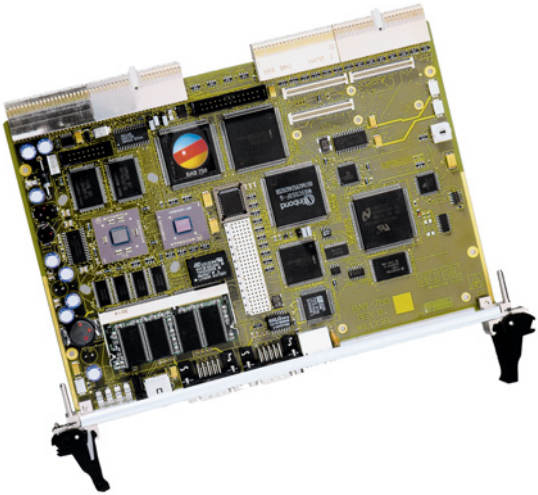
ELTEC systems

BAB 750

PowerPC 755 Based CompactPCI Board



MANUAL

Revision 1B

ELTEC systems

Revision

Revision	Changes	Date / Name
1A	First Edition, valid for Hardware revision 1A,	14.12.00 GM
1B	Disclaimer new	08.11.06 hh

DISCLAIMER

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Federal communications commission statement

- This device complies with FCC Rules Part 15. Operation is subject to the following two conditions:
- This device may not cause harmful interference, and
- This device must accept any interference received including interference that may cause undesired operation.
- 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 in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with

manufacturer's instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try correct the interference by one or more of the following measures:

- ↪ Reorient or relocate the receiving antenna.
- ↪ Increase the separation between the equipment and receiver.
- ↪ Connect the equipment to an outlet on a circuit different from that to which the receiver is connected.
- ↪ Consult the dealer or an experienced radio/TV technician for help.
- ↪ The us of shielded cables for connection of the monitor to the graphics card is required to assure compliance with FCC regulations. Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

Canadian department of communications statement

- ↪ This digital apparatus does not exceed the Class B limits for radio noise emissions from digital apparatus set out in the Radio Interference Regulations of the Canadian Department of Communications.
- ↪ This class B digital apparatus complies with Canadian ICES-003

SAFETY INFORMATION

Electrical safety

- ↪ To prevent electrical shock hazard, disconnect the power cable from the electrical outlet before reloading the system.

- When adding or removing devices to or from the system, ensure that the power cables for the devices are unplugged before the signal cables are connected. If possible, disconnect all power cables from the existing system before you add device.
- Before connecting or removing signals cables from motherboard, ensure that all power cables are unplugged.
- Make sure that your power supply is set to the correct voltage in your area. If you are not sure about the voltage of the electrical outlet you are using, contact your local power company.
- If the power supply is broken, do not try to fix it by yourself. Contact a qualified service technician or your retailer.

Operation safety

- Before installing the motherboard and adding devices on it, carefully read the manuals that came with the package.
- Before using the product, make sure all cables are correctly connected and the power cables are not damaged. If you detect any damage, contact your dealer immediately.
- To avoid short circuits, keep paper clips, screws, and staples away from connectors, slots sockets and circuitry.
- Avoid dust, humidity, and temperature extremes. Do not place the product in any area where it may become wet.
- Place the product on a stable surface.
- If you encounter technical problems with the product, contact a qualified service technician or your retailer.

EMC Rules

This unit has to be installed in a shielded housing. If not installed in a properly shielded enclosure, and used in accordance with the instruction manual, this product may cause radio interference in which case the user may be required to take adequate measures at his or her own expense.

IMPROTANT INFORMATION

This product is not an end user product. It was developed and manufactured for further processing by trained personnel.

RECYCLING

Please recycle packaging environmentally friendly:
Packaging materials are recyclable. Please do not dispose packaging into domestic waste but recycle it.

Please recycle old or redundant devices environmentally friendly:
Old devices contain valuable recyclable materials that should be reutilized. Therefore please dispose old devices at collection points which are suitable.

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1 Specification

1.1 Main Features

- CompactPCI board with up to four PMC daughter card slots One on-board and three on a optional PMC carrier board (PMCC). Two slots required with PMC carrier board.
- PowerPC CPU 755 with 300 MHz.
- RAM: 8..128 MB (64-bit SODIMM) SDRAM (66/83 MHz, CL=2).
- Cache: 1MB on-board.
- PCI host bridge: Motorola MPC106.
- PCI-ISA-Bridge: W83C553.
- Intel 21152 PCI-to-PCI bridge to compactPCI bus.
- Flash Eprom: 2 + 0,5 MB onboard, Flash programmable, byte access implemented in hardware.
- Network interface: Ethernet using DEC21143 (10/100 Mbps) with PCI-DMA, 10BaseT connector at front panel.
- Serial asynchronous: 2 * RS232 with PC97307.
- Real-time clock: MK48T59
- IDE
- Floppy
- SCSI (optional): 53C875

1.2 Specification Details

1.2.1 CPU Kernel

The CPU kernel consists of the PowerPC 755 CPU with a clock rate of 300 MHz and host bus clock of 66/83 MHz. The CPU contains two parallel 32-bit integer execution units with an additional floating point unit for 8 SPECint95 and 6.2 SPECfp95 at 200 MHz. It has an external second-level cache running at 150 MHz. Memory is controlled by the host bridge MPC106 which contains the bridge between host bus and on-board PCI itself as well as the memory interface for EDO or SDRAM modules in SODIMM format (144-pin SODIMM module; 64-bit data bus). Memory size can be anywhere between 8 and 128 MB, depending on the DIMM modules used.

1.2.2 Flash Memory

Up to 2 MB of user flash memory are supplied for storing user-generated programs. Thus, diskless systems can be built.

1.2.3 PCI Devices

The board-internal PCI bus is used for all I/O devices as well as the PCI-to-cPCI bridge. The PCI bus is of the master/slave type, capable of DMA transfers as source and target.

A single-size PMC slot allows for interfacing, e.g. using a VGA display adapter PMC module or a frame grabber interface. Due to the bus-master DMA capabilities of the PMC implementation of the PCI standard, frame grabber can be implemented efficiently without frame buffers.

A optional PMC carrier board allows additional three PMC modules.

An Ethernet controller for either 10 Mbps or 100 Mbps Ethernet with PCI DMA capabilities is provided on-board. Front panel interface is 10/100BaseT.

A optional ultra wide SCSI controller (53C875) allows transfer rates of up to 40Mb/s.

The last interface on the local PCI bus is the ISA bridge (Winbond W83C553), interfacing to the internal ISA bus with additional on-board components. Additionally, there are the standard PC components real-time clock, watchdog, keyboard controller, dual serial I/O, floppy controller, IDE controller, and parallel controller.

1.2.4 CompactPCI Interface

A Intel 51152 32-bit PCI-to-PCI bridge is used to connect to the compactPCI bus. The BAB 750 supplies system slot capabilities for four other compactPCI boards.

1.2.5 PMC

A PCI extension card for PMC boards is provided. A PMC module carrier board (PMCC) can be installed to provide three PMC module slots. The PMC connectors are buffered with an additional 32-bit PCI-PCI brdge device, located on the carrier board.

1.2.6 Mechanical

The board format is double Eurocard (6HU). If the optional PMC carrier is used the BAB 750 requires two slots.

1.2.7 I/O

16-bit SCSI, floppy, IDE, keyboard, mouse, COM2, and speaker are routed over the compactPCI P5 connector. Additionally printer and PMC I/O is connected to compactPCI P4.

On the front panel the Ethernet 10BaseT connector is located as well as the separate front panel for PMC I/O signals. The keyboard/mouse connector and two serial RS232 channel are also routed to the front panel.

1.2.8 Compatibility

The BAB 750 has been designed to be software-compatible to the PowerPC reference platform ("Yellowknife") as much as possible.

1.2.9 Related Documents

PowerPC 750 Programmer's Reference: This is the CPU manufacturer's description of the PowerPC itself and the assembly language command set.

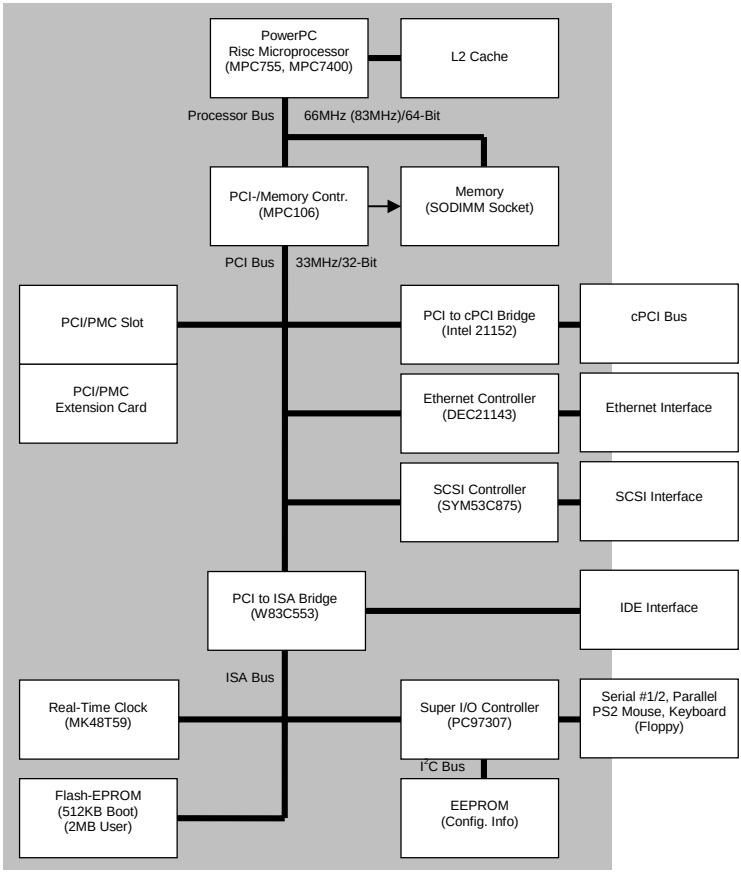


Figure 1: Block Diagram

2 Installation

2.1 Frontpanel I/O

- CPU Bus activity: "RUN" LED green
- Harddisk activity: "HDD" LED yellow
- Ethernet Link Status: "LINK" LED yellow/green (10 / 100 MBit)
- Ethernet activity: "ACT" LED yellow
- Reset: "RES" Trigger
- Keyb./Mouse: "KEY" Mini-DIN
- Serial #2: "COM2" Sub-D 9-pin
- Serial #1 "COM1" Sub-D 9-pin
- Ethernet: "100Tx" RJ45
- PMC Slot: "PMC"

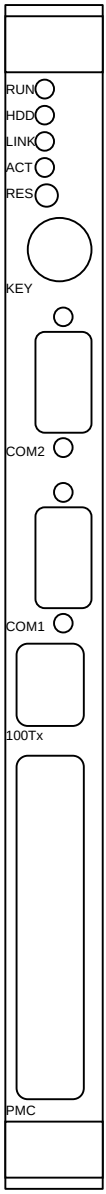


Figure 2: Frontpanel I/O

2.2 Backpanel I/O

- Keyboard / Mouse
- Floppy Disk
- IDE
- SCSI
- COM2
- Parallel

2.2.1 CompactPCI Installation

WARNING: *The springs that hold the CPU heat sink violate the mechanical compactPCI specification. Make sure that the springs don't touch other components that are installed adjecend of the BAB 750.*

WARNING: *Due to the power dissipation of the MPC755 CPU it is not recommended to operate the BAB 750 without forced air cooling.*

The BAB 750 uses two compactPCI slots, when used with the PMCC carrier board. Since the two boards (BAB 750 and PMCC) have an internal connection, be sure to install respectively remove the two-board package carefully and simultaneously!

2.2.2 What's needed for Installation

The BAB 750 must be installed into the system slot of a cPCI rack. A terminal (or a PC with a terminal emulator program), set to 9600 baud, 8 bit, no parity, is needed to check boot messages and to change boot settings (connected to COM1). A SCSI hard disk can be attached via an transition board if the operating system is booted from disk; if it is booted from Ethernet, this network connection is needed.

2.2.3 SODIMM Installation

All 144-pin SODIMMs up to 128 MByte that fit into the socket can be used with the BAB 750. The firmware reads the type and size of the SODIMM from the SPD (Serial Presence Detect) EEPROM installed on the memory module. However there are some restrictions and recommendations:

- SDRAMs should be 100 MHz or faster. They must be able to operate with CL = 2 at 83 MHz.
- FPMODE or EDO RAMs should be 60 ns or faster.
- Due to performance reasons the use of SDRAM is strongly recommended (50% advantage).

After reset the firmware tests the memory modules. If the test fails or the firmware reports the wrong size the module may not be suitable for the BAB 750.

2.2.4 Activity LEDs

There are four activity LEDs on the front panel of the BAB 750. The LEDs have a pulse stretcher to make short pulses visible.

Table 1: Activity LEDs

LED	Color	Description
RUN	Green	CPU data bus in usage
DISK	Yellow	access to IDE or SCSI bus
LNK	Green/Yellow	green = 100 Mbit link pulses present yellow = 10 Mbit link pulses present
ACT	Yellow	network activity

3 Connector Assignments

Please check the connector assignments before making any connections!

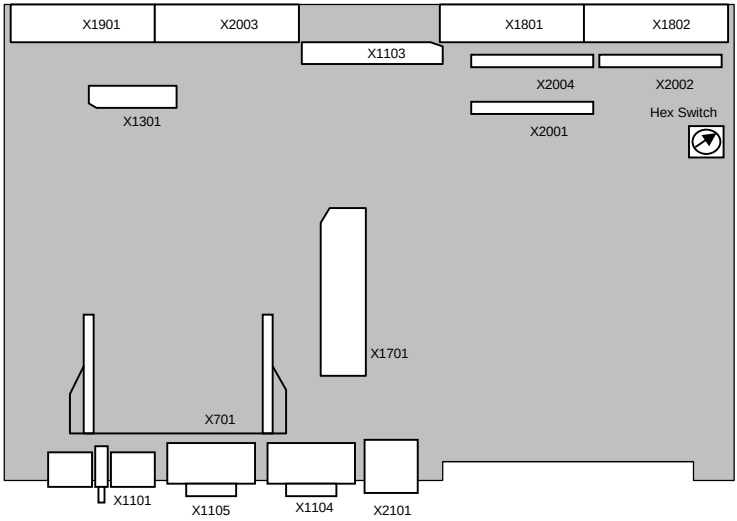


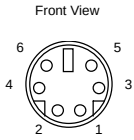
Figure 3: Connectors

3.1 Onboard Connectors

3.1.1 Keyboard / Mouse Connector

Table 2: Keyboard (6-pin miniature circular connector)

Pin	Signal
1	KBDATA
2	MDATA
3	GND
4	+5V
5	KBCLK
6	MCLK



3.1.2 Ethernet Connector

Table 3: Ethernet (8-pin telephone jack connector)

Pin	Signal
1	TXD+
2	TXD-
3	RXD+
4	nc
5	nc
6	RXD-
7	nc
8	nc

Front View

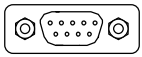
3.1.3 Serial Ports 1 and 2 Connector

Table 4: COM1, COM2 (9-pin min-D connector)

Pin	Signal
1	DCD
2	RXD
3	TXD
4	DTR
5	GND
6	DSR
7	RTS
8	CTS
9	RI

Front View

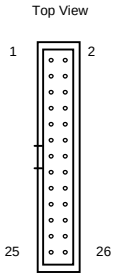
Pin 1



3.1.4 Parallel I/O Connector

Table 5: Parallel I/O Connector

Pin	Signal
1	/P_STB
2	/P_AFD
3	P_PD(0)
4	/P_ERR
5	P_PD(1)
6	/P_INIT
7	P_PD(2)
8	/P_SLIN
9	P_PD(3)
10	GND
11	P_PD(4)
12	GND
13	P_PD(5)
14	GND
15	P_PD(6)
16	GND
17	P_PD(7)
18	GND
19	/P_ACK
20	GND
21	/P_BUSY
22	GND
23	P_PE
24	GND
25	P_SLCT
26	GND



3.1.5 CompactPCI Connectors

The CompactPCI connectors P1, P2, P4 and P5 provide the connection to the CompactPCI backplane.

Table 6: CompactPCI Connector P1

Pin	Row A	Row B	Row C	Row D	Row E	Row F
1	VCC_IN	-12V	reserved	+12V	VCC_IN	GND
2	reserved	VCC_IN	reserved	reserved	reserved	GND
3	cPCI_/PIRQA	cPCI_/PIRQB	cPCI_/PIRQC	VCC_IN	cPCI_/PIRQD	GND
4	reserved	cPCI_/HEALTHY	V_I/O	reserved	reserved	GND
5	reserved	reserved	cPCI_/PCIRST	GND	S_GNT0#	GND
6	S_REQ0#	GND	reserved	S_CLK0#	cPCI_AD(31)	GND
7	cPCI_AD(30)	cPCI_AD(29)	cPCI_AD(28)	GND	cPCI_AD(27)	GND
8	cPCI_AD(26)	GND	V_I/O	cPCI_AD(25)	cPCI_AD(24)	GND
9	cPCI_C_/BE(3)	GND	cPCI_AD(23)	GND	cPCI_AD(22)	GND
10	cPCI_AD(21)	GND	reserved	cPCI_AD(20)	cPCI_AD(19)	GND
11	cPCI_AD(18)	cPCI_AD(17)	cPCI_AD(16)	GND	cPCI_C_/BE(2)	GND
12	KEY	KEY	KEY	KEY	KEY	GND
13	KEY	KEY	KEY	KEY	KEY	GND
14	KEY	KEY	KEY	KEY	KEY	GND
15	reserved	cPCI_/FRAME	cPCI_/IRDY	GND	cPCI_/TRDY	GND
16	cPCI_/DEVSEL	GND	V_I/O	cPCI_/STOP	cPCI_/LOCK	GND
17	reserved	reserved	reserved	GND	cPCI_/PERR	GND
18	cPCI_/SERR	GND	reserved	cPCI_PAR	cPCI_C_/BE(1)	GND
19	reserved	cPCI_AD(15)	cPCI_AD(14)	GND	cPCI_AD(13)	GND
20	cPCI_AD(12)	GND	V_I/O	cPCI_AD(11)	cPCI_AD(10)	GND
21	reserved	cPCI_AD(9)	cPCI_AD(8)	reserved	cPCI_C_/BE(0)	GND
22	cPCI_AD(7)	GND	reserved	cPCI_AD(6)	cPCI_AD(5)	GND
23	reserved	cPCI_AD(4)	cPCI_AD(3)	VCC_IN	cPCI_AD(2)	GND
24	cPCI_AD(1)	VCC_IN	V_I/O	cPCI_AD(0)	cPCI_/ACK64	GND
25	VCC_IN	cPCI_/REQ64	cPCI_/ENUM	reserved	VCC_IN	GND

Table 7: CompactPCI Connector P2

Pin	Row A	Row B	Row C	Row D	Row E	Row F
1	S_CLK1#	GND	S_REQ1#	S_GNT1#	S_REQ2#	GND
2	S_CLK2#	S_CLK3#	reserved	S_GNT2#	S_REQ3#	GND
3	reserved	GND	S_GNT3#	reserved	reserved	GND
4	V_I/O	reserved	cPCI_C_BE(7)	GND	cPCI_C_BE(6)	GND
5	cPCI_C_BE(5)	GND	V_I/O	cPCI_C_BE(4)	CPCI_PAR64	GND
6	cPCI_AD(63)	cPCI_AD(62)	cPCI_AD(61)	GND	cPCI_AD(60)	GND
7	cPCI_AD(59)	GND	V_I/O	cPCI_AD(58)	cPCI_AD(57)	GND
8	cPCI_AD(56)	cPCI_AD(55)	cPCI_AD(54)	GND	cPCI_AD(53)	GND
9	cPCI_AD(52)	GND	V_I/O	cPCI_AD(51)	cPCI_AD(50)	GND
10	cPCI_AD(49)	cPCI_AD(48)	cPCI_AD(47)	GND	cPCI_AD(46)	GND
11	cPCI_AD(45)	GND	V_I/O	cPCI_AD(44)	cPCI_AD(43)	GND
12	cPCI_AD(42)	cPCI_AD(41)	cPCI_AD(40)	GND	cPCI_AD(39)	GND
13	cPCI_AD(38)	GND	V_I/O	cPCI_AD(37)	cPCI_AD(36)	GND
14	cPCI_AD(35)	cPCI_AD(34)	cPCI_AD(33)	GND	cPCI_AD(32)	GND
15	reserved	GND	cPCI_/FAL	reserved	reserved	GND
16	reserved	reserved	cPCI_/DEG	GND	reserved	GND
17	reserved	GND	cPCI_/PRST	reserved	reserved	GND
18	reserved	reserved	reserved	GND	reserved	GND
19	GND	GND	reserved	reserved	reserved	GND
20	reserved	GND	reserved	GND	reserved	GND
21	reserved	GND	reserved	reserved	reserved	GND
22	reserved	reserved	reserved	reserved	reserved	GND

Table 8: CompactPCI Connector P4

PMC I/O, Parallel Port						
Pin	**Row A**	**Row B**	**Row C**	**Row D**	**Row E**	**Row F**
1	/P_STB	P_PD(0)	P_PD(1)	P_PD(2)	P_PD(3)	GND
2	P_PD(4)	P_PD(5)	P_PD(6)	P_PD(7)	/P_ACK	GND
3	/P_BUSY	P_PE	P_SLCT	/P_AFD	/P_ERR	GND
4	/P_INIT	/P_SLIN	reserved	reserved	reserved	GND
5	reserved	reserved	reserved	reserved	reserved	GND
6	reserved	reserved	reserved	reserved	reserved	GND
7	reserved	reserved	reserved	reserved	reserved	GND
8	reserved	reserved	reserved	reserved	reserved	GND
9	GND	GND	GND	GND	GND	GND
10	V_IO	PMC_IO64	PMC_IO63	PMC_IO62	PMC_IO61	GND
11	PMC_IO60	PMC_IO59	PMC_IO58	PMC_IO57	PMC_IO56	GND
12	KEY	KEY	KEY	KEY	KEY	GND
13	KEY	KEY	KEY	KEY	KEY	GND
14	KEY	KEY	KEY	KEY	KEY	GND
15	PMC_IO55	PMC_IO54	PMC_IO53	PMC_IO52	PMC_IO51	GND
16	PMC_IO50	PMC_IO49	PMC_IO48	PMC_IO47	PMC_IO46	GND
17	PMC_IO45	PMC_IO44	PMC_IO43	PMC_IO42	PMC_IO41	GND
18	PMC_IO40	PMC_IO39	PMC_IO38	PMC_IO37	PMC_IO36	GND
19	PMC_IO35	PMC_IO34	PMC_IO33	PMC_IO32	PMC_IO31	GND
20	PMC_IO30	PMC_IO29	PMC_IO28	PMC_IO27	PMC_IO26	GND
21	PMC_IO25	PMC_IO24	PMC_IO23	PMC_IO22	PMC_IO21	GND
22	PMC_IO20	PMC_IO19	PMC_IO18	PMC_IO17	PMC_IO16	GND
23	PMC_IO15	PMC_IO14	PMC_IO13	PMC_IO12	PMC_IO11	GND
24	PMC_IO10	PMC_IO9	PMC_IO8	PMC_IO7	PMC_IO6	GND
25	PMC_IO5	PMC_IO4	PMC_IO3	PMC_IO2	PMC_IO1	GND

Table 9: CompactPCI Connector P5

Wide SCSI, IDE, Floppy, Keyboard, Mouse, COM2, Speaker						
Pin	**Row A**	**Row B**	**Row C**	**Row D**	**Row E**	**Row F**
1	/SCSI_DP0	/SCSI_D11	/SCSI_IO	FD_DRDEN0	FD_DRDEN1	GND
2	/SCSI_D7	/SCSI_D10	/SCSI_REQ	/FD_INDEX	/FD_MTR0	GND
3	/SCSI_D6	/SCSI_D9	/SCSI_C/D	/FD_DS0	/FD_DIR	GND
4	/SCSI_D5	/SCSI_D8	/SCSI_SEL	/FD_STEP	/FD_WDATA	GND
5	GND	/SCSI_DP1	/SCSI_MSG	/FD_WGATE	/FD_TRK0	GND
6	/SCSI_D4	GND	/SCSI_RST	/FD_WRTPRT	/FD_RDATA	GND
7	/SCSI_D3	/SCSI_D15	GND	/FD_HDSEL	/FD_DSKCHG	GND
8	/SCSI_D2	/SCSI_D14	/SCSI_ACK	GND	GND	GND
9	/SCSI_D1	/SCSI_D13	/SCSI_BSY	COM2_DCD	COM2_RXD	GND
10	/SCSI_D0	/SCSI_D12	/SCSI_ATN	COM2_TXD	COM2_DTR	GND
11	GND	GND	SCSI_TPWR	COM2_RTS	COM2_DSR	GND
12	IDE_A2	IDE_A1	IDE_A0	COM2_RI	COM2_CTS	GND
13	IDE_D8	/IDE_RST	/IDE_ACT	12V (1)	-12V (1)	GND
14	IDE_D9	IDE_D0	/IDE_IOW	reserved	reserved	GND
15	IDE_D10	IDE_D1	/IDE_IOR	reserved	reserved	GND
16	GND	IDE_D2	IDE_IORDY	reserved	reserved	GND
17	IDE_D11	GND	IDE_IRQ	reserved	reserved	GND
18	IDE_D12	IDE_D3	GND	5V	sUSB_OC	GND
19	IDE_D13	IDE_D4	IDE_DREQ	KB_CLK	sUSB_PLUS	GND
20	IDE_D14	IDE_D5	/IDE_DACK	KB_DATA	sUSB_MINUS	GND
21	IDE_D15	IDE_D6	/IDE_CS1	MS_CLK	5V	GND
22	/IDE_IOCS16	IDE_D7	/IDE_CS3	MS_DATA	SPEAKER	GND

Table 10: Board-to-Board Connector

Pin	Row Z	Row A	Row B	Row C	Row D	Row E	Row F
1	GND	AD0	AD1	AD2	AD3	AD4	GND
2	GND	AD5	AD6	AD7	AD8	AD9	GND
3	GND	GND	AD11	AD12	AD13	AD14	GND
4	GND	AD10	GND	AD17	AD18	AD19	GND
5	GND	AD15	AD16	GND	AD23	AD24	GND
6	GND	AD20	AD21	AD22	GND	AD29	GND
7	GND	AD25	AD26	AD27	AD28	GND	GND
8	GND	GND	AD31	AD32	AD33	AD34	GND
9	GND	AD30	GND	AD37	AD38	AD39	GND
10	GND	AD35	AD36	GND	AD43	AD44	GND
11	GND	AD40	AD41	AD42	GND	AD49	GND
12	GND	AD45	AD46	AD47	AD48	GND	GND
13	GND	GND	AD51	AD52	AD53	AD54	GND
14	GND	AD50	GND	AD57	AD58	AD59	GND
15	GND	AD55	AD56	GND	AD63	C_/BE0	GND
16	GND	AD60	AD61	AD62	GND	C_/BE5	GND
17	GND	C_/BE1	C_/BE2	C_/BE3	C_/BE4	GND	GND
18	GND	GND	C_/BE7	/INTA	/INTB	/INTC	GND
19	GND	CLK0	GND	IDSEL1	/REQ0	/GNT0	GND
20	GND	/INTD	C_/BE6	GND	/ACK64	PAR64	GND
21	GND	/REQ1	/GNT1	/REQ64	GND	CLK1	GND
22	GND	/INTD	/SERR	PAR	IDSEL0	GND	GND
23	GND	GND	/DEVSEL	/STOP	/LOCK	/FRAME	GND
24	GND	/IRDY	GND	/RST	/PERR	/TRDY	GND
25	GND	TDO	TDI	/TRST	TCK	TMS	GND

3.2 Transition board

An IBM compatible floppy disk drive, an IDE harddisk, a SCSI harddisk (8 Bit, 16 Bit), COM2, and additional inputs/outputs may be connected to BAB 750 via a small transition board. This board has to be connected to the CompactPCI backplane.

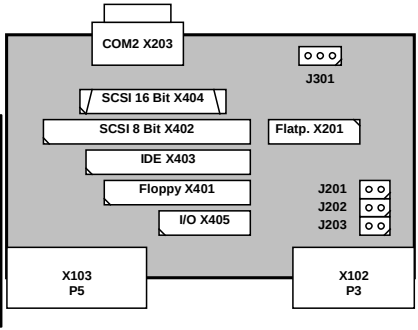


Figure 4: Transition board

3.2.1 Additional Input/Output

This connector can be used to connect additional Inputs and Outputs.

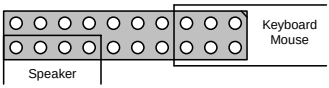


Figure 5: Additional Input/Output

Table 11: Pinout additional Input/Output (X405)

Pin	Name	Function	Function	Name	Pin
1	Vcc	Power	Data from/to Keyboard	/KBDAT	**2**
3	/MSDAT	Data from Mouse	Clock for Keyboard	/KBCLK	**4**
5	/MSCLK	Clock for Mouse	Power	GND	**6**
7	res.	reserved	reserved	res.	**8**
9	res.	reserved	reserved	res.	**10**
11	res.	reserved	reserved	res.	**12**
13	res.	reserved	Power	Vcc	**14**
15	Vcc	Power	Power	GND	**16**
17	GND	Power	Power	GND	**18**
19	res.	reserved	Speaker	SPKR	**20**

3.2.1.1 Keyboard/Mouse

The pins for the Keyboard/Mouse-Interface provide PS/2 compatible signals to connect standard PC-Hardware.

3.2.1.2 Loudspeaker

These pins can be used to connect a loudspeaker.

3.2.2 Floppy

The floppy cable is connected between floppy drive and the adapter connector. The power supply cable for the floppy drive must be connected directly to the power supply.

Table 12: Pinout Floppy Connector (X401)

Pin	Name	Name	Pin
1	Gnd	DRVDEN0	2
3	Gnd	nc	4
5	Gnd	DRVDEN1	6
7	Gnd	/INDEX	8
9	Gnd	/MTR0	10
11	Gnd	nc	12
13	Gnd	nc	14
15	Gnd	MTR1	16
17	Gnd	/DIR	18
19	Gnd	/STEP	20
21	Gnd	/WDATA	22
23	Gnd	/WGATE	24
25	Gnd	/TRK0	26
27	Gnd	/WRTPRT	28
29	Gnd	/RDATA	30
31	Gnd	/HDSEL	32
33	Gnd	/DSKCHG	34

The BAB 750 supports only one floppy drive. It must be conected in the same way as floppy drive A of a PC computer (i.e. at the crossed section of a standard PC floppy cable).

3.2.3 IDE

Like the floppy disk drive an EIDE drive is connected with its flat cable to the adapter. The power supply cable of the EIDE device must be directly connected to the power supply.

Up to two EIDE drives (harddisk, CD-ROM) can be connected. Cable length should not exceed 40 cm to avoid instable operation.

Table 13: Pinout IDE Connector (X403)

Pin	Name	Name	Pin
1	/RST	GND	**2**
3	D7	D8	**4**
5	D6	D9	**6**
7	D5	D10	**8**
9	D4	D11	**10**
11	D3	D12	**12**
13	D2	D13	**14**
15	D1	D14	**16**
17	D0	D15	**18**
19	GND	nc	**20**
21	REQ	GND	**22**
23	/IOW	GND	**24**
25	/IOR	GND	**26**
27	IORDY	nc	**28**
29	/ACK	GND	**30**
31	IRQ14	nc	**32**
33	A1	nc	**34**
35	A0	A2	**36**
37	/CS1	/CS3	**38**
39	/ACT	GND	**40**

3.2.4 SCSI

SCSI is only available on board versions with SCSI option. The SCSI cable is plugged into the appropriate connector on transition board. All SCSI devices must be cabled in a bus-like fashion, i.e. the cable goes from one device to the next one. The cable end must be terminated to ensure proper operation. An active terminator is recommended.

Table 14: Pinout SCSI Connector 8 bit (X402)

Pin	Name	Name	Pin
1	GND	D0	**2**
3	GND	D1	**4**
5	GND	D2	**6**
7	GND	D3	**8**
9	GND	D4	**10**
11	GND	D5	**12**
13	GND	D6	**14**
15	GND	D7	**16**
17	GND	PD0	**18**
19	GND	GND	**20**
21	GND	GND	**22**
23	GND	GND	**24**
25	nc	TERMPWR	**26**
27	GND	GND	**28**
29	GND	GND	**30**
31	GND	/ATN	**32**
33	GND	GND	**34**
35	GND	/BSY	**36**
37	GND	/ACK	**38**
39	GND	/RST	**40**
41	GND	/MSG	**42**
43	GND	/SEL	**44**
45	GND	/C_D	**46**
47	GND	/REQ	**48**
49	GND	/I_O	**50**

Table 15: Pinout SCSI Connector 16 bit (X404)

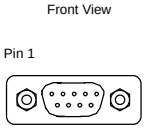
Pin	Name	Name	Pin
1	GND	D12	**2**
3	GND	D13	**4**
5	GND	D14	**6**
7	GND	D15	**8**
9	GND	PD1	**10**
11	GND	D0	**12**
13	GND	D1	**14**
15	GND	D2	**16**
17	GND	D3	**18**
19	GND	D4	**20**
21	GND	D5	**22**
23	GND	D6	**24**
25	GND	D7	**26**
27	GND	PD0	**28**
29	GND	nc	**30**
31	GND	nc	**32**
33	TERMPWR	TERMPWR	**34**
35	TERMPWR	TERMPWR	**36**
37	nc	nc	**38**
39	nc	GND	**40**
41	nc	/ATN	**42**
43	GND	GND	**44**
45	GND	/BSY	**46**
47	GND	/ACK	**48**
49	GND	/RST	**50**
51	nc	/MSG	**52**
53	GND	/SEL	**54**
55	nc	/C_D	**56**
57	GND	/REQ	**58**
59	nc	/I_O	**60**
61	GND	D8	**62**
63	GND	D9	**64**
65	GND	D10	**66**
67	GND	D11	**68**

3.2.5 Serial (COM2)

The BAB 750 supports two serial ports. COM1 and COM2 are located at the front panel (9-pin D). Additionally COM2 is routed via the transition board.

Table 16: Pinout COM2

Pin	Signal
1	DCD1
2	RXD1
3	TXD1
4	DTR1
5	GND
6	DSR1
7	RTS1
8	CTS1
9	RI1



3.3 PMC-Carrier (PMCC)

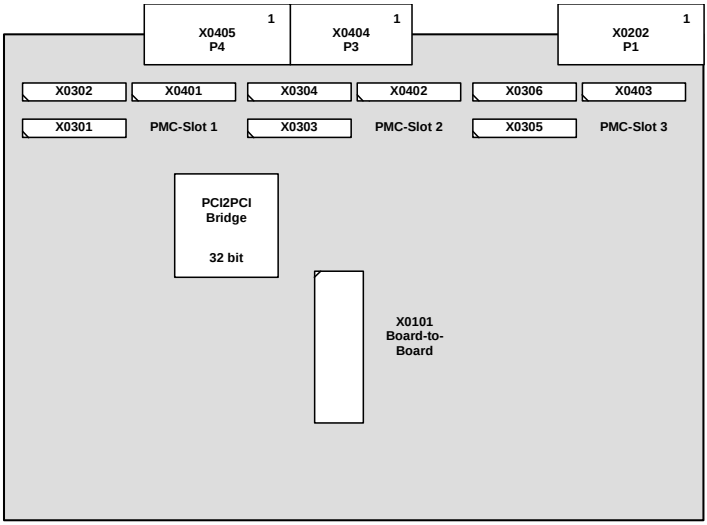


Figure 6: PMC-Carrier

The PMC-Carrier board can be used to connect three PMC boards to the PCIbus of the BAB 750. It has to be plugged into Board-to-Board connector. The PMC-Modules are isolated from the lokal PCI bus via a Intel 21152 PCI-to-PCI bridge (32 bit).

3.3.1 PMC Slots

Table 17: Pinout PMC Connector (X301, X303, X305)

Pin	Name	Name	Pin
1	TCK	-12 V	**2**
3	GND	/IRQA	**4**
5	/IRQB	/IRQC	**6**
7	nc	5 V	**8**
9	/IRQD	nc	**10**
11	GND	nc	**12**
13	PCICLK	GND	**14**
15	GND	/PGNT	**16**
17	/PREQ	5 V	**18**
19	5 V	AD31	**20**
21	AD28	AD27	**22**
23	AD25	GND	**24**
25	GND	/C_BE3	**26**
27	AD22	AD21	**28**
29	AD19	5 V	**30**
31	5 V	AD17	**32**
33	/FRAME	GND	**34**
35	GND	/IRDY	**36**
37	/DEVSEL	5 V	**38**
39	GND	/PLOCK	**40**
41	SDONE	/SBO	**42**
43	PAR	GND	**44**
45	5 V	AD15	**46**
47	AD12	AD11	**48**
49	AD9	5 V	**50**
51	GND	/C_BE0	**52**
53	AD6	AD5	**54**
55	AD4	GND	**56**
57	5 V	AD3	**58**
59	AD2	AD1	**60**
61	AD0	5 V	**62**
63	GND	/REQ64	**64**

Table 18: Pinout PMC Connector (X302, X304, X306)

Pin	Name	Name	Pin
1	12 V	/TRST	**2**
3	TMS	TDO	**4**
5	TDI	GND	**6**
7	GND	nc	**8**
9	nc	nc	**10**
11	BM1	3.3 V	**12**
13	/PCIRST	BM3	**14**
15	3.3 V	BM4	**16**
17	nc	GND	**18**
19	AD30	AD29	**20**
21	GND	AD26	**22**
23	AD24	3.3 V	**24**
25	IDSEL	AD23	**26**
27	3.3 V	AD20	**28**
29	AD18	GND	**30**
31	AD16	/C_BE2	**32**
33	GND	nc	**34**
35	/TRDY	3.3 V	**36**
37	GND	/STOP	**38**
39	/PERR	GND	**40**
41	3.3 V	/SERR	**42**
43	/C_BE1	GND	**44**
45	AD14	AD13	**46**
47	GND	AD10	**48**
49	AD8	3.3 V	**50**
51	AD7	nc	**52**
53	3.3 V	nc	**54**
55	nc	GND	**56**
57	nc	nc	**58**
59	GND	nc	**60**
61	/ACK64	3.3 V	**62**
63	GND	nc	**64**

Table 19: Pinout PMC Connector (X401, X402, X403)

Pin	Name	Name	Pin
1	IO01	IO02	**2**
3	IO03	IO04	**4**
5	IO05	IO06	**6**
7	IO07	IO08	**8**
9	IO09	IO00	**10**
11	IO11	IO12	**12**
13	IO13	IO14	**14**
15	IO15	IO16	**16**
17	IO17	IO18	**18**
19	IO19	IO10	**20**
21	IO21	IO22	**22**
23	IO23	IO24	**24**
25	IO25	IO26	**26**
27	IO27	IO28	**28**
29	IO29	IO20	**30**
31	IO31	IO32	**32**
33	IO33	IO34	**34**
35	IO35	IO36	**36**
37	IO37	IO38	**38**
39	IO39	IO30	**40**
41	IO41	IO42	**42**
43	IO43	IO44	**44**
45	IO45	IO46	**46**
47	IO47	IO48	**48**
49	IO49	IO40	**50**
51	IO51	IO52	**52**
53	IO53	IO54	**54**
55	IO55	IO56	**56**
57	IO57	IO58	**58**
59	IO59	IO50	**60**
61	IO61	IO62	**62**
63	IO63	IO64	**64**

3.3.2 CompactPCI

The CompactPCI connectors P1, P2, P3 and P4 providing the connection to the CompactPCI backplane.

Table 20: Pinout PMCC CompactPCI Connector P1

Pin	Row A	Row B	Row C	Row D	Row E	Row F
1	VCC_IN	-12V	nc	+12V	Nc	GND
2	Nc	VCC_IN	Nc	Nc	Nc	GND
3	Nc	Nc	Nc	Nc	Nc	GND
4	Nc	Nc	Nc	Nc	Nc	GND
5	Nc	Nc	Nc	GND	Nc	GND
6	Nc	GND	3,3 V	Nc	Nc	GND
7	Nc	Nc	Nc	GND	Nc	GND
8	Nc	GND	Nc	Nc	Nc	GND
9	Nc	GND	Nc	GND	Nc	GND
10	Nc	GND	3,3 V	Nc	Nc	GND
11	Nc	Nc	Nc	GND	Nc	GND
12	KEY	KEY	KEY	KEY	KEY	GND
13	KEY	KEY	KEY	KEY	KEY	GND
14	KEY	KEY	KEY	KEY	KEY	GND
15	3,3 V	Nc	Nc	GND	Nc	GND
16	Nc	GND	Nc	Nc	Nc	GND
17	3,3 V	Nc	Nc	GND	Nc	GND
18	Nc	GND	3,3 V	Nc	Nc	GND
19	3,3 V	Nc	Nc	GND	Nc	GND
20	Nc	GND	Nc	Nc	Nc	GND
21	3,3 V	Nc	Nc	Nc	Nc	GND
22	Nc	GND	3,3 V	Nc	Nc	GND
23	3,3 V	Nc	Nc	Nc	Nc	GND
24	Nc	VCC_IN	Nc	Nc	Nc	GND
25	VCC_IN	Nc	Nc	Nc	VCC_IN	GND

Table 21: Pinout PMCC CompactPCI Connector P3

Pin	Row A	Row B	Row C	Row D	Row E
1	V_IO	PMC3_IO64	PMC3_IO63	PMC3_IO62	PMC3_IO61
2	PMC3_IO60	PMC3_IO59	PMC3_IO58	PMC3_IO57	PMC3_IO56
3	PMC3_IO55	PMC3_IO54	PMC3_IO53	PMC3_IO52	PMC3_IO51
4	PMC3_IO50	PMC3_IO49	PMC3_IO48	PMC3_IO47	PMC3_IO46
5	PMC3_IO45	PMC3_IO44	PMC3_IO43	PMC3_IO42	PMC3_IO41
6	PMC3_IO40	PMC3_IO39	PMC3_IO38	PMC3_IO37	PMC3_IO36
7	PMC3_IO35	PMC3_IO34	PMC3_IO33	PMC3_IO32	PMC3_IO31
8	PMC3_IO30	PMC3_IO29	PMC3_IO28	PMC3_IO27	PMC3_IO26
9	PMC3_IO25	PMC3_IO24	PMC3_IO23	PMC3_IO22	PMC3_IO21
10	PMC3_IO20	PMC3_IO19	PMC3_IO18	PMC3_IO17	PMC3_IO16
11	PMC3_IO15	PMC3_IO14	PMC3_IO13	PMC3_IO12	PMC3_IO11
12	PMC3_IO10	PMC3_IO9	PMC3_IO8	PMC3_IO7	PMC3_IO6
13	PMC3_IO5	PMC3_IO4	PMC3_IO3	PMC3_IO2	PMC3_IO1
14	3V3	3V3	3V3	5V	5V
15	V_IO	PMC2_IO64	PMC2_IO63	PMC2_IO62	PMC2_IO61
16	PMC2_IO60	PMC2_IO59	PMC2_IO58	PMC2_IO57	PMC2_IO56
17	PMC2_IO55	PMC2_IO54	PMC2_IO53	PMC2_IO52	PMC2_IO51
18	PMC2_IO50	PMC2_IO49	PMC2_IO48	PMC2_IO47	PMC2_IO46
19	PMC2_IO45	PMC2_IO44	PMC2_IO43	PMC2_IO42	PMC2_IO41

Table 22: Pinout PMCC CompactPCI Connector P4

Pin	Row A	Row B	Row C	Row D	Row E
1	PMC2_IO40	PMC2_IO39	PMC2_IO38	PMC2_IO37	PMC2_IO36
2	PMC2_IO35	PMC2_IO34	PMC2_IO33	PMC2_IO32	PMC2_IO31
3	PMC2_IO30	PMC2_IO29	PMC2_IO28	PMC2_IO27	PMC2_IO26
4	PMC2_IO25	PMC2_IO24	PMC2_IO23	PMC2_IO22	PMC2_IO21
5	PMC2_IO20	PMC2_IO19	PMC2_IO18	PMC2_IO17	PMC2_IO16
6	PMC2_IO15	PMC2_IO14	PMC2_IO13	PMC2_IO12	PMC2_IO11
7	PMC2_IO10	PMC2_IO9	PMC2_IO8	PMC2_IO7	PMC2_IO6
8	PMC2_IO5	PMC2_IO4	PMC2_IO3	PMC2_IO2	PMC2_IO1
9	GND	GND	GND	GND	GND
10	V_IO	PMC1_IO64	PMC1_IO63	PMC1_IO62	PMC1_IO61
11	PMC1_IO60	PMC1_IO59	PMC1_IO58	PMC1_IO57	PMC1_IO56
12	KEY	KEY	KEY	KEY	KEY
13	KEY	KEY	KEY	KEY	KEY
14	KEY	KEY	KEY	KEY	KEY
15	PMC1_IO55	PMC1_IO54	PMC1_IO53	PMC1_IO52	PMC1_IO51
16	PMC1_IO50	PMC1_IO49	PMC1_IO48	PMC1_IO47	PMC1_IO46
17	PMC1_IO45	PMC1_IO44	PMC1_IO43	PMC1_IO42	PMC1_IO41
18	PMC1_IO40	PMC1_IO39	PMC1_IO38	PMC1_IO37	PMC1_IO36
19	PMC1_IO35	PMC1_IO34	PMC1_IO33	PMC1_IO32	PMC1_IO31
20	PMC1_IO30	PMC1_IO29	PMC1_IO28	PMC1_IO27	PMC1_IO26
21	PMC1_IO25	PMC1_IO24	PMC1_IO23	PMC1_IO22	PMC1_IO21
22	PMC1_IO20	PMC1_IO19	PMC1_IO18	PMC1_IO17	PMC1_IO16
23	PMC1_IO15	PMC1_IO14	PMC1_IO13	PMC1_IO12	PMC1_IO11
24	PMC1_IO10	PMC1_IO9	PMC1_IO8	PMC1_IO7	PMC1_IO6
25	PMC1_IO5	PMC1_IO4	PMC1_IO3	PMC1_IO2	PMC1_IO1

4 Board Parameters

4.1 Host Bus

66 or 83 MHz

4.2 CompactPCI

System slot CompactPCI interface according to specification PICMG 2.0 (Rev. 3.0) from October 1, 1999.

32 bit Intel 21152 Bridge

supports up to 4 periperal slots

32-bit I/O address range

32-bit memory-mapped I/O address range

4.3 PCI Local Bus

CPU to PCI Transfer Options:

Write post buffer

Max. 120 MB/s (peak)

PCI to Memory Transfer Options:

Max. 120 MB/s (peak)

Clock Speed:

33.3 MHz

IRQs

Four PCI interrupts rerouted to selectable ISA interrupts

4.4 Network

10BaseT/100BaseTx (twisted-pair)

Transfer Speed:

max. 10/100 Mbit/s

4.5 SCSI

Ultra wide SCSI (8/16 bit)

Transfer Speed:

asynchronous transfer 5 MB/s

synchronous transfer 20 MB/s (8-bit)

synchronous transfer 40 MB/s (16-bit).

4.6 Serial I/O

2 Channels:

Full duplex, asynchronous

50 b/s - 115,2 KB/s

RS232 level

4.7 Keyboard:

MF2/AT mode

PS/2 mode

4.8 Mouse

PS/2 mode

Serial mouse at channel 1 or channel 2

4.9 Parallel I/O

Centronics bidirectional, unbuffered TTL

Transfer Rate: max. 2 MB/s

4.10 MTBF Values

Includes one 64 Mbyte SODIMM.

23865 h (computed after MTL HDBK-217E)

319795 h (realistic value from industry standard experience)

ESD Values: 2 kV (Human body method)

4.11 Environmental Conditions

Storage Temperature: -40° C - +70° C (non condensing)

Operating Temperature: 0° C - +50° C (1 m/s forced air cooling)

4.12 Maximum Operating Humidity:

85% relative

4.13 Power Requirements

Total Power Requirements (without PCI extensions)

4.0 A max. 3.0 A typ. +5 VDC +/-5%

100 mA max. 30 mA typ. +12 VDC +/-10%

100 mA max. 10 mA typ. -12 VDC +/-10%

Battery

Type M4T28-BR12SH1

Approx. 8 years life time

5 Jumpers

5.1 Onboard Jumpers

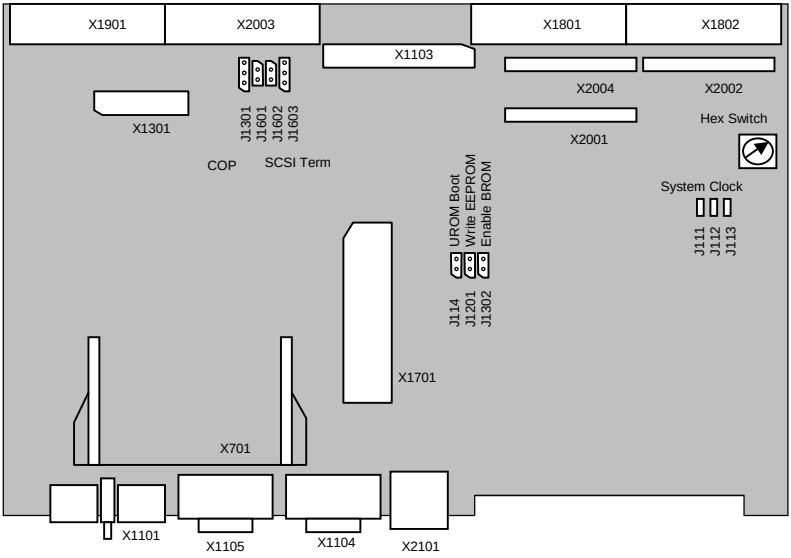


Figure 7: Parts Side Jumpers

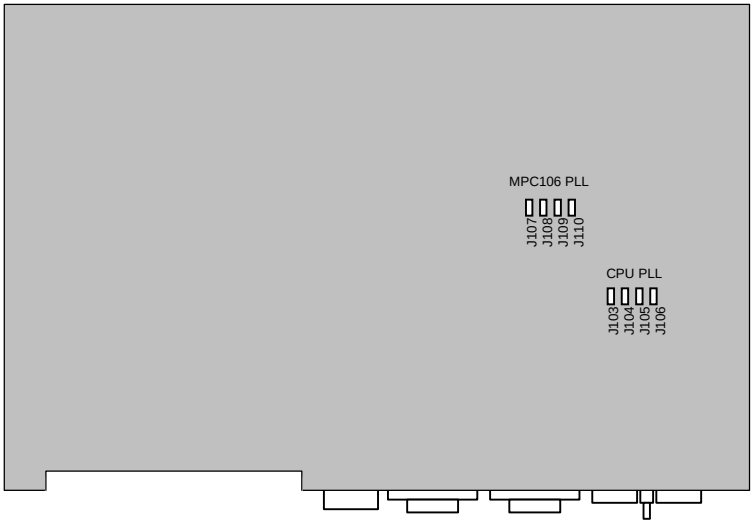


Figure 8: Solder Side Jumpers

5.1.1 User-settable Jumpers

Table 23: Boot ROM Select (J114)

J114	Description
open	Boot from Boot-ROM (default)
Short	Boot from User-ROM, 1 MB usable

5.1.2 SCSI-Termination

Table 24: Jumper J1601-J1603

Jumper			Function
J1601	J1602	J1603	
-	1-2	1-2	Automatic Mode (default)
-	1-2	2-3	Automatic LowByte Termination, Enable HighByte Termination
-	1-2	-	Automatic LowByte Termination, Disable HighByte Termination
1-2	1-2	2-3	Enable Termination
1-2	1-2	-	Enable LowByte Termination, Disable HighByte Termination
-	-	-	Disable Termination
all others			not allowed

6 Booting

6.1 Printout of Boot Screen

This chapter shows how the terminal screen looks like on a BAB 750 after power-on.

```
 *** ELTEC Elektronik, Mainz ***

BAB-PPC Monitor Version 1.2/2

Init MPU/MSR/FPU/Segment registers.
Init SuperIO (polled output on COM1).
Activating 1st level cache ..................... OK
Setting MPC106 register ........................ OK
Reading SPD of bank0/1 ......................... OK
        RAM-Type: SDRAM
Reading SPD of bank2/3 ................... FAILED
Activating  64 MByte.

PowerPC 74x/75x Ver.0008 Rev.3202 at 292 / 83 MHz

PCI devices on local bus ...
No. VendorId  DeviceId  Device Class     Sub-Class
_____________________________________________________
00  1057      0002      Bridge device           00
0B  10AD      0565      Bridge device           01
0D  1000      000F      Mass storage controller 00
0E  1011      0019      Network controller      00
13  1011      0024      Bridge device           04

Press any key to skip memory test :    65536 KByte
```

Due to the fact that no second SODIMM can be installed on the BAB 750 the failed read out of bank 2/3 is normal. Ths is no indication of a malfunction.

7 Appendix

7.1 Description of On-board Devices

This chapter describes how the on-board devices are accessed by operating system drivers. When an operating system, such as OS-9 and VxWorks, is used, there should be no need to address these devices with user-written code.

7.1.1 Interrupt Controller

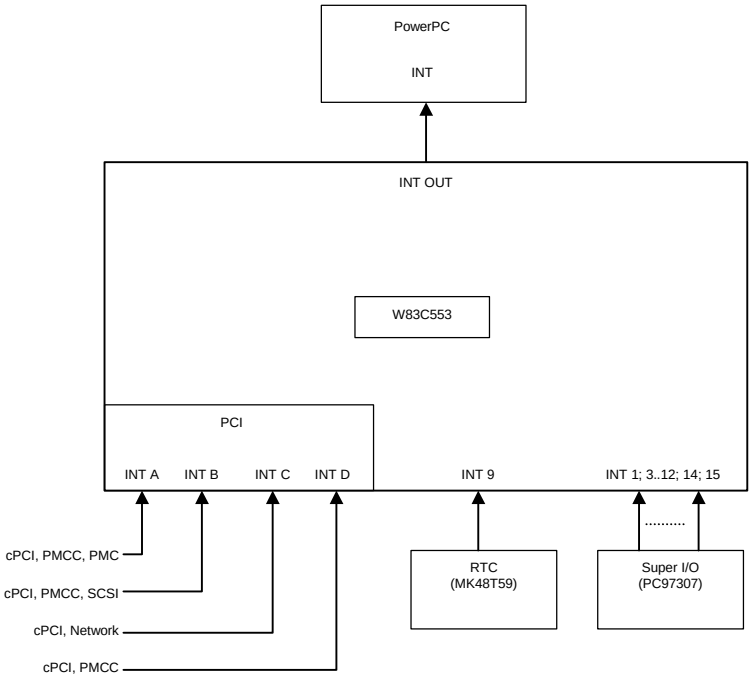


Figure 9: BAB 750 Interrupt Diagram

This diagram shows how the on-board interrupt sources are connected to the interrupt controller, located in the W83C553 chip. This chip then prioritizes and drives the CPU interrupt input. The priority scheme used is shown below:

Table 25: Interrupt

Priority	ISA IRQ	PCI IRQ	Source
1	INT 0		Timer 0 (Ticker)
2	INT 1		Keyboard
3	INT 8		
4	INT 9		
5	INT10	INT A	PMC, cPCI, PMCC
6	INT 11	INT B	SCSI or IDE, cPCI, PMCC
7	INT 12		Mouse
8	INT 13		
9	INT 14	INT C	Ethernet, cPCI, PMCC
10	INT 15	INT D	cPCI, PMCC
11	INT 3		Serial #2
12	INT 4		Serial #1
13	INT 5		RTC (Watchdog)
14	INT 6		Floppy
15	INT 7		Parallel Port

7.1.2 SRAM/RTC

A indirect addressing scheme is used to access the M48T59Y SRAM/RTC. To access the SRAM/RTC the desired address first must be written to I/O address $70 and $71. Then the data can be accessed via I/O address $76. The interrupt output of the M48T59Y is connected with the INT5 input of the interrupt controller. It may be used to generate periodic interrupts or watchdog interrupts.

Table 26: SRAM/RTC Address Assignment

I/O Address	Description
$070	SRAM/RTC LSB Address
$071	SRAM/RTC MSB Address
$076	SRAM/RTC Data

7.1.3 GPIO Use

The GPIOs of the Super-I/O are used for the following purposes:

Table 27: GPIO Usage

Name	Type	Function
GPIO10	-	not used
GPIO11	I	CPU Bus Speed (0 = 83 MHz; 1 = 66MHz)
GPIO12	-	reseved
GPIO13	-	reseved
GPIO14	-	reseved
GPIO15	I/O	I2C Data for SPD of SODIMM, ELTEC Revision EEPROM
GPIO16	O	I2C Clock for SPD of SODIMM, ELTEC Revision EEPROM
GPIO17	-	not used
GPIO20	O	cPCI Interrupt Routing bit 0*
GPIO21	O	cPCI Interrupt Routing bit 1*
GPIO22	-	not used
GPIO23	-	not used
GPIO24	I	HEX Switch LSB
GPIO25	I	HEX Switch
GPIO26	I	HEX Switch
GPIO27	I	HEX Switch MSB

* CompactPCI Interrupt Routing:

bit 1 (GPIO21)	bit 0 (GPIO20)	Function
0	0	cPCI interrupts mapped to PCI interrupt D
0	1	cPCI interrupts mapped to the corresponding PCI interrupt
1	0	reserved
1	1	reserved

7.1.4 Super-I/O Power-on Strappings

The Super-I/O wakes up in the following configuration:

Table 28: Super-I/O Wake Up Configuration:

Pin	Configuration
CFG0	FDC, KBC and RTC inactive
CFG1	No X-Bus Data Buffer
CFG3,2	Clock source is 24 MHz fed via X1 Pin
BADDR1,0	PnP Motherboard, Wake in Config state, Index 015Ch
SELCS	/CS0 on /CS0 pin

7.1.5 I/O Address Map

After initialization the following I/O address map becomes effective:

Table 29: I/O Address Map

I/O Address	Device	Description
$000-$00F	W83C553F	DMA Controller 1
$020-$021	W83C553F	Interrupt Controller 1
$040-$043	W83C553F	Counter/Timer
$060	PC97307	Keyboard Data
$061	W83C553F	Port B
$064	PC97307	Keyboard Control
$070	M48T59Y	SRAM/RTC LSB Address
$071	M48T59Y	SRAM/RTC MSB Address
$076	M48T59Y	SRAM/RTC Data
$078-$07B	W83C553F	BIOS Timer
$081-$082	W83C553F	DMA Page
$087	W83C553F	DMA Page
$089-$08B	W83C553F	DMA Page
$092	W83C553F	Port 92
$0A0-$0A1	W83C553F	Interrupt Controller 2
$0C0-$0DE	W83C553F	DMA Controller 2
$15C	PC97307	SuperI/O Index
$15D	PC97307	SuperI/O Data
$1F0-$1F7	W83C553F	IDE Controller
$220-$223	PC97307	GPIO Port 1
$224-$227	PC97307	GPIO Port 2
$278-$27F	PC97307	Parallel Port
$2F8-$2FF	PC97307	COM2
$3F0-$3F7	PC97307	Floppy/IDE Controller
$3F8-$3FF	PC97307	COM1
$3C2-$3C9	SM710	VGA Controller
$3CE-$3CF	SM710	VGA Controller
$3D4-$3D5	SM710	VGA Controller
$4D0-$4D1	W83C553F	Interrupt Mode

7.1.6 Memory Address Map

The BAB 750 uses address map B (CHRP) of the MPC106. After initialization the following address map becomes effective:

Table 30: Memory Address Map (default used by VxWorks)

CPU Address	PCI Address	Device
$0000.0000-$07FF.FFFF	-	local RAM
$0800.0000-$7FFF.FFFF	-	reserved
$8000.0000-$F9FF.FFFF	$8000.0000-$F9FF.FFFF	PCI memory space
$FA00.0000-$FAFF.FFFF	$FA00.0000-$FAFF.FFFF	PCI memory space (PMVIEW)
$F900.0000-$F900.EFFF	$F900.0000-$FCFF.FFFF	PCI memory space
$FD00.0000-$FDFF.FFFF	$0000.0000-$00FF.FFFF	PCI/ISA memory space
$FE00.0000-$FE00.FFFF	$0000.0000-$0000.FFFF	PCI/ISA I/O space
$FE01.0000-$FE7F.FFFF	-	reserved
$FE80.0000-$FE80.FFFF	$0080.0000-$0080.FFFF	PCI I/O space
$FE81.0000-$FE81.FFFF	$0081.0000-$0081.FFFF	PCI I/O space(SCSI Controller)
$FE82.0000-$FE82.FFFF	$0082.0000-$0082.FFFF	PCI I/O space(LAN Controller)
$FE83.0000-$FEBF.FFFF	$0083.0000-$00BF.FFFF	PCI I/O space
$FEC0.0000-$FEDF.FFFF	CONFIG_ADDR	PCI configuration address register
$FEE0.0000-$FEEF.FFFF	CONFIG_DATA	PCI configuration data register
$FEF0.0000-$FEFF.FFFF	$FEF0.0000-$FEFF.FFFF	PCI interrupt acknowledge
$FF00.0000-$FF7F.FFFF	-	reserved
J114 open:		
$FF80.0000-$FF9F.FFFF	$FF80.0000-$FF9F.FFFF	User Flash EPROM
$FFA0.0000-$FFBF.FFFF	$FFA0.0000-$FFBF.FFFF	Mirrored User Flash EPROM
$FFC0.0000-$FFC7.FFFF	$FFC0.0000-$FFC7.FFFF	System Flash EPROM
$FFC8.0000-$FFFF.FFFF	$FFC8.0000-$FFFF.FFFF	Mirrored System Flash EPROM
J114 closed:		
$FF80.0000-$FF87.FFFF	$FF80.0000-$FF87.FFFF	System Flash EPROM
$FF88.0000-$FFBF.FFFF	$FF88.0000-$FFBF.FFFF	Mirrored System Flash EPROM
$FFC0.0000-$FFDF.FFFF	$FFC0.0000-$FFDF.FFFF	User Flash EPROM
$FFE0.0000-$FFEF.FFFF	$FFE0.0000-$FFEF.FFFF	2nd MByte User Flash EPROM
$FFF0.0000-$FFFF.FFFF	$FFF0.0000-$FFFF.FFFF	2nd MByte User Flash EPROM

7.1.7 PCI IDSEL

The IDSEL input of each PCI device is connected to one of the PCI address/data lines for individual addressing in configuration space. Table 34 shows the connection of the IDSEL signal for the various devices on the BAB 750 and the PMC carrier board.

Table 31: IDSEL Connection

Device Number	IDSEL	Device
0	-	MPC106
11	AD(11)	W83C553F
13	AD(13)	53C875
14	AD(14)	21143
15	AD(15)	PMC
19	AD(19)	21152 (on-board cPCI)
23	AD(23)	21152 (PMCs on PMCC)

Note that the device numbers differ from Intel convention where number 0 corresponds to AD(11) and number 20 corresponds to AD(31). Configuration cycles with device number 0 are handled internally in the MPC106 and therefore don‘t correspond with a address/data line.

7.2 Factory Settable Jumpers

Table 32: CPU PLL Configuration (J103...J106)

J106	J105	J104	J103	Bus Mult.
short	short	short	short	-
short	short	short	-	x 7, 5
short	short	-	short	x 7
short	short	-	-	bypass
short	-	short	short	x 2
short	-	short	-	x 6,5
short	-	-	short	x 2,5 or 10
short	-	-	-	x 4,5 Mem. Clock 66 MHz
-	short	short	short	x 3
-	short	short	-	x 5,5
-	short	-	short	x 4
-	short	-	-	x 5
-	-	short	short	x 8
-	-	short	-	x 6
-	-	-	short	x 3,5 Mem. Clock 83 MHz
-	-	-	-	off

SMD jumper for factory use only

Note: Implementation specific settings; do not change!

Table 33: System Clock (J111, J112, J113)

J111	J112	J113	CPU Bus Clock	PCI Bus Clock
short	short	short	30	25
short	short		60	30
short		short	62,5	25
short			66	33 Mem. Clock 66 MHz
	short	short	75	37,5
	short		83	33 Mem. Clock 83 MHz

SMD jumper for factory use only!

Note: Implementation specific settings; do not change!

Table 34: MPC106 PLL Configuration (J110...J107)

J110	J109	J108	J107	Mult.	Bus Clock	PCI Clock
short	short	short	short	-	-	-
short	short	short	-	x 1	33	33
short	short	-	short	x 1	16-25	16-25
short	short	-	-	bypass	-	-
short	-	short	short	x 2	66	33 Mem. Clock 66 MHz
short	-	short	-	x 2	33-50	16-25
short	-	-	short	x 2,5	83	33 Mem. Clock 83 MHz
short	-	-	-	x 2,5	41-50	16-20
-	short	short	short	x 3	75-100	25-33
-	short	short	-	x 3	50	16
-	short	-	short	-	-	-
-	short	-	-	-	-	-
-	-	short	short	-	-	-
-	-	short	-	-	-	-
-	-	-	short	-	-	-
-	-	-	-	off	-	-

SMD jumper for factory use only

Note: Implementation specific settings; do not change!

Table 35: Hardware Debugger Configuration (J1301)

J1301	Operation
1-2	normal operation (default)
2-3	enable COP

Note: Implementation specific settings; do not change!

Table 36: Revision EEPROM Write Protection (J1302)

J1302	Operation
open	write protect
short	write enable (default)

Support Request Form

BAB 750 Revision	
BAB 750 version:	
Memory size:	
Hardware revision:	
Serial number:	
BSP revision:	
System monitor revision:	

BAB 750 Configuration (Operating system, hardware configuration, connected periphery,...)

Host Configuration (Development tool revision....)

Error Description What must be done to reproduce the error:

Send the completed form to:
ELTEC Elektronik AG
Support, Mainz/Germany
Phone: +49 (6131) 918-520
Fax: +49 (6131) 918-196
E-Mail: support@eltec.de
Web: http://www.eltec.com