

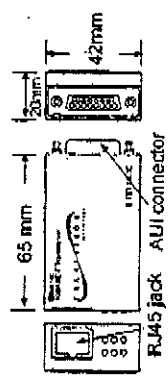
**Installation Guide**  
**Ethernet 10Base-T Transceiver**  
 Model: E-TBT-MC02

DOC. A33659  
 756-012-002 REV.1.0

**General Description**

E-TBT-MC02 Ethernet transceiver complies with IEEE 802.3 transceiver specifications and 10Mbps Ethernet CSMA/CD operation to provide a connection interface to 10Base-T Ethernet Unshielded Twisted-Pair (UTP) cable.

The transceiver is attached to the AUI connector of an Ethernet device via standard AUI cable.



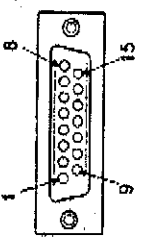
**Features**

- Provides a complete interface of the AUI to Ethernet UTP cable (IEEE 802.3 10Base-T).
- Supports data transfer rate of 10Mbps.
- CSMA/CD access mechanism
- Capability for driving the UTP cable segment up to 100M (328 ft.) without the use of a repeater.
- Selectable Link test and SQE test function.
- The RJ45 jack can detect and correct the wiring polarity reverse on the receiving pair of the UTP cable automatically.
- Supports LED indications for the Power, Transmit, Link, Receive, Collision, and Polarity reversal status.
- Dimension: 42mm x 65mm x 20mm
- Input voltage: 10.2 to 15.75 VDC
- Input current: 250mA @ 12 VDC (typical)

**Connectors & Cables**

**AUI connection:** D-sub 15 pin male connector  
 AUI drop cable (50 meters max.)

The AUI connector is used for attaching the transceiver to the AUI port provided by an Ethernet device such as an Ethernet MAC controller, an Ethernet repeater, or an Ethernet concentrator via an AUI drop cable. The pin assignments are shown as below:

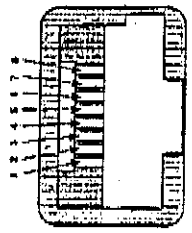


**Pin Assignments of the AUI (DB15) Connector**

| Pin | Name | Use             |
|-----|------|-----------------|
| 3   | DO+  | Data Out (+)    |
| 4   | DO-  | Data Out (-)    |
| 5   | DS   | Data Out Shield |
| 6   | DI+  | Data In+        |
| 7   | DI-  | Data In-        |
| 8   | DS   | Data In Shield  |
| 9   | CO+  | Control Out+    |
| 10  | CO-  | Control Out-    |
| 11  | CS   | Control Shield  |
| 12  | CI+  | Control In+     |
| 13  | CI-  | Control In-     |
| 14  | VS   | Voltage Common  |
| 15  | VP   | Voltage Plus    |
| 16  | VS   | Voltage Shield  |

**UTP connection:** RJ45 Jack  
 Category 3,4, or 5 UTP cable

The 10Base-T RJ45 OUT jack is used for connecting to a 10Base-T Ethernet hub via a 2-pair UTP cable. The length of the UTP cable can be up to 100 meters. The jack pin assignments are listed as below:



**Pin Assignments of the RJ45 Jack**

| Pin | OUT-Jack Assignments |
|-----|----------------------|
| 1   | Outgoing Data 1 (+)  |
| 2   | Outgoing Data 1 (-)  |
| 3   | Incoming Data 1 (+)  |
| 4   | Incoming Data 1 (-)  |
| 5   | (No connection)      |
| 6   | (No connection)      |
| 7   | Incoming Data 2 (+)  |
| 8   | Incoming Data 2 (-)  |

**Setting Switches**

Two switches are provided for setting the options of disabling the SQE test function and LINK test function. Both test functions are Ethernet and 10Base-T standard.

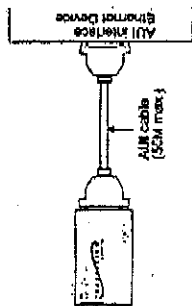
| Switch Setting | Function                               |
|----------------|--|
| SW1 ON         | Enable SQE test (factory default)      |
| SW1 OFF        | Disable SQE test (for repeater device) |
| SW2 ON         | Enable Link test (factory default)     |
| SW2 OFF        | Disable Link test                      |

The transceiver is shipped from the factory with the SQE test enabled. Depending on the Ethernet device to which the AUI connector attaches, you can set the SW1 switch to "OFF" position to disable the SQE test function or set the switch to "ON" position to enable the SQE test function.

If the transceiver is connected to an Ethernet repeater, a 10Base-T hub, or a wiring concentrator, the SQE test function should be disabled.

### Installation

Attaching to an Ethernet device via an AUI cable  
 The Ethernet device can be a network interface controller, wiring concentrator, or repeater that provides an AUI port. For attaching to such device, an AUI cable of appropriate length is required. The following figure illustrates the connection of the transceiver and an Ethernet device via an AUI cable.



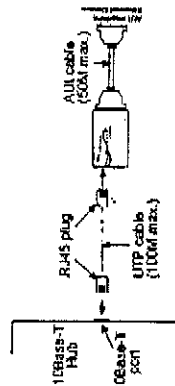
#### Important

If the transceiver is attached to an Ethernet repeater, a 10Base-T hub, or a wiring concentrator, the SQE test function should be disabled.

#### Connecting to a 10Base-T Ethernet Hub

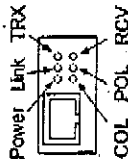
To connect the transceiver to a 10Base-T hub, follow the steps:

1. Select an appropriate length UTP cable for the connection.
2. Connect one end of the UTP cable to the RJ45 jack of the transceiver.
3. Route the free end of the UTP cable to area where the 10Base-T hub is located.
4. Connect the free end of the UTP cable to an IN jack on the 10Base-T hub.



### Interpreting LED Indicators

There are six diagnostic LED indicators provided on the transceiver to indicate the operation status as below:



| LED   | Operation status    | State              | Interpretation   |
|-------|---------------------|--------------------|--|
| Power | Power status        | On<br>Off          | Transceiver is on.<br>Transceiver is off.  |
| Link  | UTP link status     | On<br>Off<br>Blink | The UTP link is ok or link test function is disabled.<br>No UTP link or UTP link is faulty.<br>UTP link is faulty.                           |
| TRX   | Transmission status | Blink<br>Off<br>On | Transmission is in operation.<br>No transmission.<br>Normal, if large transmission is in operation.<br>Problem, if no transmission.          |
| RCV   | Receiving status    | Blink<br>Off<br>On | Receiving data packet.<br>No packet is being received.<br>Normal, if heavy traffic load.<br>Problem, if no network traffic.                  |
| COL   | Collision status    | Off<br>Blink       | No collision occurs.<br>There is presence of collisions.   |
| POL   | Polarity reversal   | Off<br>On          | There is no polarity reversal problem detected on the UTP cable.<br>Polarity reversal problem exists on the receiving pair of the UTP cable. |

### Wiring the UTP Cable

How to install the UTP cable is determined by the characteristics of the 10Base-T UTP port of the device connected at the other end of the cable. The following figure shows some examples:

| Wiring for the UTP cable |                          |
|--------------------------|--------------------------|
| Pin                      | Pin                      |
| Transceiver              | 10Base-T hub's IN jack   |
| 1                        | 1                        |
| 2                        | 2                        |
| 3                        | 3                        |
| 6                        | 6                        |
| Transceiver              | 10Base-T hub's OUT jack  |
| 1                        | 3                        |
| 2                        | 6                        |
| 3                        | 1                        |
| 6                        | 2                        |
| Transceiver              | Computer's 10Base-T port |
| 1                        | 3                        |
| 2                        | 6                        |
| 3                        | 1                        |
| 6                        | 2                        |
| Transceiver              | Transceiver              |
| 1                        | 3                        |
| 2                        | 6                        |
| 3                        | 1                        |
| 6                        | 2                        |

**Note:** The OUT jack of a 10Base-T hub is normally used for connection to another 10Base-T hub. The vendor's 10Base-T hub, sometimes, provides a crossover option to set the jack as an IN jack for connection to a 10Base-T Ethernet station.