RJ45 Colours and Wiring Guide
TIA / EIA 568 A B

CTEC1767
References:

• http://www.cablesplususa.com/rj45-utp-guide.php

• http://en.wikipedia.org/wiki/Gigabit_Ethernet

• http://en.wikipedia.org/wiki/Ethernet_over_twisted_pair

• http://en.wikipedia.org/wiki/Category_5_cable
Basic Theory

• Traditional 10Base-T and 100Base-T Ethernet uses two twisted pairs (out of four):
Basic Theory (2)

- By looking at a T-568A UTP Ethernet straight-thru cable and an Ethernet crossover cable with a T-568B end, we see that the **TX (transmitter) pins are connected to the corresponding RX (receiver) pins, plus to plus and minus to minus.** You can also see that both the blue and brown wire pairs on pins 4, 5, 7, and 8 are not used in either standard.
Basic Theory (3)

• Important!

All four pairs are used in **1000BASE-T**, i.e., IEEE 802.3ab Gigabit Ethernet.
TIA-568A

RJ-45 Plug
Pin 1

Clip is pointed away from you.
TIA 568-A (2)

• The T-568A standard is supposed to be used in new network installations.

• Previously most off-the-shelf Ethernet cables used the T-568B standard; however, it makes absolutely no functional difference in which you choose.
TIA-568B

RJ-45 Plug
Pin 1

Clip is pointed away from you.

T-568B T-568B
Both the T-568A and the T-568B standard **Straight-Through** cables are used most often as patch cords for your Ethernet connections.

If you require a cable to connect two 10Base-T/100Base-T Ethernet devices directly together without a hub/switch or when you connect two hubs/switches together, you will need to use a **Crossover** cable instead.
RJ45 Crossover Cable

RJ-45 Plug
Pin 1

Clip is pointed away from you.
Crossing over

• A good way of remembering how to wire a Crossover Ethernet cable is to wire one end using the T-568A standard and the other end using the T-568B standard.

• Another way of remembering the colour coding is to simply switch the Green set of wires in place with the Orange set of wires. Specifically, switch the solid Green (G) with the solid Orange, and switch the green/white with the orange/white.
Gigabit: *No more crossing over?*

- **Automatic MDI/MDI-X Configuration** is specified as an optional feature in the 1000BASE-T standard, meaning that straight-through cables will often work between Gigabit capable interfaces.
Automatic MDI/MDI-X Configuration

• This feature eliminates the need for crossover cables, making obsolete the uplink/normal ports and manual selector switches found on many older hubs and switches and greatly reducing installation errors.
Testing Your Cable

• Using the Microscanner Pro ...