

Identifying the Wires Connected to a RJ-45 Connector Terminated Ethernet Cable

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Content provided by: FlexRadio Systems Engineering

A common cable that can be used for creating a connection from the FLEX-3000 microphone connector to external audio hardware or to a custom microphone connector is the ubiquitous 10 and 100 BaseT Ethernet cables. These cables are usually Category 3 or 5 twisted pair and well suited for audio applications.

When you cut off then end of one of these cables, you will find four (4) sets of two (2) wires twisted together. Each one of these sets of wires is referred to as a "twisted pair" and they are color coded. Each pair has a solid color wire and a stripped colored wire that is the same as the solid color, but has white on it in a "barber pole" or a stripped line geometry. In an Ethernet cable the 100 ohm balanced twisted pairs will always be:

- Orange and White/Orange
- Green and White/Green
- Blue and White/Blue
- Brown and White/Brown

To make things good and confusing, the twisted pairs are not connected to pins 1-8 on the RJ-45 connector in sequential order. To add insult to injury, there are two different wiring standards that determine which color of wire is connected to what pin in the RJ-45 connector. These standards are known as the T-568A and T-568B and they define the pin-out, or order of connections, for wires in 8P8C (also referred to as RJ45) eight-pin modular connector.

By far, the most popular wiring configuration is T-568B definition which superseded the T-568A definition. Under most circumstances, this is way the connector is wired and it is usually printed on the jacket of the cable itself to indicate how it is wired.

Below are two diagrams of the two wiring standards.

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Below is the Microphone Pin-outs for the FLEX-3000

The important thing to remember is that the MIC (-) and the MIC (+) are on pins 4 and 5 respectively on the FLEX-3000 RJ-45 microphone connector, so no matter which wiring standard is used, they will *always* be on the blue (mic -) and white/blue (mic +) wires and that maintains the twisted pair integrity, so external interference is minimized.

You can also sometimes determine the wire color in the RJ-45 connector by looking through the connector, but this is not always a definitive way to determine the wiring standard used.

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