Application Advisory: CAT5 Termination & Testing

AA-1(CAT-5) **June 2002**

WHAT IS CAT5?

The recommended cabling for **Xantech's** MRC Keypad to Controller/Amplifier product line is the standard unshielded twisted-pair (UTP) CAT5 cable. CAT5 (Category 5) is a popular type of network cabling that is composed of 4 twisted-pair wires (Total 8 wires).

The MRC product line uses 'Pin-to-Pin' CAT5 cabling that can be purchased pre-fabricated at fixed lengths or self-assembled to custom lengths. The color-coded wiring standard is EIA/TIA 568B. The plastic connector on the end of the CAT5 wire is "registered jack" RJ45.

Caution: Power voltage for the keypad is transmitted along this cable! **Incorrect wiring on this cable can destroy the MRC Keypad!**

PROPER CAT5 CABLE ASSEMBLY

Note: Xantech recommends using an "all-in-one" Strip-and-Crimp tool for cutting, stripping, and crimping of CAT5 cable.

Step1: Cut the CAT5 cable "square" so that the twisted pairs are even in length. Use either wire cutters or the "all-in-one" tool.

Step2: Strip the outer plastic insulation off about ¾" down from the end. ***Beware of cutting into twisted pairs below the plastic insulation.*** Use either a wire stripping tool or the "all-in-one" tool.

Step3: Unravel the twisted pairs and inspect each wire for cuts in the insulation. ***Do not unravel more than ¾" of twisted-pairs.***

Step4: Insert wiring through "boot" of RJ45 connector.

Step5: Slide wires into RJ45 plastic connector according to color coding scheme as shown in **Figure 1**.

Step6: After proper pin-out is confirmed, crimp the RJ45 plastic connector with wires inserted using an approved CAT5 crimp tool.

Step7: Slightly tug and visually inspect the assembled cable. Slide boot over connector.

Step 8: Repeat steps 1-7 for opposite end.

CAT5 CABLE TESTING

There are several methods for testing CAT5 cable.

The first and **preferred method** is to **use a CAT5 aftermarket tester**. Simply connect each end of the RJ45 Terminated CAT5 cable to the testing device and let it determine if the connection is good. This will check pin-pin continuity and also check for any hidden shorts in the cable.

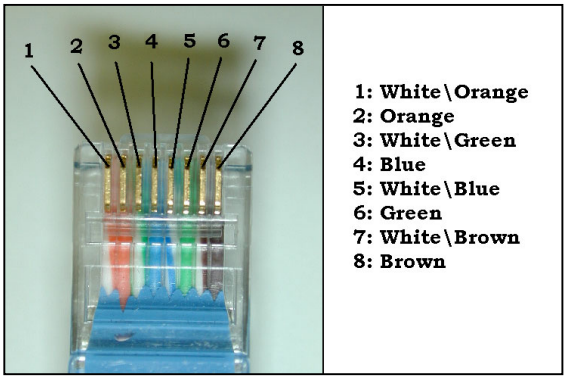

Figure 1: RJ45/CAT5 (EIA/TIA 568B)

Second, using a Multi-Meter, verify continuity from pin 1 on one end to pin 1 on the opposite end. Check all 8 pins in this fashion. Also check adjacent pins for any possibly shorts.

Note: Take extra precaution not to destroy the RJ45 pins with the test leads.

VERIFY PROPER 12Vdc POWER

Regardless of the method used above for testing continuity, **Xantech recommends using a Multi-Meter to verify proper power is on the correct pins *before* the keypad is connected to the MRC system.**

With the Keypad 'un-plugged', make sure the MRC Controller/Amplifier is powered 'on' with the CAT5 cable connected to the proper Zone Keypad connection on the rear of the MRC Controller Amplifier.

A 12Vdc measurement should be read when the positive probe is on pin 6 and the negative probe is on pin 3.

For additional reference:
http://www.startech.com/structuredwiring/
http://www.videkonline.co.uk/
http://www.kingclee.net/index.shtml