TC1230 Series

RS-366 DIAL-UP
FIBER OPTIC MODEM

User's Manual

MODEL: _____

S/N: _____

DATE: _____

Notice!

Although every effort has been made to insure that this manual is current and accurate as of date of publication, no guarantee is given or implied that this document is error free or accurate with regard to any specification. TC Communications, Inc. reserves the right to change or modify the contents of this manual at any time without prior notification.

TC COMMUNICATIONS
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Read Me First !!!
(TC1880, TC1230)

All of the TC Communications' TC1880 Series multiplexers and TC1230 Modems are **DCE** devices. They can ONLY be connected to **DTE** devices.

CAUTION:

These TC1880s and TC1230s will be damaged if they are connected to other DCE devices. **Damaged units returned due to this type of careless connection will not be covered under the manufacturer's warranty.**

Table of Contents

Chapter 1 - Overview 4
..... 4
Electrical Specifications 4
Optical 4
Power Requirements 4
TC1230 Virtual Connection & Cable connection 5

Chapter 2 - LEDs, DIP Switches and Connectors 6

Chapter 3 - Bench Tests 7
RS-366 Signal Loopback Test 7
Local Optical Loopback Test 7
Remote Loopback Test 8

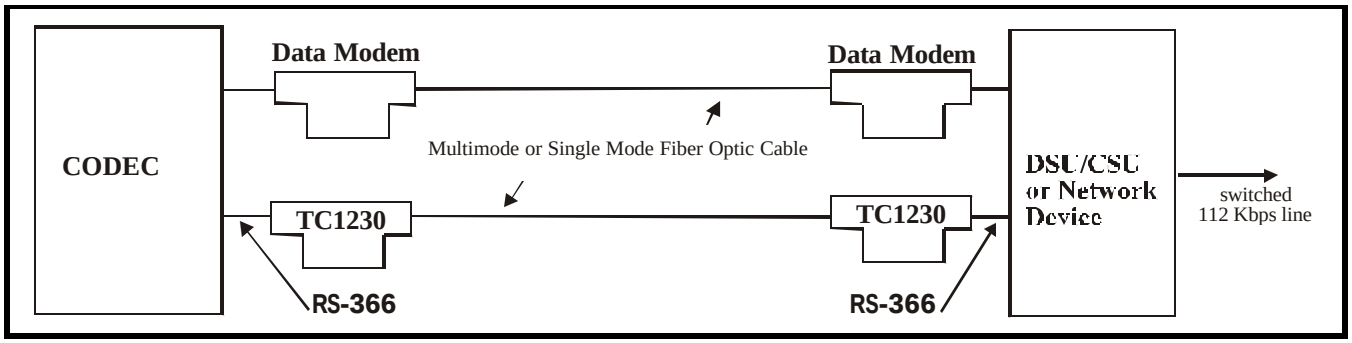
Chapter 4 - Appendix 9
Return Policy 9
Warranty 9

Chapter 1

1. Description

Intended for video conferencing applications, the TC1230 Fiber Optic Modem transmits RS-366 dial-up information between Codecs and CSU/DSUs, Hubs and other Network Devices at the demarcation point. The TC1230 supports asynchronous speeds up to 112 Kbps and connects directly into the RS-366 interface on Codec and Network Devices. It supports all 11 control signals (typically 5 in and 6 out).

The TC1230 works over all popular sizes of Single Mode (1310nm) and Multimode (850nm & 1310nm) fiber optic cable. Fiber optic connectors are ST or FC (optional). The electrical connector is a DB25 female. Power is 9 to 12VDC or 115 to 230VAC with an external power cube. The TC1230 provides six channel status LED indicators to monitor the status of each channel's RS-366 signal.



2. Electrical Specifications

Interface:	**RS-366**
Data Rate:	**Asynchronous DC to 112Kbps**
Connector:	**DB25 female (DCE only)**
Pinouts:	**Refer to next page**

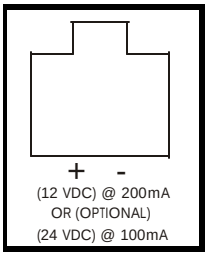
3. Optical

Transmitter:	**LED/ELED typical launch power:**	**-15dBm* (850nm MM/1310nm MM, @62.5/125µm)** **-15dBm* (1310nm SM, @9/125µm)**
Receiver:	**PIN Diode: typical sensitivity:**	**-30dBm* (850nm MM/1310nm MM, 62.5/125µm)** **-35dBm* (1310nm SM, 9/125µm)**
Loss Budget:	**850nm/1310nm MM, @62.5/125µm:** **1310nm Single Mode, @9/125µm:**	**15dB** **20dB**
Distance:	**850nm Multimode** **1310nm Multimode** **1310nm Single Mode**	**up to 3km* distance (62.5/125µm)** **up to 5km* distance (62.5/125µm)** **up to 20km* distance (9/125µm)**
Connector:	**ST** **FC**	

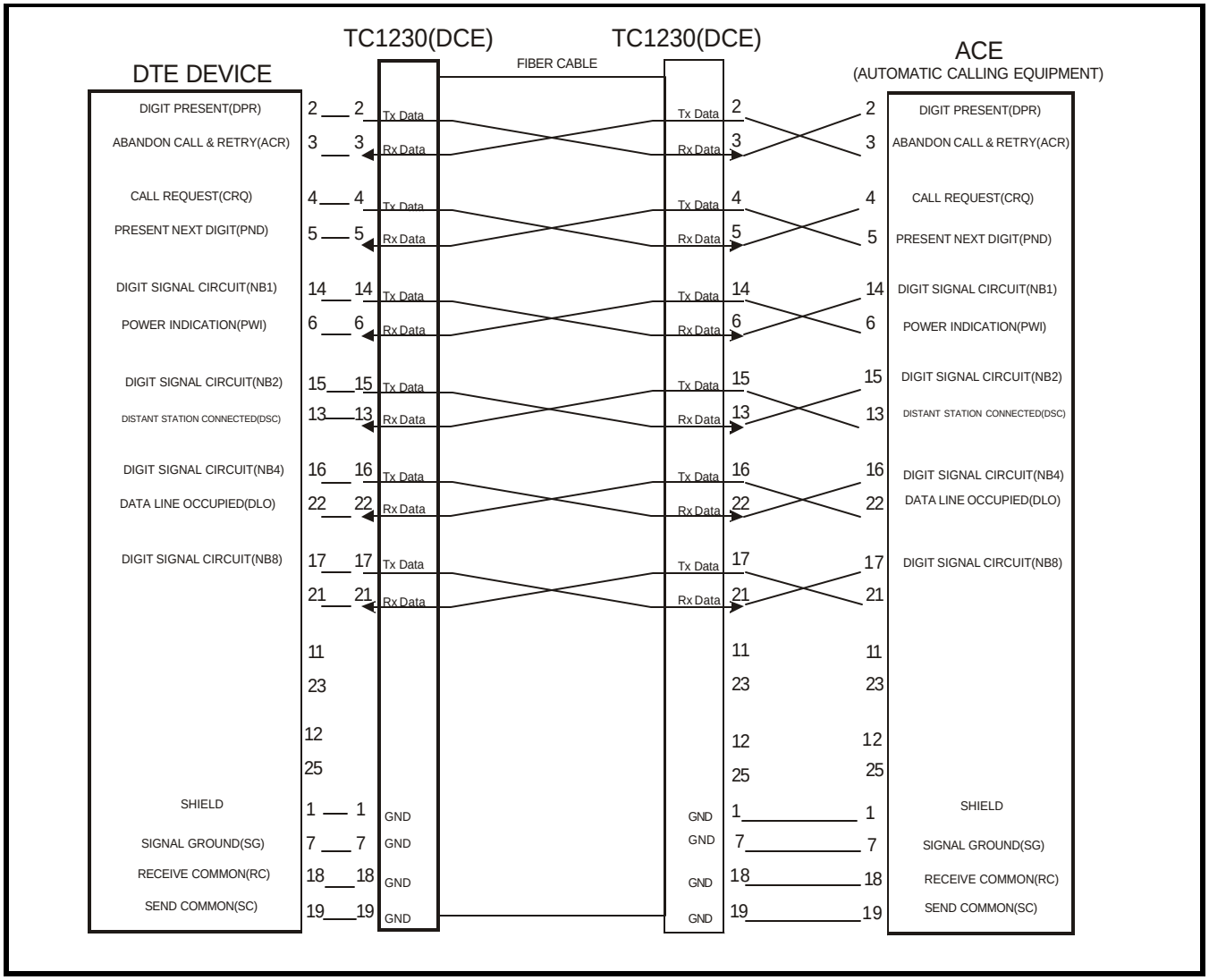
Launch power, sensitivity & distance are listed for reference only. These numbers may vary.

4. Power Requirements

The TC1230 is designed to draw power from the power jack only and consumes very low power. The input DC voltage is 12VDC @ 200mA or (Optional 24VDC @ 100mA). Should the external power adapter need to be replaced, use one with the following specifications: 12VDC @200mA, or (optional) 24VDC @100mA, with a terminal block connector that came with the TC1230, as shown on the diagram.

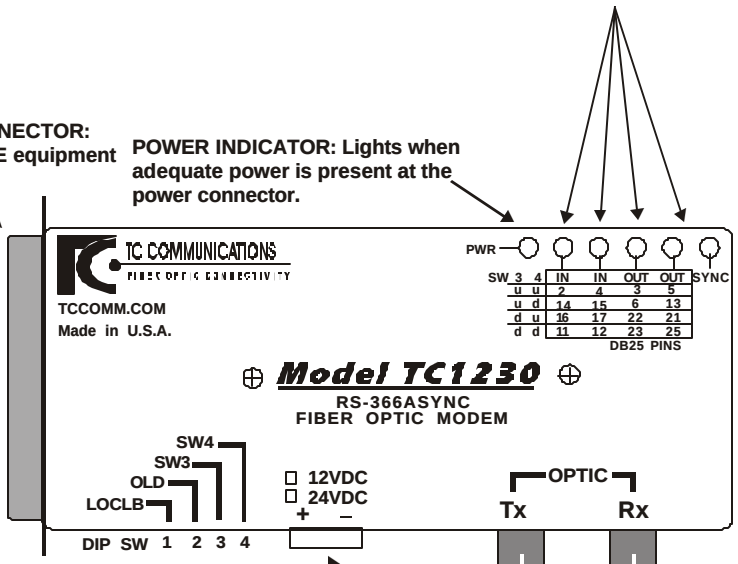


TC1230 Virtual Connection & Cable connection



Chapter 2 - LEDs, DIP Switches and Connectors

CHANNEL STATUS LED INDICATORS: Used to monitor the status of each channel's RS-366 signal. Two channels can be monitored at one time depending on the setting of SW3 & SW4.
One "IN" & one "OUT" LED per channel will be lit. LEDs will be solidly lit when sending and receiving a valid signal.



DB25 FEMALE CONNECTOR:
Connect to your DTE equipment

POWER INDICATOR: Lights when adequate power is present at the power connector.

SYNC INDICATOR: Lights when a valid optical signal (above the threshold sensitivity level) is present at the optic receiver.

DIP SWITCH FUNCTIONS:
SW1: (LOCLB) Electrical Local Loopback.
SW2: When Enabled (down position), this unit will be compatible with the previous version TC1230.
SW3 & SW4: By setting these switches to a particular configuration, you can monitor two channels at one time for the status of the RS-366 signals. Each number, represents that particular pin on the female DB25 connector. See example below and the chart on the unit.
u: Means Up.
d: Means Down.

	SW 3	4	IN	IN	OUT	OUT
CASE 1:	u	u	2	4	3	5

TERMINAL BLOCK CONNECTOR:
Connect power source here
12VDC @200mA or
(Optional) 24VDC @100mA.

OPTIC RECEIVER: Connect optic cable here to receive signal from remote unit's transmitter.

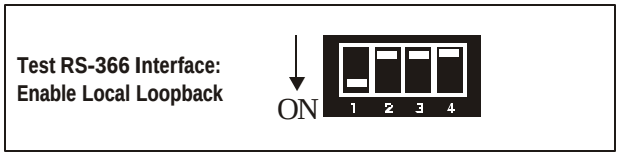
OPTIC TRANSMITTER: Connect optic cable here to transmit signal to remote unit's optic receiver.

Pins 2 & 3 define CH1. Both LED's should be "ON" if Pin 2 is receiving and Pin 3 is transmitting a valid RS-366 signal.
Pins 4 & 5 define CH2. Both LED's should be "ON" if Pin 4 is receiving and Pin 5 is transmitting a valid RS-366 signal

RS-366 Signal Loopback Test

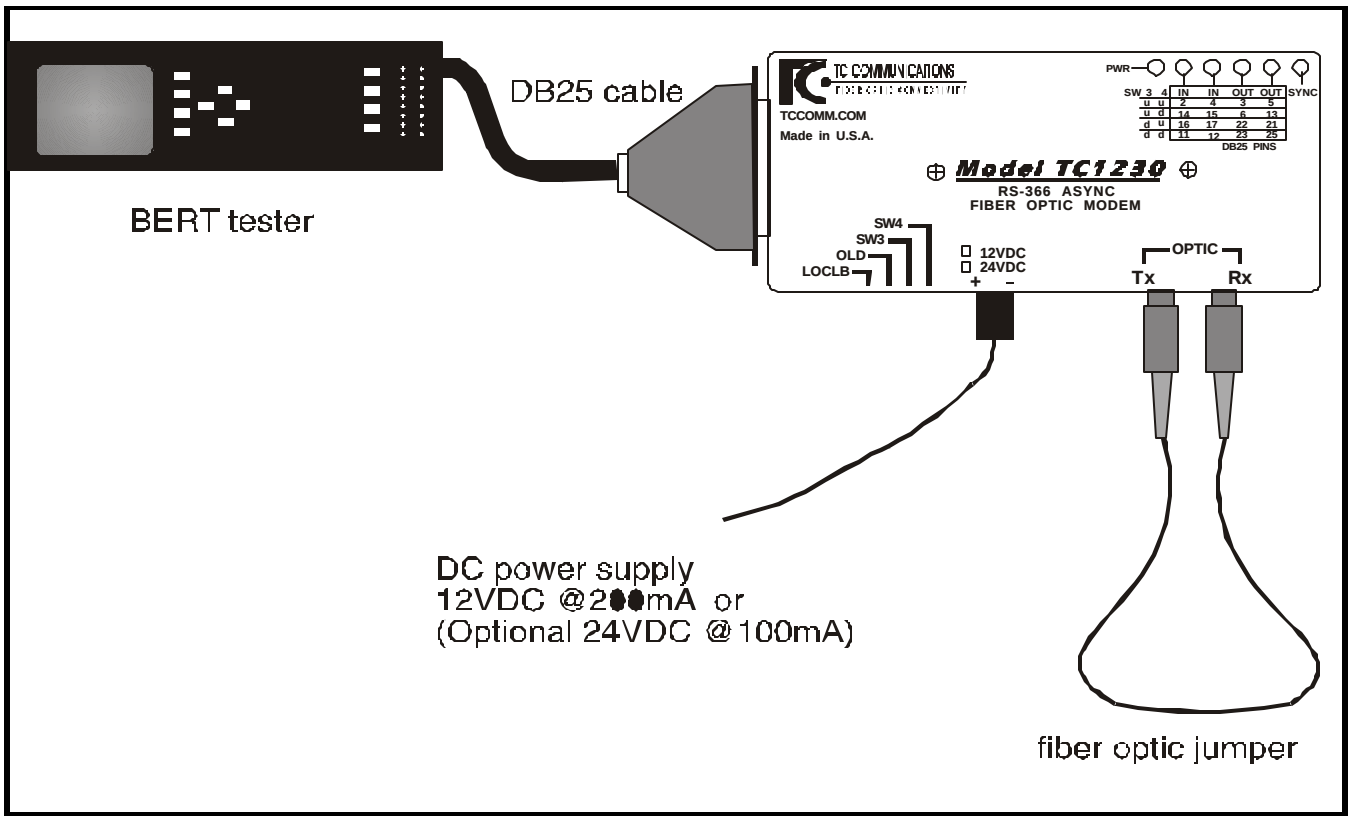
When **SW1** is in the Down position, the RS-366 input pins (2 & 4) are looped back to the output pins (3 & 5) on the DB25 connector. This function allows the user to isolate and test the electrical signal connections and transmit/receive circuitry.

Test RS-366 Interface:
Enable Local Loopback



Local Optical Loopback Test

Set up the bench test as illustrated in the Figure below . The BERT tester should be configured as a DTE device. Set the tester's data rate to 19.2Kps with a test pattern of "511." Make sure all DIP switches on the TC1230 are in the Up position.The tester's "RTS" status should be set to Off. Once the tester's "RTS" is turned On, an optic signal should be detected by the optic Rx and the TC1230's "SYNC" LED will light. The tester should indicate a "Sync" signal. Verify the TC1230's LEDs: "PWR", " and "SYNC" should all be solidly lit. In the case that you are monitoring either selected channel(s) (see example, CASE 1 on page 6), you should see the corresponding LEDs "ON".



Local Optic Loopback Test Setup Diagram

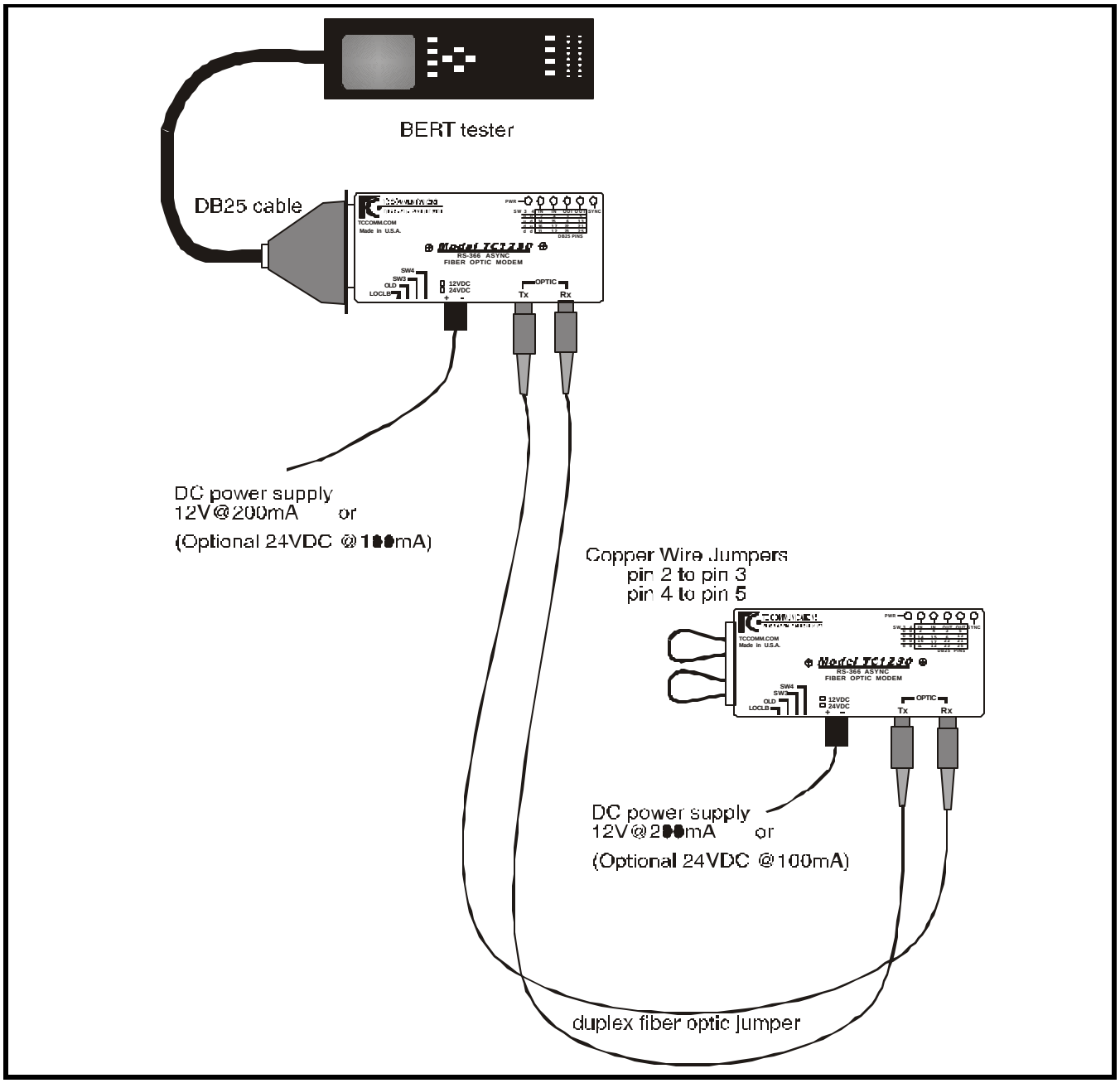
Remote Loopback Test

Set up the bench test as illustrated in the following Figure. The local TC1230 should be connected to a BERT tester. Install two copper wire jumpers at the remote TC1230's DB25 connector to form an RS-366 loopback by connecting pin 2 (TxD) to pin 3 (RxD) and pin 4 (RTS) to pin 5 (CTS).

Both TC1230's should have all their DIP switches in the Up position. The fiber cables between the TC1230's should be cross-connected (local unit's optic Tx to remote's Rx; local unit's optic Rx to remote's Tx).

The tester's "RTS" status should be set to Off. Once the tester's "RTS" is turned On, an optic signal should be detected by the remote unit's optic Rx and both TC1230's "SYNC" LEDs will light (due to the loopback status). The tester should indicate a "SYNC" signal.

Verify both TC1230's LEDs: "PWR", "Selected channel's LEDs", and "SYNC" should all be solidly lit. This test verifies the composite optical and electrical signals, LEDs, and integrity of the fiber optic link.



Remote Loopback Test Setup Diagram

Chapter 4

Return Policy

To return a product, you must first obtain a Return Material Authorization number from the Customer Service Department. If the product's warranty has expired, you will need to provide a purchase order to authorize the repair. When returning a product for a suspected failure, please provide a description of the problem and any results of diagnostic tests that have been conducted.

Warranty

Damages by lightning or power surges are not covered under this warranty.

All products manufactured by TC Communications, Inc. come with a five year (beginning 1-1-02) warranty. TC Communications, Inc. warrants to the Buyer that all goods sold will perform in accordance with the applicable data sheets, drawings or written specifications. It also warrants that, at the time of sale, the goods will be free from defects in material or workmanship. This warranty shall apply for a period of five years from the date of shipment, unless goods have been subject to misuse, neglect, altered or destroyed serial number labels, accidents (damages caused in whole or in part to accident, lightning, power surge, floods, fires, earthquakes, natural disasters, or Acts of God.), improper installation or maintenance, or alteration or repair by anyone other than Seller or its authorized representative.

Buyer should notify TC Communications, Inc. promptly in writing of any claim based upon warranty, and TC Communications, Inc., at its option, may first inspect such goods at the premises of the Buyer, or may give written authorization to Buyer to return the goods to TC Communications, Inc., transportation charges prepaid, for examination by TC Communications, Inc. Buyer shall bear the risk of loss until all goods authorized to be returned are delivered to TC Communications, Inc. TC Communications, Inc. shall not be liable for any inspection, packing or labor costs in connection with the return of goods.

In the event that TC Communications, Inc. breaches its obligation of warranty, the sole and exclusive remedy of the Buyer is limited to replacement, repair or credit of the purchase price, at TC Communications, Inc.'s option.

To return a product, you must first obtain a Return Material Authorization (RMA) number and RMA form from the Customer Service Department. If the product's warranty has expired, you will need to provide a purchase order to authorize the repair. When returning a product for a suspected failure, please fill out RMA form provided with a description of the problem(s) and any results of diagnostic tests that have been conducted. The shipping expense to TC Communications should be prepaid. The product should be properly packaged and insured. After the product is repaired, TC Communications will ship the product back to the shipper at TC's cost to U.S. domestic destinations. (Foreign customers are responsible for all shipping costs, duties and taxes [both ways]. We will reject any packages with airway bill indicating TC communications is responsible for Duties and Taxes. To avoid Customs Duties and Taxes, please include proper documents indicating the product(s) are returned for repair/retest).