

Unshielded Twisted-Pair Cable Recommendations for EtherExpress™ PRO/100 Adapters

This document covers the following topics:

- Recommended cables
- Cable and connector pinouts
- Link integrity
- Common problems

For more information on the 100BASE-TX specification, ISO/IEC 8802-3, contact your local network supplier or call the IEEE (800-678-IEEE).

Recommended cables

The cable must comply with the IEEE 802.3 10BASE-T standard for 2-pair, Category 5, UTP cable. The cable between the computer and the hub must be less than 100 meters long. These UTP cables work well:

Manufacturer	Model number	No. of pairs
Belden	1588A	2

The EtherExpress PRO/100 Adapters do not support pre-10BASE-T concentrators.

Cable and connector pinouts

If you need to repair a cable or provide connectors for UTP cable, wire straight through as shown in the following table.

To Make a Straight Cable (For connections between a hub and a client):

Use only four of the eight pins. Pins 1 and 2 must be a pair, and pins 3 and 6 must be a pair.

Function	Pin#		Pin#
TX+	1	<----->	1
TX-	2	<----->	2
RX+	3	<----->	3
RX-	6	<----->	6

To allow for a straight-through cable, the hub provides an internal transmit/receive crossover function. This means the transmit circuit of the network card is connected to the receive circuit of the hub and vice versa.



To Make a Crossover Cable (For connections between two hubs or two clients):

Use only four of the eight pins. Pins 1 and 2 must be a pair, and pins 3 and 6 must be a pair.

Function	Pin#	Pin#
TX+	1	3
TX-	2	6
RX+	3	1
RX-	6	2

Pinout for the RJ45 connector

1	--		8	-----	
2	--		7	-----	
3	--	---	6	-----	
4	--		5	-----	
5	--		4	-----	
6	--	---	3	-----	
7	--		2	-----	
8	--		1	-----	
-----			-----		
END			TOP		

Pin name and function:

1 Transmit Data Plus. The positive signal for the TD differential pair. This signal contains the serial output data stream transmitted onto the network.

2 Transmit Data Minus. The negative signal for the TD differential pair. This contains the same output as pin 1.

3 Receive Data Plus. The positive signal for the RD differential pair. This signal contains the serial input data stream received from the network.

4 not used

5 not used

6 Receive data minus. The negative signal for the RD differential pair. This signal contains the same input as pin 3.

7 not used

8 not used

Link integrity

There are two sets of LEDs on the EtherExpress PRO/100 adapter, one set (yellow) is for 10 Mbps operation and one set (green) is for 100 Mbps operation. The LEDs are labeled LNK for link and ACT for activity. The adapter is designed to auto-detect 10 or 100 Mbps operation.

The 10MB LNK LED indicates that a link pulse is present on the wire. The 100MB LNK LED indicates that a link-idle pattern is present on the wire.

NOTE: The 10MB LNK LED will light if a PCI adapter is connected to a 100MB line and the drivers aren't loaded. If this happens, load the drivers and the 100MB LNK LED will light.

The ACT LED indicates that there is read/write activity on the network. It doesn't always mean there is activity on the adapter.

Common problems

A hub can't "see" a workstation

This is often caused by a crossed wire in the cable or wiring closet. Check to make sure the wiring is correct.

Workstations can't connect to the network

If your workstations are having problems connecting, check the NET.CFG file for proper speed selection and make sure that the last line reads:

lastdrive=f (for NETX systems) or
lastdrive=z (for VLM systems).

Also try resetting your concentrator or hub or turn power off and on.

Polarity problems

A common problem in 10BASE-T wiring is crossing the positive and negative phases of the transmit or receive signals. For example, a problem would occur if pins 1 and 2 were crossed (TX+ connected to TX-).

The current EtherExpress PRO/100 adapters automatically detect this problem and adjust for it internally. But even though the current EtherExpress PRO/100 adapters can take care of this crossover for you, it is best to check your wiring and correct this problem if you find it.