

μPCBoard

The Board contains two network interfaces, one for the network connection and the other one for connecting to PC. There is also an option of audio interface inbuilt. In case of development of price-sensitive applications where top performance is not required, Server version of the board is suggested for use. For more challenging tasks where more powerful CPU and larger memory storage is required, customers are advised to use Pro version of the board. The board can also be used as a network component like a firewall, router/switch etc. In such cases the board is delivered without audio interface, which results into purchase price reduction. Upon request, the board is supplied in a stylish case.



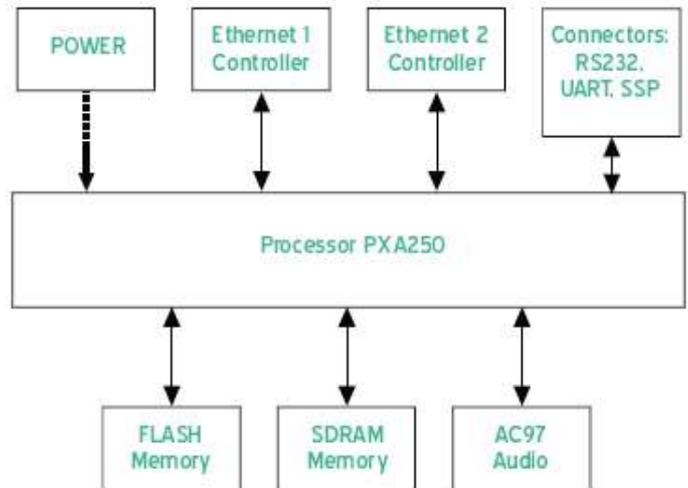
Linux operating system is preinstalled on the board as default. Board is manageable through standard RS232 serial link. For the effective work, user should use terminal station. Later when network interfaces are configured user can manage whole system remotely via LAN/internet using SSH protocol. Also remote software upload/upgrade is supported by system. There can be customer made applications stored in FLASH memory.

In case of medium to large sized orders, the **board can be customized** and delivered also without preinstalled operating system. For more information refer to technical specification of the board.

Hardware specification

Common to all types of the board

- 2 x 10Mb Ethernet (cs89x0)
- RS232 connector, output to terminal
- UART serial connector (3.3-5V)
- JTAG connector
- AC97 audio (optional) – stereo line IN/OUT, mono microphone input, Mono/Stereo headphones output
- FLASH-erase-protection switch (optional)
- RESET switch
- POWER LED
- Power: 9V (connector 5.5x2.1mm, center positive), power consumption up to 5W
- Size: 100x107x27 mm
- Operating temperatures:
0°C to +70°C (commercial version)
-40°C to +85°C (industrial version, without audio)



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Types of Boards:

Xscale micro PCBoard Basic

- Intel PXA255/200MHz Processor
- 32MB FLASH memory
- 64MB SDRAM memory
- 2 x Ethernet 10Mb
- 1 x RS232
- 1 x Serial asynchronous port
- **Audio**
- OS Linux

Xscale micro PCBoard Server

- Intel PXA255/200MHz Processor
- **16MB FLASH memory**
- 64MB SDRAM memory
- 2 x Ethernet 10Mb
- 1 x RS232
- 1 x Serial asynchronous port
- OS Linux

Xscale micro PCBoard Server Pro

- Intel PXA255/200MHz Processor
- **32MB FLASH memory**
- 64MB SDRAM memory
- 2 x Ethernet 10Mb
- 1 x RS232
- 1 x Serial asynchronous port
- OS Linux

Software specification

OS Linux version 2.4.19-rmk4-pxa2

- File system (ROMFS, JFFS2, EXT2, NFS, RAMFS)
- Terminal
- SSH, TFTP
- LINUX basic utilities (Bash, Vi, ...)
- Network drivers
- Demo MP3 player

Typical Application

- Firewall
- Router
- IP Telephony
- Embedded Systems
- Automatization, industry
- Security systems
- Mobil devices (GSM/GPRS)

Audio connector

Pin	Description
1	LINE_IN_L *
2	LINE_OUT_L
3	LINE_IN_R *
4	LINE_OUT_R
5	AGND
6	MONO_OUT *
7	MIC1_IN
8	HP_OUT_L
9	MIC1_REF
10	HP_OUT_R

* Optional

SP1 3-5V (5V tolerant I/O pins accept 5V,3.3V)

Pin	Description
1	VCC5
2	VCC3.3
3	SP1_BT_CTS
4	GND
5	SP1_BT_RTS
6	GND
7	SP1_BT_RXD
8	GND
9	SP1_BT_TXD
10	GND

SP0-RS232 (V.28 voltage level)

Pin	Description
1	SP0_RXD
2	SP0_CTS
3	SP0_DCD
4	SP0_DSR
5	SP0_RI
6	SP0_TXD
7	SP0_RTS
8	SP0_DTR
9	GND
10	GND

RS232 (V.28 voltage levels)

Pin	Description
1	SP0_DCD
2	SP0_RXD
3	SP0_TXD
4	SP0_DTR
5	GND
6	SP0_DSR
7	SP0_RTS
8	SP0_CTS
9	SP0_RI

The same port

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SSP (5V tolerant I/O pins accept 5V,3.3V)

Pin	Description
1	VCC5
2	VCC3.3
3	SSP_FRM
4	GND
5	SSP_CLK
6	GND
7	SSP_TXD
8	GND
9	SSP_RXD
10	GND

JTAG connector

Pin	Description
1	VREF (VCC3.3)
2	VCC3.3
3	-TRST
4	GND
5	TDI
6	GND
7	TMS
8	GND
9	TCK
10	GND
11	RTCK
12	GND
13	TDO
14	GND
15	-RESET
16	GND
17	NC
18	GND
19	NC
20	GND

Settings:

Serial console settings

- Baud rate: 38400
- Data bits: 8
- Parity: none
- Stop bits: 1
- Flow control: none

Jumper settings

JP331 – FLASH Erase

- ENABLE (with jumper)
- DISABLE (without jumper)

Logging to system

There are two possibilities, via *serial console* or *SSH session*.

Serial console

Use null modem cable, connect it to RS232 on PXABoard and computer. Start terminal on computer (Hyperterminal, TeraTerm, Minicom, ...) with 38400 baud rate, 8 data bits, None Parity, 1 Stop-Bit, None Flow Control.

SSH session

Run SSH (Putty, cygwin, OpenSSH, ...) to address specified shipment.

Set username "root" and password "root".

File system

Flash of capacity 16/32MB (8MB possible) is divided into 3 partitions. First 256kB partition is used for BootLoader. On second 768kB partition LinuxKernel resumes. The last part is assigned to filesystem JFFS2(rw). That means you can copy or create any file on it up to the capacity of available resources.

Write Flash from Linux

Block Devices

/dev/mtdblock0 (BootLoader)
/dev/mtdblock1 (LinuxKernel)
/dev/mtdblock2 (FileSystem)

Character Devices

/dev/mtd0(BootLoader,rw)
/dev/mtd1(BootLoader,ro)
/dev/mtd2(LinuxKernel,rw)
/dev/mtd3(LinuxKernel,ro)
/dev/mtd4(FileSystem,rw)
/dev/mtd5(FileSystem,ro)



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Examples:

to erase linuxKernel partition:

```
eraseall /dev/mtd2
```

to write new LinuxKernel:

```
cat newkernel>/dev/mtd2
```

to mount folder 's':

```
mount /dev/mtdblock2-t jffs2s
```

Logging to system

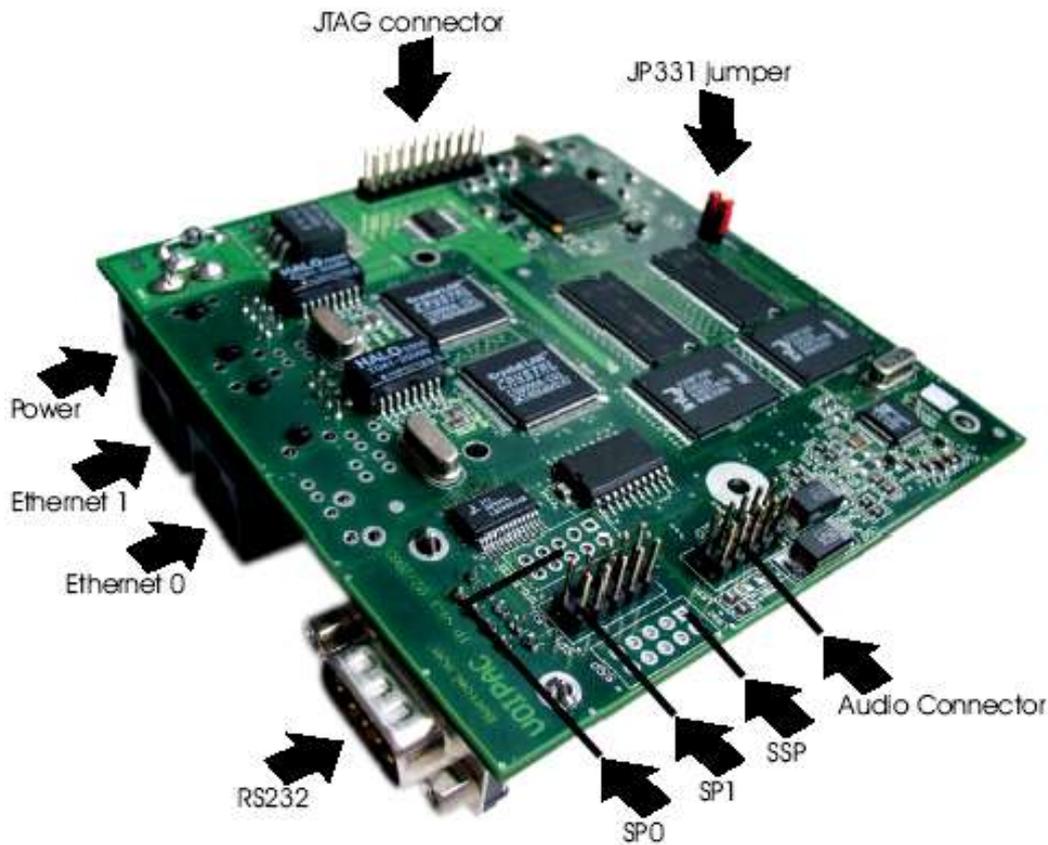
JP331 on PXABoard is ON. Connect JTAG to the PXABoard and to LPT port on the computer (Windows running).

Run "*instdrv giveio c:\winnt\system32\drivers\giveio.sys*"

To write data from FILE to partition 1 (partitions start from 0)

run "*Jflash.exe FILE P1*"

Pop up window shows up on the screen with processing information.



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