

METALLIC FACILITY TERMINAL  
4-4 WIRE TRANSMISSION UNIT (J99343BD)

SD-1C359-01

DESCRIPTION

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1. INTRODUCTION

1.01 This section describes the J99343BD 4-4 wire passive transmission unit which is part of the Metallic Facility Terminal (MFT) family of equipment.

1.02 This section is reissued for the following reasons:

- (a) To make corrections concerning the 49A and 49B attenuators in paragraph 3.02.
- (b) To incorporate component designation changes on the circuit board on the unit J99343BD-L2

Revision arrows are used to emphasize the more significant changes.

1.03 The MFT family of equipment is a standardized group of plug-in units which supply the transmission and signaling functions required with metallic facilities.

1.04 The 4-4 wire passive transmission unit (Fig. 1) is used to interface 600- or 1200-ohm facilities with 600-ohm equipment or facilities where gain and equalization functions are not required.

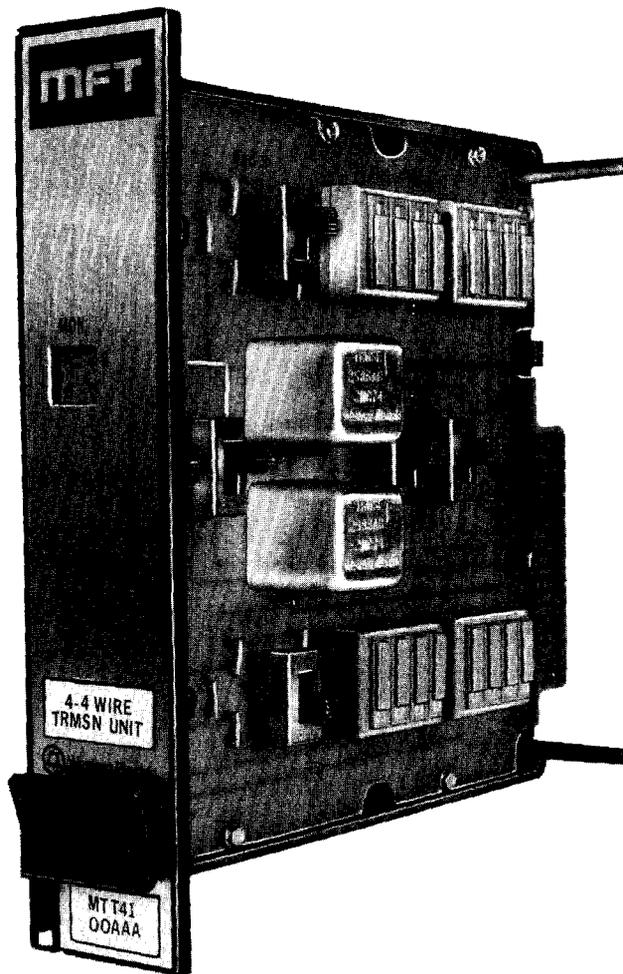


Fig. 1—J99343BD 4-4 Wire Transmission Unit

1.05 This unit performs all the functions supplied by the 4182B network (V4 family) except the 150-ohm capability on the facility side. An added feature of the J99343BD transmission unit

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## SECTION 332-912-104

is the ability to reverse the SX/SX1 leads by operating a switch.

**1.06** Basically, the J99343BD 4-4 wire transmission unit supplies:

- (a) Transmission level control—The 1000-Hz loss of the unit is adjustable from 1.0 dB to 24.5 dB in 0.1 dB increments for both directions of transmission.
- (b) The derivation of SX and SX1 leads for dc or low-frequency signaling.
- (c) Impedance matching—600 ohms on the A side to either 600 or 1200 ohms on the B side.

### 2. EQUIPMENT DESCRIPTION

**2.01** The 4-4 wire transmission unit is an MFT plug-in device with dimensions identical to the other MFT units.

**2.02** Construction consists of circuit components located on a printed wiring board mounted on a die-cast frame. Five slide switches (Fig. 2) on the printed wiring board set the necessary options and configurations. These switches are discussed in Part 3 of this section.

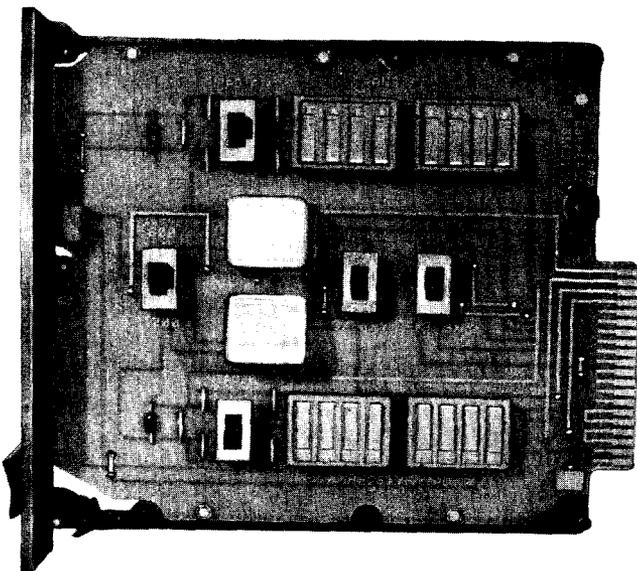


Fig. 2—J99343BD 4-4 Wire Transmission Unit Controls

**2.03** Located on the faceplate of the unit are: unit designations, high impedance monitoring jacks, and a latch for securing and removing the unit from its mounting.

**2.04** The 4-4 wire transmission unit may be installed in single- or double-module MFT mounting arrangements. When installed in double module mountings, the 4-4 wire transmission unit is inserted into the transmission unit slot. The associated signaling unit slot is used for a companion signaling unit or left vacant depending on requirements. Section 332-910-101 contains detailed information on mounting arrangements for MFT plug-ins.

**2.05** As with most other MFT plug-in units, the J99343BD has applications in the Customer Premises Facility Terminal (CPFT) equipment. CPFT is covered in Sections 332-610-100, -200, and -500.

**2.06** The two sides of the 4-4 wire transmission unit are referred to as the A and B sides (♦transmit and receive paths respectively on List 2 unit♦). The A side (600 ohms) always faces the equipment and the B side (600 or 1200 ohms) always faces the facility.

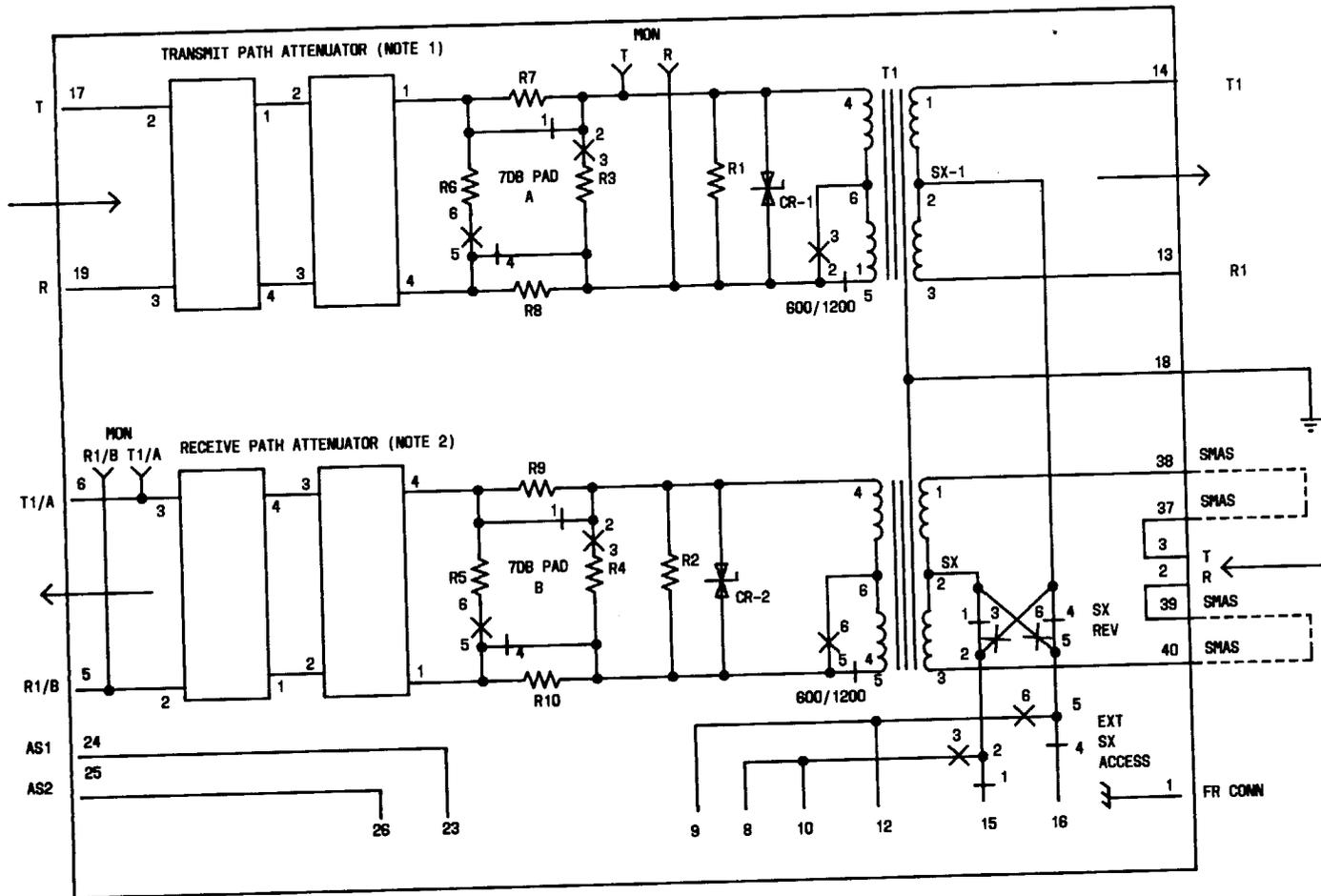
**2.07** The J99343BD 4-4 wire transmission unit, being passive, requires no power for operation.

### 3. CIRCUIT DESCRIPTION

**3.01** Figure 3 is a schematic diagram of the J99343BD transmission unit. With the exception of the placement of the MON jacks, the transmit and receive paths through the unit are identical.

**3.02** ♦The 49A and 49B attenuators are precision 600-ohm devices. The loss of each of the 49A attenuators is adjustable between 0.0 dB and 1.5 in 0.1 dB steps. The loss of each of the 49B attenuators is adjustable between 0.0 dB and 15.0 dB in 1.0 dB steps.

**3.03** The adjustment of these attenuators, designated TRANSMIT PATH ATTENUATOR and RECEIVE PATH ATTENUATOR (TRANS PAD and RECEIVE PAD on List 1 unit), is accomplished by operating switches on the attenuators to the proper position.♦ The designations associated with each switch correspond to the loss in dB that will



- NOTES:  
 1. DESIGNATED TRANS PAD ON LIST 1  
 2. DESIGNATED RECEIVE PAD ON LIST 1.

Fig. 3—J99343BD 4-4 Wire Transmission Unit Schematic Diagram

be inserted when the designation of that switch is visible (see Fig. 2).

**3.04** Located in each transmission path is a 7.0 dB pad which may be switched in or out as necessary. These pads are designated 7.0 dB (PAD A and PAD B for the transmit and receive paths respectively on List 1 unit) and may be independently switched in or out as required. The pads are in when their respective switches are operated toward the designation.

**3.05** Diodes CR1 and CR2 are included in the circuit as surge protectors. They prevent voltages greater than 17.6 volts from being propagated through the unit.

**3.06** Transformers T1 and T2 supply impedance matching (600 or 1200 ohms) on the B side and also derive SX and SX1 signaling leads.

**3.07** The B side impedance is selected by operating the 600/1200 switch to the appropriate position. The 600-ohm setting is generally used for nonloaded cable facilities and carrier system channels. The 1200-ohm setting is generally used for loaded cable facilities.

**3.08** The line side of T1 and T2 is centertapped to derive the SX and SX1 leads. The SX1 lead is derived from transformer T1 (A side transmit) and the SX lead is derived from T2 (B-side receive).

**3.09** A switch designated SX REV/NOR is included to reverse the SX and SX1 leads. This function may be necessary to properly orient the SX/SX1 leads with certain connecting circuitry or signaling units.

**3.10** The switch designated EXT SX/NOR allows the SX and SX1 leads to be connected to a companion MFT signaling unit or to be connected externally at the distributing frame. With the EXT SX switch in the NOR position, the SX/SX1 leads are connected to the MFT signaling unit via terminals 15 and 16. In the EXT SX position, the SX/SX1 leads are extended to the distributing frame as the BS1 and BS2 leads.

#### 4. REFERENCES

**4.01** The following documents contain additional information which may be helpful.

DOCUMENT	SUBJECT
CD-, SD-1C359-01	MFT Circuit
CD-, SD-1C485-01	MFT Test Extender (J99343TB)
CD-, SD-7C010-01	Customer Premises Facility Terminal (CPFT)
332-610-100	CPFT Description
332-910-100	MFT General Description
332-910-101	MFT Shelf, Frame, Power Panel, and Distributing Frame Arrangements—Description
332-910-102	MFT Test Extender—Description and Operation
332-910-180	MFT General Application Information