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# 8-PORT 10BaseT HUB SPECIFICATIONS

## Standards

IEEE 802.2, 802.3

## Physical

### Dimensions

6.88" X 3.75" X 1.63" (175mm x 95mm x 41mm)

## Input Power

### Universal Power Supply

Input Range: 85 to 265 VAC at 47 to 63 Hz.  
(Rated at 40 watts maximum.)

### AC Input:

TN PN	Requirement	Location
3500	120 volts, 60 hertz	USA/Canada/Mexico
3501	230 volts, 50 hertz	Europe
3506	240 volts, 50 hertz	United Kingdom
3508	100 volts, 50-60 hertz	Japan
3510	240 volts, 50 hertz	Australia

## MTBF

103,434 hours

## Environment

Temperature: 0-50°C (32° to 122° F)  
Humidity: 10-90%, non condensing  
Altitude: 0-10,000 feet

## Warranty

5 years

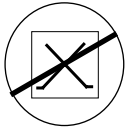
# 8-Port 10BaseT Hub with AUI Connector (E-TBT-HB-0801)

7334.D

For assistance in installing, using, or maintaining the TRANSITION Networks LANMaster T8 8-Port Ethernet™ Hub, contact TRANSITION Networks Technical Support at:

**(800) 260-1312**

or contact your local distributor.



**CAUTION: RJ connectors are NOT INTENDED FOR CONNECTION TO THE PUBLIC TELEPHONE NETWORK.** Failure to observe this caution could result in damage to the public telephone network.

Der Anschluss dieses Gerätes an ein öffentliches Telekommunikationsnetz in den EG-Mitgliedstaaten verstösst gegen die jeweiligen einzelstaatlichen Gesetze zur Anwendung der Richtlinie 91/263/EWG zur Angleichung der Rechtsvorschriften der Mitgliedstaaten über Telekommunikationsendeinrichtungen einschliesslich der gegenseitigen Anerkennung ihrer Konformität.

### Compliance Information

UL Listed

C-UL Listed (Canada)

CISPR/EN55022 Class A

### FCC Regulations

This equipment has been tested and found to comply with the limits for a class A digital device, pursuant to part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at the user's own expense.

### Canadian Regulations

This digital apparatus does not exceed the Class A limits for radio noise for digital apparatus set out on the radio interference regulations of the Canadian Department of Communications.

### European Regulations

#### Warning

This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

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## 10Base2 Cable Specifications

The physical characteristics of the 10Base2 cable must meet or exceed IEEE 802.3 10Base2 specifications.

### Cable Characteristics:

Cable type:	Stranded Coaxial RG58 (ThinNet)
Impedance:	50 $\Omega$ @ 10 MHz
Mutual Capacitance:	24 pF/ft $\pm$ 20% @ 10 MHz
<b>Maximum Cable Length:</b>	185 meters (610 feet)
<b>Maximum number network connections:</b>	30
<b>Minimum distance between connections:</b>	0.5 meters (1.6 feet)

**Terminate 10Base2 cable at one end using a 50 ohm terminator and at the other end using a 50 ohm terminator grounded to earth ground.**

## 10BaseT Cable and Connector Specifications

The physical characteristics of the 10BaseT cable must meet or exceed IEEE 802.3 10BaseT specifications.

### 10BaseT Cable Characteristics:

Category 3 wire or better is required; category 5 wire is recommended. Either shielded twisted pair (STP) or unshielded twisted pair (UTP) can be used. **DO NOT USE FLAT OR SILVER SATIN WIRE.**

#### Category 3:

Gauge	24 to 22 AWG
Attenuation	28 dB/1000' @ 10 MHz
Differential Characteristic Impedance	100 $\Omega$ $\pm$ 10% @ 10 MHz

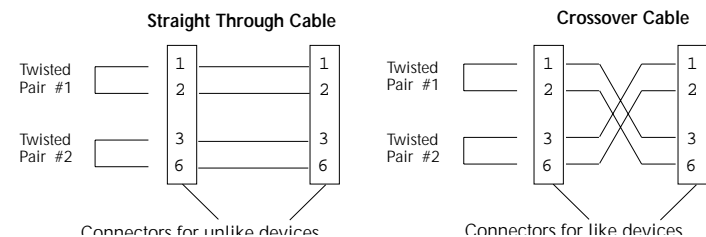
#### Category 5:

Gauge	24 to 22 AWG
Attenuation	20 dB/1000' @ 10 MHz
Differential Characteristic Impedance	100 $\Omega$ $\pm$ 10% @ 10 MHz

**Maximum Cable Length:** 100 meters (330 feet)

### 10BaseT Connector Characteristics:

The two active pairs in a 10BaseT network are pins 1 & 2 and pins 3 & 6. Use only dedicated wire pairs (such as blue/white & white/blue, orange/white & white/orange) for the active pins. 10BaseT cable for unlike devices (such as hub to terminal device) must be configured as straight through; 10BaseT cable for like devices (such as hub to hub or terminal device to terminal device) must be configured as crossover.



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# ETHERNET CABLE SPECIFICATIONS

Maximum number of terminal devices on Ethernet network: 1024

## 10Base5 Cable and Connector Specifications

The physical characteristics of the 10Base5 cable must meet or exceed IEEE 802.3 10Base5 specifications.

### 10Base5 Cable Characteristics:

Cable type: RG8 Solid Coaxial (ThickNet)  
Impedance: 50  $\Omega$  @ 10 MHz  
Capacitance: 26pF/ft

**Maximum Cable Length:** 500 meters (1650 feet)

**Maximum number network connections:** 100

**Minimum distance between connections:** 2.5 meters (8.2 feet)

**Terminate 10Base5 cable at one end using a 50 ohm terminator and at the other end using a 50 ohm terminator grounded to earth ground.**

### AUI Cable and Connector Specifications

The cable is a special 4-pair individually shielded with an overall braided shield.

**Maximum AUI Cable Length:** 50 meters (165 feet)

### AUI Connector Characteristics:

AUI Port: Male DB-15 with locking posts.  
AUI Connection: Cable shell must be grounded.  
Connector Legend:

1 Logic Ref.	6 Power Return	11 Logic Ref
2 Collision+	7 N/C	12 Receive
3 Transmit+	8 Logic Ref.	13 Power
4 Logic Ref.	9 Collision--	14 Logic Ref.
5 Receive+	10 Transmit-	15 N/C

## 10BaseFL Cable and Connector Specifications

The physical characteristics of the 10BaseFL cable must meet or exceed IEEE 802.3 10BaseFL specifications.

### 10BaseFL Cable Characteristics:

Fiber Optic Cable Recommended: 62.5/125  $\mu$ m multimode fiber  
Optional: 100/140  $\mu$ m multimode fiber  
85/125  $\mu$ m multimode fiber  
50/125  $\mu$ m multimode fiber

Fiber Optic Transmitter Power: Average power: -15.0 dBm  
Peak power: -12.0 dBm  $\pm$ 1dBm

Fiber Optic Receiver Sensitivity: Average sensitivity: -27.4 dBm  
Bit error rate:  $\leq 10^{-10}$

**Maximum Cable Length:** 2000 meters (6500 feet)

### 10BaseFL Connector Characteristics:

ST type connectors (SMA type available upon request)

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## Table of Contents

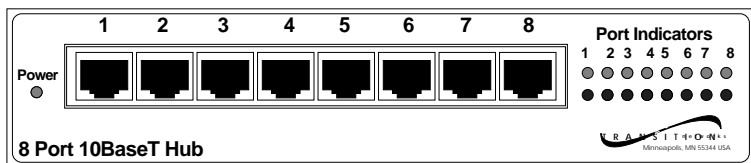
<b>1 INTRODUCTION</b> . . . . .	<b>1</b>
The 8-Port 10BaseT Hub . . . . .	1
8-Port 10BaseT Hub Features . . . . .	1
Networking the 8-Port 10BaseT Hub . . . . .	2
Connectors, Indicators and Switches . . . . .	3
<b>2 SITE CONSIDERATIONS.</b> . . . . .	<b>4</b>
Ensuring Compliance with 5-Segment Rule . . . . .	5
Ensuring Correct 10BaseT Configuration . . . . .	6
<b>3 INSTALLATION.</b> . . . . .	<b>7</b>
Unpacking the 8-Port 10BaseT Hub . . . . .	7
Installing 8-Port 10BaseT Hub on Flat Surface . . . . .	7
Connecting 10BaseT Cable at 8-Port 10BaseT Hub Front . . . . .	8
Connecting Network Cable at 8-Port 10BaseT Hub Back . . . . .	9
Connecting to 10Base5 Using AUI Drop Cable . . . . .	9
Connecting to Network Using Transceiver . . . . .	9
Powering the 8-Port 10BaseT Hub . . . . .	10
Verifying the Installation . . . . .	10
<b>4 OPERATION</b> . . . . .	<b>11</b>
Monitoring Power LED . . . . .	11
Monitoring Port/Indicator LEDs . . . . .	11
<b>5 MAINTENANCE</b> . . . . .	<b>12</b>
<b>POLICY AND PROCEDURE</b> . . . . .	<b>13</b>
<b>ETHERNET CABLE SPECIFICATIONS.</b> . . . . .	<b>15</b>
<b>8-PORT 10BaseT HUB SPECIFICATIONS</b> . . . . .	<b>17</b>

# 1. INTRODUCTION

This guide is intended for the system or network administrator responsible for installing and monitoring a TRANSITION Networks 8-Port 10BaseT Hub. A working knowledge of local area network (LAN) operations, including familiarity with communications protocols used on interconnected LANs, is assumed.

## The 8-Port 10BaseT Hub

The 8-Port 10BaseT Hub (E-TBT-HB-0801), is a stand-alone, fully functional Ethernet repeater which provides eight RJ-45 10BaseT connectors on the front and one AUI connector on the back.



- Eight (8) RJ-45 10BaseT ports standard
- One (1) AUI interface for existing or future connections
- LED status indicators

The sole purpose of this remedy shall be provided the customer with the replacement or repair of non-conforming goods in the manner described in this Warranty statement. This exclusive remedy shall not be deemed to have failed of its essential purpose so long as TN is willing and able to repair or replace the defective item(s) or refund the purchase price.

TN reserves the right to inspect products claimed to be defective under warranty either at the customer's location or at TN's plant. TN assumes no liability for liability charges incidental to the adjustment, service, repairing, removal or replacement of the product, or other costs, or the expense of repairs made outside of its factory, except when made with TN's prior written consent. Additionally, Transition Networks reserves the right to charge for all testing and shipping incurred, if after testing, a return is classified as "No Problem Found".

TN's total liability in connection with the products and their installation to all persons and from all causes in the aggregate, whether in contract, tort, or strict liability, shall not exceed the amount paid to TN for the product directly related to the alleged damage. However, in no event shall TN have any liability to a customer or any third party for products manufactures according to the customer's specifications.

### C. Return Procedure

The customer must follow this procedure for the return of defective items:

1. Locate the serial number(s) of the item(s) to be returned.
2. Determine the date the item(s) was received.
3. Contact Transition Networks Technical Support to determine if the problem can be corrected on site.

#### If not, and the product is covered by warranty, then:

- Call the distributor directly or contact TN.
- Request a Return Material Authorization (RMA).
- Ship the item, prepaid in original packaging to Transition Networks at the above address.
- Include the RMA number on the outside of the carton and/or on the Packing List.
- Include a copy of the RMA form.
- Include a copy of the original invoice or packing list (if possible) to expedite processing.
- The item(s) may be shipped by the customer or the distributor.
- Transition Networks will repair or replace the unit, at TN's discretion, and cover the cost of the return freight to the distributor or to the customer, whichever requested the RMA number.

#### If the item(s) was received **more than five years ago**, or if the item(s) is **no longer covered by warranty** for other reasons, then:

- Call the distributor or contact TN.
- Request a Material Repair Authorization number (MRA).
- Ship the item(s), prepaid, in the original packaging to Transition Networks at the above address.
- Include the MRA number on the outside of the carton add/or on the Packing List.
- Include a copy of the MRA form.
- Include a copy of the original invoice or packing list (if possible) to expedite processing.
- Only the customer (end-user) may send the items(s) to TN.
- TN will contact the customer after the item(s) have been received, inspected, and a cost estimate of the repair determined.
- The repair charges may be billed, with customer's approval, though the distributor, or on a prepaid or C.O.D. basis directly to the customer. The charges will include the cost of shipping.

The return authorization numbers are valid only for 90 days from the date issued.

## Warranty Statement

### A. Five Year Warranty

Transition Networks, Inc. (TN) warrants, for a period of five years, that TN products (with the exception of power supplies and fans that TN warrants for two years) will be free from defects in materials and workmanship, and will be in conformity with TN's specifications.

TN's warranty on products manufactured by or assembled for TN in accordance with a customer's specifications, is a five-year warranty that the goods conform to such specifications.

The warranty is invalidated if the goods have been subject to alterations, misuse, accident, Acts of God (e.g., damage by floods, lightning strikes, Etc.), tampering, improper maintenance, improper installation, or abuse. If the user is unsure about the proper means of installing or using the equipment, contact TN's free Technical Support or Network Design Services, which can be reached by:

**Telephone** 1.800.LAN.WANS or 612.941.7600  
**Fax** 612.941.2322  
**E-mail** techsupport@transition.com  
**Internet** http://www.transition.com

THE ABOVE WARRANTY IS EXCLUSIVE AND EXTENDS ONLY TO PRODUCTS ASSEMBLED BY TRANSITION NETWORKS, INC. TO THE EXTENT PERMITTED BY LAW, TN DOES NOT MAKE AND DISCLAIMS ALL OTHER WARRANTIES, EXCEPT TITLE, EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, ANY WARRANTY OF DESCRIPTION, MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR NON-INFRINGEMENT, AND ANY WARRANTY BASED UPON PRIOR WRITTEN OR ORAL REPRESENTATIONS REGARDING SUCH PRODUCTS MADE BY TN, ITS EMPLOYEES, AGENTS, OR REPRESENTATIVES.

### B. Limitations and Exclusions

If the customer believes any goods sold by TN are defective and within the warranty period, the following general procedure will be followed:

1. Locate the serial number and delivery date of the item(s).
2. Notify TN within the warranty period.
3. TN will promptly issue a return authorization form for the goods.
4. Upon receiving the form, the customer will promptly return the item(s) at customer's own expense, shipped prepaid, to the distributor from which it was purchased, or directly to TN.

TN will only accept goods for return if the following conditions have been met:

1. A return form is obtained from TN.
2. The freight charges have been prepaid by the customer.
3. Goods are re-packed in their original packaging.

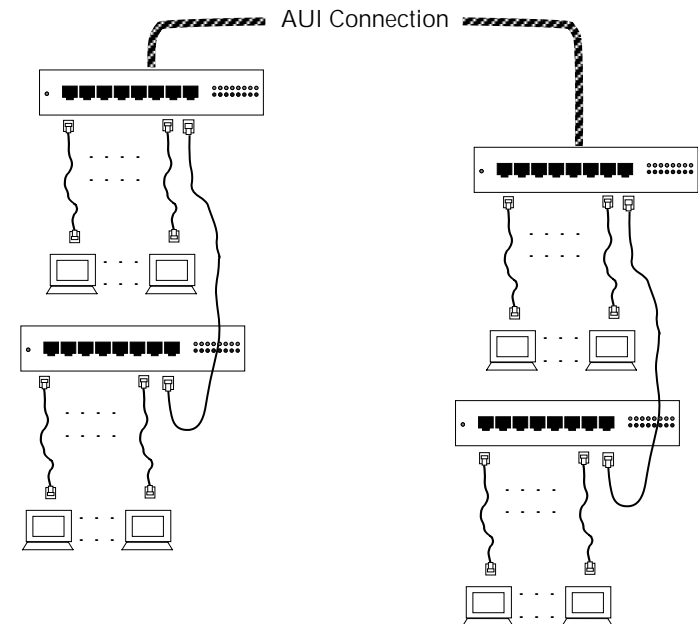
If under warranty TN shall, at its option, (1) repair the goods free of charge (2) replace the goods free of charge, or (3) accept the return of the item(s) and credit the current price to the reseller (within 90 days of purchase), or (4) if the goods are not under warranty, will repair the item(s) at a minimum charge of USD \$200 (two hundred U.S. dollars) per item.

THIS IS THE EXCLUSIVE REMEDY FOR ANY BREACH OF WARRANTY. IN NO EVENT SHALL TRANSITION NETWORKS BE LIABLE FOR SPECIAL, INDIRECT, INCIDENTAL OR CONSEQUENTIAL DAMAGES OF ANY KIND, WHETHER FOR BREACH OF ANY CONDITION OF SALE, FOR NEGLIGENCE, ON THE BASIS OF STRICT LIABILITY, CONTRACT, OR OTHERWISE AND IRRESPECTIVE OF WHETHER TN IS INFORMED BY CUSTOMER OF THE POSSIBILITY OF SUCH DAMAGES IN ADVANCE OF THIS SALE.

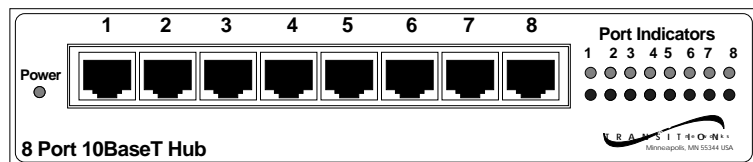
## Networking the 8-Port 10BaseT Hub

10BaseT connections are made at the front of the 8-Port 10BaseT Hub to terminal equipment and to other 8-Port 10BaseT Hubs.

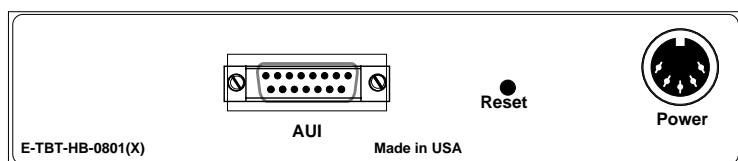
The AUI connector at the back of the 8-Port 10BaseT Hub can provide a connection to the network backbone. The AUI connection can be to 10Base5 through an AUI drop cable or to 10Base2, 10BaseT, or 10BaseFL through a transceiver.



## Connectors, Indicators and Switches



Front View of the Ethernet 8-Port Hub



Back View of the Ethernet 8-Port Hub

### Connectors

Eight (8) **RJ-45** 10BaseT connectors are located at the front of the 8-Port 10BaseT Hub.

One (1) **power** connector and one (1) AUI connector are located at the back of the 8-Port 10BaseT Hub.

### LEDs

The **Power** LED at the front of the 8-Port 10BaseT Hub indicates the 8-Port 10BaseT Hub connection to external power.

The **Port Indicators** LEDs at the front of the 8-Port 10BaseT Hub indicate (for each port) the status of the 8-Port 10BaseT Hub connections to the 10BaseT network.

## 5. MAINTENANCE

**WARNING: DO NOT, UNDER ANY CIRCUMSTANCES, open and attempt to repair the 8-Port 10BaseT Hub or power supply adapter unit. Failure to observe this warning could result in personal injury or death from electrical shock.**

**NOTE:** Failure to observe the above warning will immediately void the warranty.

### Fault Isolation

If two network devices fail to communicate through the 8-Port 10BaseT Hub, consider the following:

- Are the LEDs described in the previous section functioning properly?
- Do network devices have Link Integrity enabled?
- Do network devices communicate when the 8-Port 10BaseT Hub is not installed between them?
- Is flat or “silver satin” wire used in site internal wiring?
- Are internal wiring patch cords, punch down blocks, and wall jacks properly pinned or configured?
- Is the cable unbroken and properly connected?
- Are network interface cards properly configured?

### Technical Support Contact

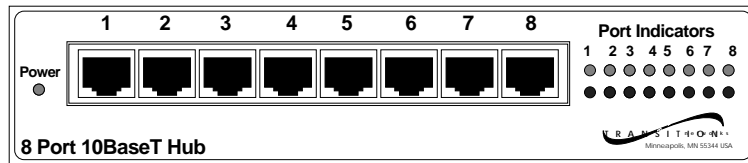
For assistance in fault isolation and in maintaining the 8-Port 10BaseT Hub Pocket Hub, contact:

**Technical Support (800) 260-1312**

or your local distributor.

## 4. OPERATION

The 8-Port 10BaseT Hub normally requires no intervention beyond occasionally monitoring the Power and Port Indicator LEDs.



### Monitoring Power LED

The green **Power** LED is illuminated when the 8-Port 10BaseT Hub is connected to external power.

### Monitoring Port Indicators LEDs

Each of the eight twisted pair ports displays an associated LED pattern:

<i>Link:</i>	Steady Green
<i>Data Transmission:</i>	Blinking Green
<i>Reverse Polarity:</i>	Steady Red
<i>Data Received:</i>	Blinking Red
<i>Transmit and Receive:</i>	Slowly Alternating Red and Green
<i>Partition Condition:</i>	Quickly Alternating Red and Green

## 2. SITE CONSIDERATIONS

The site for the 8-Port 10BaseT Hub must provide:

- AC power outlet for each 8-Port 10BaseT Hub
- Adequate ventilation
- Standard environmental conditions
- Isolation from electrical noise, including radio transmitters and broadband amplifiers, motors, high power electrical lines, or fluorescent light fixtures.

Additionally:

- The twisted pair cables should not run in the same conduit with power line cables.
- Phone lines should be separated from data cables.
- Flat or "silver satin" wires should not be used.
- If using an AUI drop cable to connect to a network backbone, the maximum cable distance is:

10Base5	500 meters
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- If attaching transceivers to the AUI connector for a network backbone connection, the maximum cable distances are:

10BaseFL	2000 meters
10Base2	185 meters
10BaseT	100 meters

And:

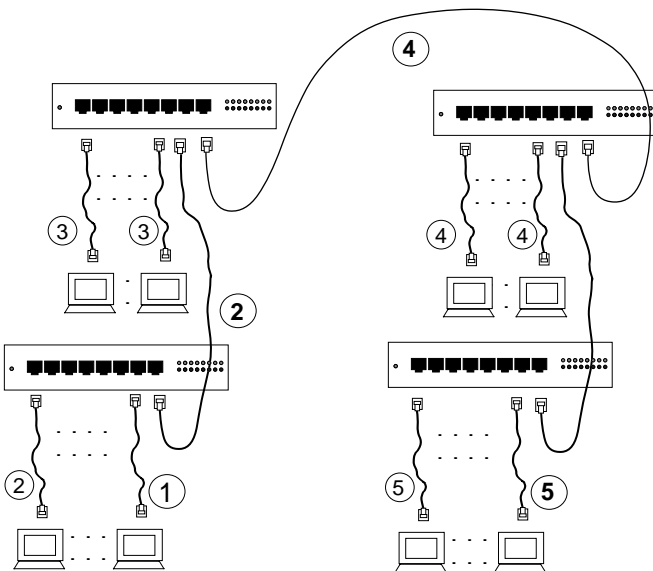
- Since the 8-Port 10BaseT Hub functions as an Ethernet repeater, the entire 8-Port 10BaseT Hub installation should comply with the IEEE Ethernet 802.3 specification.
- RJ-45 connected cables should be configured as crossover or straight through according to installation requirements.

## Ensuring Compliance with 5-Segment Rule

To conform to the Ethernet 802.3 specification when connecting 10BaseT Hubs, the transmission path between any two Data Terminating Equipment (DTE) devices can consist of no more than five segments. NOTE: A segment is the cable connection between cable interfaces in an Ethernet LAN.

To assign segment numbers to cable connections:

1. Determine the two terminals in the network which are separated by the greatest number of segments.
2. Assign a segment path between the terminals by labeling the cable connected to one of the terminals "segment 1" and the segment connected to the other terminal "segment n" (n = total number of segments and must be 5 or fewer).
3. To verify that no segment paths contain more than n segments, assign segment paths and numbers to all other terminals.



## Powering the 8-Port 10BaseT Hub

To power ON the 8-Port 10BaseT Hub:

1. Locate the power receptacle on the back of the 8-Port 10BaseT Hub.
2. Connect the 8-Port 10BaseT Hub power connector end of the power supply adapter to the 8-Port 10BaseT Hub.
3. Connect the external power connector end of the power supply adapter to external AC power.

NOTE: After the power supply adapter is connected to the 8-Port 10BaseT Hub and to external power, the green **Power** LED is illuminated.

## Verifying the Installation

After wiring has been installed, connect two devices (such as a network file server and a network device) to the 8-Port 10BaseT Hub. Verify that the two devices communicate with each other through the 8-Port 10BaseT Hub.

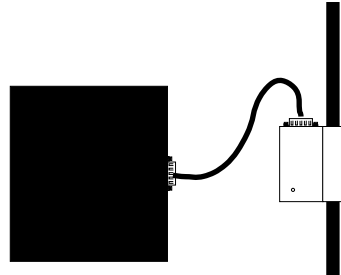
If the two network devices communicate correctly, continue to connect other network devices to the 8-Port 10BaseT Hub.

## Connecting Network Cable at 8-Port Hub Back

### Connecting 10Base5 Using AUI Drop Cable

To connect 10Base5 Cable to 8-Port 10BaseT Hub female AUI connector:

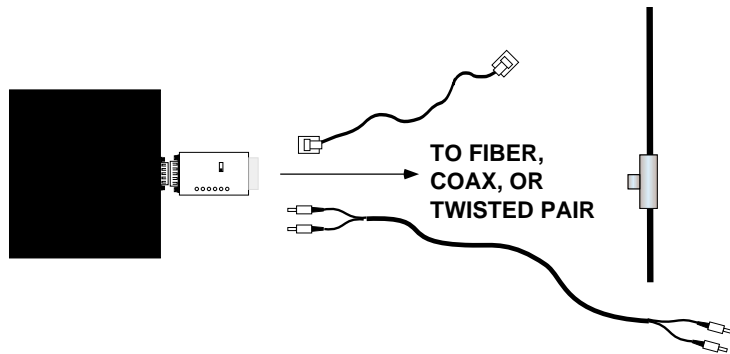
1. Locate or build IEEE 802.3 compliant AUI drop cable.
2. Connect AUI drop cable male DB-15 connector to the 8-Port 10BaseT Hub AUI connector.
3. Connect AUI drop cable female DB-15 connector to the AUI port on a transceiver or media attachment unit (MAU).



### Connecting to Network Using Transceiver

To connect 8-Port 10BaseT Hub to network using transceiver:

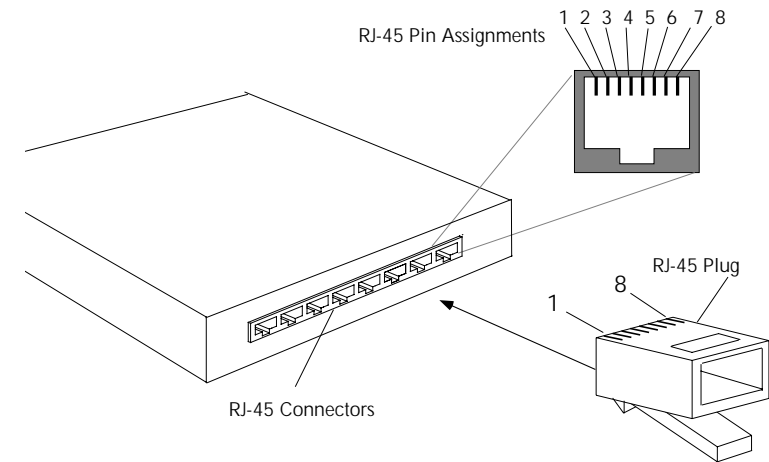
1. Locate IEEE 802.3 compliant transceiver with male AUI DB-15 connector and correct network media connector.
2. Connect transceiver male AUI DB-15 connector to the 8-Port 10BaseT Hub female AUI connector.
3. Connect transceiver network media connector to the network media.



## Ensuring Correct 10BaseT Configuration

The 10BaseT cable and RJ-45 connectors for **Hub to Terminal** connections must be configured as **straight through**. The 10BaseT cable and RJ-45 connectors for **Hub to Hub** connections must be configured as **crossover**.

The two active pairs in a 10BaseT network are pins 1 & 2 and pins 3 & 6. Use only dedicated wire pairs (such as blue/white & white/blue, orange/white & white/orange) for the active pins.



### Straight Through Cable at RJ-45 Plug

Hub . . . . . PC, transceiver, NIC, printer

RJ-45 Male	. . . . .	RJ-45 Male
1	. . . . .	1
2	. . . . .	2
3	. . . . .	3
6	. . . . .	6

### Crossover Cable at RJ-45 Plug

Hub	. . . . .	Hub
RJ-45 Male	. . . . .	RJ-45 Male
1	. . . . .	3
2	. . . . .	6
3	. . . . .	1
6	. . . . .	2

### 3. INSTALLATION

To install the 8-Port 10BaseT Hub:

- Unpack the 8-Port 10BaseT Hub.
- Install on flat surface.
- Connect 10BaseT Cable at Front.
- Optionally install Network cable.
- Connect 8-Port 10BaseT Hub to power.
- Verify the installation.

Direction is provided in the pages that follow.

#### Unpacking the 8-Port 10BaseT Hub

The 8-Port 10BaseT Hub packing contents should include the following:

Item	Part Number
LANMaster™ T8	E-TBT-HB-0801
Power Supply	3500, 3501, 3506, 3508, or 3510, (depending upon power configuration in country where installed)
User's Guide	7334

#### Installing 8-Port Hub on Flat Surface

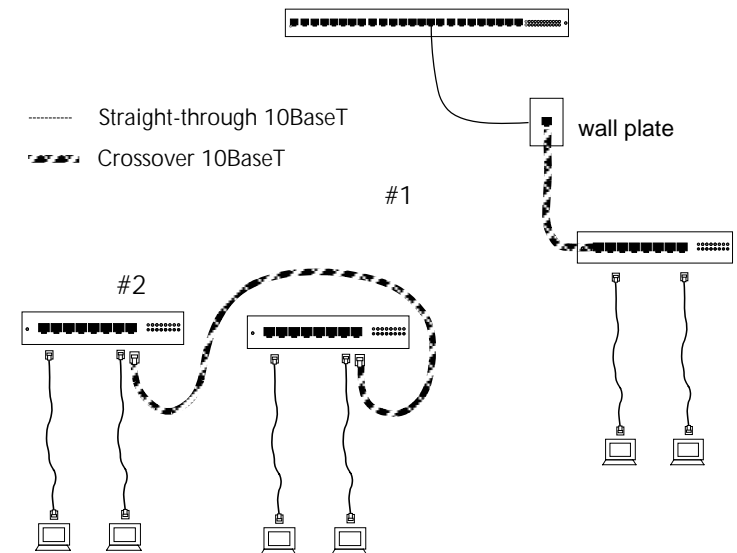
To install the 8-Port 10BaseT Hub on table, shelf, or other flat surface:

1. Carefully turn 8-Port 10BaseT Hub to side.
2. Install four (4) rubber feet:
  - Remove protective paper from adhesive surface of rubber foot.
  - Position rubber foot at bottom corner of 8-Port 10BaseT Hub.
  - Secure rubber foot to 8-Port 10BaseT Hub surface.
  - Repeat for remaining rubber feet.
3. Return 8-Port 10BaseT Hub to upright position.

#### Connecting 10BaseT Cable at 8-Port 10BaseT Hub Front

To connect 10BaseT Cable to RJ-45 connectors at the 8-Port 10BaseT Hub front:

1. Locate or build 10BaseT cables with the following characteristics:
  - 802.3 compliant (See page 15)
  - correct (straight through or crossover) cable configuration for site installation (See page 6)
  - male RJ-45 plug connectors installed at both cable ends.
2. Connect male RJ-45 plug connector at one end of 10BaseT cable to 8-Port 10BaseT Hub RJ-45 jack connector.



3. Connect male RJ-45 plug connector at other end of 10BaseT cable to DTE terminal RJ-45 jack connector (using **straight through** cable orientation) or to 8-Port 10BaseT Hub RJ-45 jack connector (using **crossover** cable orientation).