

TC1880 Series

4/5/6/8 Channel RS-232 FIBER OPTIC MICRO MUX

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.

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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.**

Regulatory Compliance

TC1880 series products, including TC1881, TC1882, TC1883, TC1884, TC1885, and TC1886, comply with the FCC Part 15 Class A standard.

FCC Part 15 Notice

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 his or her own expense.

You can determine whether your equipment is causing interference by turning it off. If the interference stops, the TC equipment probably caused it. If the equipment causes interference to radio or television reception, try to correct the interference by using one or more of the following measures:

- Turn the television or radio antenna until the interference stops.
- Move the equipment to one side or the other of the television or radio.
- Move the equipment farther away from the television or radio.
- Plug the equipment into an outlet that is on a different circuit from the television or radio. (I.E., make sure the equipment and the television or radio are using different circuit breakers or fuses.)

Changes or modifications not expressly approved by TC Communications, Inc. could void the FCC approval and void your authority to operate the equipment.

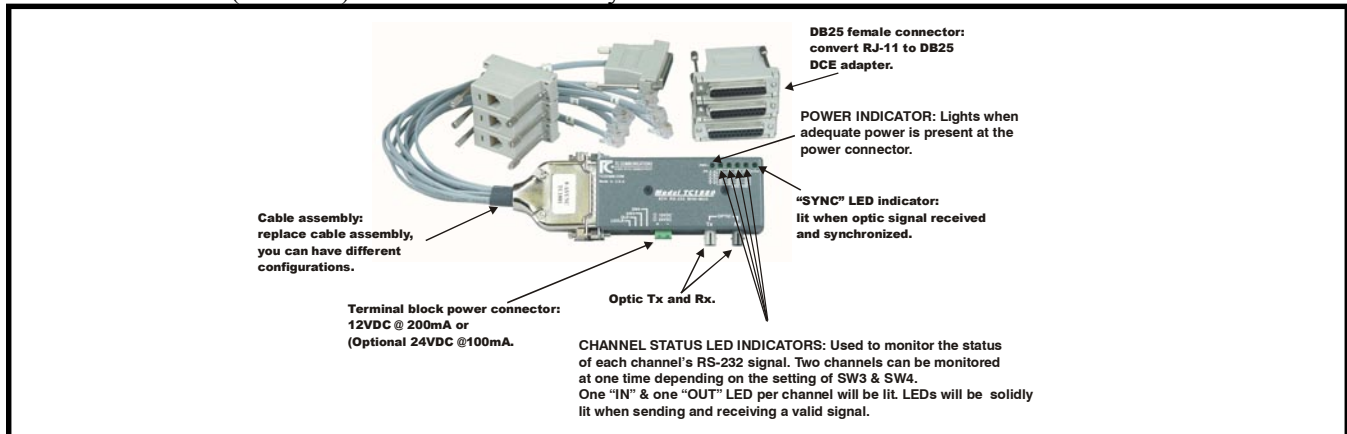
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1. Description

The TC1880 series is a compact sized TDM (time division multiplexer) with RS-232 interface. It consists of a base unit (TC1880) and a cable assembly.



By replacing the cable assembly you can have the following 6 configurations for your applications:

Model	Async Channels	Sync (ext. clock) Channels
TC1881	8	0
TC1882	4	2
TC1883	2	3
TC1884	0	4
TC1885	4 (w/1 control)	0
TC1886	2 (w/1 control)	2

The base unit is an 8 channel RS-232 multiplexer. Each channel's data rate can be DC to 112Kbps. Power is 12VDC, (Optional 24VDC) or 115/230VAC with an external power cube.

2. Electrical (TC1880)

Interface:	RS-232
Data Rate:	Sync/Asynchronous DC to 112Kbps
Connector:	DB25 female
Pinouts:	Refer to next page

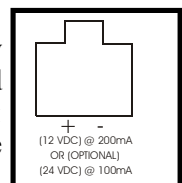
3. Optical

Transmitter:	LED, typical launch power	-17dBm* (850nm MM, 1300nm MM, @62.5/125μm)
	LASER, typical launch power	-16dBm* (1300nm SM, @9/125μm) -8dBm* (1300nm SM, @9/125μm)
Receiver:	PIN, typical sensitivity	-32dBm* (850nm MM/1300nm MM, 62.5/125μm)
	LASER, typical sensitivity	-36dBm* (1300nm SM 9/125μm) -36dBm* (1300nm SM, @9/125μm)
Distance:	LED, 850nm Multimode	up to 4km* distance (62.5/125μm)
	LED, 1300nm Single Mode	up to 20km* distance (9/125μm)
	LASER, 1300nm Single Mode	up to 50km* distance (9/125μm)

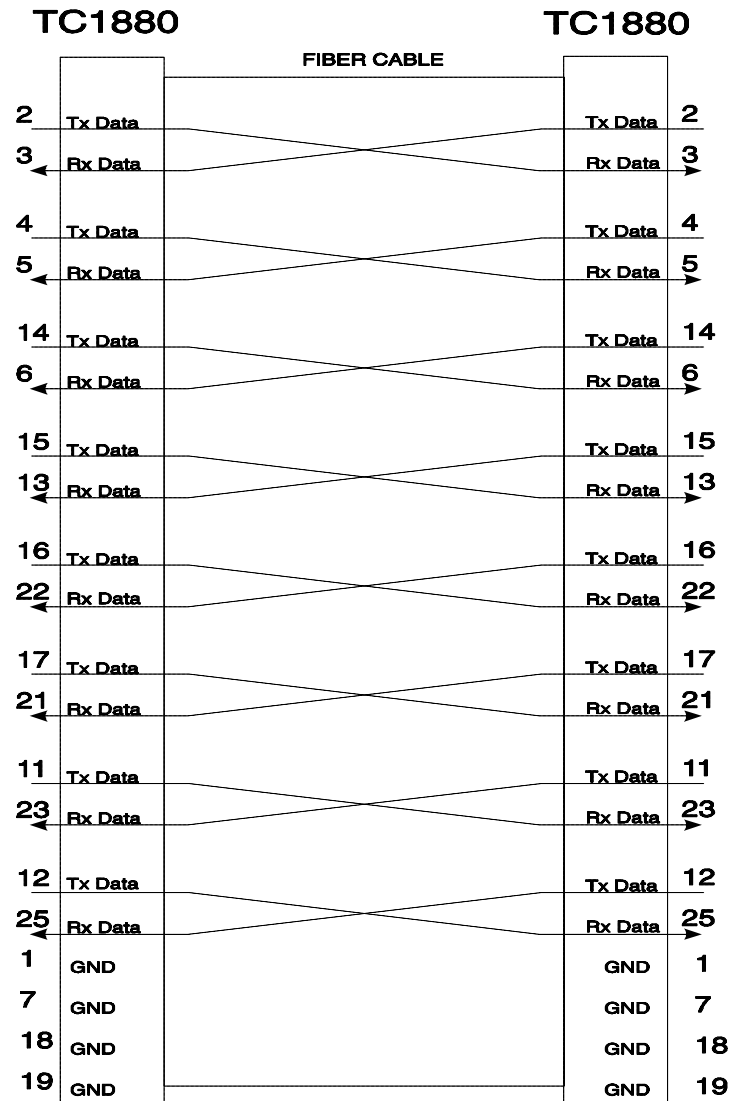
**Launch power, sensitivity & distance are listed for reference only. These numbers may vary.*

4. Power Requirements

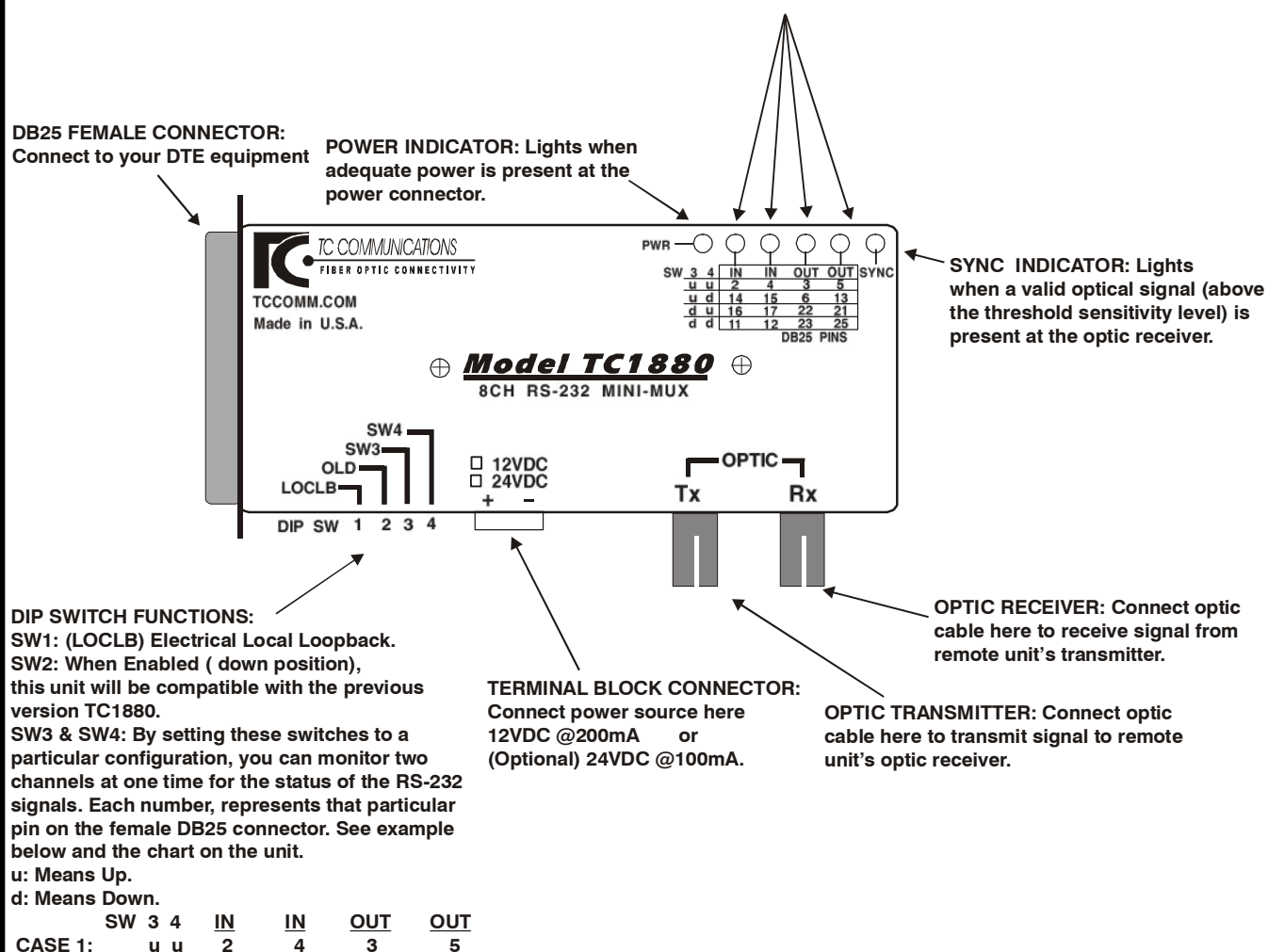
The TC1880 is designed to draw power from the power jack only and consumes very low power. The input DC voltage is 12VDC @ 200mA or (Optional 24VDC @ 100mA). Should the external power adapter need to be replaced, use one with the following specifications: 12VDC @200mA, or (optional) 24VDC @100mA, with a terminal block connector that came with the TC1880, as shown on the diagram.



TC1880 Virtual Connection & Cable Connection



LEDs, DIP Switches and Connectors



Pins 2 & 3 define CH1. Both LED's should be "ON" if Pin 2 is receiving and Pin 3 is transmitting a valid RS-232 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-232 signal.

Chapter 2

TC1881 Cable Assembly

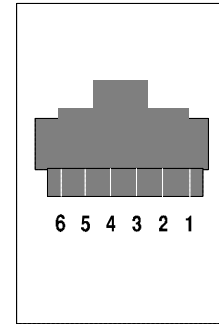
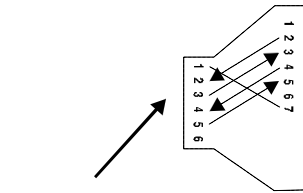
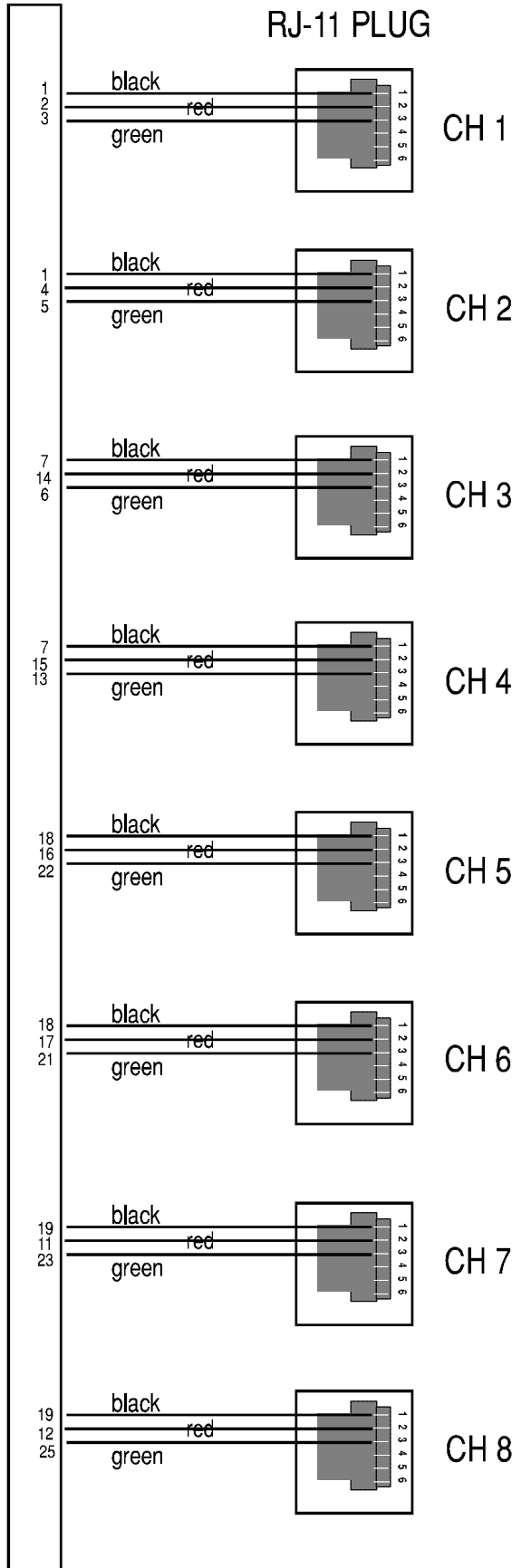
DB25 MALE

RJ-11 PLUG

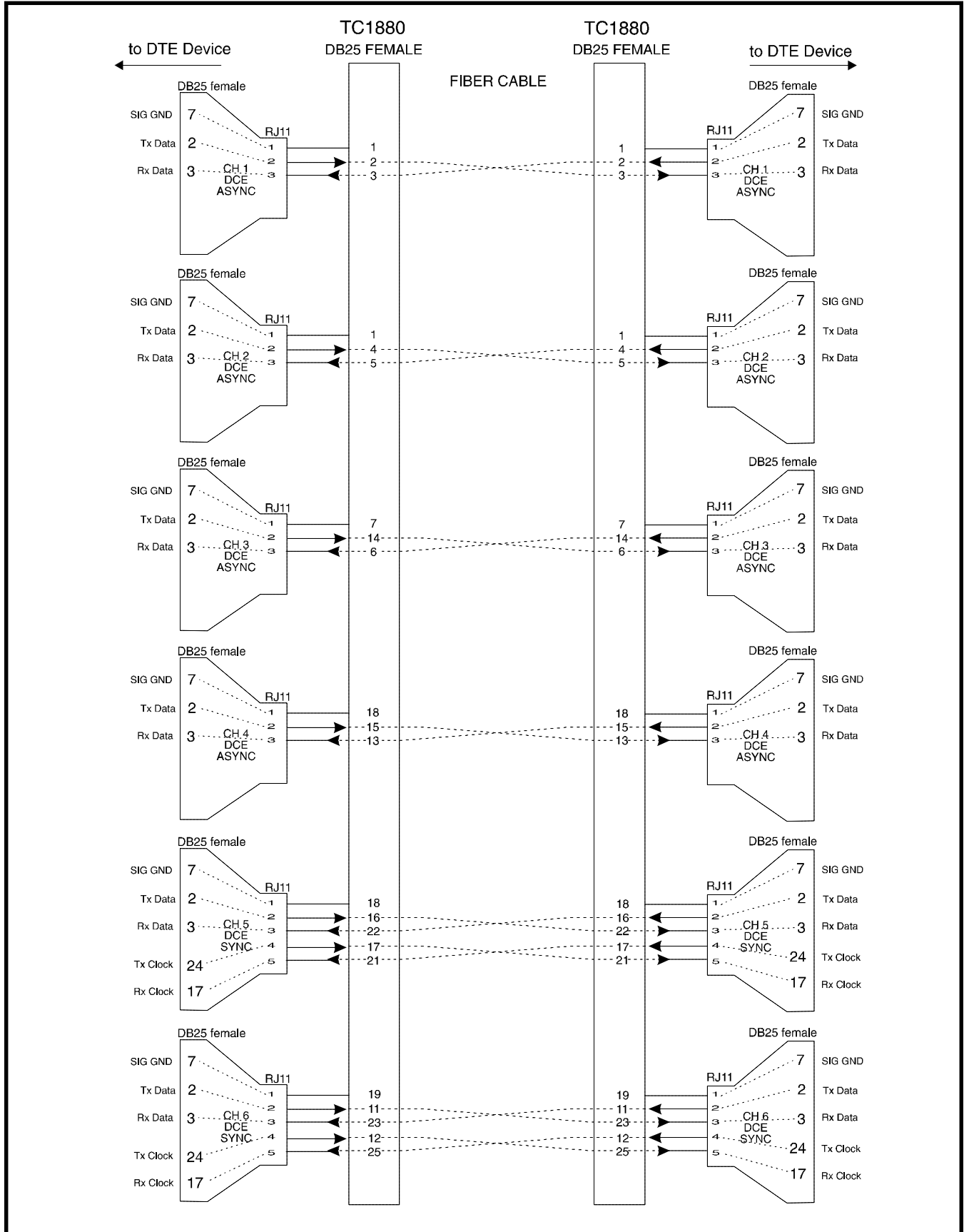
RJ-11 to DB25 female
DCE

Tx Data
Rx Data

RJ-11 JACK

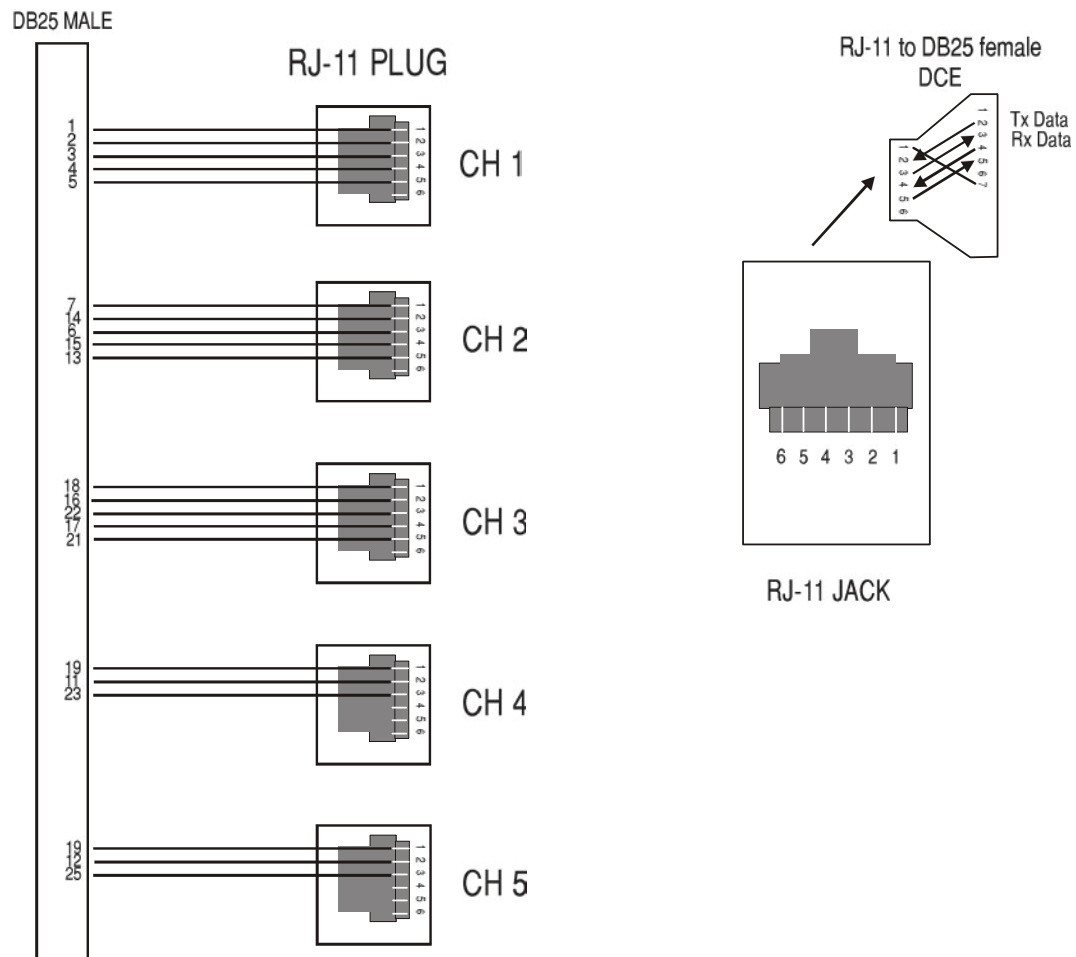


TC1882 4 CH Async & 2 CH Sync Mux DTE Device to DTE Device Virtual Circuit Connections



TC1883 Cable Assembly
3 CH Sync & 2 CH Async Mux
P/N: 600-18803-01

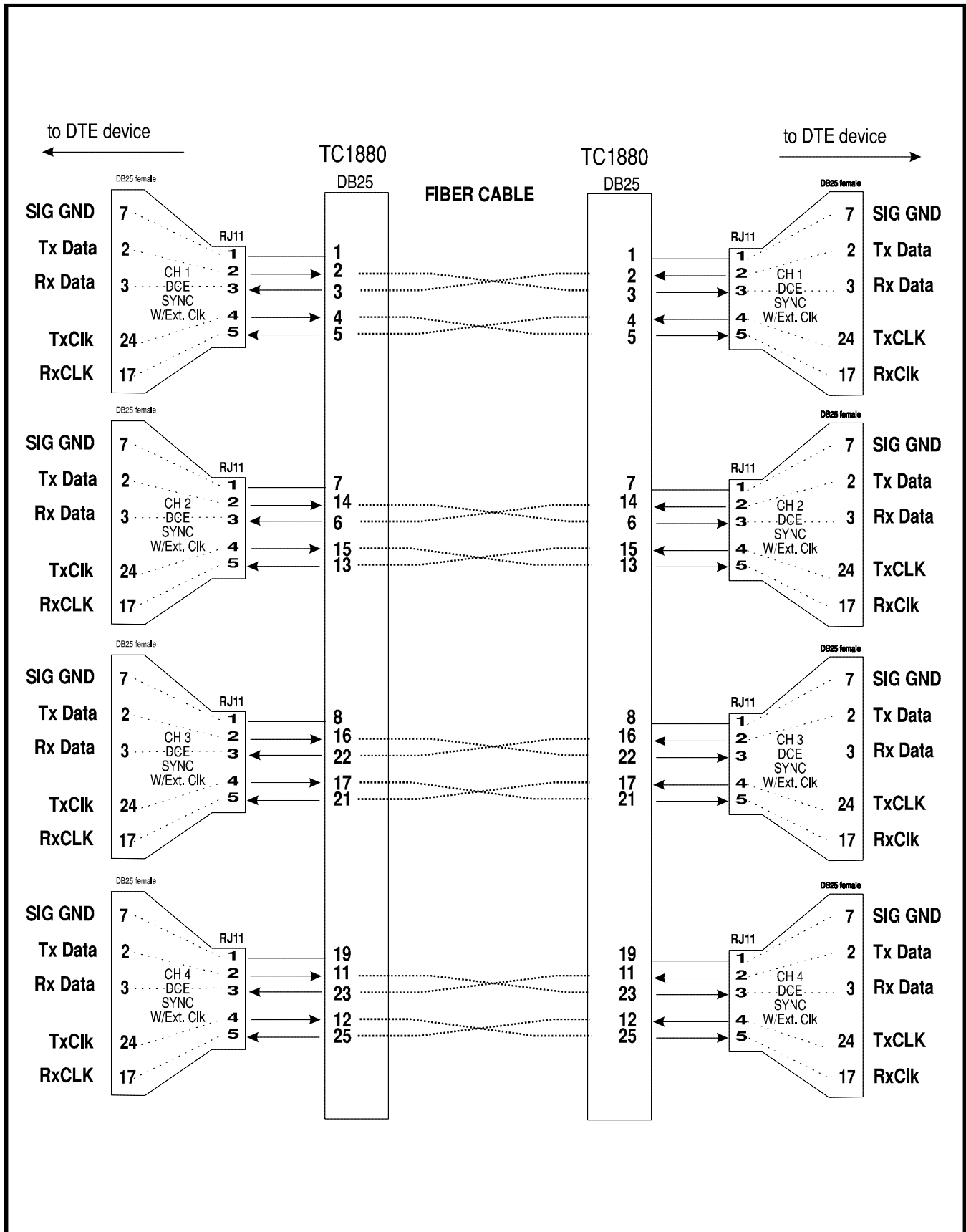
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NOTE:
 1. CABLE LENGTH: 1 FEET
 2. USE HEAT SHRINK TUBE AT DB25 END (IF IT IS POSSIBLE)
 3. PLEASE NOTE PIN NUMBER ASSIGNMENT IS OPPOSITE BETWEEN PLUG & JACK

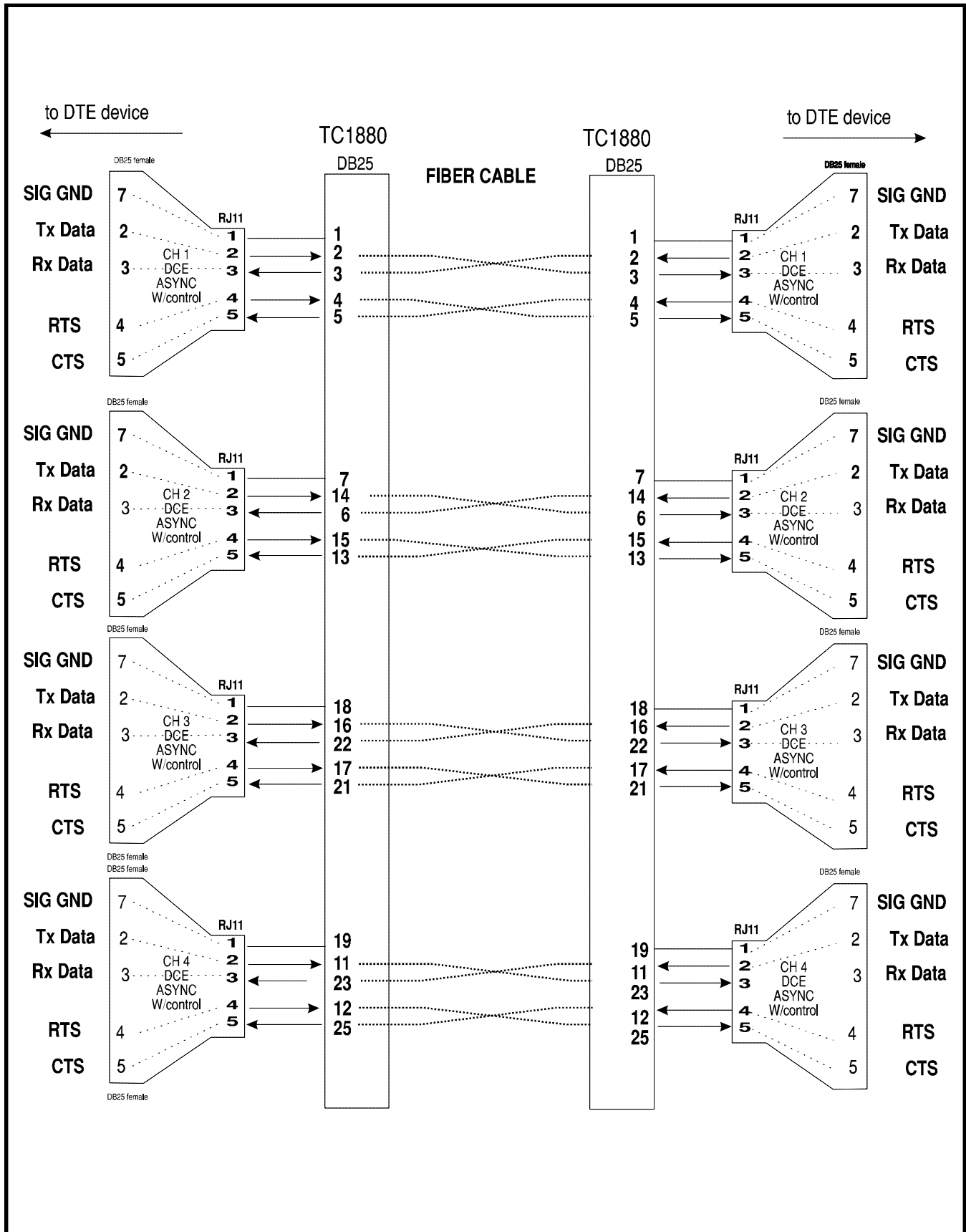
TC1884
4 CH Sync Mux with External Clock
DTE Device to DTE Device
Virtual Circuit Connections

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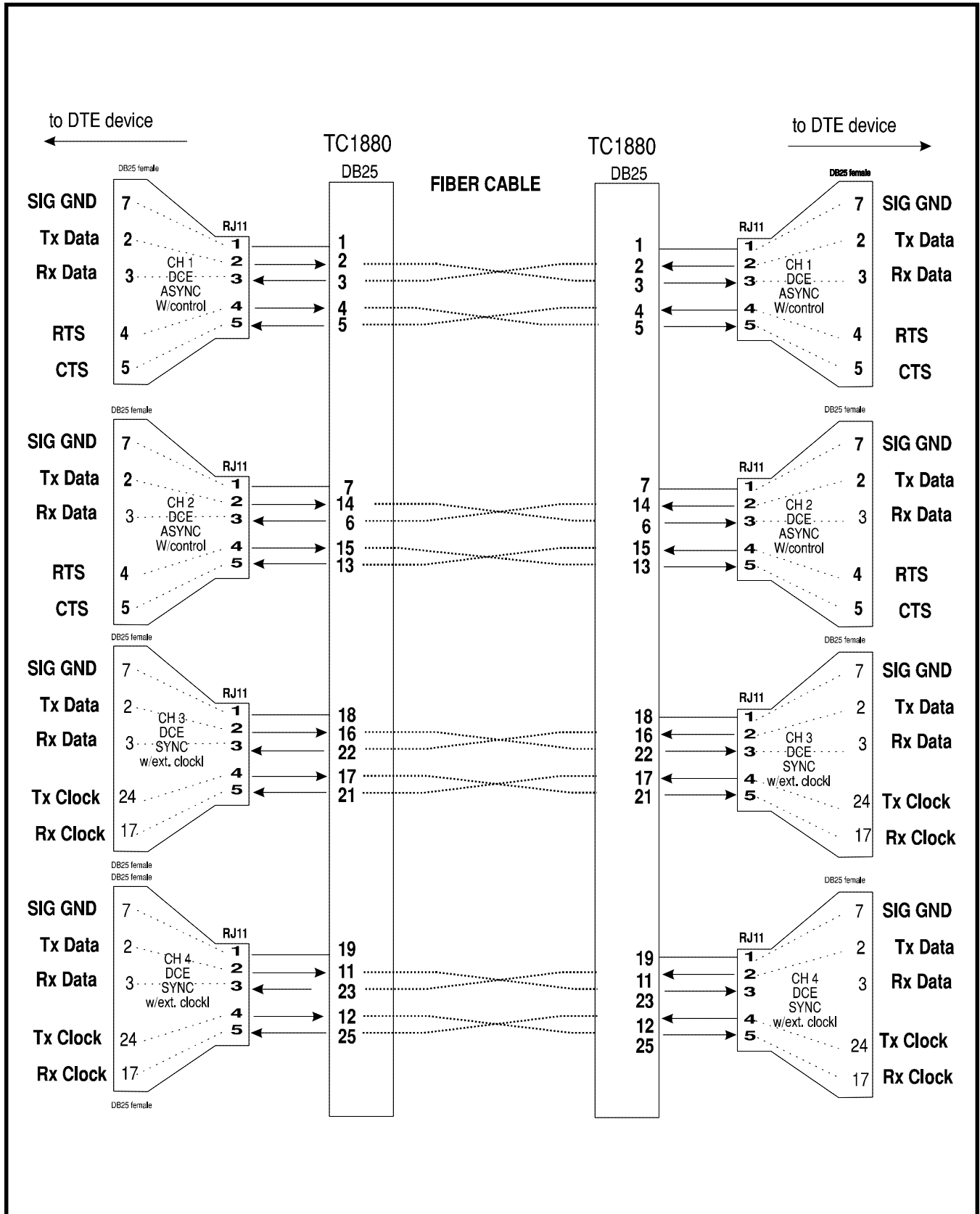


TC1885
4 CH Async Mux with Control
DTE Device to DTE Device
Virtual Circuit Connections

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TC1886 **2 CH Async Mux with Control and** **2 CH Sync Mux with External Clock** **DTE Device to DTE Device** **Virtual Circuit Connections**



RS-232 Signal Loopback Test

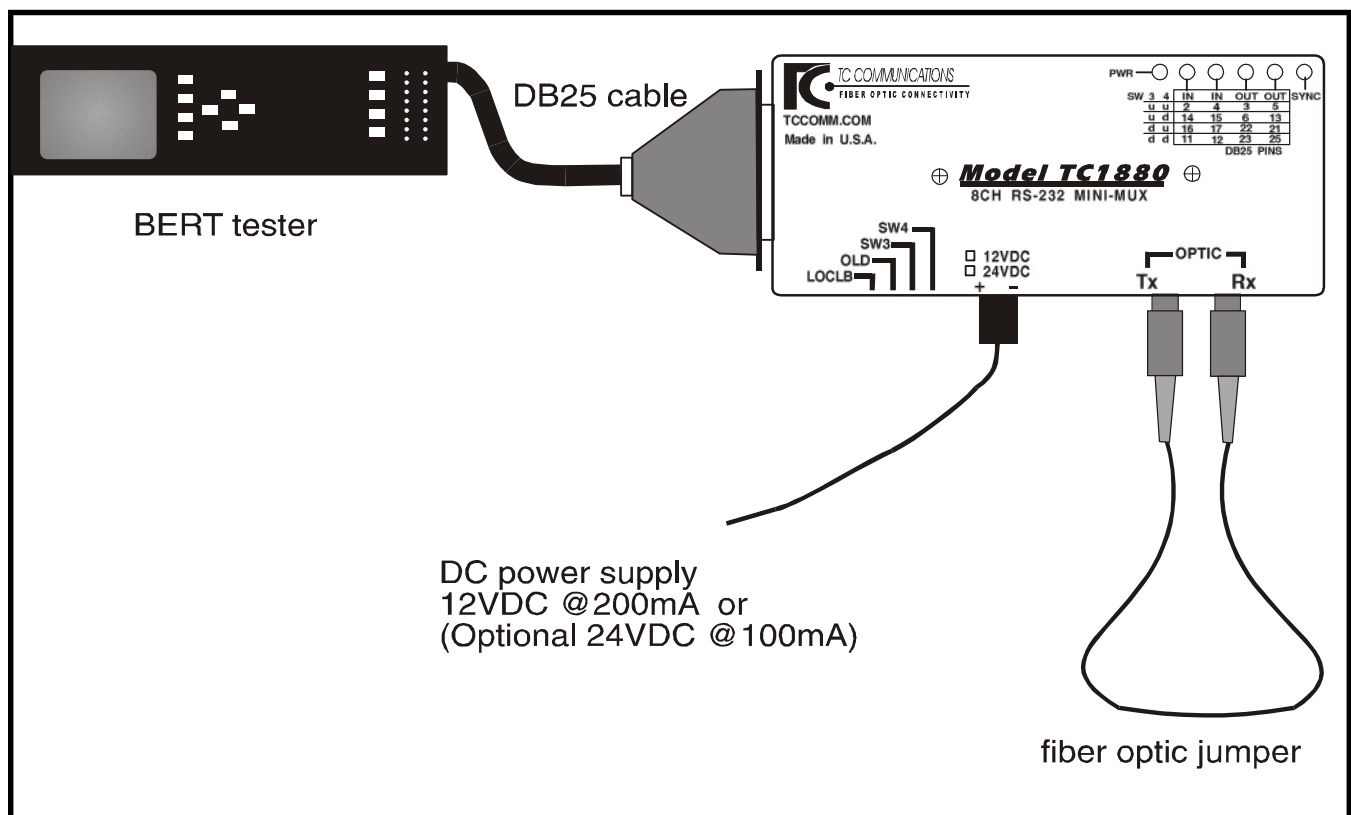
When **SW1** is in the Down position, the RS-232 input pins (2 & 4) are looped back to the output pins (3 & 5) on the DB25 connector. This function allows the user to isolate and test the electrical signal connections and transmit/receive circuitry.

Test RS-232 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 TC1880 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 TC1880's "SYNC" LED will light. The tester should indicate a "Sync" signal. Verify the TC1880'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 5), you should see the corresponding LEDs "ON".



Local Optic Loopback Test Setup Diagram

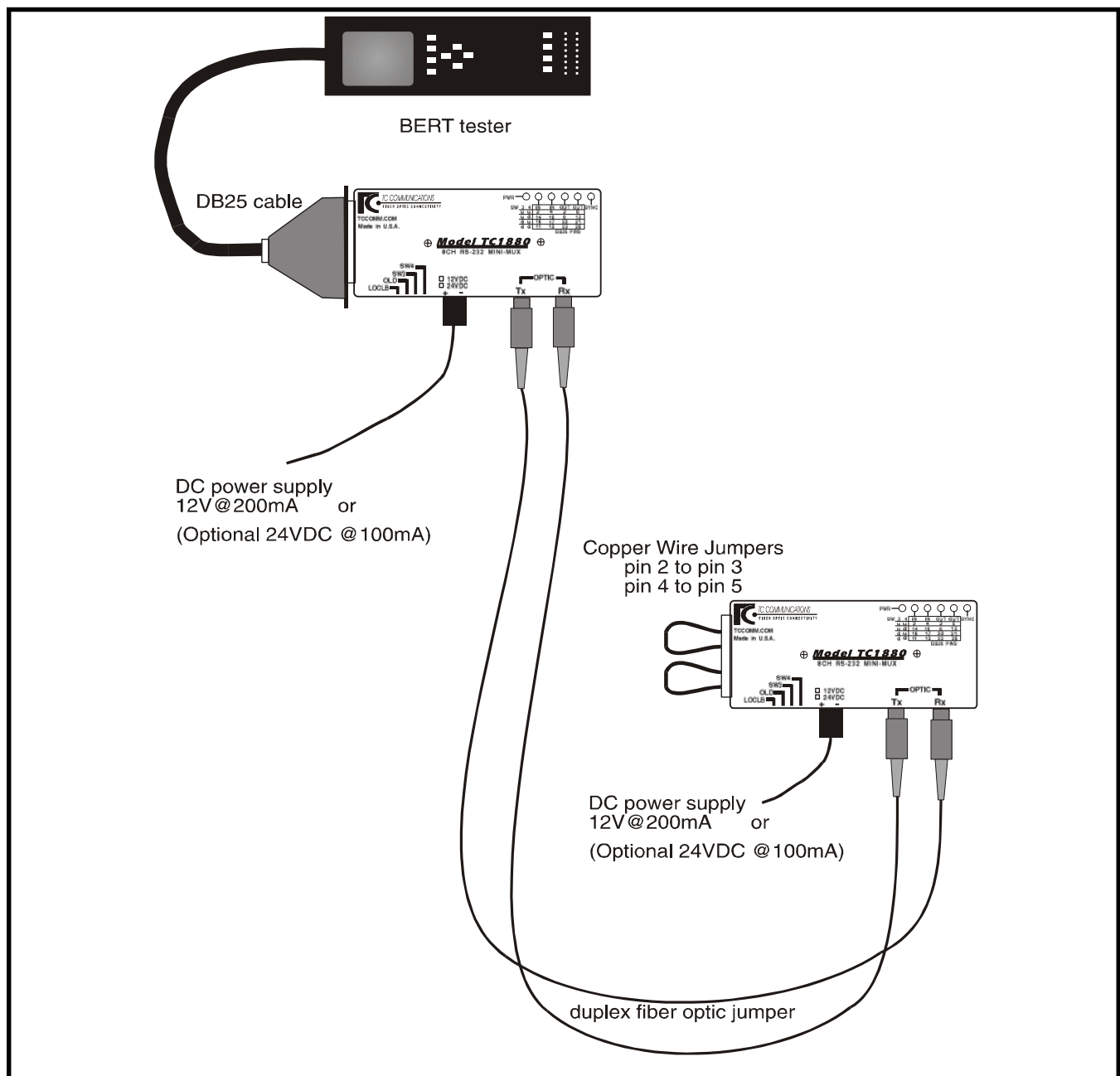
Remote Loopback Test

Set up the bench test as illustrated in the following Figure. The local TC1880 should be connected to a BERT tester. Install two copper wire jumpers at the remote TC1880's DB25 connector to form an RS-232 loopback by connecting pin 2 (TxD) to pin 3 (RxD) and pin 4 (RTS) to pin 5 (CTS).

Both TC1880's should have all their DIP switches in the Up position. The fiber cables between the TC1880'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 TC1880's "SYNC" LEDs will light (due to the loopback status). The tester should indicate a "SYNC" signal.

Verify both TC1880'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

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).