

Computer Ports & Connectors

Understanding Computer Input/Output Interfaces

What Are Computer Ports?

A port is a physical interface on a computer where you can connect external devices to exchange data, power, or both.

Input Ports

Keyboards, mice, microphones

Output Ports

Monitors, speakers, printers

I/O Ports

USB, Ethernet, storage devices

Ports are typically located on the back and front of a computer case. Different ports serve different purposes and support various devices.

USB Ports

Universal Serial Bus

USB 2.0



Speed: 480 Mbps

Color: Black

Use: Keyboards, mice, printers

USB 3.0 / 3.1 / 3.2



Speed: 5-20 Gbps

Color: Blue/Teal

Use: Fast storage, HD video

USB Type-C

The Modern Universal Connector



Reversible

Plug either way

Video

DisplayPort/HDMI



Fast

Up to 40 Gbps

Universal

Multiple protocols



Power

Up to 100W

Compact

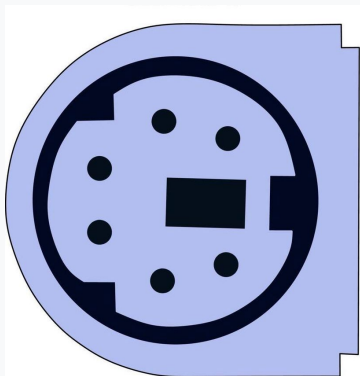
Small size

PS/2 Ports

Keyboard & Mouse Connectors



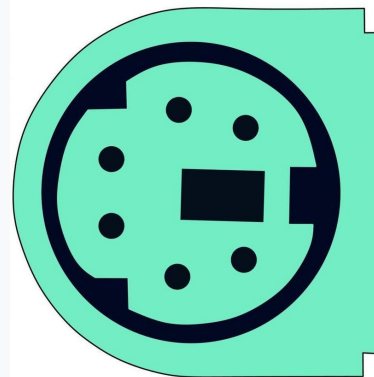
Keyboard Port



- 6-pin mini-DIN
- Colour: Purple/Violet
- Direct motherboard connection
- Faster response than USB



Mouse Port



- 6-pin mini-DIN
- Colour: Green
- Same shape as keyboard
- Colour-coded to prevent confusion

VGA Port

Video Graphics Array



15-pin D-sub connector (3 rows of 5 pins)

Color: Blue • Signal: Analog video







Max Resolution: 1920×1080 (typically 1280×1024)

Status: Legacy standard, replaced by HDMI & DisplayPort

Modern Video Ports



HDMI

Plug (Male)	Socket (Female)	Name
		Type A 13.9mm x 4.45mm
		Type C (Mini HDMI) 10.42mm x 2.42mm
		Type D (Micro HDMI) 6.4mm x 2.8mm

- Transmits both digital audio and video
- Supports up to 8K resolution
- Features HDR (High Dynamic Range)
- Most common on TVs, monitors, and consumer electronics



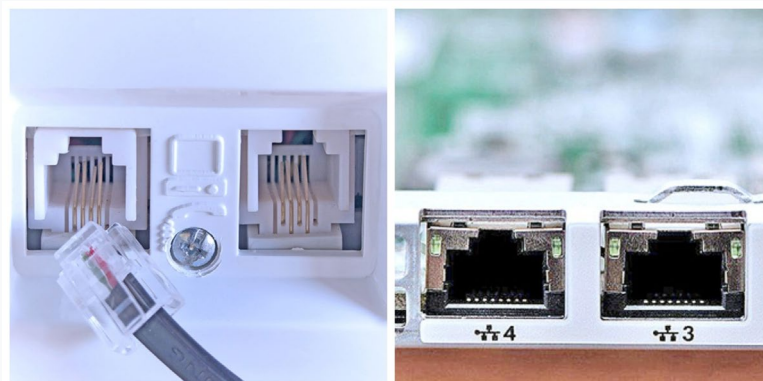
DisplayPort



- Digital audio and video transmission
- Supports up to 8K resolution
- Can Daisy-chain multiple monitors
- Preferred for PC gaming and professional displays

Ethernet LAN Port

RJ-45 Network Connector



8P8C Connector (commonly called RJ-45)

Speeds: 100 Mbps • 1 Gbps (common) • 10 Gbps • Up to 100 Gbps

Use: Wired network connection - More stable and faster than Wi-Fi

Audio Ports

3.5mm Audio Jacks - Color Coded

  **Microphone** • Pink/Red - Voice recording

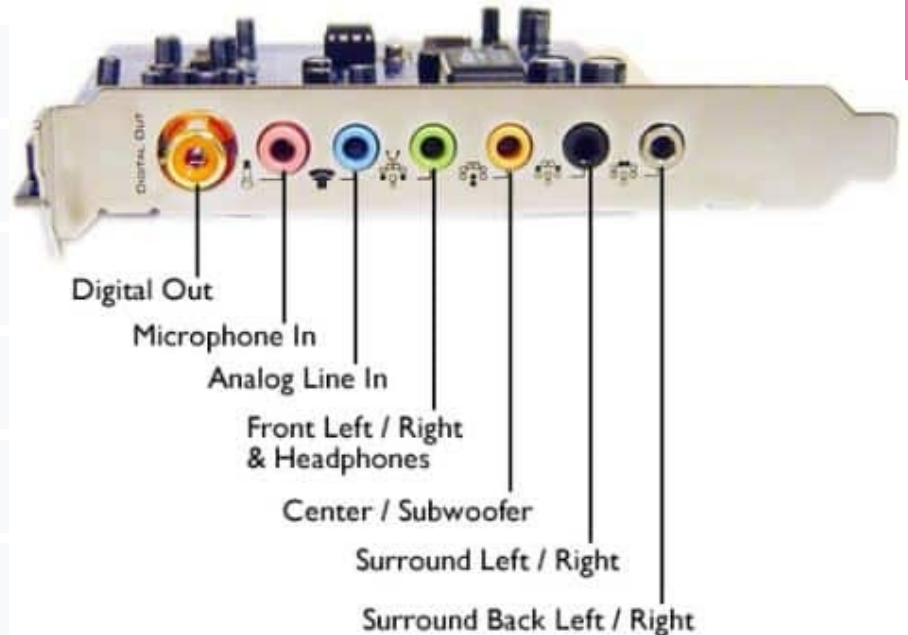
  **Line In** • Light Blue - Audio input

  **Speakers** • Green - Audio output

  **Line Out** • Yellow - External amplifiers

  **Surround** • Black - Rear speakers

  **Subwoofer** • Orange - Bass speakers



Legacy Ports

Serial & Parallel Connectors

Serial Port (COM)



- 9-pin connector
- Colour: Teal/Cyan
- Serial data transfer
- Use: Old modems, industrial equipment

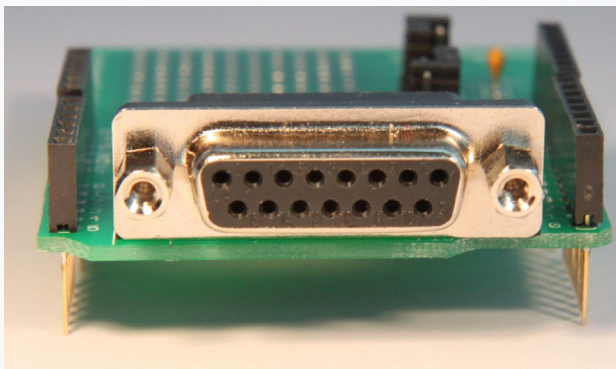
Parallel Port (LPT)



- 25-pin connector
- Color: Pink/Magenta
- Parallel data transfer
- Use: Old printers, scanners

Game/MIDI Port

Dual-Purpose Connector



DB-15 connector (15 pins) • Color: Yellow/Gold

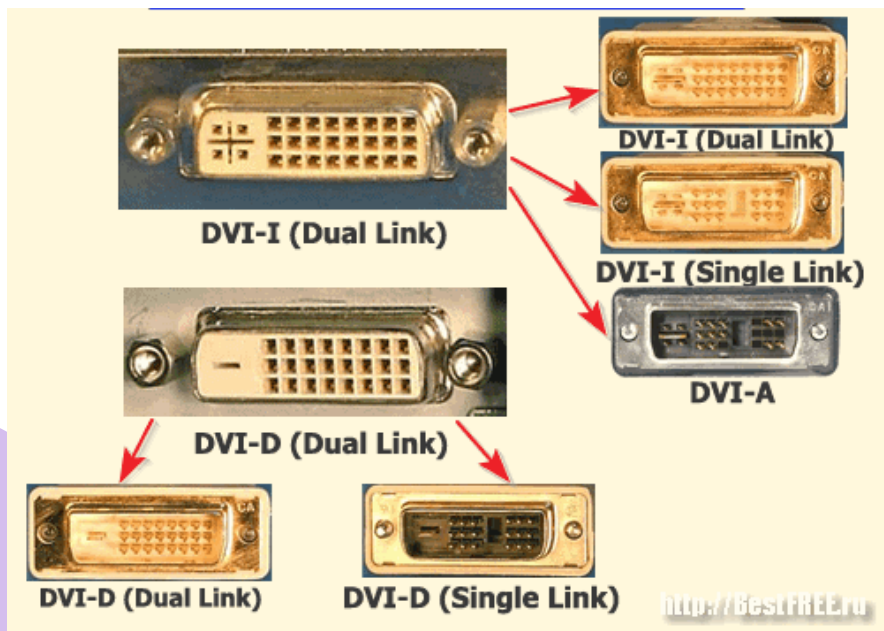
Game Port: Joysticks and game controllers (1990s gaming)

MIDI Port: Electronic musical instruments, synthesizers

Status: Obsolete - Replaced by USB

DVI Port

Digital Visual Interface (DVI) is a video interface standard that transmits uncompressed digitised video



<u>DVI Type</u>	<u>Signal Type</u>	<u>Max Resolution</u>	<u>Bandwidth</u>
DVI-D Single Link	Digital	1920 x 1080	4.59 Gbps
DVI-D Dual Link	Digital	2048 x 1536	9.9 Gbps
DVI-I Single Link	Digital/Analog	1600 x 1200	4.95 Gbps
DVI-I Dual Link	Digital/Analog	2048 x 1536	9.9 Gbps
DVI-A Analog	Analog	1920 x 1080	

Other Important Ports



Thunderbolt 3

Thunderbolt

High-speed data transfer, video, and power (40-80 Gbps)

eSATA USB



eSATA

External Serial ATA for fast external storage devices



FireWire (IEEE 1394)

High-speed connection for video cameras and hard drives



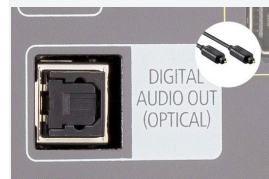
SD Card Reader

Read memory cards from cameras, phones, and other devices



Power Jack

Connect power adapter to charge the device



Optical Audio

Digital audio connection using light (S/PDIF)

Quick Reference Guide

Port	Color	Speed	Use Case
USB 2.0	Black	480 Mbps	Keyboards, mice, printers
USB 3.0	Blue	5 Gbps	Fast storage, HD video
USB-C	Various	40 Gbps	Universal connector
PS/2 Keyboard	Purple	Low	Legacy keyboards
PS/2 Mouse	Green	Low	Legacy mice
VGA	Blue	Analog	Old monitors
HDMI	Black	48 Gbps	Modern displays
DisplayPort	Black	80 Gbps	PC gaming displays
Ethernet	Various	1-100 Gbps	Network connection
Audio (Mic)	Pink	Analog	Microphone input
Audio (Speakers)	Green	Analog	Audio output