KRAMER ELECTRONICS LTD.

HDBT Installation Guide

MODELS:

Kramer HDBT
Cable Recommendations for
Usage and Termination Guidelines

For the latest information on our products and a list of Kramer distributors, visit our Web site where updates to these cable installation instructions may be found.

We welcome your questions, comments, and feedback.
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P/N: 2900-300462 Rev 1

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1 Introduction

This document contains successful cable installation guidelines and is intended for Kramer technical personnel or external system integrators.

To check that you have the latest version, go to the DOWNLOADS section of our Web site at: http://www.kramerelectronics.com/support/product_downloads.asp

To check our suggested cables listing, per product, go to http://www.kramerelectronics.com

Kramer's BC-HDKat6a is an HDBaseT certified 4-pair U/FTP (unshielded around foiled twisted pair) cable designed as the ideal companion to Kramer's HDBaseT transmitter-receiver sets to provide optimum range and performance. It is constructed of 4 shielded twisted pairs (U/FTP) of 23AWG solid copper conductors that are cabled together in an unshielded outer jacket, and is optimized for installations of HDBaseT twisted pair digital transmitter−receiver sets. Although shielding is not necessary for signals using Kramer's HDBaseT cable, it is, nonetheless highly recommended in order to overcome electromagnetic interference to keep the quality of the signal high all along the cable run.

The Kramer high quality BC-HDKat6a HDBaseT cable (CAT 6a) passes uncompressed full HD digital video, audio, 100BaseT Ethernet, Power over Ethernet and various control signals through a single 330ft (100m) twisted pair category cable. This cable is available in pull boxes of 305m (1000ft).

This cable was tested and accredited in an Alliance Recognized Testing facility, met the requirements set by HDBaseT Alliance and therefore works perfectly with HDBaseT devices.

Before installing a particular cable, be sure to check that you are using the appropriate cable best suited to your installation. Take into account the distances involved, as well as the expected performance of the connected devices (for example, consider the expected resolutions of display devices).

2 General Guidelines and Recommendations

It is essential that you keep away as far as possible from EMI (Electro-Magnetic Interference) environments, and in particular:

- **EMI sources:** Keep the cable away from electromagnetic interference environments such as high-voltage electrical cables, electric motors (such as elevators or refrigerators), fluorescent, light-fixtures and so on
- **AC power cables:** Keep the cable at a distance of at least 12” from AC power cables
- **AC power canals:** Do not use electrical conduits to deploy the cable
- **Patch cords:** For better results do not use patch cords

Proper cable termination is crucial; otherwise installation failure may occur (see Section 3):

- Make sure that the drain wire is well soldered to the metal casing of the RJ-45 connectors on both cable ends
- Always use the recommended Kramer RJ-45 connector (CCR-RJ45-TP6)
- Keep the pairs twisted as close to the termination point as possible and make sure that the strain relief is pulled over the purple jacket of the cable

2.1 General Rules

The following are general rules to follow during the installation.

We recommend that you:

- Make only gradual bends in the cable when necessary to maintain the minimum bend radius of 4 times the cable diameter or approximately 3cm radius
- Use low-to-moderate force when pulling cable. The standard calls for a maximum of 25 lbf (pounds of force)

Never:

- Bend, twist, or kink the cable at any time. Doing so may result in permanent damage to the geometry of the cable and cause transmission failures
- Over-tighten cable ties or use plastic ties
- Splice or bridge Category cable at any point
- Use excessive force when pulling the cable
- Tie cables to electrical conduits, or lay cables on electrical fixtures
- Install taut cables (cables should be loose, but not sagging)
- Use staples on CAT cable that crimp the cable tightly

2.2 Patch Cables and Connectors

Ideally, the signal from the transmitter to the receiver should be transmitted using a single cable; however, often patch cables are used to connect the device to the deployed cable. Considering that patch cables tend to be the weakest link in the installation, they should only be used if absolutely necessary (at the transmitter or receiver), and these cables should be kept as short as possible.

Be sure to verify that the patch cord connector is terminated using the same wiring scheme as the category cable.

3 HDBaseT Twisted Pair Cable Termination

This procedure describes how to terminate **HDBT** Twisted Pair cable.

Tools

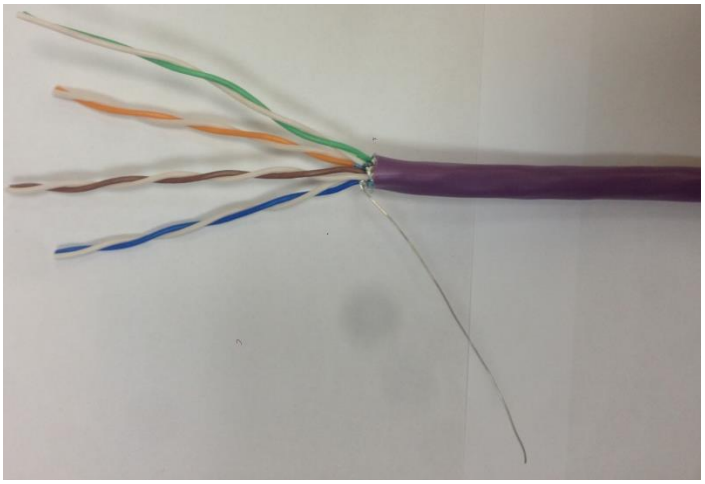
You will need these tools at hand: a **razor knife**, **wire cutters**, a **pair of pliers** and a **standard RJ-45 Crimp Tool**.

Step 1: Remove part of the purple jacket

Remove approximately 2.5” of the purple jacket using the razor knife exposing the 4 shielded pairs and drain wire. Fold the drain wire over onto the cable for future use.

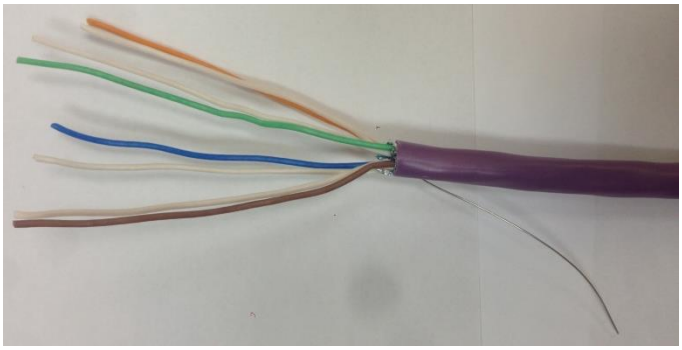
Step 2: Separate the 4 pairs

Separate the 4 pairs. Use the razor knife to carefully remove the shielding without scoring the wires beneath it. Repeat for all 4 pairs.



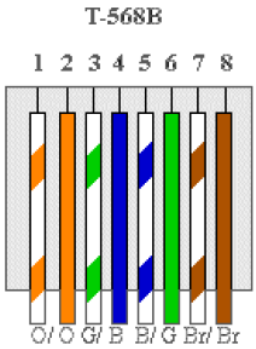
Step 3: Untwist each pair

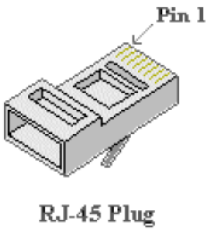
Untwist each pair and straighten the individual conductors. Be sure to keep each pair together so it can be identified.

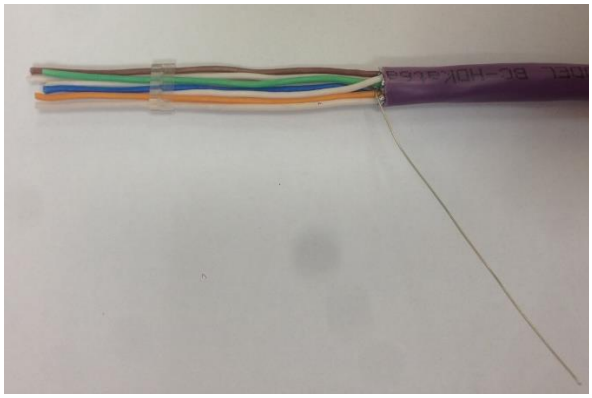


Step 4: Insert conductors into the plastic loader

Using the standard wiring scheme shown here (T-568B), insert the conductors into the plastic loader piece of the R-J45 connector. The plastic loader is necessary because the thickness of CAT 6 cable does not allow it to sit flat in an RJ-45 connector like in normal CAT 5. Note how the loader staggers the cables:

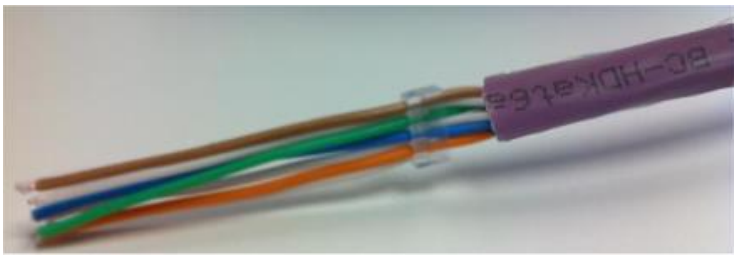






Step 5: Slide the plastic loader down the cable

Slide the plastic loader down the cable as close to the base as possible. Keep pressure on the top and bottom of the loader so the cables stay in place while sliding down.



Step 6: Cut all conductors

Using the wire cutters, cut all conductors leaving approximately 0.5” remaining.

Step 7: Insert the cable into the RJ-45 connector

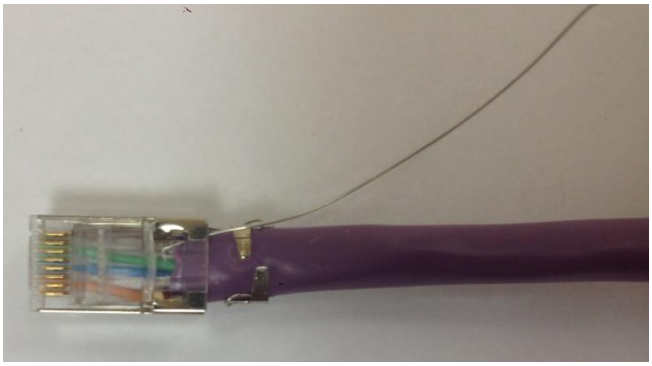
With the orange pair on the left and the clip of the RJ-45 connector facing downwards, insert the cable into the RJ-45 connector, pushing the cable all the way in until the exposed pairs contact the back of the connector.

Step 8: Crimp the RJ-45 connector

Using the Standard Crimp Tool, crimp the RJ-45 connector.

Step 9: Flip the drain wire up onto the RJ-45 connector

Flip the drain wire up onto the RJ-45 connector. Clamp the strain relief down on the purple jacket of the BC-HDKat6a cable using the pair of pliers.



Step 10: Solder the drain wire to the metal casing of the RJ-45 connector

Solder the drain wire to the metal casing of the RJ-45 connector and cut off the excess using the wire cutters.

Verify the continuity of the conductors and the shield using a cable tester.