

What does a 24-pin connector box mean



Overview

24 Pin Connectors Explained: ATX Pinout, Cables and Safety 24 pin connectors in a desktop PC are usually the standard 24-pin ATX motherboard power connector.

Key Takeaways

A 24-pin connector box is the main interface between a computer's power supply unit (PSU) and motherboard, delivering essential power and control signals to ensure system operation.

Function and Purpose

The 24-pin connector, often referred to as the ATX main power connector, serves as the backbone of a desktop computer's power delivery system. It transmits multiple regulated DC voltages (+3.3V, +5V, +12V, -12V, and +5VSB) from the PSU to the motherboard, powering critical components such as the CPU, RAM, graphics card, and peripheral devices. It also carries control signals like PS-ON# (to turn the PSU on) and PWR_OK (to indicate stable voltage), ensuring safe startup and shutdown sequences.

Evolution and Design

Introduced with the ATX 2.0 specification in 2003, the 24-pin connector replaced the older 20-pin design to meet the higher power demands of modern hardware. The additional four pins provide extra +12V and ground connections, improving stability, reducing electromagnetic interference, and supporting high-performance CPUs and GPUs. Many PSUs feature a modular 20+4-pin design for backward compatibility with older motherboards.

Pinout and Signal Overview

The 24 pins are arranged in two rows and each has a specific function:

- Power rails: +3.3V, +5V, +12V, -12V, +5VSB
- Ground pins: Multiple pins to stabilize voltage and reduce noise
- Control signals: PS-ON# (pin 16) activates the PSU; PWR_OK (pin 8) signals voltage stability
- Sense lines: Some pins monitor voltage drops to ensure accurate delivery to the motherboard. The connector's asymmetric shape prevents incorrect insertion, protecting the motherboard and PSU from damage.

Importance

Understanding the 24-pin connector is crucial for PC builders and technicians. Proper connection ensures reliable power delivery, system stability, and prevents potential damage to components. Miswiring or using an incompatible connector can prevent the system from booting or cause hardware failure. In summary, the 24-pin connector box is a critical component that powers and communicates with the motherboard, supporting modern computing needs while maintaining safety and stability.

Article Content

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What Is 24-pin motherboard connector in Computer Hardware?

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An Overview of the 24-Pin ATX Power Connector The 24-pin ATX power connector serves as the primary power source for modern

Connector Basics

Pin header connectors comprise several different means of connection. Generally, one side is a series of pins which are soldered to

Complete 24-pin ATX Power Connector Pinout Guide

The 24-pin ATX power connector is a standardized component that ensures compatibility and interchangeability across various

What's the difference between 20+4 pin and 24 pin connectors

A 20+4 pin power looks like this and is backwards compatible with the older ATX standard of 20 pin. The 24 pin is a fixed cable

24 Pin Power Cable Pinout Guide Understanding the ATX Connector

By familiarizing yourself with this connector, you can ensure optimal performance and longevity of your computer's hardware. What is

Understanding Connector Symbol Wiring Diagrams

In a connector symbol wiring diagram, connectors are represented by specific symbols or pictograms to indicate their function and

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