USB Main board Pin-out's

General USB Standard Details
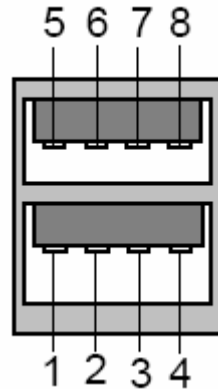
Pin No.	Definition
1	USB V0
2	USB D0-
3	USB D0+
4	GND
5	USB V1
6	USB D1-
7	USB D1+
8	GND

How fast is USB?

High speed USB products have a design data rate of 480 Mb/s. Full speed USB devices signal at 12Mb/s, while low speed devices use a 1.5Mb/s sub channel.

Speed Comparison

Port	Speed
Serial port	115kbits/s (.115Mbits/s)
Standard parallel port	115kBYTES/s (.115MBYTES/s)
USB 1.x	12Mbits/s (1.5MBYTES/s)
ECP/EPP parallel port	3MBYTES/s
IDE	3.3-16.7MBYTES/s
SCSI-1	5MBYTES/s
SCSI-2 (Fast SCSI, Fast Narrow SCSI)	10MBYTES/s
Fast Wide SCSI (Wide SCSI)	20MBYTES/s
Ultra SCSI (SCSI-3, Fast-20, Ultra Narrow)	20MBYTES/s
UltraIDE	33MBYTES/s
Wide Ultra SCSI (Fast Wide 20)	40MBYTES/s
Ultra2 SCSI	40MBYTES/s
IEEE-1394	100-400Mbits/s (12.5--50MBYTES/s)
Hi-Speed USB (USB 2.0)	480Mbits/s
Wide Ultra2 SCSI	80MBYTES/s
Ultra3 SCSI	80MBYTES/s
Wide Ultra3 SCSI	160MBYTES/s
FC-AL Fiber Channel	100-400MBYTES/s

How does USB compare to IEEE-1394 (Firewire)?

While the two serial buses seem similar, they are intended to fulfil different market and cost needs. 1394 has the potential to move more data in a given amount of time, but is considerably more expensive than USB due to its more complex protocol and signalling rate. Applications that are best suited for 1394 are high quality consumer or professional video streams and other high bandwidth entertainment applications; all higher end consumer devices. USB is appropriate for high and low bandwidth computer peripherals such as mass storage, video, audio, scanners, printers, keyboards, and just about any peripheral.

How many USB peripherals can I connect at once?

Technically, you can connect up to 127 individual USB peripherals at one time. Due to the fact that some devices reserve USB bandwidth, the practical maximum of devices is less than the theoretical maximum. However, PCI-USB add-in cards provide an independent USB bus to which even more peripherals can be connected.

How long of a cable can I use to connect my device?

In practice, the USB specification limits the length of a cable between full speed devices to 5 meters (a little under 16 feet 5 inches). For a low speed device the limit is 3 meters (9 feet 10 inches).

Why can't I use a cable longer than 3 or 5m?

USB's electrical design doesn't allow it. When USB was designed, a decision was made to handle the propagation of electromagnetic fields on USB data lines in a way that limited the maximum length of a USB cable to something in the range of 4m. This method has a number of advantages and, since USB is intended for a desktop environment, the range limitations were deemed acceptable. If you're familiar with transmission line theory and want more detail on this topic, take a look at the USB signals section of the developers FAQ.

How far away from a PC can I put a USB device?

With the maximum of 5 hubs connected with 5m cables and a 5m cable going to your full speed device, this will give you 30m of cable (see section 7.1.19 for details). With a low speed device, you will be able to get a range up to 27m, depending on how long the device's cable is. With a straightforward cable route, you will probably be able to reach out 25m or so from the PC.
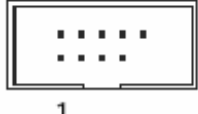
USB ROB Cabling Guide

Colour	Signal
Black	Ground
White	USB P0-
Green	USB P0+
Red	Vcc (+5v)

Note that some board using the 1 x 8 Pin connector have the second Ground pin blanked off, to use the second USB port on such main-boards you will need to modify the connector by re wiring the Second ground connector into the same pin as the first connector.
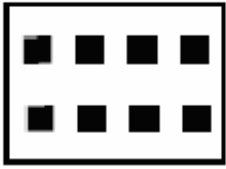
Main-board Pinout's

PC Partner
10 pins USB header - *Intel Standard Pin out*

Pin #1	
+5v	+5v
USB P0-	USB P1-
USB P0+	USB P1+
Ground	Ground
Key	No Connection

Intel 845G/ 845GL/ 845E

8 pins USB header

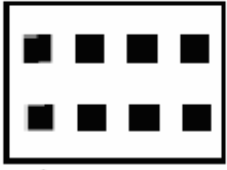| Pin#1	
+5v	Ground
USB P0-	USB P1+
USB P0+	USN P1-
Ground	+5v

Applies to

Slot 1 or Socket 370
Intel 845, Intel 815/ 815E/ 815EP/ 815P,Intel 810/ 810E, Intel 440LX/ EX/ ZX/ BX ,VIA Apollo Pro266/ 266T,VIA Apollo Pro133A/ Pro133T,VIA Apollo Pro133T,VIA ProSavage PM133,VIA PLE133,VIA Apollo Pro133,VIA Apollo Pro/ Pro+.
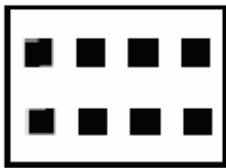
Socket A
VIA Apollo KT333, VIA Apollo KM266, VIA Apollo KLE133, VIA Apollo KT266, VIA ProSavage KM133/ KM133A, VIA Apollo KT133/ 133A

Socket 7
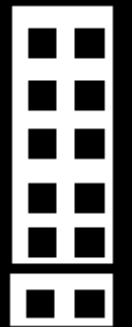Intel 430TX , VIA VP3/ MVP3 (excluded VIB838DS)/ MVP4, VIA VIB823DS/ DSE

Pin #1	
+5v	+5v
USB P0-	USB P1-
USB P0+	USB P1+
Ground	Ground

Chipsets	Applicable for the following models.
Intel 430VX	MB520NH, VXB810DS, VXB820DS, VXB830DS, MB540N
VIA VPX	VIB800DS, VIB804DS, VIB804DSE
VIA MVP3	VIB838DS

Pin #1	
Ground	+5v
USB P0+	USB P1-
USB P01	USB P1+
+5v	Ground

Chipsets	This pin-out is applicable for the following model.
Intel 440LX	LXB801D.
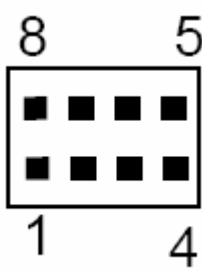
12 pins USB header

Pin #1	
USB P0-	Ground
USB P0+	Ground
USBP1-	Ground
USBP1+	Ground
+5v	Ground
+5v	Ground

Chipsets	
Intel 430VX Intel 440FX	MB520N, MB520NDMB600N, MB600ND
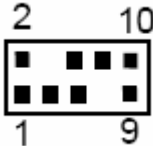
Gigabyte

8 Pin
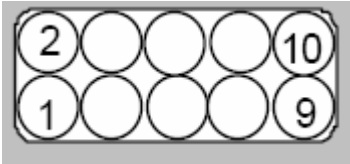
Pin No.	Definition
1	VCC (+5v)
2	USB D0-
3	USB D0+
4	GND
5	VCC (+5v)
6	USB D1-
7	USB D1+
8	GND

GA7
IXE4

10 Pin
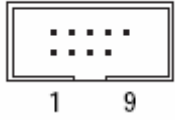
Pin No.	Definition
1	VCC (+5v)
2	GND
3	USB D2-
4	No Connection
5	D2+
6	D3+
7	No Connection
8	USB D3-
9	GND
10	VCC (+5v)

GA7
ZXH, DXE, DX(R)+,

Pin No.	Definition
1	No Connection
2	VCC (+5v)
3	GND
4	No Connection
5	No Connection
6	USB +
7	GND
8	USB -
9	GND
10	No Connection
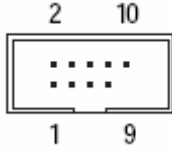
10Pin (USB2)

Pin No.	Definition
1	VCC (+5v)
2	VCC (+5v)
3	USB Dx-
4	USB Dy-

	5	USB Dx+
	6	USB Dy+
	7	GND
	8	GND
	9	No Pin
	10	No Connector

GA-7N400 Pro2, GA-7N400, 7N400-L, VAX, VAX-P, VAX-P Ultra, 7VM400M-RZ, 7VT600-RZ / 7VT600-RZ-C.

ASRock
10Pin (USB2)

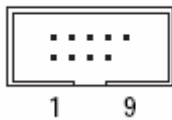| Pin No.	Definition
1	VCC (+5v)
2	VCC (+5v)
3	USB Dx-
4	USB Dy-
5	USB Dx+
6	USB Dy+
7	GND
8	GND
9	No Pin
10	No Connector
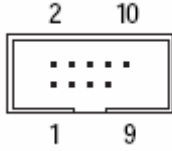
All ASRock Boards use the same pin-out.

MSI
10Pin (USB2)

Pin No.	Definition
1	VCC (+5v)
2	VCC (+5v)
3	USB Dx-
4	USB Dy-
5	USB Dx+
6	USB Dy+
7	GND
8	GND
9	No Pin
10	No Connector

ECS Elite

K7S5A

Pin No.	Definition
1	VCC (+5v)
2	VCC (+5v)
3	USB Dx-
4	USB Dy-
5	USB Dx+
6	USB Dy+
7	GND
8	GND
9	No Pin
10	No Connector

FAQ

Question: I cannot get USB to work. Does my OS support it?
Answer: Microsoft will only support USB under the following OSs: Windows 2000/Windows ME/Windows 98SE/Windows 98/Windows 95(OSR2.1 or OSR2.5) For more information please see (Microsoft's web site http://www.microsoft.com)

Question: Where can I get a VIA PCI to USB driver?
Answer: The VIA Tech 3838 PCI to USB controller is included in all Windows Operating systems that have support for USB. If your operating system cannot find the drivers, you will need to reinstall your operating system or contact the place of purchase of your PC for assistance.

Question: I cannot get my USB to work at all. Windows does not see any USB devices. What can I do?
Answer: Check that USB is enabled in your bios. Consult your motherboard manual to see how to do this. Windows 95, first edition and Windows NT does not support USB. All other operating systems have their own USB driver built in. If your USB still does not work after you have enabled it in your bios, please contact your motherboard manufacturer. You may be required to update your bios to a bios that supplies more power to USB.

Question: My USB devices stop working suddenly or will not work at all.
Answer:

1) Check that USB is enabled in your bios. Consult your motherboard manual to see how to do this.

2) Windows 95, first edition and Windows NT does not support USB. All other operating systems have their own USB driver built in.

3) Check your motherboard manufacturer's web site to see if they have a BIOS that provides more power to the USB.

4) Make sure that you do not have a device or many devices that require more power than your USB port can supply. A standard onboard USB has 450 to 500 mA of power (this is the USB standard). Examples of power used by USB devices:
  ➢ Microsoft USB mouse - 100mA
  ➢ Saitek Cyborg 3D joystick - 20mA
  ➢ Kodak DC4800 camera - 2mA
  ➢ USB network card - 180mA
  ➢ Cannon Scanner N65OU uses 500mA of power when idle in & up to 800mA when scanning

If all these USB devices are used at the one time they would need 1102mA of power but the total provided by the motherboard USB is only 500mA. The only way to use many USB devices at once is to get a Powered USB hub. A powered USB hub uses 0mA and has up to 5000mA available. If you want to or need to use many USB devices at a time, you have to get a powered hub. Some devices like scanners, even on their own need a powered hub. They can run off the motherboard, but it is not recommended if they use over 400mA.

To find out how much power your devices are using - go into System Properties from Control Panel. Go into Device Manager under Hardware and under the tab for Universal Serial Bus Controllers. Go into USB Root hub and look under power. It will list the mA for devices plugged in. There will be a USB root hub for every two ports you have available on your board. This will vary between 2 and 6.

5) Other things that will affect power to the USB are
  1) BIOS settings made by motherboard manufacturers
  2) Power Supply - an insufficient power supply will reduce power to the USB
  3) CPU speed - the higher the power consumption of the CPU, the less power will be supplied to the USB
  4) The more peripherals you have in the PC will reduce the power to the USB

Bibliography

ASRock Website, http://www.asrock.com, Main-board Manuals.
Gigabyte Website, http://www.giga-byte.com, Main-board Manuals.
Micro Star International Website, http://www.msi.com.tw, Main-board Manuals.
PC Partners Website, http://www.pcpartner.com Main-board Manuals.
Universal Serial Bus Websidte, http://www.usb.org, Frequently asked questions .