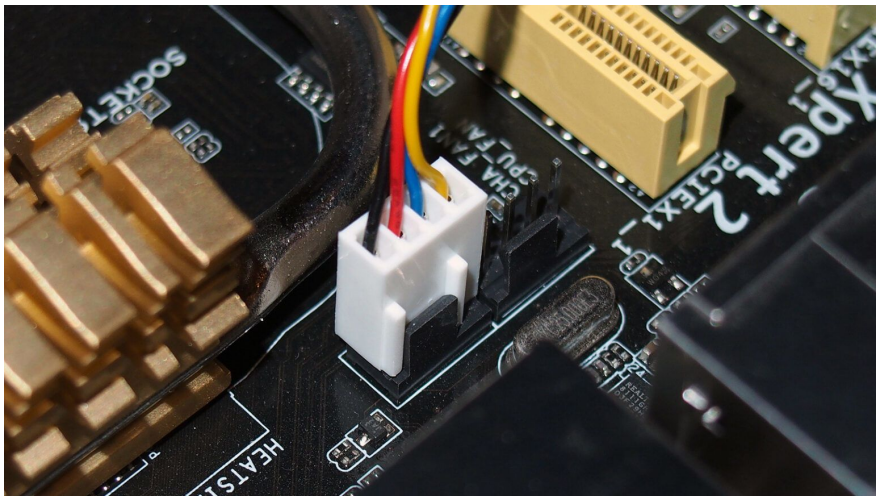
Instructions on how to connect 4-wire radiator fan wires most accurately

The cooling fan helps reduce the heat generated when used from heat-dissipating components such as CPU, RAM, VGA,... Learn how to connect 4-wire and 3-wire cooling fans correctly.

Computer cooling fans are currently considered an indispensable component for computer systems. They help reduce the amount of heat generated when used from heat-dissipating components such as CPU, RAM, VGA, etc. Let's learn how to **connect 4-wire and 3-wire cooling fans** correctly through the following article.

How to wire a 4-wire radiator fan (PWM)

Intel introduced the first 4-wire cooling fan product line on the market in 2003, replacing the previous 3-wire product lines.



With enhanced features and benefits, it reduces heat and noise quite well when the machine operates at high intensity. Although converting the heat sink from 3 wires to 4 wires may be slow at first due to not having time to adapt. However, currently, converting to 4-wire heat sink fans has become quite popular and is chosen to be used more because of its superior features.

The 4-wire radiator fan includes: 1 ground wire, 1 12V wire, 1 Sensor wire and 1 speed control wire (the wire is capable of carrying the PWM signal from the motherboard to the fan).

This PWM signal wire is directly connected to control and fine-tune the 4-pin connector. Unlike the 3-wire radiator fan, the speed control and adjustment is done by increasing or decreasing the voltage. Meanwhile, the 4-wire fan is always managed and operated with the same voltage even when the rotation speed changes.

The PWM signal is used to set the start time and required for the current to reach the cooling fan motor. The current with a distribution voltage of 5V, the signal will take effect. If the voltage does not change, the fan will run at maximum speed, to reduce the speed of the cooling fan, the motherboard will send a PWM signal, alternating on and off continuously to the power supply for the motor, causing the speed to decrease.

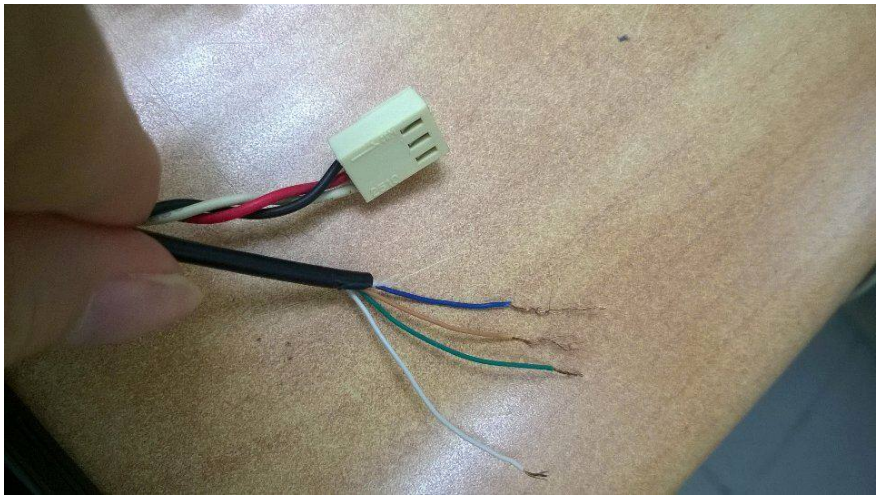
At this time the fan speed is determined by the duration of the power supply on and off signal.

The advantage of using PWM signal to control the cooling fan is better noise reduction and more stable rotation speed management.

How to connect 3 wire radiator fan

3-wire cooling fan is a type of fan used to cool the case with a traditional connection to a 3-pin connector. Includes 3 wires: ground wire, power wire and control wire.

3-wire cooling fans for computer systems usually have a voltage of 12V, the fan will rotate at a standard specified speed. To reduce the rotation speed of the cooling fan, it is necessary to adjust the voltage supplied to the fan through the motherboard or some form of external controller.



When the voltage goes to 0, the fan will stop running.

Above we can see the operating principle of 4-wire radiator fans and 3-wire radiator fans and simple but effective **ways to connect 4-wire radiator fans .**

Basically, the rotation speed of a 4-wire or 3-wire cooling fan depends on many different factors. Currently, on the market, 4-wire cooling fans are preferred and used quite popularly thanks to the standard PWM signal used on most motherboards. 4-wire cooling fans can reach slower speeds without stopping like 3-wire cooling fans.

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