

Short description Rev. 1.3

The following short description is intended to convey a brief overall view of the components. Installation alternatives are depicted herein.

Connector location

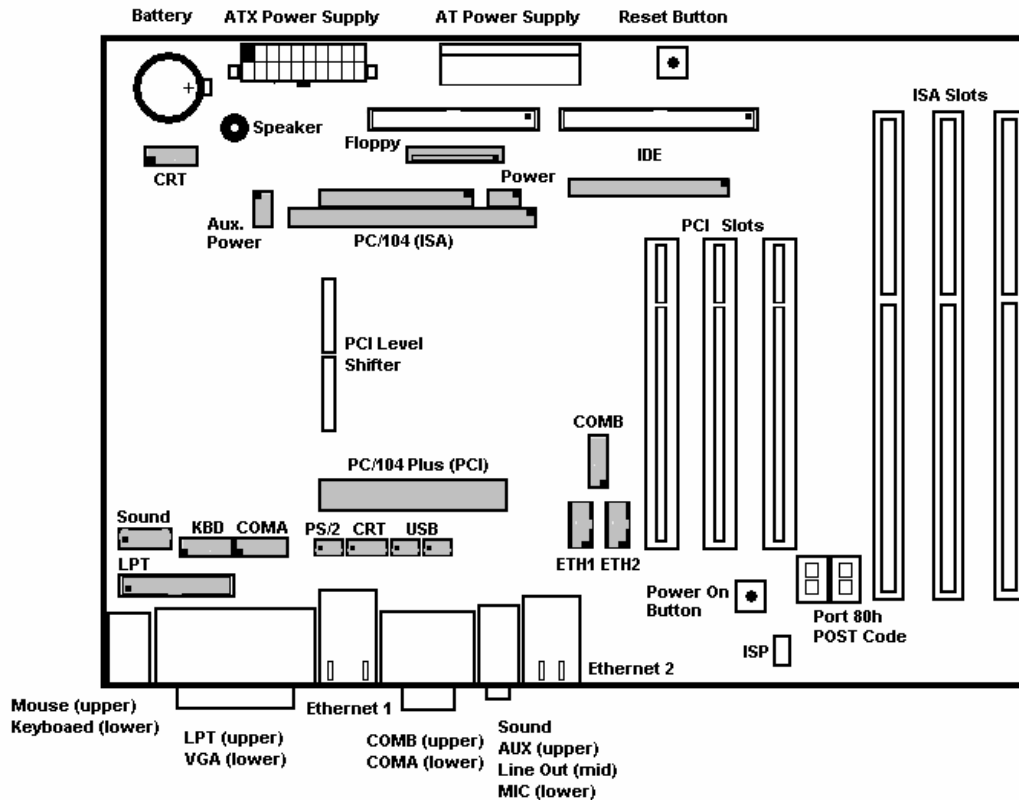


Figure1: Connector Description

Notes: On every through-hole connector, Pin1 is marked on PCB!
 Board to board connectors which are used for interface connections from PC/104 CPU board to the baseboard are coloured grey.

1. Connector pinout

PIN	PC/104-Bus				PC/104-Power		PC/104plus-Bus			
	X1(A)	X1(B)	X1(C)	X1(D)	X1(E)	X1(F)	X2(A)	X2(B)	X2(C)	X2(D)
0			GND	GND						
1	IOCHCK#	GND	SBHE#	MEMCS16#	VCC	GND	NC	NC	VCC	AD0
2	SD7	RSTDRV	LA23	IOCS16#	+12V	BATT	VCC	AD2	AD1	VCC
3	SD6	VCC	LA22	IRQ10	-12V	-5V	AD5	GND	AD4	AD3
4	SD5	IRQ9	LA21	IRQ11	VCC	GND	CBE#0	AD7	GND	AD6
5	SD4	-5V	LA20	IRQ12			GND	AD9	AD8	GND
6	SD3	DRQ2	LA19	IRQ15			AD11	VCC	AD10	NC
7	SD2	-12V	LA18	IRQ14			AD14	AD13	GND	AD12
8	SD1	0WS#	LA17	DACK#0			3V_ATX ¹⁾	CBE#1	AD15	3V_ATX ¹⁾
9	SD0	+12V	MEMR#	DRQ0			SERR#	GND	NC	PAR
10	IOCHRDY	GND	MEMW#	DACK#5			GND	GPERR#	3V_ATX ¹⁾	NC
11	AEN	SMEMW#	SD8	DRQ5			STOP#	3V_ATX ¹⁾	LOCK#	GND
12	SA19	SMEMR#	SD9	DACK#6			3V_ATX ¹⁾	TRDY#	GND	DEVSEL#
13	SA18	IOW#	SD10	DRQ6			FRAME#	GND	IRDY#	3V_ATX ¹⁾
14	SA17	IOR#	SD11	DACK#7			GND	AD16	3V_ATX ¹⁾	CBE#2
15	SA16	DACK#3	SD12	DRQ7			AD18	3V_ATX ¹⁾	AD17	GND
16	SA15	DRQ3	SD13	VCC			AD21	AD20	GND	AD19
17	SA14	DACK#1	SD14	MASTER#			3V_ATX ¹⁾	AD23	AD22	3V_ATX ¹⁾
18	SA13	DRQ1	SD15	GND			IDSEL0	GND	IDSEL1	IDSEL2
19	SA12	REF#	GND	GND			AD24	CBE#3	VCC	NC
20	SA11	SYSCLK					GND	AD26	AD25	GND
21	SA10	IRQ7					AD29	VCC	AD28	AD27
22	SA9	IRQ6					VCC	AD30	GND	AD31
23	SA8	IRQ5					REQ#1	GND	REQ#2	VCC
24	SA7	IRQ4					GND	REQ#3	VCC	GNT#1
25	SA6	IRQ3					GNT#2	VCC	GNT#3	GND
26	SA5	DACK#2					VCC	PCICLK0	GND	PCICLK1
27	SA4	TC#					PCICLK2	VCC	PCICLK3	GND
28	SA3	BALE					GND	INTD#	VCC	PCIRST#
29	SA2	VCC					+12V	INTA#	INTB#	INTC#
30	SA1	OSC					-12V	NC	NC	GND
31	SA0	GND								
32	GND	GND								

¹⁾ 3 V PCI extension cards are only supported, when ATX-Power is connected

PCI Slots				PCI Slots			
PIN	X5	X6	X7	PIN	X5	X6	X7
1	NC	NC	NC	61	-12V	-12V	-12V
2	+12V	+12V	+12V	62	GND	GND	GND
3	NC	NC	NC	63	GND	GND	GND
4	NC	NC	NC	64	NC	NC	NC
5	VCC	VCC	VCC	65	VCC	VCC	VCC
6	INTA#	INTB#	INTC#	66	VCC	VCC	VCC
7	INTC#	INTD#	INTA#	67	INTB#	INTC#	INTD#
8	VCC	VCC	VCC	68	INTD#	INTA#	INTB#
9	NC	NC	NC	69	NC	NC	NC
10	VCC	VCC	VCC	70	NC	NC	NC
11	NC	NC	NC	71	NC	NC	NC
12	GND	GND	GND	72	GND	GND	GND
13	GND	GND	GND	73	GND	GND	GND
14	NC	NC	NC	74	NC	NC	NC
15	PCIRST#	PCIRST#	PCIRST#	75	GND	GND	GND
16	VCC	VCC	VCC	76	PCLK1 ²⁾	PCLK2 ²⁾	PCLK3 ²⁾
17	GNT#1	GNT#2	GNT#3	77	GND	GND	GND
18	GND	GND	GND	78	REQ#1	REQ#2	REQ#3
19	NC	NC	NC	79	VCC	VCC	VCC
20	AD30	AD30	AD30	80	AD31	AD31	AD31
21	3V ATX ¹⁾	3V ATX ¹⁾	3V ATX ¹⁾	81	AD29	AD29	AD29
22	AD28	AD28	AD28	82	GND	GND	GND
23	AD26	AD26	AD26	83	AD27	AD27	AD27
24	GND	GND	GND	84	AD25	AD25	AD25
25	AD24	AD24	AD24	85	3V ATX ¹⁾	3V ATX ¹⁾	3V ATX ¹⁾
26	IDSEL0	IDSEL1	IDSEL2	86	CBE#3	CBE#3	CBE#3
27	3V ATX ¹⁾	3V ATX ¹⁾	3V ATX ¹⁾	87	AD23	AD23	AD23
28	AD22	AD22	AD22	88	GND	GND	GND
29	AD20	AD20	AD20	89	AD21	AD21	AD21
30	GND	GND	GND	90	AD19	AD19	AD19
31	AD18	AD18	AD18	91	3V ATX ¹⁾	3V ATX ¹⁾	3V ATX ¹⁾
32	AD16	AD16	AD16	92	AD17	AD17	AD17
33	3V ATX ¹⁾	3V ATX ¹⁾	3V ATX ¹⁾	93	CBE#2	CBE#2	CBE#2
34	FRAME#	FRAME#	FRAME#	94	GND	GND	GND
35	GND	GND	GND	95	IRDY#	IRDY#	IRDY#
36	TRDY#	TRDY#	TRDY#	96	3V ATX ¹⁾	3V ATX ¹⁾	3V ATX ¹⁾
37	GND	GND	GND	97	DEVSEL#	DEVSEL#	DEVSEL#
38	STOP#	STOP#	STOP#	98	GND	GND	GND
39	3V ATX ¹⁾	3V ATX ¹⁾	3V ATX ¹⁾	99	LOCK#	LOCK#	LOCK#
40	NC	NC	NC	100	GPERR#	GPERR#	GPERR#
41	NC	NC	NC	101	3V ATX ¹⁾	3V ATX ¹⁾	3V ATX ¹⁾
42	GND	GND	GND	102	SERR#	SERR#	SERR#
43	PAR	PAR	PAR	103	3V ATX ¹⁾	3V ATX ¹⁾	3V ATX ¹⁾
44	AD15	AD15	AD15	104	CBE#1	CBE#1	CBE#1
45	3V ATX ¹⁾	3V ATX ¹⁾	3V ATX ¹⁾	105	AD14	AD14	AD14
46	AD13	AD13	AD13	106	GND	GND	GND
47	AD11	AD11	AD11	107	AD12	AD12	AD12
48	GND	GND	GND	108	AD10	AD10	AD10
49	AD9	AD9	AD9	109	GND	GND	GND
50	CBE#0	CBE#0	CBE#0	110	AD8	AD8	AD8
51	3V ATX ¹⁾	3V ATX ¹⁾	3V ATX ¹⁾	111	AD7	AD7	AD7
52	AD6	AD6	AD6	112	3V ATX ¹⁾	3V ATX ¹⁾	3V ATX ¹⁾
53	AD4	AD4	AD4	113	AD5	AD5	AD5
54	GND	GND	GND	114	AD3	AD3	AD3
55	AD2	AD2	AD2	115	GND	GND	GND
56	AD0	AD0	AD0	116	AD1	AD1	AD1
57	VCC	VCC	VCC	117	VCC	VCC	VCC
58	REQ64#	REQ64#	REQ64#	118	ACK64#	ACK64#	ACK64#
59	VCC	VCC	VCC	119	VCC	VCC	VCC
60	VCC	VCC	VCC	120	VCC	VCC	VCC

¹⁾ 3 V PCI extension cards are only supported, when ATX-Power is connected

²⁾ The PCLK signals are not same as the PCICLK signals on the PC104plus connector. The clocks are buffered, due to the fact that the length of these signals do not comply with the PCI specification.

PIN	ISA Slots				IDE (I/O)	Floppy (I/O)	LPT / VGA (I/O)	IDE (CPU-Board)	Floppy (CPU-Board)
	X13..15 (A)	X13..15 (B)	X13..15 (C)	X13..15 (D)	X31	X34	X26	X30	X33
1	IOCHCK#	GND	SBHE#	MEMCS16#	HDRST#	GND	RED	HDRST#	VCC
2	SD7	RSTDRV	LA23	IOCS16#	GND	NC	GREE	GND	INDEX#
3	SD6	VCC	LA22	IRQ10	IDE D7	GND	BLUE	IDE D7	VCC
4	SD5	IRQ9	LA21	IRQ11	IDE D8	NC	NC	IDE D8	DR0#
5	SD4	-5V	LA20	IRQ12	IDE D6	GND	GND	IDE D6	VCC
6	SD3	DRQ2	LA19	IRQ15	IDE D9	NC	GND	IDE D9	DSKCHG
7	SD2	-12V	LA18	IRQ14	IDE D5	GND	GND	IDE D5	NC
8	SD1	0WS#	LA17	DACK#0	IDE D10	IN-	GND	IDE D10	NC
9	SD0	+12V	MEMR#	DRQ0	IDE D4	GND	KEY	IDE D4	NC
10	IOCHRDY	GND	MEMW#	DACK#5	IDE D11	MTR0#	GND	IDE D11	MTR0#
11	AEN	SMEMW#	SD8	DRQ5	IDE D3	GND	NC	IDE D3	NC
12	SA19	SMEMR#	SD9	DACK#6	IDE D12	NC	NC	IDE D12	FDIR
13	SA18	IOW#	SD10	DRQ6	IDE D2	GND	HSYNC	IDE D2	NC
14	SA17	IOR#	SD11	DACK#7	IDE D13	DR0#	VSYN	IDE D13	STEP#
15	SA16	DACK#3	SD12	DRQ7	IDE D1	GND	NC	IDE D1	GND
16	SA15	DRQ3	SD13	VCC	IDE D14	NC		IDE D14	WDATA#
17	SA14	DACK#1	SD14	MASTER#	IDE D0	GND		IDE D0	GND
18	SA13	DRQ1	SD15	GND	IDE D15	FDIR#		IDE D15	WGATE#
19	SA12	REF#			GND	GND		GND	GND
20	SA11	SYSCLK			NC	STEP#		NC	TRK0#
21	SA10	IRQ7			IDE DMARQ	GND	STB	IDE DMARQ	GND
22	SA9	IRQ6			GND	WDAT	D0	GND	WRTRPT#
23	SA8	IRQ5			IDE IOW#	GND	D1	IDE IOW#	GND
24	SA7	IRQ4			GND	WGAT	D2	GND	RDATA#
25	SA6	IRQ3			IDE IOR#	GND	D3	IDE IOR#	GND
26	SA5	DACK#2			GND	TRK0#	D4	GND	HSEL
27	SA4	TC#			IDE RDY	GND	D5	IDE RDY	
28	SA3	BALE			NC	WRTP	D6	CSELR	
29	SA2	VCC			IDE ACK#	GND	D7	IDE ACK#	
30	SA1	OSC			GND	RDATA	ACK	GND	
31	SA0	GND			IRQ14	GND	BUSY	IRQ14	
32					NC	HSEL	PE	NC	
33					IDE A1	GND	SLCT	IDE A1	
34					NC	DSKC	AFD	NC	
35					IDE A0		ERR	IDE A0	
36					IDE A2		INIT	IDE A2	
37					IDE CS0#		SLIN	IDE CS0#	
38					IDE CS1#		GND	IDE CS1#	
39					DASP		GND	DASP	
40					GND		GND	GND	
41							GND	VCC	
42							GND	VCC	
43							GND	GND	
44							GND	NC	
45							GND		

PIN	COM1 (CPU-Board)	COM2 (CPU-Board)	USB1 (CPU-Board)	USB2 (CPU-Board)	Mouse (CPU-Board)	Keyboard (CPU-Board)	ISP	Power On Connector
	X16	X17	X9	X10	X11	X18	X35	X32
1	RLSD1	RLSD2	USB1 VCC	USB2 VCC	MS DAT	SPEAKER	VCC	PWRBTN#
2	DSR1	DSR2	USB00	USB10	VCC MS	GND	GND	GND
3	SIN1	SIN2	USB01	USB11	GND MS	PGOOD	TCK	
4	RTS1	RTS2	USB1 GND	USB2 GND	MS CLK	KBLOCK#	TDO	
5	SOUT1	SOUT1				KB DAT	TDI	
6	CTS1	CTS2				KB CLK	TMS	
7	DTR1	DTR2				GND KB		
8	RI1	RI2				VCC KB		
9	GND	GND				BATT		
10	NC	NC				NC		

	Ethernet2 (I/O)	Mouse / Keyboard ²⁾ (I/O)	USB Ethernet1 (I/O)	COM (I/O)	ATX Power	AT- Power	Ethernet1 (CPU- Board)	VGA (CPU- Board I)	VGA (CPU- Board II)	LPT (CPU- Board)
PIN	X27	X21	X8	X19	X28	X29	X24	X22	X38	X20
1	TXD+	KB DAT	USB1 VCC	RLSD1	3V ATX ¹⁾	PGOOD	TXD+	RED	RED	STB
2	TXD-	MS DAT ²⁾	USB00	RXD1	3V ATX ¹⁾	VCC	TXD-	GREEN	GND	AFD
3	RXD+	GND KB	USB01	TXD1	GND	+12V	RXD+	BLUE	GREEN	PD0
4	NC	VCC KB	USB1 GND	DTR1	VCC	-12V	NC	GND	GND	ERR
5	NC	KB CLK	USB2 VCC	GND	GND	GND	NC	VSYNC	BLUE	PD1
6	RXD-	MS CLK ²⁾	USB10	DSR1	VCC	GND	RXD-	HSYNC	GND	INIT
7	NC	MS DAT	USB11	RTS1	GND	GND	ACT LED		VSYNC	PD2
8	NC	NC	USB2 GND	CTS1	PGOOD	GND	LINK LED		GND	SLIN
9		GND MS	TXTC	RI1	5V SB	-5V			HSYNC	PD3
10		VCC MS	TXD+		+12V	VCC			GND	GND
11		MS CLK	TXD-	RLSD2	3V ATX ¹⁾	VCC				PD4
12		NC	RXD+	RXD2	-12V	VCC				GND
13			RXD-	TXD2	GND					PD5
14			RXTC	DTR2	PS ON					GND
15			LINK LED	GND	GND					PD6
16			NC	DSR2	GND					GND
17			ACT LED	RTS2	GND					PD7
18			NC	CTS2	-5V					GND
19				RI2	VCC					ACK
20					VCC					GND
21										BUSY
22										GND
23										PE
24										GND
25										SLCT
26										VCC

	Ethernet1 (CPU- Board)	Sound (CPU- Board)	Sound (I/O)
PIN	X25	X36	X39
1	TXD+	SNDR	SND GND
2	TXD-	SND GND	AUXAL
3	RXD+	SNDL	SNDL
4	NC	AUXAR	MIC
5	NC	MIC C	NC
6	RXD-	AUXAL	NC
7	ACT LED		NC
8	LINK LED		NC
9			NC
10			NC
11			AUXAR
12			SNDR
13			MICBVC
14			
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26			

To protect the external powerlines of peripheral devices the customer has to take care about:

- that the wires have the right diameter to withstand the maximum available current
- that the enclosure of the peripheral device fulfils the fire protecting requirements of IEC/EN 60950.

²⁾ Keyboard connector can also be used for mouse and keyboard, when using a split cable

¹⁾ 3 V PCI extension cards are only supported, when ATX-Power is connected

2. Features

- PC/104
- PC/104plus
- 3 PCI slots for extension cards

Note: Do use 3V PCI cards only with ATX power supply connected!

- 3 ISA slots for extension cards
- 2 USB interfaces (Type A)
- 2 serial interfaces (both RS232)
- 1 parallel interface
- PS/2 mouse interface
- PS/2 keyboard interface

Note: With an additional split cable, you can also connect mouse *and* keyboard to the keyboard connector!

- On board piezo electronic speaker
- 2 RJ45 Ethernet connector
- 15DSUB VGA connector
- Lithium Battery 3V
- ATX power connector
- AT power connector
- Reset button
- ATX power on button
- 2pin power on header for connecting chassis power on switch
- IDE interface
- Floppy interface
- On board port 80 decoding and visualisation
- ISP for the pld devices
- Sound connector for mic, line out and aux

2.1. In System Programming

To program the Atmel ATF1502 devices on board, you need

- a PC with one free parallel port and Win9x, WinNT4.0, Win2k installed (There may be problems with WinNT and Win2k)
- the software ATMELISP (Please refer to www.atmel.com)
- the JEDEC-Files which should be programmed
- a ByteBlaster cable (Please refer to www.altera.com)

Start the ATMELISP software. You should see this screen:

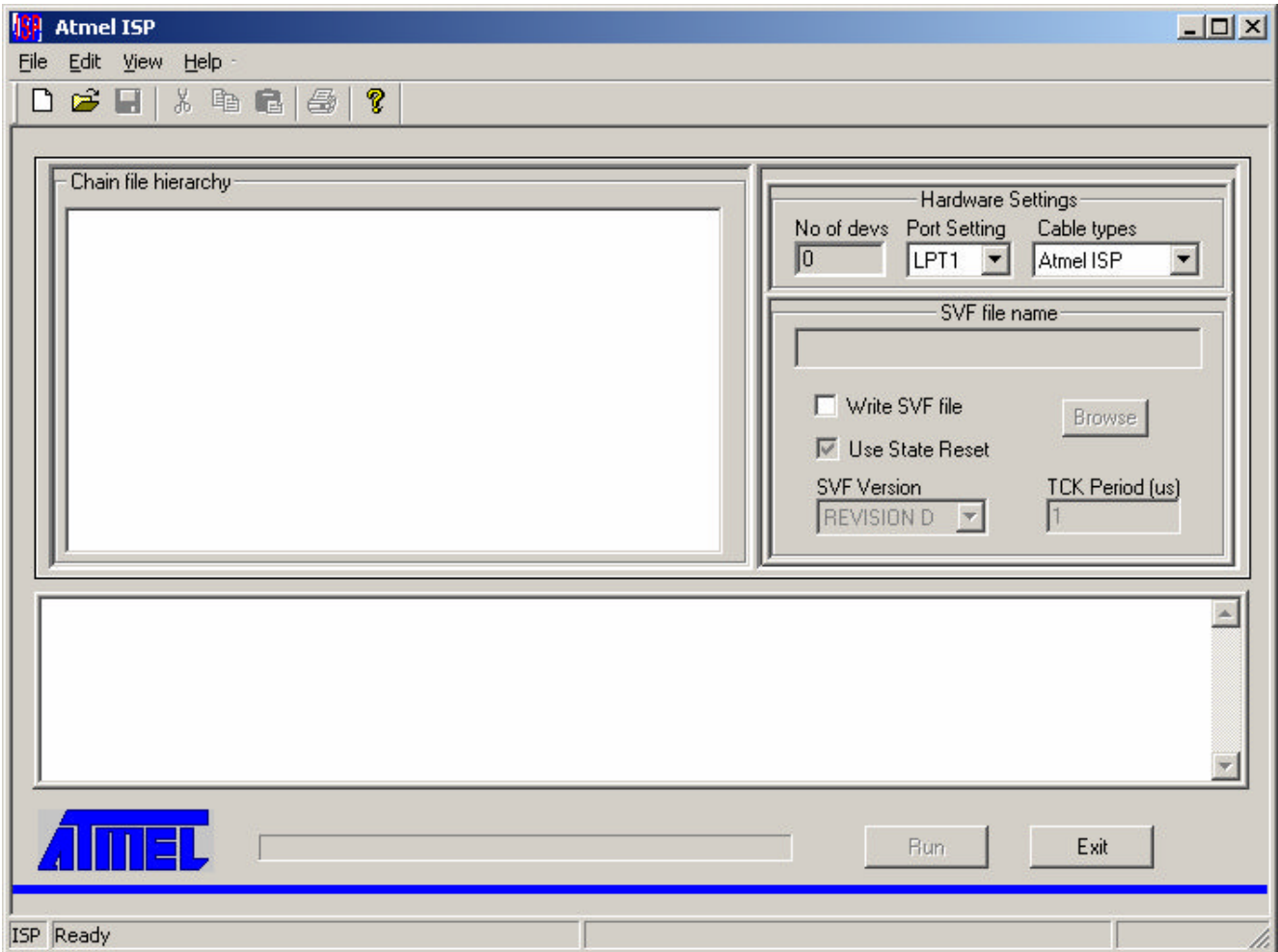


Figure 2: ATMELISP

First of all change the “Cable Type” in the upper right corner of the screen to “ByteBlaster”.

Select “Edit” and “Add new device”. Add the first one after device 0. Select the options as shown in figure 3 and choose the JEDEC file for the first device and click “OK”. Repeat this for the second device (add after device 1).

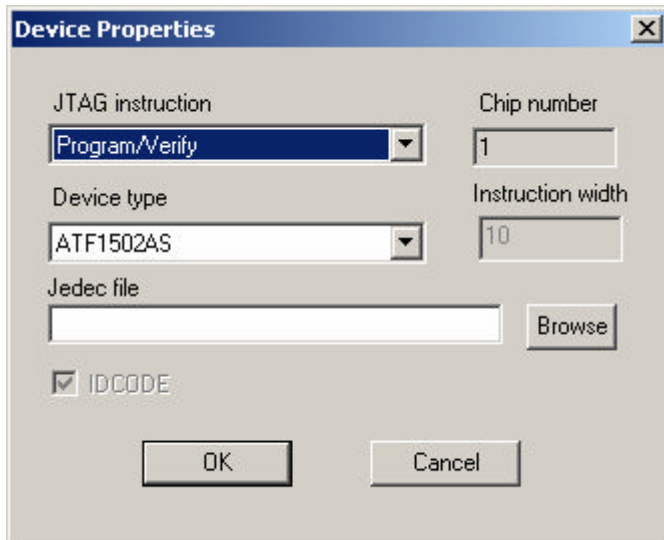
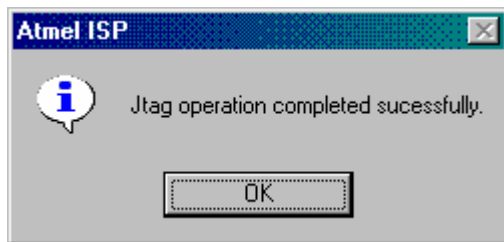


Figure 3: Device Choice

Connect the Hardware via ByteBlaster cable to the PC and choose "Run". You will be asked to save the chain file, containing information about the JTAG instructions. ATMELISP will prompt a message if the process was successful:



2.2. Mechanical:

Dimensions: Length: 305mm, Width 178mm

2.3. Technical data:

Surface temperature: operating 0 bis +60°C (corresponding airflow necessary)
storage: -10 bis +85°C

relative humidity: operating: 10% bis 90% non condensing
non operating: 5% bis 95% non condensing

2.4. Electrical characteristics:

Supply Voltage: (*1) +5V
+3V(ATX only)

+12V
-12V
-5V (ISA Bus only)
???

Supply current:

Note: depending on connected CPU and extension boards the current drawn will be higher!

- *1: To protect the external powerlines of peripheral devices the customer has to take care about:
- that the wires have the right diameter to withstand the maximum available current
 - that the enclosure of the peripheral device fulfils the fire protecting requirements of IEC/EN 60950.

Battery voltage for RTC: 3.0 ... 4.2 V

Battery supply current: max. 10 μ A

Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions.

NORDIC CAUTION TEXTS CONCERNING LITHIUM BATTERIES

Danish: **ADVARSEL !** Lithiumbatteri – Eksplosionsfare ved fejlagtig håndtering. Udskiftning må kun ske med batteri af samme fabrikat og type. Lever det brugte batteri tilbage til leveradøren.

Norwegian: **ADVARSEL !** Eksplosjonsfare ved feilaktig skifte av batteri. Benytt samme batteritype eller en tilsvarende type anbefalt av apparatfabrikanten. Brukte batterier kasseres i hendhold til fabrikantens instruksjoner.

Swedish: **WARNING !** Explosionsfara vid felaktigt batteribyte. Använd samma batterityp eller en ekvivalent typ som rekommenderas av apparattillverkaren. Kassera använt batteri enligt fabrikantens instruktion.

Finnish: **VAROITUS !** Paristo voi räjähtää, jos se on virheellisesti asennettu. Vaihda paristo ainoastaan laltemistajan suosittelmaan tyyppiin. Havita käytetty paristo valmistajan ohjeiden mukaisesti.

3. Document history:

date	Doc. name	doc. rev.	author	Action
28.08.02	ADA9K110.DOC	1.0	A. Knott	Short description created
16.05.05	ADA9K111.DOC	1.1	STC	Added new picture
22.08.05	ADA9K112.DOC	1.2	STC	Added sound connector to featurelist
23.03.07	ADA9K113.DOC	1.3	BHO	New drawing for connector locations