1A TRANSACTION TELEPHONE
TEST LINE STATION
DESCRIPTION

CONTENTS PAGE

1. GENERAL

1.01 This section covers the physical and functional descriptions of the 1A TRANSACTION telephone test line station (1A TTTLS) shown in Fig. 1.

1.02 This section is reissued to add minor clarifications and to note that the 1A TTTLS can be equipped with all three types of 806E data auxiliary sets (thereby making it suitable to test TRANSACTION telephone sets I, II and II with printer). Since this reissue constitutes a general revision, change arrows ordinarily used to denote changes have been omitted.

1.03 The purpose of the 1A TTTLS is to provide an automatic facility to remotely verify the operation of TRANSACTION telephone sets which are used on the switched telecommunications network.

1.04 The 1A TTTLS can provide up to two TRANSACTION telephone test lines. Each test line consists of a data set 407A-type and a data auxiliary set (DAS) 806E-type.

1.05 The 41B2 data housing is used to mount the test lines and the necessary power units (101A and 210A types).

1.06 The 1A TTTLS may be housed in a KS-20018-L12-type cabinet, or equivalent, or any mounting rack arrangement that will accept the 23-inch 41B2 data mounting.

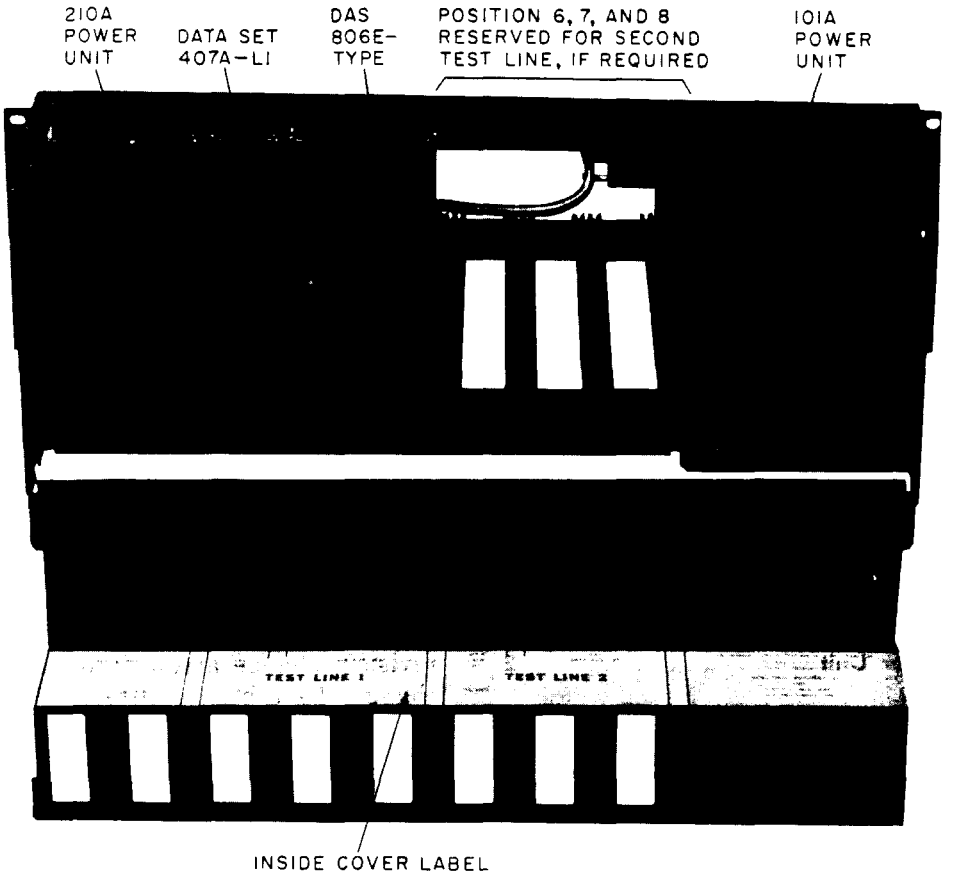

Fig. 1— 1A TTTLS—One Test Line Installed

2. PHYSICAL DESCRIPTION

A. General

2.01 This part covers a general description of the physical appearance, along with the power requirements of components which make up the 1A TTTLS.

B. Cabinet

2.02 If the 1A TTTLS is to be installed in a KS-20018-L12-type cabinet, refer to the section entitled Data Sets—Multiple Installation Information (590-010-201) for detailed descriptive information of the cabinet.

C. 41B2 Data Mounting

2.03 The data mounting is approximately 23 inches wide, 8-2/3 inches high, 16-1/2 inches deep and, with only the 101A power unit installed, weighs approximately 38 pounds. The data mounting provides mounting space for the 101A and 210A power units, two data sets 407A-type, and two DASs 806E-type.

2.04 The 101A power unit (Fig. 2) is supplied with the 41B2 data mounting, although they may be shipped in separate cartons. The data mounting is also supplied with a P3BJ power cord which consists of a Hubbel twist-lock receptacle and a 3-prong male plug. The power source (nominal 117 volt 60 Hz) must be individually fused to provide 100 watts.

2.05 For further information on the 41B2 data mounting, refer to the section entitled 41-Type Data Mounting—Identification (590-102-132).

D. 101A Power Unit

2.06 The 101A power unit furnishes dc power (+12, -12, and +5 volts) for the data sets

Fig. 2—101A Power Unit

and provides a grounded receptacle which is used to connect ac power to the 210A power unit.

E. 210A Power Unit

2.07 The power unit (Fig. 3) consists of a printed wiring board, discrete circuitry, two power supplies, and associated hardware. Printed wiring board terminals are located on the rear of the power unit, enabling it to plug into the 41B2 data mounting. The power unit is approximately 8 inches high, 12 inches deep, 3 inches wide, and weighs 6 pounds.

2.08 The power unit furnishes -9 and -12 dc voltages for the DAS. The 210A power unit is mounted in positions 1 and 2 of the data mounting. It is equipped with an 18-inch power cord consisting of a Hubbel twist-lock receptacle on one end (which connects to the back of the 210A power unit) and a 3-prong male plug on the other end (which connects to the receptacle on the 101A power unit).

F. Data Set 407A-Type

2.09 The data set consists of two printed wiring circuit packs (CPs), JU1 and JU2. These CPs are sandwiched together with the printed wiring sides out (see Fig. 4). An 840308019, 25-pin connector is located on the front of the data set and provides the interface with the DAS. Printed wiring board terminals are located on the rear of the data set, enabling it to plug into the data mounting. The data set for test line 1 is mounted in position 3 of the data mounting, while the data set for test line 2 is mounted in position 6.

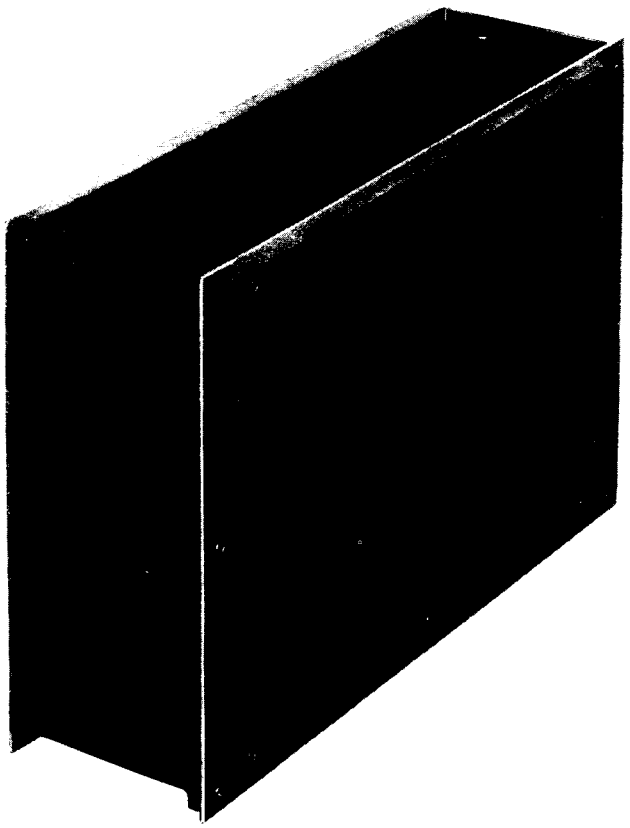

Fig. 3—210A Power Unit

2.10 The data set 407A-type is approximately 8 inches high, 12 inches deep, 1-1/2 inches wide, weighs approximately 2-1/2 pounds, and requires power sources of +12, -12, and +5 Vdc.

G. DAS 806E-Type

2.11 The DAS (Fig. 5) consists of a printed wiring board, two microprocessor boards, and various hardware. An 840308019, 25-pin connector is located on the front of the DAS and provides interface with the data set. Printed wiring board terminals are located on the rear of the DAS, enabling it to plug into the data mounting. The DAS for test line 1 is mounted in positions 4 and 5 of the data mounting, while the DAS for test line 2 is mounted in positions 7 and 8.

2.13 The DAS is approximately 8 inches high, 12 inches deep, 3 inches wide, and weighs approximately 2-1/2 pounds. The DAS requires power sources of +12, -12, +5, and -9 Vdc.

3. FUNCTIONAL DESCRIPTION

A. General

3.01 This part covers the functions of data set 407A-type and DAS 806E-type when used in the 1A TTTLS.

3.02 A functional block diagram of a 1A TTTLS with two test lines is shown in Fig. 6.

B. Data Set 407A-Type

3.03 The data set is functionally, as well as physically, divided into two halves; a line control and interface CP (JU1) and a receiver CP (JU2).

3.04 JU1 can be matched to either a 600-ohm private line or a 900-ohm direct distance dialing (DDD) line by strapping the appropriate option on the JU1 CP. Option strapping is specified in CD-1D240-01. When used in the 1A TTTLS, the JU1 CP also provides the following:

- Automatic answer
- Return to data
- Tone answer-back.

3.05 The hybrid network in JU1 allows detection of valid data signals while the data set is transmitting tone answer-back.

3.06 JU2 accepts the 2-out-of-8 TOUCH-TONE® transmission code. The transmission code consists of two groups of frequencies, a low group and a high group, each containing four frequencies. The frequencies are grouped and designated as shown in Fig. 7. The TOUCH-TONE signals are detected at the rate of ten characters per second. A character consists of one frequency from each group shown in Fig. 7. Therefore, the 2-out-of-8 code provides 16 different frequency pairs (characters). Data set 407A-type recognizes all of these characters.

C. Indicator LEDS

3.07 Seven status LEDs are provided on the front of the data set as shown in Fig. 4. The names and functions of the LEDs are defined as follows.

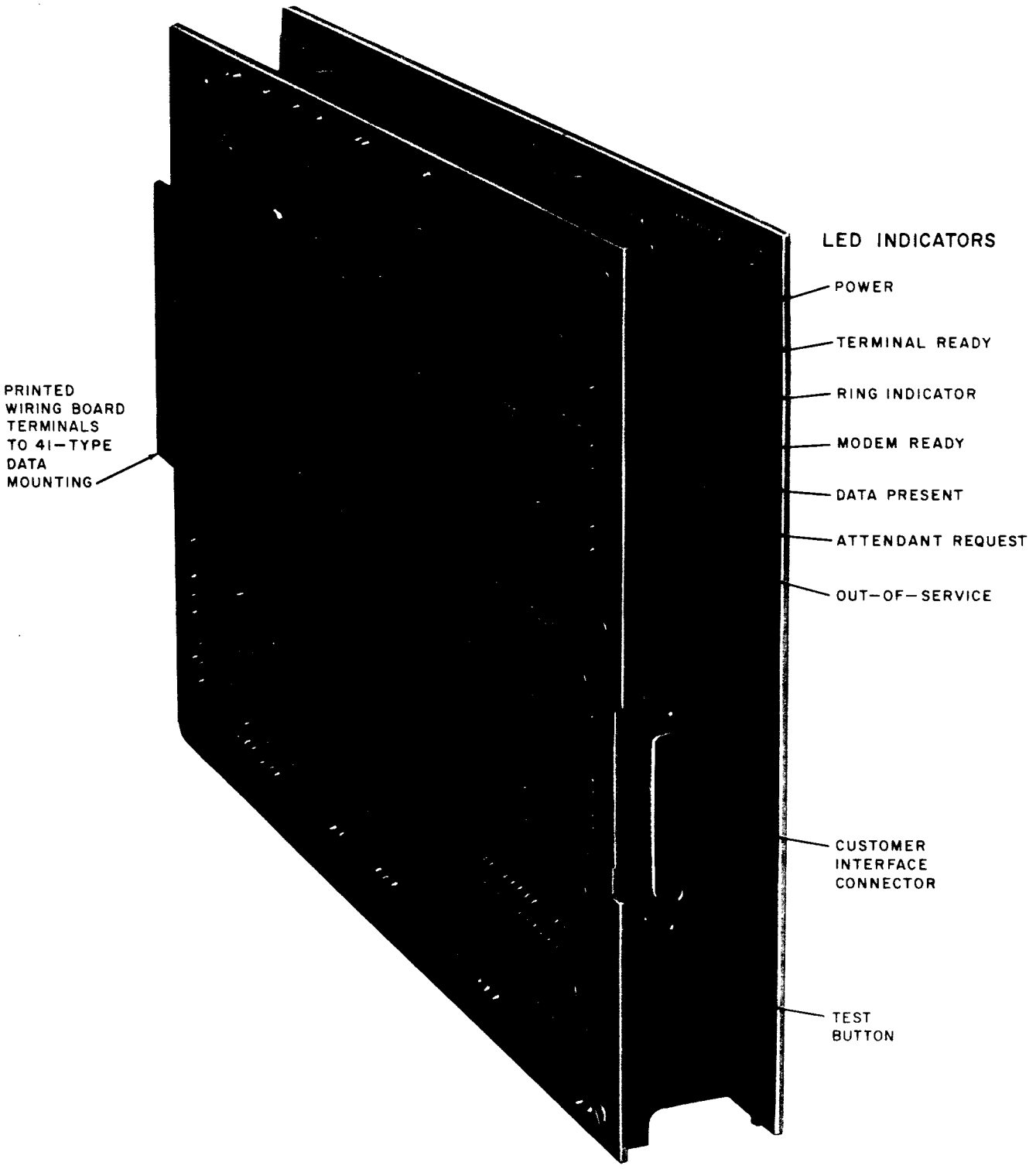

Fig. 4—Data Set 407A-Type

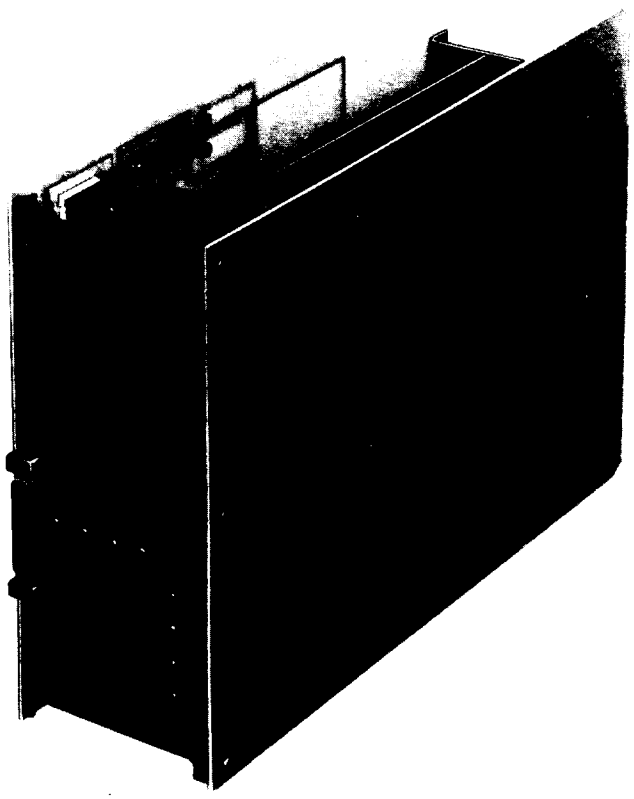

Fig. 5—Data Auxiliary Set 806E-Type

- The "ON" LED indicates that power is applied to the data set.

- The terminal ready (TR) LED indicates the status of the data-terminal-ready signal from the DAS interface.

- The ring indicator (RI) LED indicates that ringing is being applied to the data set.

- The modem ready (MR) LED indicates the status of the data-set-ready signal to the DAS interface. This LED comes on 3 seconds after ringing is tripped, if the station is in the data mode and TR is on. Once it comes on, it stays on until termination of the call.

- The data present (DP) LED indicates the status of the data-present signal to the DAS interface. This signal (DP LED ON) indicates the data set is receiving data.

- The attendant request (AR) LED indicates an attendant request from the TRANSACTION telephone set.

- The out-of-service (OS) LED indicates that the data set has been placed out of service.

3.08 The data set detects ringing current on its associated line circuit and generates a ring indicator (RI) signal to the DAS interface. Since the DAS is always ready to receive data (DTR turned on), the line control circuit will answer the call automatically and then sense dc loop current. A 2025-Hz answer tone is then transmitted for about 3 seconds to the calling station, indicating the call has been answered. The DSR lead is turned on, indicating the data set has been connected to the line. After the answering sequence is over, the call will be terminated when the loop current is interrupted.

D. DAS 806E-Type

3.09 The DAS consists of an interface CP(JU4), a central processor unit (CPU) CP, and a programmable read-only memory (PROM) CP.

3.10 JU4 provides the interface circuitry between the data set and the CPU via the 840308019, 25-pin connector. JU4 also provides eight LEDs mounted on the faceplate of the DAS. These LEDs light in response to the 2-out-of-8 transmission code received from data set 407A-type.

3.11 The CPU determines if the data received by the data set from the TRANSACTION telephone corresponds to that expected. It does this by comparing the data received with the data stored in the PROM. The CPU also controls the transmission of 2025-Hz tone and data to the TRANSACTION telephone. Once the CPU has determined that the data received corresponds with the data expected, the DAS 806E-type signals the TRANSACTION telephone (using the 3-second 2025-Hz answer tone via the data set) that the TRANSACTION telephone is operating properly.

3.12 If a wrong character is received, or if the attendant at the TRANSACTION telephone waits longer than 10 seconds (20 seconds for 806E-3) to input the next character in a sequence, the DAS will transmit an interrupted tone to the TRANSACTION telephone and disconnect.

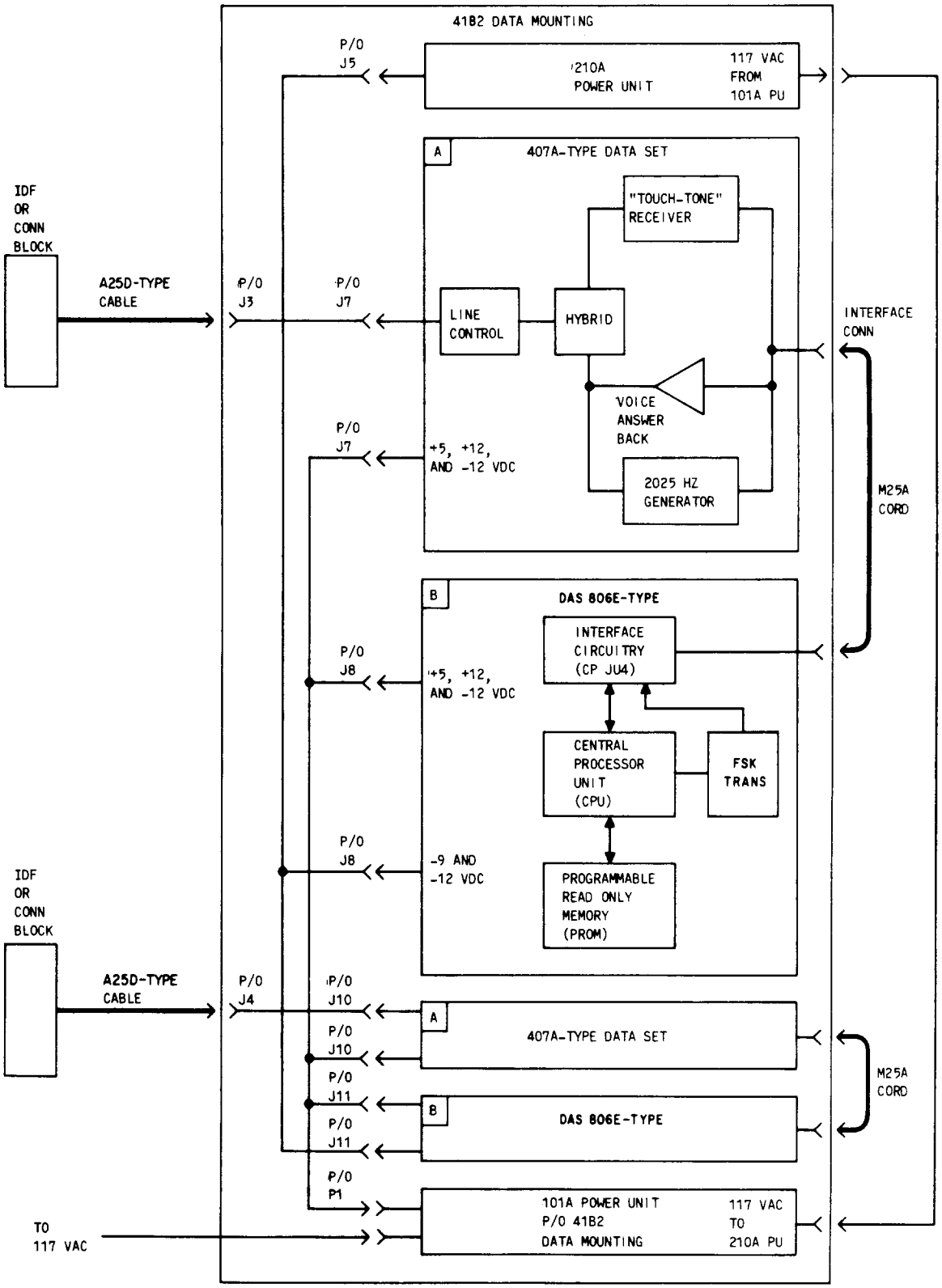

Fig. 6— Functional Arrangement—1A TTTLS—Typical

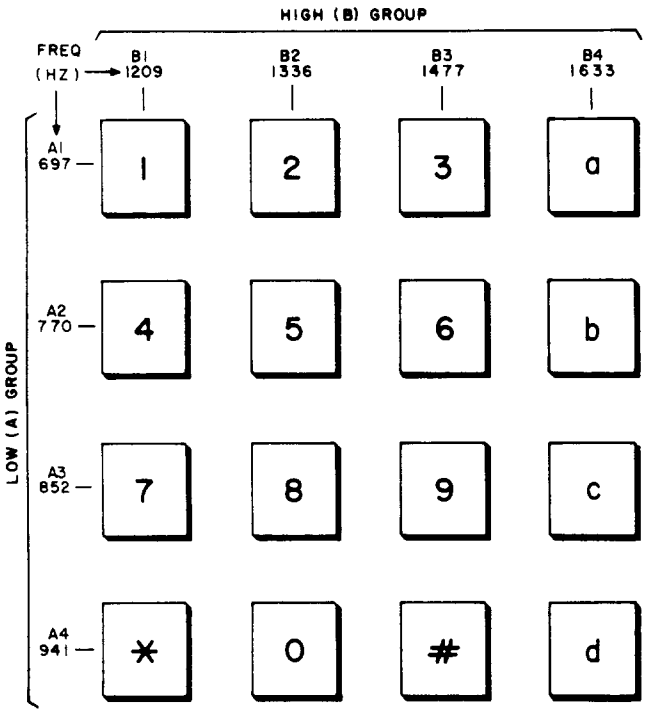

Fig. 7—TOUCH-TONE Button Designations and Frequency Assignments When Used With the 1A TTTLS

4. OPTIONS

A. Data Set 407A-Type

4.01 Option strapping is done by means of small 2-pronged plugs which fit into numbered jacks on the JU1 CP. Options for data set 407A-type that are pertinent when used with the 1A TTTLS are listed in Table A.

B. 101A Power Unit

4.02 Option HH (frame ground connected to signal ground) is installed on the rear of the 101A power unit. This factory-installed option is always used in the 1A TTTLS and must be installed.

TABLE A

1A TTTLS OPTIONS

FEATURE OR OPTION TO BE INSTALLED		WIRING OPTION	INSTALLATION PROCEDURE
			INSTALL RED STRAPS ON DATA SET 407A-L1
Switched network		A	E34 - E32, E37 - E38, E42 - E41
Without ACD		C	E28 - E26 E30 - E29
Contact interface		J	E49 - E47, E51 - E50
Answer back level 407A 407A-L1A	- 3 dBm	E	E54 - E56, E60 - E58
	- 7 dBm	F	E54 - E53, E60 - E59
	-12 dBm	G	E54 - E55, E60 - E61
Answer back level 407A-L1B	- 5 dBm		E54 - E56 E58 - E60
	- 7 dBm		E54 - E55 E60 - E61
	- 9 dBm		E53 - E54 E59 - E60
	-11 dBm		E54 - E92 E60 - E25
			INSTALL STRAP ON 101A POWER UNIT
Frame ground connected to signal ground		HH	E16 to E17

5. REFERENCES

5.01 The following documents pertain to the 1A TTTLS:

NUMBER	TITLE
SD-&CD-1D240-01	407-Type Data Station
SD-&CD-1D241-01	Power Unit 101A
SD-&CD-1D262-01	1A TRANSACTION Telephone Test Line Station Using Data Auxiliary Set 806E-Type

SECTION	TITLE
314-811-200	1A TRANSACTION Telephone Test Line Station—Installation and Connections
314-811-500	1A TRANSACTION Telephone Test Line Station—Maintenance and Tests
590-102-132	41-Type Data Mounting—Identification
594-030-100	Data Set 407-Type—Identification
598-087-100	DAS 806E1 and 210A Power Unit—Identification.