DATA SET 103B

TRANSMITTER-RECEIVER

DESCRIPTION AND OPERATION

1. INTRODUCTION

1.01 This section covers description and operation of data set 103B. It does not include information concerning the business machine used with the data set.

2. GENERAL

2.01 Data set 103B is designed for low-speed transmission and reception of data over a point-to-point or multistation private line network.

2.02 No provision is made for alternate voice communication.

3. DESCRIPTION

3.01 Data set 103B is composed of electronic and relay circuits and is enclosed in a two-tone gray plastic case (see Fig. 1 and 2).

3.02 Electronic circuits are arranged on plug-in printed wiring boards

3.03 A nonlocking lucite key, located on the front of the set, is used to condition data set for remote testing from a data test center. Test key is illuminated when in test mode.

3.04 Business machine connections are made through a KS-19087, List 2 connector at the rear of the set, designated CUST EQUIP. The connecting cord, equipped with a Cinch or Cannon DB-19604-432 plug, must be furnished by the customer.

3.05 A KS-19088, List 2 connector, also located at the rear of the set, is designated TEL LINE. A D25C-61 cord (5 1/2 feet long), which is equipped with a KS-19087, List 2 connector, is used to connect the private line to the data set through the TEL LINE connector.

3.06 A KS-14532, List 15 gray cord assembly (10 feet long) is used to connect the data set to a 117-volt ac 3-wire receptacle (two parallel blades and a U-shaped grounding pin).

3.07 A power cord and a D25C-61 mounting cord are furnished as part of the data set.

3.08 The data set may be arranged for three different business machine input-output options:

- EIA (bipolar voltage).
- UNI (unipolar negative voltage).
- CUR (contact closures from business machine, but 60-ma current signals to business machine).

3.09 Line, control, test, and data circuits permit simultaneous flow of data in both directions on the line (full-duplex operation). The set may be modified for a 2-loop half-duplex operation through the business machine operation when data set is arranged for the CUR option as in 3.08.

3.10 Channel transmitting levels are adjustable in 2-db steps from 0 to -14 db on the low channel and from 0 to -8 db on the high channel. Level requirements should be specified on the service order.

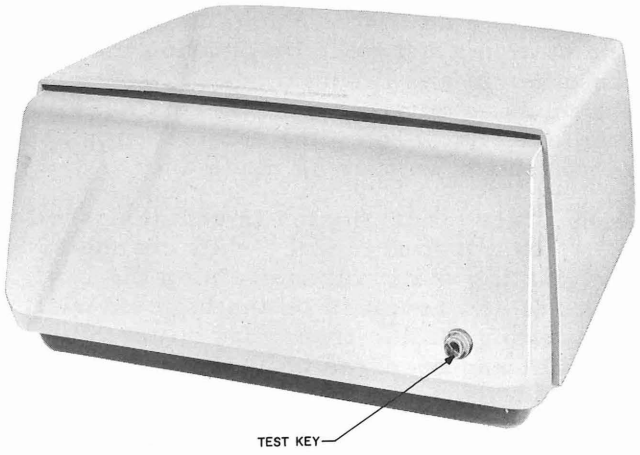

Fig. 1 - Data Set 103B

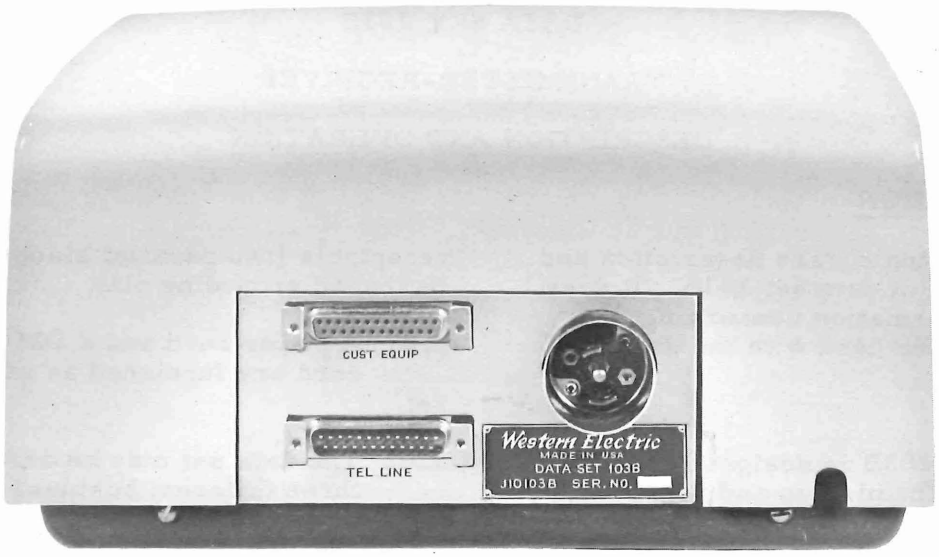

Fig. 2 - Data Set 103B, Rear View

3.11 Receive level for each frequency may be no lower than -49 dbm

4. OPERATION

4.01 For detailed operation of the data set refer to CD- and SD-1D023-01.

4.02 All functions of the data set are controlled by the business machine.

4.03 The data set converts signals from the business machine into voice-frequency tones. These frequencies are transmitted over the private line to the distant station. The receive data set converts frequencies received from the line into proper form for business machine use. Fig. 3 shows a simplified block diagram of data set 103B

4.04 To accomplish data transmission between any two stations in the system, one station must be in originating mode and the other in answering mode. Selection of the mode is controlled by the business machine. However, the data set may be modified for answering mode only.

4.05 Data transmission is accomplished over two frequency shift channels. Originating station transmits on the low channel and receives on the high channel. Answering station transmits on the high channel and receives on the low channel. Table A shows the channel frequencies.

4.06 Options are provided to hold data set output to business machine in either marking or spacing condition during absence of received carrier.

TABLE A

CHANNEL FREQUENCIES

Station Mode	Transmitted Signal	Frequency cps
Originating	mark (F_{1m})	1070
	space (F_{1s})	1270
Answering	mark (F_{2m})	2025
	space (F_{2s})	2225

4.07 For full-duplex operation the customer connects the DX to the -20 volt lead. For half-duplex operation the customer connects the DX to the SD lead.

4.08 A test key is provided to permit remote testing of the data set from a data test center. When in test mode, the data test center can make loop back tests on data set.

4.09 The LO relay, under control of the business machine, connects data set send data (SD) lead to the receive data (RD1) lead. This permits business machine attendant to test the business machine.

4.10 During the test or local mode, as described in 4.08 and 4.09, INTERLOCK lead is off. This indicates to the business machine that the data set is not in a position to transmit data.

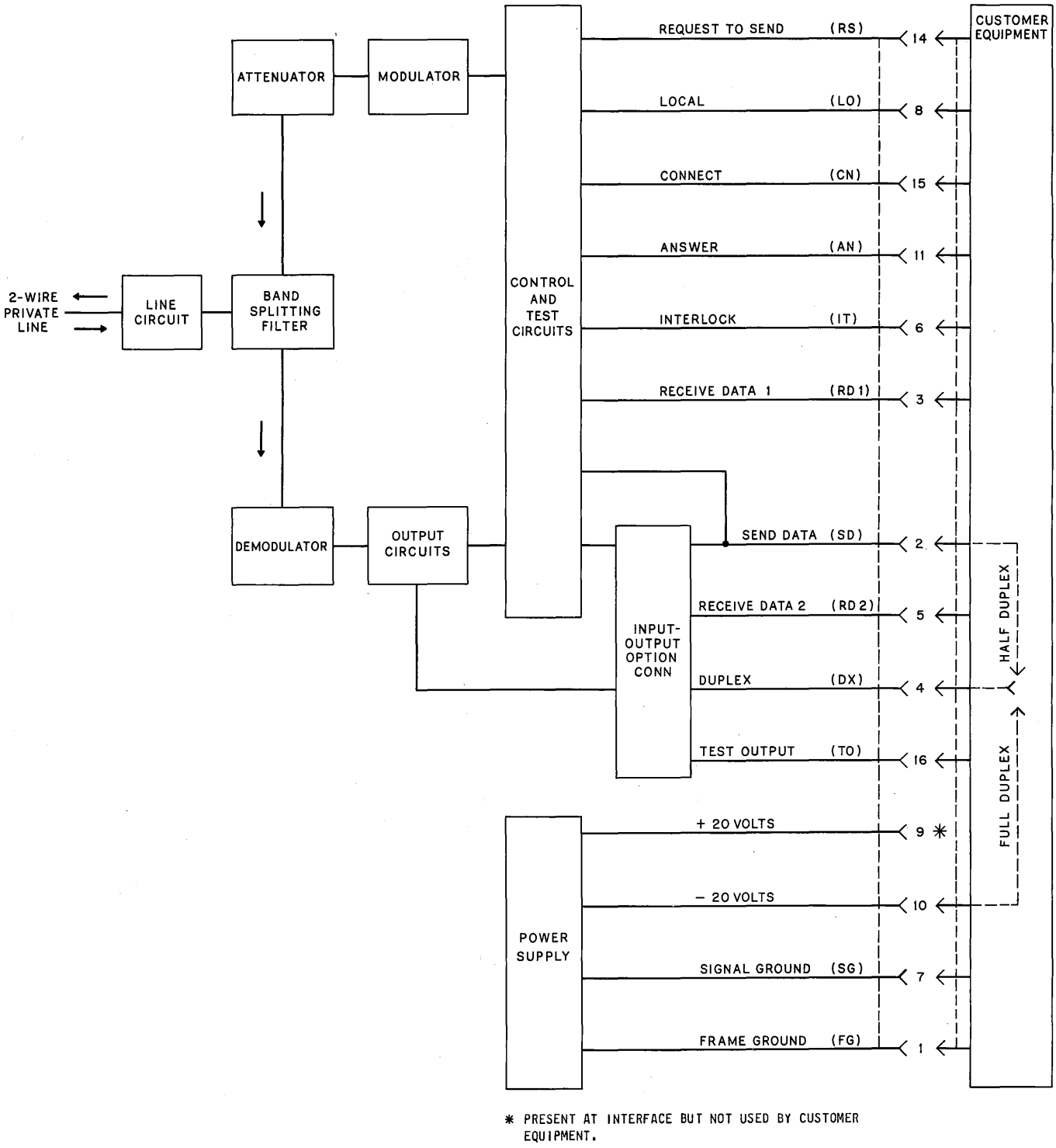

Fig. 3 - Data Set 103B, Block Diagram