

TC1504

RS-422/RS-449 SYNC FIBER OPTIC MODEM (Rev. A0.1)

User's Manual

MODEL: _____

S/N: _____

DATE: _____

Notice!

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Description

The TC1504 Fiber Optic Modem links data communication equipment requiring an RS-422A interface. It supports synchronous data speeds (with an external clock) up to 2.048 Mbps and is equipped with a male DB-37 connector. A four-position DIP Switch provides for Local & Remote Loopback functions, Slave Clock operation and DCE/DTE device selection. There are six LED indicators that reflect operational status such as Terminal Clock (TT), Transmit data (SD), Receive clock (RT), Receive data (RD) and DC power supply.

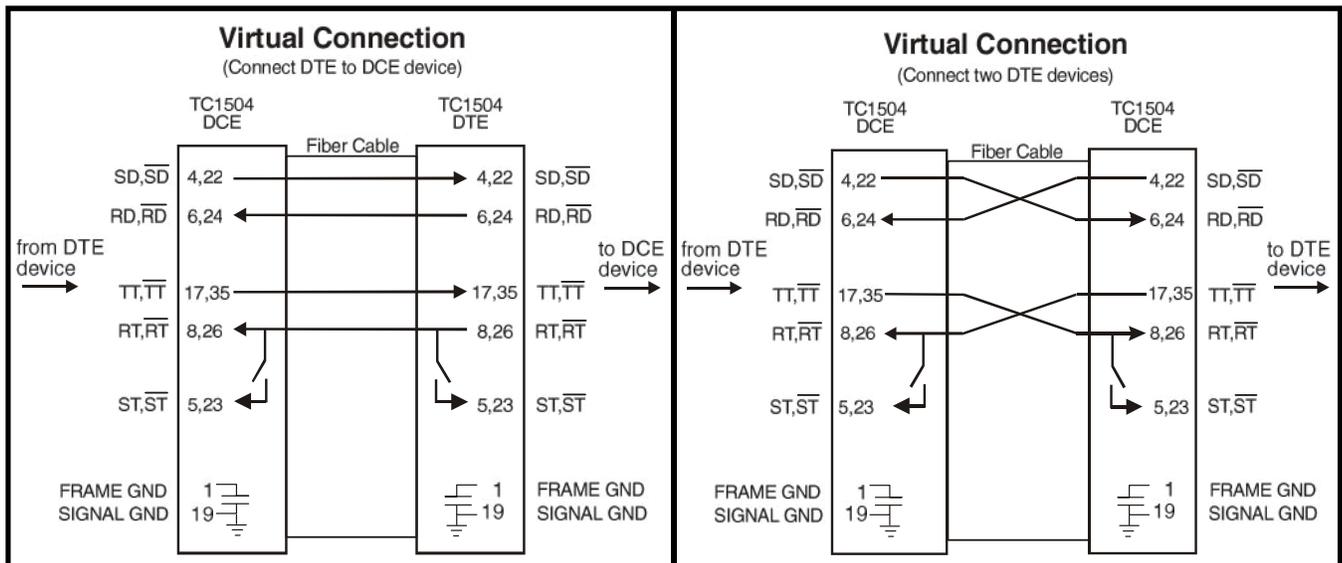
The TC1504 is available in either Multimode or Single Mode versions. The Single Mode version supports transmission distances up to 30km over Single Mode (1310nm) fiber optic cable. Fiber optic connectors can be either ST or (FC optional) type.

Operational Theory

The TC1504 latches onto the RS-422/RS-449 data by the received clock signal (from user's equipment) to produce an encoded optic signal (with an embedded clock). The composite optic signal is then transmitted by the optic transmitter through the optic cable to a remote TC1504's optic receiver. The received optic signal is processed and decoded to separate data and clock from the composite optic signal and then transmitted out to a remote device.

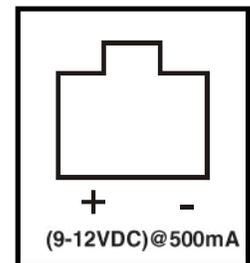
Electrical Specifications & Virtual Connection

Interface: RS-422/RS-449
Data Rate: Synchronous DC to 2.048 Mbps
Connector: DB37 Male (DCE/DTE switchable)

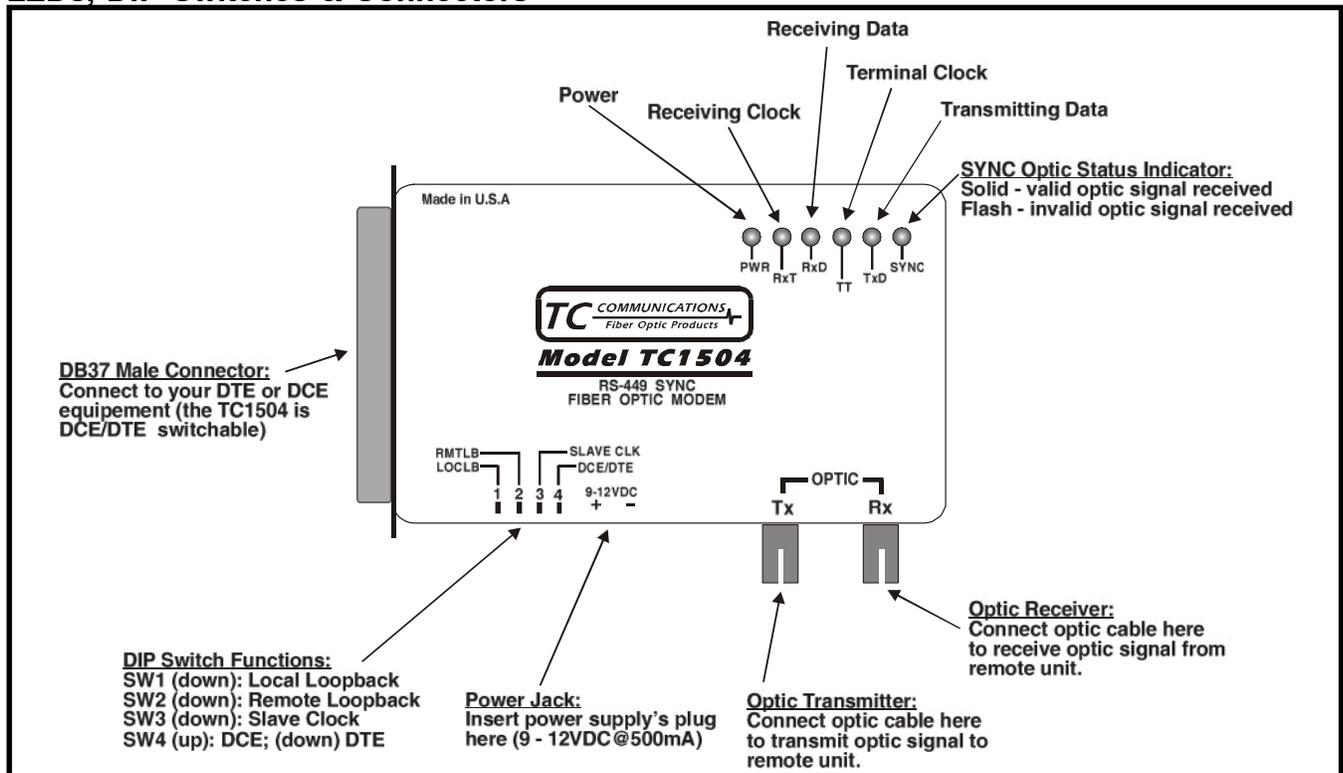


Power Requirements

- A. The TC1504 is designed to draw very low power from an external power adapter. The input DC voltage is from 9V to 12V and current is 220mA to 300mA for the 850nm and 1310nm versions.
- B. Should an external power adapter require replacement, use one with the following specifications: 12VDC @800mA with a terminal block connector. You may order it from TC Communications.



LEDs, DIP Switches & Connectors



Optical Specifications (at data rate 1.544Mbps)

Transmitter:	LED/ELED; typical Launch Power:	-19dBm* (850nm/1310nm Multimode, @62.5/125µm) -16dBm* (1310nm Single Mode, @9/125µm)
Receiver:	PIN Diode; typical Sensitivity:	-34dBm* (850nm/1310nm Multimode, @62.5/125µm) -36dBm* (1310nm Single Mode, @9/125µm)
Loss Budget:	850nm/1310nm MM, @62.5/125µm:	15dB
	1310nm Single Mode, @9/125µm:	20dB
Distance:	850nm Multimode, @62.5/125µm:	up to 3km distance*
	1310nm Multimode, @62.5/125µm:	up to 4km distance*
	1310nm Single Mode, @9/125µm:	up to 30km distance*
Wavelength:	850nm Multimode	
	1310nm Multimode	
	1310nm Single Mode	
Connector:	ST	
	FC	

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

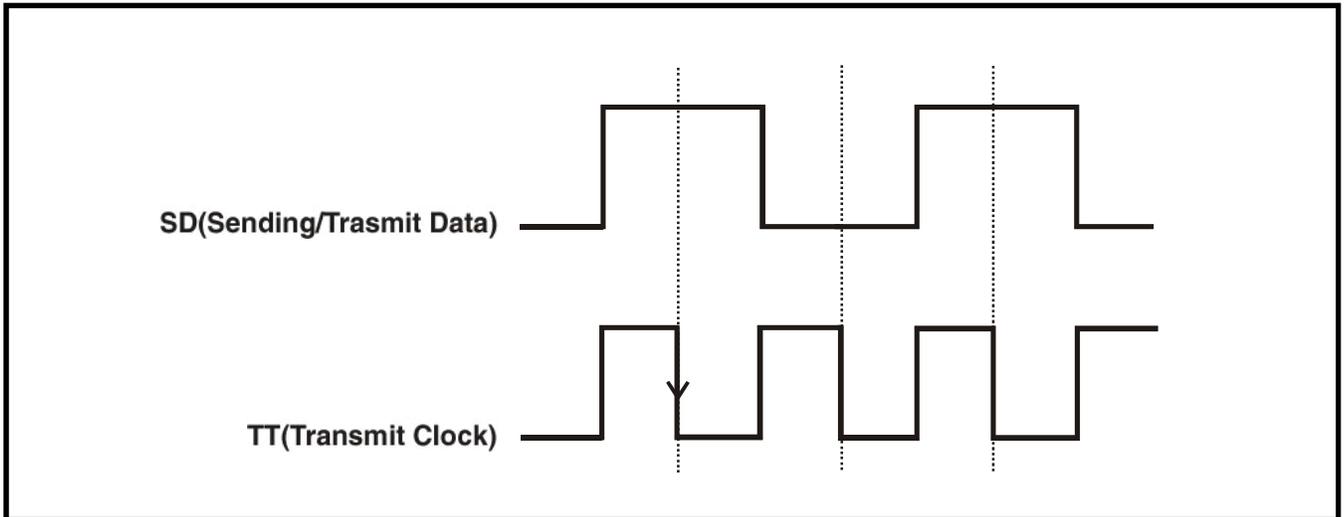
Physical Characteristics

Height:	0.79" (2.0 cm)
Width:	4.1" (10.4 cm)
Depth:	2.96" (7.5 cm)
Weight:	5.5 oz. (121 gm)

Temperature

Operating:	-10 to 50 degree C	Hi-Temp(optional):	-20 to 70 degree C
Storage:	-40 to 90 degree C	Humidity:	95% non-condensing

Transmit Data & Transmit Clock Wave forms



Installation & Troubleshooting

- A. Identify your equipment as DCE or DTE. TC1504's DTE/DCE DIP Switch has to be set to the opposite of your equipment. For example, if you connect the TC1504 to a DTE device, set the DCE/DTE DIP Switch (SW4) to the DCE (up) position.
- B. Always connect one TC1504 and conduct a Local Optic Loopback test first. To perform the test:
 1. Use a short optic cable to loop from optic "Tx" back to optic "Rx."
 2. Connect the TC1504 to the user's equipment.
 3. Check if the "Sync" LED is lit.
 4. If the "Sync" LED is off, try sliding the DCE/DTE switch down or verify the fiber cable and connections, then re-examine the "Sync" LED.
 5. The TC1504 requires a "clock" input signal (pins 17 & 35 when set as DCE) to latch onto incoming data; without a valid clock signal, no valid optic signal will be generated.

Warranty & Return Policy

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).