



Lab 5.1.5 RJ-45 Jack Punch Down

Objective

- Learn the correct process for terminating or punching down an RJ-45 jack
- Learn the correct procedure for installing the jack in a wall plate

Background / Preparation

In this lab, the student will learn to wire an RJ-45 data jack for installation in a wall plate using a punch-down tool. These skills are useful when it is necessary to install a small amount of cabling in an office or residence. A punch tool is a device that uses spring-loaded action to push wires between metal pins, while at the same time skinning the sheath away from the wire. This ensures that the wire makes a good electrical connection with the pins inside the jack. The punch tool also cuts off any extra wire.

Category 5 or Category 5e cabling and Category 5 or 5e rated T568B jacks will be used. A Category 5/5e straight-through patch cable with an RJ-45 connector will normally plug into this data jack or outlet to connect a PC in a work area to the network. It is important to use Category 5 or 5e rated jacks and patch panels with Category 5 or 5e cabling in order to support Fast Ethernet (100 Mbps) and Gigabit Ethernet (1000 Mbps). The process of punching down wires into a data jack in an office area is the same as punching them down in a patch panel in a wiring closet. The following resources are required:

- 60 - 90 cm (2 - 3 feet) length of Category 5/5e cabling, which can be one per person or one per team
- Two Category 5/5e RJ-45 data jacks (one extra for spare) – If RJ-45 data jacks are installed on both ends of the cable, the installation can be tested by inserting cable with RJ-45 connectors and a simple cable continuity tester.
- Category 5/5e wall plate
- 110 type punch-down tool
- Wire cutters

Use the following procedure and diagram to punch down the wires into the RJ-45 jack and install the jack into the wall plate:

Step 1

Remove the jacket 2.54 cm (1 inch) from the end of the cable.

Step 2

Position wires in the proper channels on the jack maintaining the twists as closely as possible. The diagram below shows an example of how to place the wires on one type of jack. Most jacks will have the channels color-coded to indicate where the wires go. The photo of the jack on the next page shows one variety of jack. Jacks are typically stamped to indicate whether they are T568A or B as shown in the photo.

Step 3

Use the 110 punch-down tool shown below to push conductors into the channels. Make sure to position the cut side of the punch-down tool so that it faces the outside of the jack. If this is not done, it will cut the wire being punched down. Try tilting the handle of the punch tool a little to the outside, so it will cut better. If any wire remains attached after using the punch tool, simply twist the ends gently to remove them. Then place the clips on the jack, and tighten them. Make sure that no more than 1.27 cm (one half inch) of untwisted wire is between the end of the cable jacket and the channels on the jack.

Step 4

Snap the jack into its faceplate by pushing it in from the back side. Make sure when this is done, that the jack is right-side up so the clip faces down when the wall plate is mounted.

Step 5

Use the screws to attach the faceplate to either the box or to the bracket. If there is a surface-mounted box, keep in mind that it might hold 30 - 60 cm (1 - 2 feet) of excess cable. Then it will be necessary to either slide the cable through its tie-wraps or pull back the raceway that covers it in order to push the rest of the excess cable back into the wall. If there is a flush-mounted jack, all that is needed is to push the excess cable back into the wall.

Category 5 T568B Jack Wiring Color Scheme

Hold the jack with the 8-pin jack receptacle, which is the part that the RJ-45 connector goes into, facing up or away from the body while looking at the wire channels or slots. There should be four wire channels on each side. Match the wiring colors to the codes on the jack.



Single Wire punch tool



8-pin receptacle

| | |
|-------------|--------------|
| White Green | White Blue |
| Green | Blue |
| White Brown | White Orange |
| Brown | Orange |