

## Cat5e or Cat6e Wiring

We cannot overstress the importance of correct Cat5e or Cat6e wiring for your whole-house system. If you don't use Cat5e or Cat6e cable (hereinafter referred to as Cat5/6) or if the tips are installed poorly or incorrectly, things won't work or they won't work right.

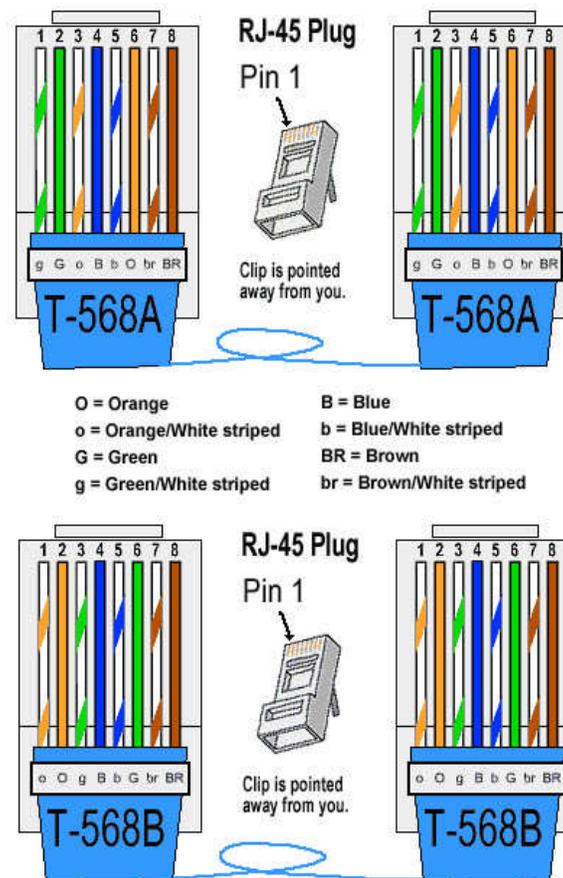
Cat5/6 cable is made up of four twisted-pairs of wires (8 total wires, each of which is uniquely color-coded.) The twisting of the pairs optimizes signal strength in the pair, reduces chance for external interference and minimizes signal "cross-talk" from other twisted pair sets in the bundle.

Our system uses all eight of the wires in the Cat5/6 cable to carry various combinations of digital signals, analog signals, power and ground.

Our system uses the world-wide standards, T-568A or T-568B wiring protocols for the Cat5/6 cable. These two standards define the left-to-right sequence for the eight color-coded wires inside the cable. T-568A was the original standard. T-568B was later adopted and is the more recent one.

For connecting our systems, EITHER T-568A or T-568B is acceptable but, whichever one you elect to use, you must use it consistently throughout your system. In other words, you cannot mix the two standards.

The image below shows the left-to-right color-coded wire sequence for both of the two standards:



You cannot use 8-conductor intercom wire or anything other than Cat5/6 for connecting our keypads. (Cat6e provides higher data throughput and higher resistance to external noise or crosstalk, but is not required for our system.)

## Diagnosing Keypad Functionality Issues:

If, after installing everything, you are having keypad problems, one of the very first things to suspect is your Cat5/6 wiring. You can easily test/diagnose the validity of your Cat5/6 wiring by using a short length of known-good, factory-made Cat5/6 cable. Here is the keypad test procedure:

1. Turn off power to the central Controller
2. Remove ALL of your keypads from the zones and take them to the location of your central Controller (mark each Keypad's ID number on its backside for reference).
3. Unplug **all** Cat5/6 cables from the back of the central Controller, marking each of them so you know which Zone they go to.
4. Use a short, factory-made, straight-thru Cat5/6 cable to connect the Keypad from Zone 1 directly to the Zone 1 RJ45 connector on the back of the central Controller.
5. Turn the central Controller on and power on the Zone 1 keypad. Test the keypad's functionality. If it works properly, turn off the Controller, unplug the keypad, mark it as OK and set it aside.
6. Repeat steps 4 & 5 for each of the keypads, remembering to turn off the main Controller before connecting or disconnecting any keypad.

Note: By only connecting one keypad at a time during these tests, you are eliminating any chance that a defective keypad may be causing noise or interference that makes other keypads look defective..

If all keypad test OK using the short test cable, you should now test each keypad independently using the Cat5/6 cable that goes to its zone, using the following procedure:

1. Turn off power to the central Controller
2. Connect the Cat5/6 cable coming from the zone to be tested into the RJ45 connector for that zone on the back of the central Controller
3. Take that zone's Keypad to the zone and connect it to the Cat5/6 cable there.
4. Turn the central Controller on and power on the Keypad in the zone. Test the keypad's functionality. If it works properly, that run of Cat5/6 is OK. If the keypad does not work properly after this test, there is a problem with the cable (problems can be caused by broken wires, drywall screws/nails penetrating the cable, use of non-Cat5/6 cable or by incorrect color-coded sequence of the wires.)
5. Power off the central Controller and unplug the just-tested Cat5/6 cable from it.
6. Repeat steps 2-5 for each of the other Keypad/Zone sets.

This set of tests will determine which Cat5/6 cable runs are incorrect.