

technical explanation

FAN Connectors

At least one fan is required to cool a computer system effectively. To improve the airflow it's recommended to have more than one fan installed, especially if you have an High-End System. In order to supply these fans with power and to allow temperature control, the mainboard has several connections for fans.

2 - pin molex, short

The fan is only supplied with power for functionality. Speed Adjustment is not possible.

3 - pin molex, short

In case of an 3-pin molex connector the fan speed can be read out through the third pin.

Actual mainboards are able to adjust the fan speed depending on the voltage.

A big disadvantage of speed adjustment over the board voltage is that fans require a high starting voltage which can not be regulated that low.

These fans are usually louder than PWM capable fans with a 4 - pin connector.

On your mainboard, the 3-pin connector looks like this:



4 - pin molex, short

With the 4-pin connector, the fan speed can be controlled via a PWM (pulse duration modulation) line, the fourth pin of the plug. By the pulse duration modulation, the fans can be controlled in a much larger speed range than in the case of a control over the voltage from the mainboard.

The 3- and 4-pin molex plugs can easily be plugged into a 3- or 4-pin connector. If you plug in the 3-pin fan to an 4-pin connector you are not able to use the PWM function. Same for 4-pin fan to an 3-pin connector. Due to the rail at the connector and the notch on the plug, an error while connecting the fan is nearly impossible. On your mainboard, the 4-pin connector looks like this:



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4 - pin molex

You can hardly find this connection in modern PC systems. This was used for hard drives or DVD drives and some other expansion cards.

Only 2 of the 4 lines are used for the connection of fans. There are also variants in which from the plug another 2-pin Molex, small is attached.

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