

µA1-C Mini-ITX PPC Board Documentation

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µA1-C Outline Specifications

Processor system

- Main board has universal MegArray 300 connector capable of taking a variety of PPC cpu modules including the IBM PPC750CXe, PPC75OFX and PPC750GX CPUs (up to 800MHz) and Freescale MPC744x, MPC745x G4 processors up to 1.3 GHz
- 133MHz front side bus
- Articia 'S' northbridge with iMemory for run-time memory fault recovery and patented Floating Buffer subsystem for smart data traffic management and high data throughput
- Memory subsystem supports PC133 SDRAM up to 2GB. One 144-pin SODIMM slot on board

Expansion Slot

- One 33MHz 32-bit 5V PCI slot on board for custom expansion

Graphics subsystem

- Onboard ATI Radeon 7000 AGP graphic controller with 32 MB DDR video RAM support up to 1920 x 1440 at 75Hz
- VGA, RCA and S-Video output connectors

On Board Devices

- Ultra DMA 100/66/33 IDE controller with one 40-pin and one 44-pin IDE connectors
- USB 1.1 controller with 4 USB ports
- 3Com 100/10 Ethernet controller with RJ45 port
- One serial port with onboard pin header
- 6-channel sound controller with 6-channel 5.1 surround sound and CD audio in connector
- SPDIF digital audio in/out connector

Back Panel I/O Ports

- 1 x parallel port
- 1 x VGAport
- 1 x S-Video port
- 1 x RCA video out port
- 1 x PS/2 keyboard port
- 1 x PS/2 mouse port
- 2 x USB1.1 ports
- 1 x 5.1 audio port
- 1 x RJ45port
- 1 x Gameport

Firmware

- 4Mbit Flash ROM with UBoot firmware

Operating System support

- Linux PPC and OS4* (* when special OS4 compatible firmware is installed)

Power consumption

- Typically 15-20w with 750Gx CPU running at 800MHz

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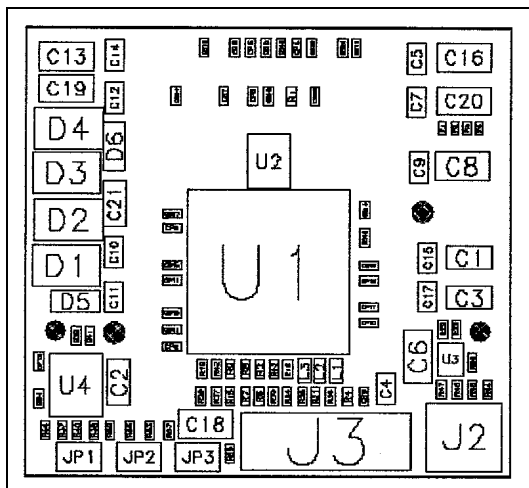
CPU Module Cards

The µA1-C CPU modules use a 300-pin MegArray connector which shares a common pinout with those used on the A1-XE board. In principle these modules are interchangeable, but due consideration must also be given to the physical size of different CPU module, and their cooling requirements. If changing CPU module types you **MUST** adjust the CPU core voltage to match the new CPU module before powering up. Failure to do so may destroy your CPU module, your motherboard or both.

Currently available CPU modules for the µA1-C are:

- 750FX @ 800MHz
- 750GX @ 800MHz
- 7447A @ 1.3GHz (estimated availability 1Q05)

The layout of the 750FX/GX CPU module is shown below



The main functional components of the 750FX/GX CPU module are as follows :

- | | |
|-------------------------|---|
| U1: | Processor (PPC750FX or GX) |
| J2 with JPI, JP2 & JP3: | Assigned for the synthesizer clock speed ratio. See appendix for detailed settings. |
| J3: | JTAG connector |

The default CPU frequency setting for the 750FX/GX modules is 800MHz corresponding to the following settings:

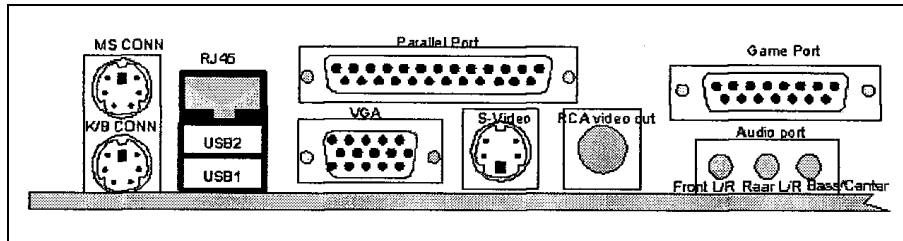
- | | |
|----------------|--------------------------|
| J1: | 1=on, 2=off, 3=off, 4=on |
| JP1, JP2, JP3: | all shorted |

µA1-C back panel I/O ports

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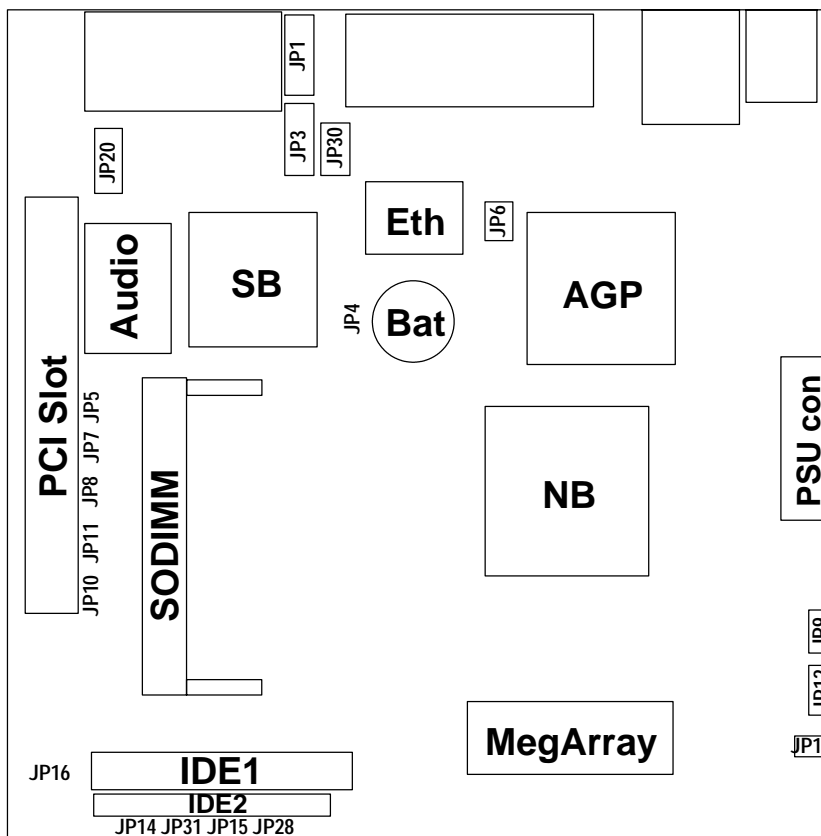
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µA1-C main board layout, jumpers and headers

The µA1-C uses the Mini-ITX form factor (170mmx170mm). The main functional components are shown below.

The diagram above shows the following main on-board components



300-pin MegArray	CPU module connector
Northbridge	Mai Logic Articia 'S'
Southbridge	VIA VT82C686B
10/100 ethernet Controller	3COM 3C920
AGP graphics controller	ATI Radeon 7000

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6-channel PCI audio controller C-Media 8738

The jumpers have the following functions:

- JP1 Mic, line-in, line-out
- JP2 n/a
- JP3 Serial port connector
- JP4 Battery active : 1-2 = active; 2-3 = CMOS reset
- JP5 Reset
- JP6 CPU fan connector
- JP7 Power switch
- JP8 System clock (with JP10, JP11) - see table (default 1-2 shorted)
- JP9 Reserved
- JP10 System clock (with JP8, JP11) - see table (default 1-2 shorted)
- JP11 System clock (with JP8, JP10) - see table (default 1-2 shorted)
- JP12 CPU core voltage (5 x 2 jumpers) - see table. (default for 750Fx/Gx =3-4 & 9-10 shorted; 1-2, 4-5, 6-7 open =1.44v)
- JP13 CPU fan connector
- JP14 Speaker connector
- JP15 IDE hard drive LED
- JP16 Power LED
- JP17-19 n/a
- JP20 CD analogue audio in
- JP21-27 n/a
- JP28 Reserved test port
- JP29 n/a
- JP30 USB 3 & 4 connector
- JP31 SPDIF audio in/out

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Appendix - Jumper settings and header pinouts

System clock configuration : JP8, JP10, JP11

JP8	JP10	JP11	FSB MHz	AGP MHz	PCI MHz	USB MHz	Ref MHz
2-3	2-3	2-3	Hi-z	Hi-z	Hi-z	Hi-z	Hi-z
2-3	2-1	2-3	100	66.67	33.33	Hi-z	14.32
2-3	2-1	2-1	100	66.67	33.33	48	14.32
2-1	2-1	2-3	133	66.67	33.33	Off	14.32
2-1	2-1	2-1	133	66.67	33.33	48	14.32

750Fx/Gx CPU module clock speed multiplier

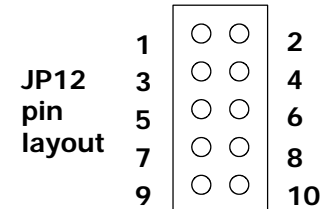
J2-1	J2-2	J2-3	J2-4	JP1	Multiplier
On	Off	On	On	Short	4x
On	Off	On	On	Open	4.5x
On	Off	On	Off	Short	5x
On	Off	On	Off	Open	5.5x
On	Off	Off	On	Short	6x
On	Off	Off	On	Open	6.5x
On	Off	Off	Off	Short	7x
Off	Off	Off	Off	Open	7.5x
Off	On	On	On	Short	8x

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CPU core voltage JP12

1-2	3-4	5-6	7-8	9-10	VCC_CORE
Open	Open	Open	Open	Short	1.34
Short	Open	Open	Open	Short	1.39
Open	Short	Open	Open	Short	1.44
Short	Short	Open	Open	Short	1.49
Open	Open	Short	Open	Short	1.54
Short	Open	Short	Open	Short	1.59
Open	Short	Short	Open	Short	1.64
Short	Short	Short	Open	Short	1.69
Open	Open	Open	Short	Short	1.74
Short	Open	Open	Short	Short	1.79
Open	Short	Open	Short	Short	1.84
Short	Short	Open	Short	Short	1.89
Open	Open	Short	Short	Short	1.94
Short	Open	Short	Short	Short	1.99
Open	Short	Short	Short	Short	2.04
Short	Short	Short	Short	Short	2.09
Open	Open	Open	Open	Open	1.244
Short	Open	Open	Open	Open	2.14
Open	Short	Open	Open	Open	2.24
Short	Short	Open	Open	Open	2.34
Open	Open	Short	Open	Open	2.44
Short	Open	Short	Open	Open	2.54
Open	Short	Short	Open	Open	2.64
Short	Short	Short	Open	Open	2.74
Open	Open	Open	Short	Open	2.84
Short	Open	Open	Short	Open	2.94
Open	Short	Open	Short	Open	3.04
Short	Short	Open	Short	Open	3.14
Open	Open	Short	Short	Open	3.24
Short	Open	Short	Short	Open	3.34
Open	Short	Short	Short	Open	3.44
Short	Short	Short	Short	Open	3.54



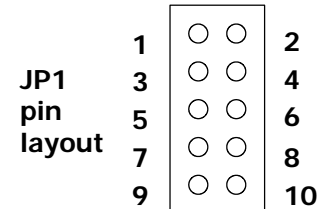
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Connector pin assignments

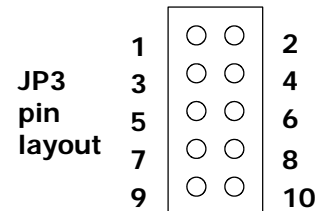
JP1 sound connector

Pin #	Signal
1	Mic in
2	Gnd
3	+5v
4	+5v
5	Line out R
6	Line in R
7	GND
8	GND (removed polarising pin)
9	Line out L
10	Line in L



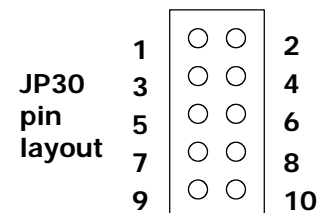
JP3 serial connector

Pin #	Signal
1	DCD
2	RxD
3	TxD
4	DTR
5	GND
6	DSR
7	RTS
8	CTS
9	RI
10	n/c



JP30 USB 3 & 4 connector

Pin #	Signal
1	VCC
2	VCC
3	USB3 D-
4	USB4 D-
5	USB3 D+
6	USB4 D+
7	GND
8	GND
9	GND
10	GND (removed polarising pin)

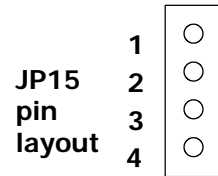


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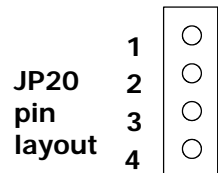
JP15 HDD LED

Pin #	Signal
1	IDE1 -
2	IDE1 +
3	IDE2 -
4	IDE2 +-



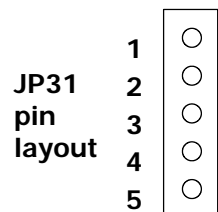
JP20 CD analogue audio in

Pin #	Signal
1	CD in L
2	GND
3	GND
4	CD in R



JP31 SPDIF digital audio in/out

Pin #	Signal
1	SPDIF in
2	GND
3	SPDIF out
4	n/c
5	+5v



Please note that this information is believed to be correct and accurate at the time of publication. However neither Eyetech, nor any other participant in the µA1-C program, accepts any responsibility for any inaccuracies in this document. The information given is liable to change without notice.

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