- GPIO

Flash

- 2GB or 4GB PATA solid state drive (on-board NAND Flash).

IDE support

- Parallel ATA interface – single channel (master/slave).

GPS receiver

- ITrax300 GPS receiver with full position/velocity/time functionality (20 tracking channels).

ISIS-Breakout board

Power supply

- +12V operation (Power brick supply input).
- On/Off button.
- Power LED's.
- On-board coin cell battery for RTC backup.

Serial port

- One full RS-232 port (COM1). Interfaced to the TSC1 by default (LCD variant only).
- One software selectable RS232/422/485 port (COM2).

USB

- Four user accessible USB 2.0 ports on USB type A connectors.

Ethernet

- One 10/100 BaseT Ethernet port on RJ45 socket with LED indication.

Graphics

- Analogue VGA interface.

Legacy

- PS/2 keyboard and mouse support.
- PC beeper.

ISIS-HDA board

Audio

- 5.1 surround sound on standard Mic/Line in/Line out 3.5mm jack connectors.

Display set (LCD variant only)

Flat panel display

- 8.4 inch LVDS 24bit FPD (800 x 600 pixels).

Inverter

- +5V operation FPD inverter.

Touchscreen

- 8.4 inch 4 wire resistive touchscreen.

Touchscreen controller

- Eurotech TSC1 RS232 touchscreen controller.

Software specification

Operating system support

The ISIS is compatible with the following operating systems:

- Microsoft Windows XP and XP Embedded.
- Linux.

Drivers

All system components have drivers available for Windows XP and Linux.

Refer to the relevant Software manual for more information.

BIOS

The CPU module incorporates a custom system BIOS developed by Eurotech which is based on the InsydeH2O core from Insyde Software, www.insydesw.com/products/products-efi-h2o.htm.

The BIOS provides the standard functions as well as the following features:

- Full legacy IO support.
- ACPI and APM support.
- SMBIOS.
- Boot support for IDE, NAND Flash and USB.
- PCIe/PCI bridge support.
- PCI/ISA bridge configuration.

The BIOS also provides operating system support for Windows XP Embedded and Linux. Utilities to update the BIOS are provided.

Hardware specification

What's in the Kit?

- Perspex base with the ISIS, Breakout and Audio boards mounted on it.
- Perspex panel with the 8.4" flat panel display, inverter and TSC1 mounted on it (LCD variant only).
- All interconnecting cables.
- 12V output power brick supply.
- US, UK or European power cord.
- Eurotech Touchscreen Stylus.
- Eurotech ISIS development kit DVD.
- 2GB USB memory stick.
- COM1/COM2 breakout cable.
- 2 meter Crossover RJ45 UTP cable.
- 2 meter Null-Modem DB9F to DB9F cable.
- Eurotech cleaning cloth

What else do I need?

- A PS/2 or USB keyboard.
- A PS/2 or USB mouse.
- A VGA monitor (if not using the flat panel kit or for dual display support).
- A development system with DVD-ROM drive.
- A GPS antenna (if using the ISIS onboard GPS module).

Expansion buses

PC/104-Plus bus interface

The PC/104-Plus bus interface on the ISIS supports PCI local bus compatible peripherals, as defined in the *PCI Local Bus Specification Revision 2.2*. This version of the PCI bus is intended as a 32-bit bus running at 33MHz.

The ISIS supports a stack of up to four PC/104-Plus cards. In standard operation the ISIS is used on the top of the PC/104-Plus stack, however PC/104-Plus and PC/104 cards can be stacked up onto the ISIS by using a PC/104-Plus extender standoff solution.

The +5V and +12V power rails are routed to the PCI interface to provide power to the PC/104-Plus modules. If -12V is required, it needs to be supplied directly to the PC/104-Plus add-on board.

PC/104 bus interface

PC/104 bus interface (www.pc104.org) supports 16-bit ISA compatible peripherals. Standard 64+40 way 0.1" stack-through connectors are used.

The +5V and +12V power supply lines are routed to the PC/104 bus connectors to provide power to the modules. If -12V or -5V is required, they need to be supplied directly to the PC/104 add-on board.

As the US15W SCH does not support legacy DMA, there is no DMA support on the ISA bus. Only 8/16-bit memory and IO PC/104 cards are supported.

PCI Express Mini Card socket

A PCI Express Mini Card socket is available for wireless connectivity.

The CPU module PCI Express port 2 is connected directly to the PCIe Mini Card socket on the ISIS. USB 2.0 and SMBus interfaces are also routed to the PCIe Mini Card socket. The PCIe Mini Card socket supports a SIM card socket mounted onto the ISIS board.

Both PCIe Mini Card and SIM card sockets are located underneath the CPU module. It is therefore required to remove the CPU module to access either of those sockets.

I²C/SMBus

The system management bus is made available for customer use via a 12-pin header (J15) on the ISIS. The US15W SCH provides a SMBus Rev1.0 compliant host controller.

The I²C bus and the SMBus are essentially compatible with each other. Both buses feature addressable slaves and operate at the same speed, up to 100kHz.

GPIO

Eight general purpose IO's are provided via a 12-pin header (J15) on the ISIS. These are individually configurable as inputs or outputs.

SDIO/MMC socket

An SDIO socket is provided on the ISIS using the CPU module 4 bit wide access port 1.

The SDIO card interface offers great flexibility, including the ability to use the SD socket for data storage and I/O cards such as Bluetooth and WiFi. The SDIO/MMC controller supports MMC4.0 and SDIO1.1 specifications.

MMC 4.0 transfer rates can be up to 48MHz; SDIO 1.1 supports transfer rates of up to 24MHz. The US15W SCH SDIO/MMC controller only supports flash cards using byte addressing limiting the maximum memory density to 2GB. Sector based addressing is not supported.

Graphics support

The ISIS development kit supports dual independent pipe for multiple display modes on two outputs:

- 24 bit LVDS.
- VGA.

The two display outputs can be configured in a number of display modes, to allow for independent display timings and extended desktop/multi-monitor operating modes.

The ISIS development kit supports Single, Twin, Clone and Extended display configuration modes.

Audio support

The ISIS supports an Intel High Definition Audio interface. The HD Audio digital bus is decoded by the ISIS-HDA board, supporting 5.1 surround sound on standard 3.5mm stereo jacks. See ISIS-HDA board, page 24 for more information.

USB support

There are four user USB 2.0 high-speed root ports (0/1/4/5) accessible on USB A connectors located on the ISIS-Breakout board. USB 2.0 allows data transfers up to 480 MB/s.

Ethernet

One 10/100 Ethernet RJ45 socket is available on the ISIS-Breakout board. The Intel 82551IT controller supports MDI/MDI-X feature, enabling auto-correction of incorrect cabling with respect to cross-over versus straight-through cables.

Link and Activity LED’s are built in the RJ45 socket and indicate the link state and transfer activity of the ISIS over the network.

IDE support

The single primary parallel ATA/IDE interface is directly accessible on the ISIS board through a 44-pin header (J5) on the ISIS board. This gives the user the possibility to connect an external hard drive or CD-drive to the ISIS board.

An LED is present on the ISIS-Breakout and signals access to the IDE bus.

Flash

The ISIS supports a soldered down solid state FLASH disk with boot support. This is interfaced on the IDE bus and provides options for 2GB and 4GB NAND flash. The Intel Z-P140 PATA solid state disk is used for this function.

PS/2 interface

Legacy PS/2 keyboard and mouse are supported on standard PC99 MiniDin connectors.

Serial ports

Serial port 1 is a full RS-232 interface port and is connected to the Eurotech TSC1 by default (LCD variant only). If the user does not wish to use the serial touchscreen controller, it is possible to connect serial port 1 directly to the upper SUBD9 male connector on the ISIS breakout. A suitable cable is provided in the cable kit to do so.

Serial port 2 is a software selectable RS232/485/422 port and is accessible on a standard SUBD9 male connector.

GPS receiver

An optional GPS module is used on the ISIS to provide complete GPS functionality including position, velocity and time (PVT).

The Fastrax iTrax300 GPS module is based on SiRF GSC3e/LP single chip. More information on iTrax300 can be found at: iTrax300 (www.fastrax.fi).

Touchscreen controller

The ISIS development kit supports the Eurotech's TSC1. The TSC1 is an analogue resistive touchscreen controller that interfaces with the processor board via an RS232 serial port.

For more details about the TSC1, please go to www.eurotech.com or contact the Eurotech sales team (see page 28).

Power requirements

The ISIS development kit system operates from a single +12V (+/-5%) power input on 2.1mm DC jack. All other required power rails are generated on-board.

A suitable +12V power supply is provided in the kit (auto-ranging 90-264VAC input, 12VDC 5Amps output switching power supply).

The typical power consumption of the development kit system with no extra device/add-on card is less than 20W.

Although the ISIS does not use the +12V rail, it is routed to PC/104-Plus and PC/104 connectors and can be used by devices or modules stacked onto the ISIS module. It is also connected to the 4-way PC type power connector to provide power to an optional hard-drive or DVD/CD-drive.

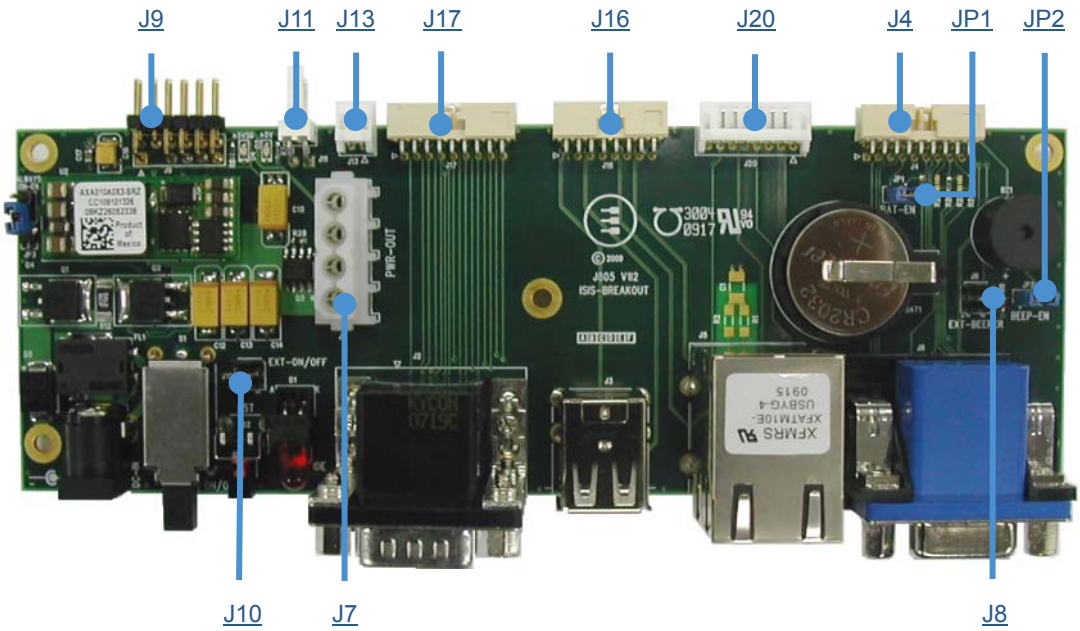
A removable CR2032 coin cell battery is provided for RTC backup.

Connectors and jumpers

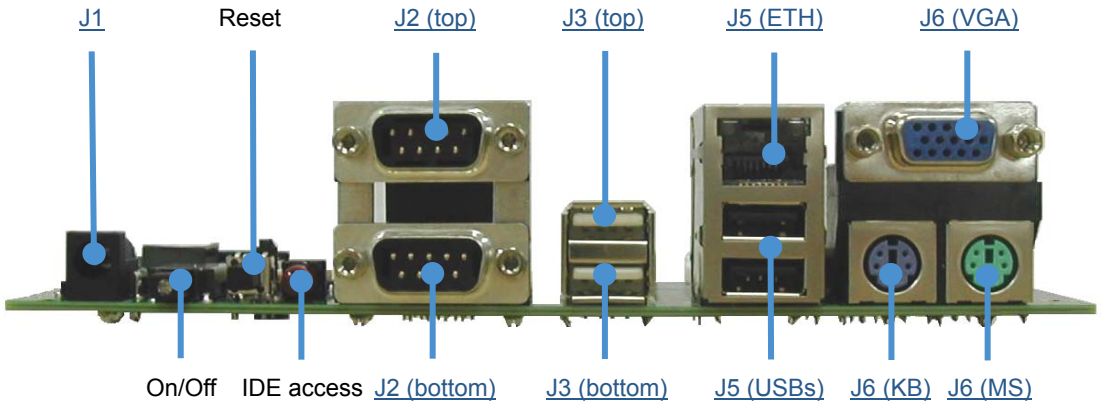
ISIS-Breakout

The following diagrams show the location of the connectors and jumpers on the ISIS-Breakout.

Top view



Side view



The connectors on the following pages are shown in the same orientation as the picture above, unless otherwise stated.

Summary of connectors and jumpers

The following table lists the connectors on the ISIS-Breakout:

Connector	Function	Connector details in section
J1	DC_IN	J1 – DC_IN, page 17
J2	COM1/COM2	J2 – COM1/COM2, page 17
J3	USB0/USB1	J3 – USB0/USB1, page 17
J4	Multifunction/VGA (header)	J4 - Multifunction and VGA, page 18
J5	Ethernet and USB4/USB5	J5 - Ethernet and USB4/USB5, page 18
J6	PS/2 mouse and keyboard and VGA	J6 - PS/2 mouse and keyboard and VGA, page 19
J7	CDROM/HDD power	J7 - CDROM/HDD power, page 20
J8	External beeper	J8 - External beeper, page 20
J9	Power out	J9 - Power out, page 20
J10	External On/Off	J10 - External On/Off, page 21
J11	Touchscreen controller power	J11 - TSC1 power, page 21
J13	IDE activity LED	J13 - IDE activity LED, page 21
J16	USB 2.0 ports 0,1,4,5 (header)	J16 - USB 2.0 (ports 0, 1, 4, 5), page 21
J17	Serial ports 1 and 2 (header)	J17 - COM1 and COM2, page 22
J20	10/100 Ethernet (header)	J20 - 10/100 Ethernet, page 22

The following table lists the jumpers on the ISIS-Breakout:

Jumper	Function	Jumper details in section
JP1	Battery enable	JP1 – BAT-EN, page 23
JP2	Beeper enable	JP2 – BEEP-EN, page 23
JP3	Always on enable	JP3 – ALWAYS ON-EN, page 23

Connectors

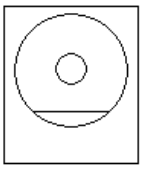
There are 15 connectors on the ISIS-Breakout; the use of each one is explained below.

J1 – DC_IN

Socket: 2.1mm DC Jack socket.

Mating plug: 2.1mm DC Jack plug.

Pin	Signal name
Tip	Positive terminal (+12V)
Sleeve	Negative terminal (0V)

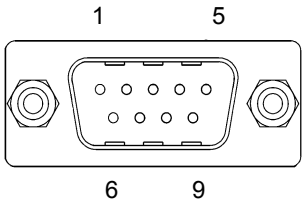


J2 – COM1/COM2

Connector: Dual stacked SUB D9 male.

Mating socket: SUB D9 female.

Pin (top)	Signal name	Pin (bottom)	Signal name
1	DCD1	1	DCD2/RX2/TX2F-
2	RX1	2	RX2/RX2/TX2F+
3	TX1	3	TX2/RX2F-
4	DTR1	4	DTR2/RX2F+
5	GND	5	GND
6	DSR1	6	DSR2
7	RTS1	7	RTS2
8	CTS1	8	CTS2
9	RI1	9	RI2



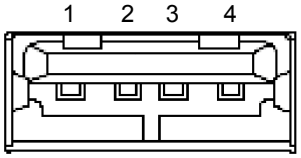
Serial port 1 is used to interface to the TSC1 by default, thus COM1 is not accessible on the upper DB9 connector which is blanked with a grommet.

J3 – USB0/USB1

Connector: Dual stacked USB type A.

Mating plug: USB type A plug.

Pin (top)	Signal name	Pin (bottom)	Signal name
1	+V5_USB01	1	+V5_USB01
2	USB_D0-	2	USB_D1-
3	USB_D0+	3	USB_D1+
4	GND	4	GND



J4 – Multifunction and VGA

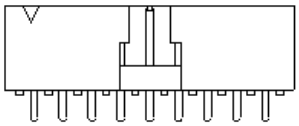
Connector: FCI Minitek 98464-G61-18ULF, 18-way, 2mm (.0787"), shrouded header.

Mating housing: FCI Minitek 90311-018LF.

Crimps: FCI Minitek 77138-201LF.

Mating IDC receptacle: FCI Minitek 89947-718LF.

Pin	Signal name	Pin	Signal name
1	GND	2	+V5F
3	KBDATA	4	KBCLK
5	MSDATA	6	MSCLK
7	BAT	8	PC_BEEP
9	PB_RST#	10	GND
11	HSYNC	12	VSYNC
13	RED	14	GREEN
15	DDCSCL	16	DDCSDA
17	GND	18	BLUE



J5 – Ethernet and USB4/5

Connector: COMBO RJ45 socket and dual stacked USB type A.

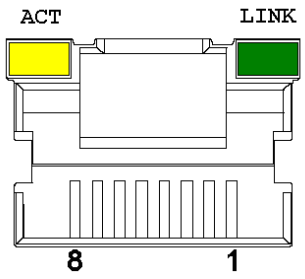
Mating plugs: RJ45 plug and USB type A plugs.

Activity LED: Indicates either transmit or receive activity.

Link LED: Indicates if the link is valid in either 10 or 100Mbps.

Ethernet

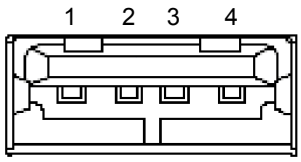
Pin	Signal name
1	TX+
2	TX-
3	RX+
4	NC
5	NC
6	RX-
7	NC
8	NC



USB4/USB5

Pin (top)	Signal name
1	+V5_USB45
2	USB_D4-
3	USB_D4+
4	GND

Pin (bottom)	Signal name
1	+V5_USB45
2	USB_D5-
3	USB_D5+
4	GND



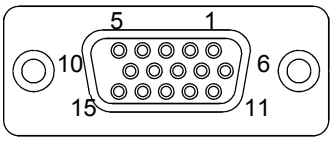
J6 – PS/2 mouse and keyboard and VGA

Connector: Stacked HD15 VGA and dual 6-pin Mini-DIN PS/2 connectors.

Mating plugs: PS/2 and VGA plugs.

VGA

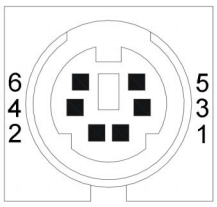
Pin	Signal name	Pin	Signal name
1	RED	9	+V5F
2	GREEN	10	GND
3	BLUE	11	NC
4	NC	12	DDCSDA
5	GND	13	HSYNC
6	GND	14	VSYNC
7	GND	15	DDCSCL
8	GND		



Keyboard (left) and Mouse (right)

Pin	Signal name
1	KBDATA
2	NC
3	GND
4	+V5F
5	KBCLK
6	NC

Pin	Signal name
1	MSDATA
2	NC
3	GND
4	+V5F
5	MSCLK
6	NC



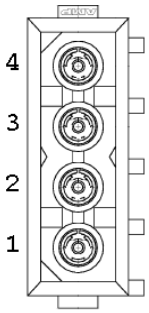
J7 – CDROM/HDD power

Connector: TYCO 770997-1 power header.

Mating housing: TYCO 1-480426-0.

Crimps: TYCO 163305-2.

Pin	Signal name
1	+12V
2	GND
3	GND
4	+5V



J7 provides output power only. Do not connect to an input power source.

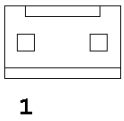
J8 – External beeper

Connector: FCI Dubox 76384-402LF, 2-way, 2.54mm (0.1") header.

Mating Housing: FCI Dubox 65240-002LF.

Crimps: FCI 76357-401LF.

Pin	Signal name
1	Beeper+ (+V5F)
2	Beeper-



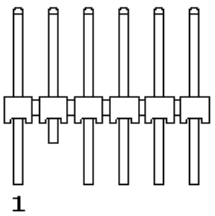
J9 – Power out

Connector: SAMTEC TSW-106-08-G-D-RA, dual row, 2.54mm (0.1") header.

Mating Housing: MOLEX 90143-0012 12-way housing.

Crimps: MOLEX 90119-0111.

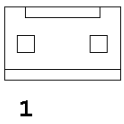
Pin	Signal name	Pin	Signal name
1	GND	2	+5V
3	NC (pin removed)	4	+12V
5	NC	6	NC
7	GND	8	+5V
9	NC	10	PWRBTN#
11	+5VSB	12	PS_ON#



J10 – External On/Off

Connector: FCI Dubox 76384-402LF, 2-way, 2.54mm (0.1") header.
Mating Housing: FCI Dubox 65240-002LF.
Crimps: FCI 76357-401LF.

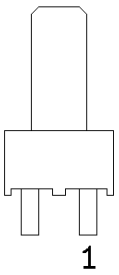
Pin	Signal name
1	PWRBTN#
2	GND



J11 – TSC1 Power

Connector: MOLEX KK 0022057028, 2-way, 2.54mm (0.1") header.
Mating Housing: MOLEX KK 0022012025.
Crimps: MOLEX 0008500030.

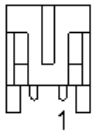
Pin	Signal name
1	+5V
2	GND



J13 – IDE activity LED

Connector: JST S2B-PH-K-S, 2-way 2mm (.0787"), shrouded header.
Mating socket: JST PHR-2 housing.
Crimps: JST SPH-002T-P0.5L.

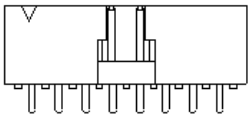
Pin	Signal name
1	IDE_LED (anode)
2	IDE_LED# (cathode)



J16 – USB 2.0 (ports 0, 1, 4, 5)

Connector: FCI Minitek 98464-G61-16ULF, 16-way 2mm (.0787") shrouded header.
Mating housing: FCI Minitek 90311-016LF.
Crimps: FCI Minitek 77138-201LF.
Mating Receptacle: FCI Minitek 89947-716LF.

Pin	Signal name	Pin	Signal name
1	USB_D0+	2	USB_D0-
3	GND	4	+V5_USB01
5	USB_D1+	6	USB_D1-
7	GND	8	+V5_USB01
9	USB_D4+	10	USB_D4-
11	GND	12	+V5_USB45
13	USB_D5+	14	USB_D5-
15	GND	16	+V5_USB45



J17 – COM1 and COM2

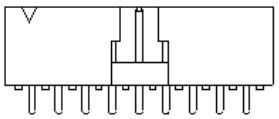
Connector: FCI Minitek 98464-G61-18ULF, 18-way, 2mm (.0787"), shrouded header.

Mating housing: FCI Minitek 90311-018LF.

Crimps: FCI Minitek 77138-201LF.

Mating Receptacle: FCI Minitek 89947-718LF.

Pin	Signal name	Pin	Signal name
1	GND	2	RI2
3	DTR2/RX2F+	4	CTS2
5	TX2/RX2F-	6	RTS2
7	RX2/RX2/TX2F+-	8	DSR2
9	DCD2/RX2/TX2F-	10	GND
11	RI1	12	DTR1
13	CTS1	14	TX1
15	RTS1	16	RX1
17	DSR1	18	DCD1



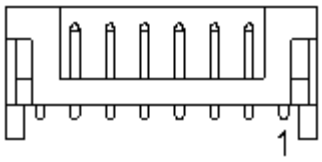
J20 – 10/100 Ethernet

Connector: JST S8B-PH-K-S, 8-way, 2mm (.0787"), shrouded header.

Mating socket: JST PHR-8 Housing.

Crimps: SPH-002T-P0.5L.

Pin	Signal name
1	TX-
2	TX+
3	GND
4	LINK LED (cathode)
5	RX-
6	RX+
7	ACT LED (cathode)
8	COM LED (anodes)



Jumpers

There are three jumpers on the ISIS-Breakout; the use of each one is explained below.

JP1 – BAT-EN

JP1 function table:

Position	Function
Open	Battery is disconnected
Closed (default)	Battery is connected

JP2 – BEEP-EN

JP2 function table:

Position	Function
Open	Onboard beeper is disconnected
Closed (default)	Onboard beeper is connected

JP3 – ALWAYS ON-EN

JP3 function table:

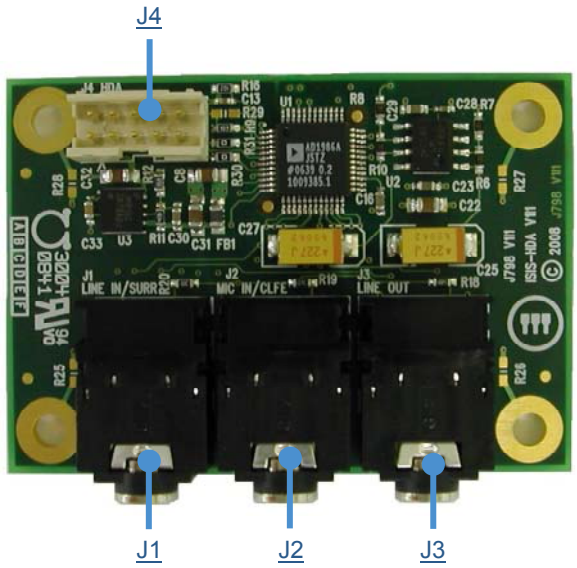
Position	Function
Open (default)	12V and 5V supplies are switched on upon PS_ON# assertion (ATX style power mode)
Closed	12V and 5V supplies are always switched on (AT style power mode)

By default (JP3 open), the user needs to press the momentary On/Off button to power up the ISIS. However in the Always on mode (JP3 closed), the On/Off button is not used and the ISIS powers up automatically.

ISIS-HDA board

The following diagram shows the location of the connectors on the ISIS-HDA board.

Top view



Connectors

There are four connectors on the ISIS-HDA board; the use of each one is explained below.

J1 – LINE IN/SURR

Socket: 3.5mm stereo jack.

Mating plug: 3.5mm stereo plug.

Pin	Signal name - 2.0 mode	Signal name - 5.1 mode
Tip	Line in left	Rear surround left
Ring	Line in right	Rear surround right
Sleeve	Ground	Ground

J2 – MIC IN/CLFE

Socket: 3.5mm stereo jack.

Mating plug: 3.5mm stereo plug.

Pin	Signal name - 2.0 mode	Signal name - 5.1 mode
Tip	Microphone 1	Surround centre
Ring	Microphone 2	Low frequency effects
Sleeve	Ground	Ground

J3 – LINE OUT

Socket: 3.5mm stereo jack.

Mating plug: 3.5mm stereo plug.

Pin	Signal name - 2.0 mode	Signal name - 5.1 mode
Tip	Line out left	Front surround left
Ring	Line out right	Front surround right
Sleeve	Ground	Ground

J4 – HD audio

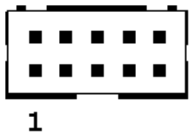
Connector: FCI Minitek 98414-G06-10LF, 10-way 2mm (.0787") shrouded header.

Mating housing: FCI Minitek 90311-010LF.

Crimps: FCI Minitek 77138-201LF.

Mating receptacle: FCI Minitek 89947-710LF.

Pin	Signal name
1	+5V
2	GND
3	HDA_SDO
4	HDA_CLK
5	HDA_SPKR
6	GND
7	HDA_RST#
8	HDA_SYNC
9	HDA_SDI0
10	NC



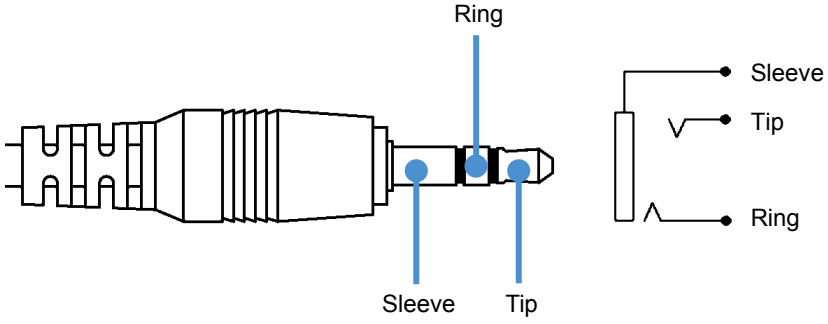
LINE IN, MIC, LINE OUT – Audio connectors

3.5mm stereo audio jacks are used for audio connection. The audio codec can operate in either of the following modes

- 2.0 mode, which allows for microphone, line in and line out operation.
- 5.1 mode, which provides six-channel surround sound output. The microphone input and line in are not available during six channel mode.

Selection of 2.0 or 5.1 mode is made under software control.

The audio connectors are illustrated in the following diagram:



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 ATOM processors:

www.intel.com

PC/104 consortium

PC/104 specifications, vendor information and available add-on products:

www.PC/104.org

SDIO card information

SD Card Association and product Information:

www.sdcard.org

IEEE Specifications

Information about wired and wireless communication:

www.ieee.org

Trusted Computing Platform Alliance

Information about Trusted Platform:

www.trustedcomputing.org

Appendix B – RoHS Compliance

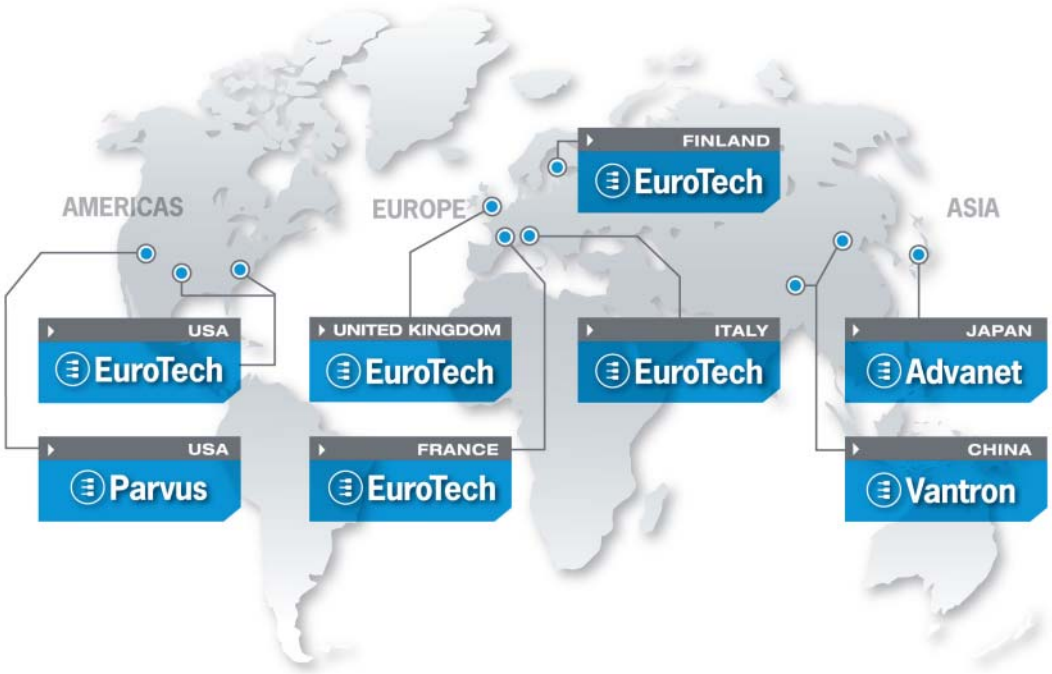
EUROTECH

The Restriction of the use of certain Hazardous Substances (RoHS) Directive came into force on 1st July 2006. The ISIS board shall be 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 100ppm.

Eurotech Group Worldwide presence



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