

UNSHIELDED TWISTED PAIR

A. The twisted-pair network port on the Ethernet adapter board is a modular, RJ-45 eight-pin socket. Each end of the twisted-pair network interface cable (supplied with the adapter board) has a mating, RJ-45, eight-pin modular plug.

B. 10BaseT Twisted-Pair Interconnection

The following items are required to interconnect the network computers to a 10BaseT twisted pair network.

1. A twisted-pair interface cable for each computer
2. A local concentrator for interconnecting computers or a wall jack wired for 10BaseT twisted-pair cable that leads to a concentrator in a wiring closet or other location
3. Insert the modular plug at one end of the interface cable into the RJ-45 twisted-pair wire network port at the back of the computer.
4. Attach the other end of the interface cable to an input port of a compatible concentrator (10BaseT) or wall jack.

C. Link Status

When the computer has been connected to a concentrator port and both systems are powered on, verify the connection by observing the green link integrity LED indicator provided above the twisted-pair network port on the adapter board.

1. The LED is not visible after reassembling the computer.
2. When a valid connection exists, the LEDs at the adapter board and the concentrator are lit. The status LED can be checked at the concentrator end only.
3. If the LEDs are not lit and the computer and concentrator are powered on, check the modular plug connection at the adapter board and at the concentrator and all wiring.
4. The polarity status LED is "on" if the polarity of the twisted-pair receive wires is normal. It is "off" if the polarity is reversed. The adapter automatically corrects for reversed polarity.

D. Using Existing Phone Cable

Telephone wiring can be used if it meets minimum standards and all wall jacks are wired correctly.

1. The following specs are requirements:

Unshielded, twisted-wire pairs (2 pairs)
22,24,26 guage
Characteristic impedance of 85-110 Ohms at 10MHz
Maximum attenuation of 11.5 dB/100 meters at 10MHz
Maximum attenuation of 7.2 dB/100 meters at 5 MHz
RJ-45 modular plugs: Molex 90075-0037, or equivalent
Crimper tool: Molex 11-01-0026 or equivalent
RJ-45 modular wall socket: Molex 95015-0003 or equiv.

2. Telephone-type cable, commonly known as "silver satin" is NOT ACCEPTABLE. Silver satin cable is flat and typically has a silver vinyl jacket. Use of silver satin can cause

a false data collision on the network.

3. The arrangement of twisted-pairs at the wall jack in a typical telephone installation are usually not acceptable for network signal transmission. The two twisted-wire pairs required for network signals MUST be wired to the wall jack in the following arrangement:

Wire Pair	Color Code	Function	Modular Wall Pin #
1 1	orange/white band white/orange band	network signals network signals	2 1
2 2	green/white band white/green band	network signals network signals	6 3
3 3	blue/white band white/blue band	telephone telephone	4 5
4 4	solid gray solid orange	telephone telephone	8 7

4. Pair 1 - attach to pins 1 & 2 Pair 2 - attach to pins 3 & 4
The twisted-wire pairs for telephone signals (if used) are attached to the remaining pins.
5. Determine which conductors are twisted together, record the wire colors for each pair and note the pin to which each wire is attached.
6. Network interconnections are usually in a wiring closet. You must be able to identify and separate the conductors carrying network signals from the conductors used for telephone operation.
7. The color code and wire-pair management will vary from one manufacturer to another.

E. Interface Cable Wiring

The twisted-pair interface cable provided has an 8-pin modular plug at each end that mates with the twisted-pair network port on the LAN adapter board and with an RJ-45 modular wall jack.

F. Wiring Closet Termination

1. If you are using existing wiring:
 - A. Concentrators are typically mounted inside the wiring closet, where the phone conductors are terminated at a wiring panel.
 - B. A segment of twisted-pair wire is attached to the conductors from each network computer at the terminator panel and plugged into a concentrator port.
2. If you are installing a new network cable:
 - A. The wire pairs for each computer may be attached directly to an RJ-45 plug and connected to a concentrator port.
 - B. The wire pairs may also be terminated at a wiring panel (or other termination device) and then connected to a 10BaseT concentrator port through a twisted-pair wire

segment that has an RJ-45 plug at one end.

G. Concentrators

1. This adapter, when used with twisted-pair cable, MUST always connect to a concentrator.
 - A. This results in a star-wired network with the concentrator at the center of the star.
 - B. This adapter is compatible with the Ethernet 12-Port Twisted Pair Hub (260-5543).
2. By changing a jumper on the adapter it is also compatible with the AT&T and HP "StarLAN 10" twisted-pair signaling method by using software setup.

H. StarLAN 10 Concentrators

1. AT&T and HP StarLAN 10 compatible adapters operate over StarLAN-type wiring and use 10 Mbps Ethernet speeds and protocols.
 - A. Original StarLAN products do not provide the Link Integrity feature required by the 10BaseT standard.
 - B. This adapter can operate with existing StarLAN 10 products that do not have Link Integrity, providing the Link Integrity Test function on the adapter is disabled.
 1. To disable the Link Integrity test function, run the software setup program and select StarLAN10 = yes.
 2. When StarLAN10 mode is turned on, automatic selection between AUI and UTP is disabled and the adapter remains in UTP mode.

STANDARD (THICK) ETHERNET CABLE

- A. The AUI (Attachment Unit Interface) port is used to attach an Ethernet AUI drop-cable to the Ethernet adapter. The drop-cable must also be attached to a trunk coaxial cable through a standard Ethernet transceiver.
- B. The AUI port connects to a media attachment unit (MAU). The MAU acts as the interface to an Ethernet network using thick cable or any Ethernet medium.
- C. The adapter's standard Ethernet port can also be used for operation with other types of cabling such as fiber-optic.
- D. Connecting to Other Ethernet Media
 1. Attach a drop-cable to the Ethernet adapter's AUI port on the first computer to be connected. A sliding latch is provided on the AUI port that locks the cable to the connector.
 2. Connect the other end of the AUI drop-cable to a transceiver for the media being used. Secure with the sliding latch.
 3. Attach all the computers and segments to the main or "spine" Ethernet cable the same way.
 4. Use a signal repeater to attach each additional cable segment of "rib" (500 meters each, maximum).
 5. Attach a 50-Ohm cable terminator at each end of every cable segment.

(SMM/jlc-03/28/94)

