

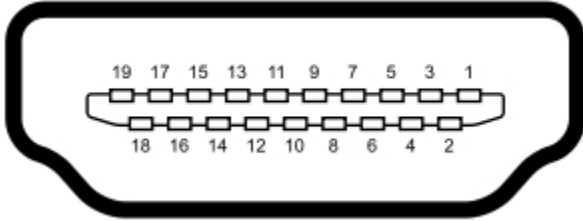
Matthew Elbert and Matthew Harville

HDMI:

HDMI is an acronym for High Definition Multimedia Interface. It was designed in 2002 and production began on consumer products in 2003. It is a compact audio/video interface that transfers uncompressed video data and compressed or uncompressed digital audio data. The connector conforms to [EIA/CEA – 861 standards](#). There are five types of connectors assigned the letters A through E as well as six different versions that are 1.0, 1.1, 1.2, 1.3, 1.4, and 2.0. Max voltage is 5V with 19 pins.

HDMI version	1.0	1.1	1.2	1.3	1.4	2.0
Date initially released	December 9, 2002	May 20, 2004	August 8, 2005	June 22, 2006	May 28, 2009	September 4, 2013
Maximum clock rate (MHz)	165	165	165	340	340 ^[94]	600 ^{[148][149]}
Maximum TMDS throughput per channel (Gbit/s) including 8b/10b overhead	1.65	1.65	1.65	3.40	3.40	6
Maximum total TMDS throughput (Gbit/s) including 8b/10b overhead	4.95	4.95	4.95	10.2	10.2	18
Maximum throughput (Gbit/s) with 8b/10b overhead removed	3.96	3.96	3.96	8.16	8.16	14.4
Maximum audio throughput (Mbit/s)	36.86	36.86	36.86	36.86	36.86	49.152 (IEC61937 and DST audio)
Maximum color depth (bit/px)	24	24	24	48 ^[a]	48	48

Maximum consumer resolution over single link at 24-bit/px^[b]	1920×1200p60	1920×1200p60	1920×1200p60	2560×1600p60	4096×2160p30 ^[153]	4096×2160p60
---	--------------	--------------	--------------	--------------	-------------------------------	--------------



Type A receptacle HDMI

Pin 1 TMDS Data2+

Pin 2 TMDS Data2 Shield

Pin 3 TMDS Data2-

Pin 4 TMDS Data1+

Pin 5 TMDS Data1 Shield

Pin 6 TMDS Data1-

Pin 7 TMDS Data0+

Pin 8 TMDS Data0 Shield

Pin 9 TMDS Data0-

Pin 10 TMDS Clock+

Pin 11 TMDS Clock Shield

Pin 12 TMDS Clock-

Pin 13 CEC

Pin 14 Reserved (HDMI 1.0–1.3c), Utility/HEAC+ (Optional, HDMI 1.4+ with HDMI Ethernet and audio return channel (HEAC))

Pin 15 SCL (I²C Serial Clock for DDC)

Pin 16 SDA (I²C Serial Data Line for DDC)

Pin 17 DDC/CEC/HEAC Ground

Pin 18 +5 V (max 0.05 Amp)

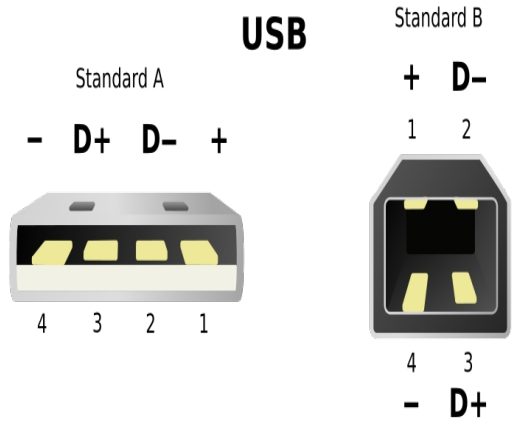
Pin 19 Hot Plug detect (all versions) and HEAC- (optional, HDMI 1.4+ with HDMI Ethernet and audio return channel (HEAC))

USB 2.0

Universal Serial Bus 2.0(USB 2.0) aka “Hi Speed” is the successor to USB 1.1. Its pin-outs are as follows: Pin 1 VCC (+5V, red wire), Pin 2 Data- (white wire), Pin 3- Data+ (green wire), and Pin 4 Ground (black wire). The voltage specifications of the USB 2.0 are 5Vdc with a max. voltage of 5V+/- .25V and a max. current at 0.5-0.9A; 5A (charging devices). Three speed modes for USB 2.0 are 1.5, 12, 480 megabits.



A USB receptacle on your PC is a type A connector (Picture above), seen on computers and laptops. The type-A receptacle can be found on upstream devices such as a hub or the back of your computer. We can find these A-type plugs on keyboards, computer mice, but also can be used to connect a host device to another device. As for a standard B-Type USB, it is characterized as having a square like connection. It is used as a downstream connection for printers. Some devices that have a b-type USB have no data connection thus only requiring power from a device upstream hence why it is an upstream.



USB 3.0



USB 3.0 uses 2 types of connectors; Standard-A, Standard-B and they have 9 and 11 pins respectively. The Standard-A is used for the host side connection and pc connection. The Standard-B is used for device side connection. USB 3.0 is backwards compatible with USB 2.0, uses 5 volts and has a 5 gbit/s transfer rate. A third connector is used for backwards compatibility with USB 1.x/2.0 by adding a 5-pin plug "stacked" on side of a with USB 1.x/2.0 connector.

IEEE 1394 (FIREWIRE)

IEEE 1394 stands for Institute of Electrical & Electronic Engineers, whereas 1394 is the section of standards code that deals with it. FireWire is a very fast external bus standard that supports data transfer rates up to 800Mbps. A single port can be used to connect up to 63 external devices. 1394 also supports isochronous data delivering data at a guaranteed rate. The 9-pin FireWire 800 port is capable of operating at 100, 200, 400, and 800 Mbps, depending on the device to which it is connected. The FireWire 800 port is bilingual in that it supports both IEEE 1394a and 1394b. Using a cable with a 9-pin connector at one end and a 4-pin or 6-pin connector at the other, the 9-pin port is capable of directly connecting to all existing FireWire devices. Using a cable with 9-pin connectors at both ends, the 9-pin port is capable of operating at 800 Mbps. The operating Voltage is $\pm 12.8\text{VDC}$. Future iterations of FireWire are expected to increase speed to 6.4 Gbit/s and additional connectors such as the small multimedia interface

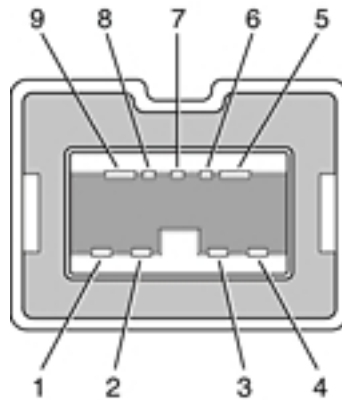


Figure 3-3 9-pin FireWire 800 connector:

Tab
le
3-3
Sig
nals
on
the
9-pi
n
Fire
Wir
e
800
con
nec

tor

Pin

Signal name

1

TPB-

2

TPB+

3	TPA-
4	TPA+

5

TPA (R)

6	VG
7	SC

8

VP

9

TPB (R)

--	--






Ethernet Cable




Ethernet cable is the physical connection used in networking technologies, based on the [IEEE 802.3](#) standard. The term RJ45 is used to describe the 8 piece, 8 connection (8P8C) connector used in conjunction with ethernet cable.

Type	Voltage	Notes
10BASE-T	+2.5 V or -2.5 V	
100BASE-TX	+1 V, 0 V, or -1 V	Follows the same wiring patterns as 10BASE-T, but is more sensitive to wire quality and length, due to the higher bit rates.
1000BASE-T	-2 V, -1 V, 0 V, +1 V, and +2 V	While +2 V to -2 V voltage may appear at the pins of the line driver, the voltage on the cable is nominally +1 V, +0.5 V, 0 V, -0.5 V and -1 V.

There are two pinout versions, T-568B (Common), and T-568A. While both pinout versions work, and the only requirement is that both ends of the cable adhere to the same version, typically T-568B is used.

T-568B Pinout Version

Pin	Signal	Pair	Color
1	BI_DA+	2	 white/orange stripe
2	BI_DA-	2	 orange solid
3	BI_DB+	3	 white/green stripe
4	BI_DC+	1	 blue solid
5	BI_DC-	1	 white/blue stripe

6	BI_DB-	3	 green solid
7	BI_DD+	4	 white/brown stripe
8	BI_DD-	4	 brown solid

Sources

- <http://www.iplocation.net/tools/rj45-wiring.php>
- <http://en.wikipedia.org/wiki/Ethernet>
- http://en.wikipedia.org/wiki/Ethernet_crossover_cable
- http://en.wikipedia.org/wiki/IEEE_802.11
- http://en.wikipedia.org/wiki/Category_5_cable
- http://en.wikipedia.org/wiki/Category_6_cable

Chris Brehm

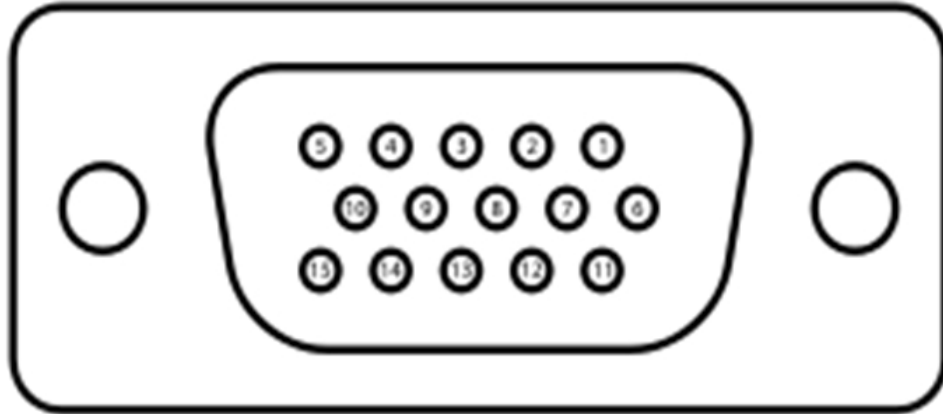
Jesse Easterly

Otoole

Tuesday, Thursday 6:30pm

VGA port

VGA stands for video graphics array and was introduced in 1987 as successor to EGA. The most common VGA connector is the DE-15 or HD-15. Two other less common connectors used are the DE-9 and mini DE-15. The DE-15 connector contains 15 pins. A VGA port transmits analog component video signals. This component video signal consists of red, blue, and green video signals at 700mV peak to peak terminated at 75Ω. The DE-15 also contains horizontal and vertical sync lines. The DE-15 connector contains 4 i²c data lines on pins 4,11,12,15. These data lines are used for monitor identification. The VGA cable can be used with a variety of supported resolutions, ranging from 640×350 at 60 Hz and up to 2048×1536 at 85 Hz.



Pin 1	RED	Red video
Pin 2	GREEN	Green video
Pin 3	BLUE	Blue video
Pin 4	ID2/RES	formerly Monitor ID bit 2, reserved since E-DDC
Pin 5	GND	Ground (HSync)
Pin 6	RED_RTN	Red return
Pin 7	GREEN_RTN	Green return
Pin 8	BLUE_RTN	Blue return
Pin 9	KEY/PWR	formerly key, now +5V DC
Pin 10	GND	Ground (VSync, DDC)
Pin 11	ID0/RES	formerly Monitor ID bit 0, reserved since E-DDC
Pin 12	ID1/SDA	formerly Monitor ID bit 1, I²C data since DDC2
Pin 13	HSync	Horizontal sync
Pin 14	VSync	Vertical sync
Pin 15	ID3/SCL	formerly Monitor ID bit 3, I²C clock since DDC2

Jake Thorsnes

9-9-14

S. Toole

Mech 25

Keyboards and Mice's

Keyboards and mouse are the most basic type of input devices on a computer. The original connector was the AT Connector which was replaced by the PS/2 port connector which is a type of Mini-DIN style used in many computers, see image below with the pin out chart next to it which tells the pins purpose. This was the style that used for years but was eventually replaced by the USB connection. The voltage drop across the connector is +5V DC. Data signal: Serial data at 10 to 16 kHz with 1 stop bit, 1 start bit, 1 parity bit (odd)

■

.....

