

DATA SET 404A

TRANSMITTER-RECEIVER

IDENTIFICATION AND OPERATION

1. GENERAL

1.01 This section contains information on the identification and operation of Data Set 404A. Information concerning the associated business machine or telephone equipment is not included.

1.02 Data Set 404A provides low-speed, parallel transmit and receive data service. It is used on 4-wire private line systems to automatically transmit and receive multifrequency signals for dialing and controlling purposes.

1.03 This section is reissued to change information concerning the data set power supply.

1.04 For detailed information on Data Set 404A, refer to SD- and CD-1D055-01 and the section entitled Data Set 404A, Theory of Operation and Supplementary Information (594-021-150).

2. IDENTIFICATION

2.01 Data Set 404A consists of 14 printed circuit boards, 21 relays, 10 dry reed relays, and a 637B filter network. Refer to Fig. 1 for the locations of these major components.

2.02 Frequencies generated by the two transmit oscillators are shown in Table A. The relay which drives the oscillator for that particular frequency is also shown. The two rest frequencies are generated in the absence of data contacts. The U relay must operate for all frequencies in order to allow the signal to appear on the telephone transmit line.

2.03 A valid character consists of one frequency from each group transmitted simultaneously. Data Set 404A can transmit or receive as many as ten characters per second. Rest frequencies are not used in any of the frequency combinations; therefore, 16 frequency combinations are available as valid signals.

2.04 The following four options are available for the amplification of the signal which is to be presented to the line:

- Z — 0 dBm signal
- Y — -3 dBm signal
- X — -6 dBm signal
- No strap — -9 dBm signal

Note: Option Z is factory-wired.

2.05 The following two options are available for the attenuation of the receiver input signal:

- W—10 dBm attenuation
- V—no attenuation

Note: Option W is factory-wired.

2.06 Two 48A Power Supplies are provided as part of Data Set 404A. These power supplies are provided to convert the 105- to 130-volt, 60-Hz ac power into two regulated 18-volt dc outputs. Each output provides ground, -18 volts, and +18 volts. Data Set 404A provides the business machine with +6 volts and a ground which, after certain functions within the business machine, are returned to the data set for operation of the relays. Both power supplies have floating grounds which are tied together. The chassis ground will be provided by a strap for installation testing of the data set, but this strap must be removed before placing the data set in operation.

2.07 Facilities are provided for performing a local and remote installation test of the data set under the control of the S1 switch. With the S1 switch in the REMOTE position, a dynamic test and a static test are possible. When the set is in the remote test mode, the output of the receiver

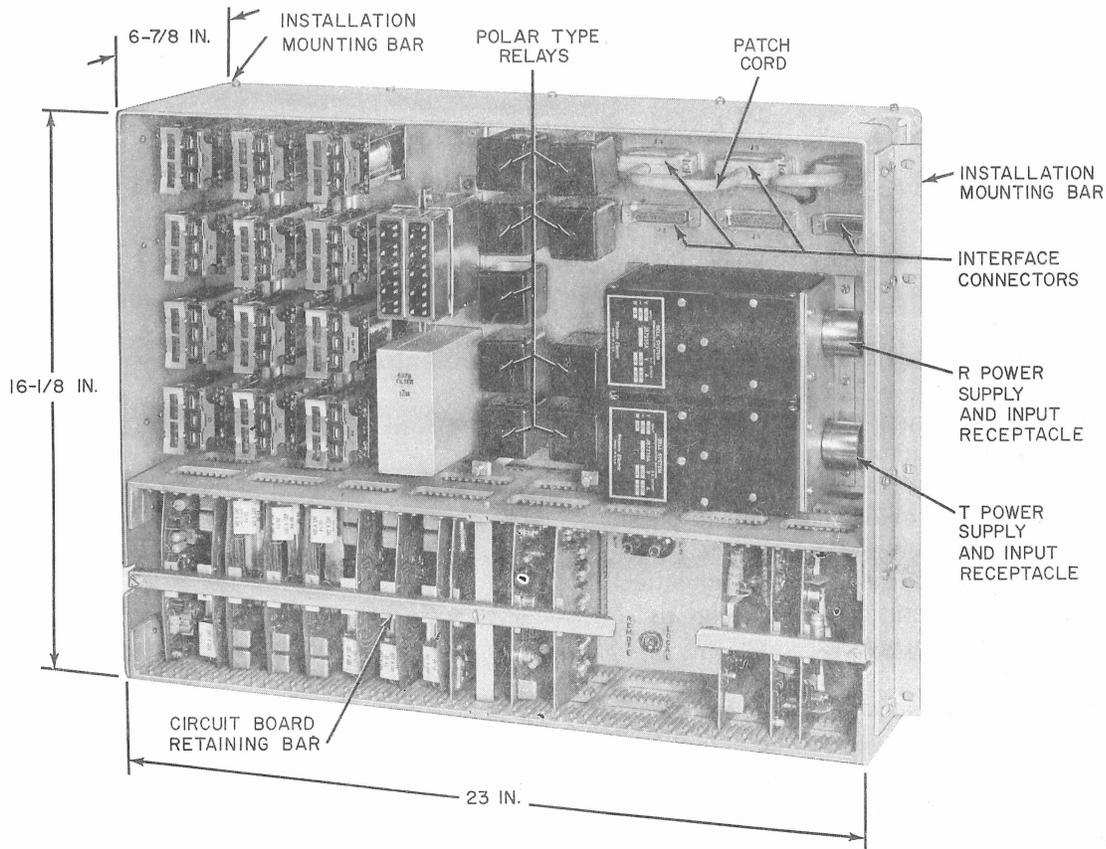


Fig. 1—Data Set 404A, Front View

is looped to the input of the transmitter. The Data Test Center (DTC) sends valid signals to the data set and checks the tones being transmitted.

2.08 In the dynamic test mode, the transmitter sends tones of 50-millisecond duration regardless of the duration of the tones sent by the DTC. In the static test mode, tones transmitted by the data set will be equal in duration to the tones sent by the DTC. A frequency of 2050 Hz is sent with a valid data signal by the DTC in order to place the data set in the static test mode.

2.09 For further testing information, refer to the section entitled 904E-Type Data Test Center—Test Procedure—Data Set 404A—Loop-Back Test (668-204-500).

2.10 Data Set 404A weighs 53 pounds. Refer to Fig. 2 for a rear view of the set.

TABLE A
FREQUENCIES AND THEIR OSCILLATOR DRIVERS

LOW GROUP		HIGH GROUP	
FREQUENCY (HZ)	RELAY	FREQUENCY (HZ)	RELAY
600	(Rest)	1098	(Rest)
697	L'	1209	P'
770	M'	1336	Q'
852	N'	1477	R'
941	O'	1633	S'

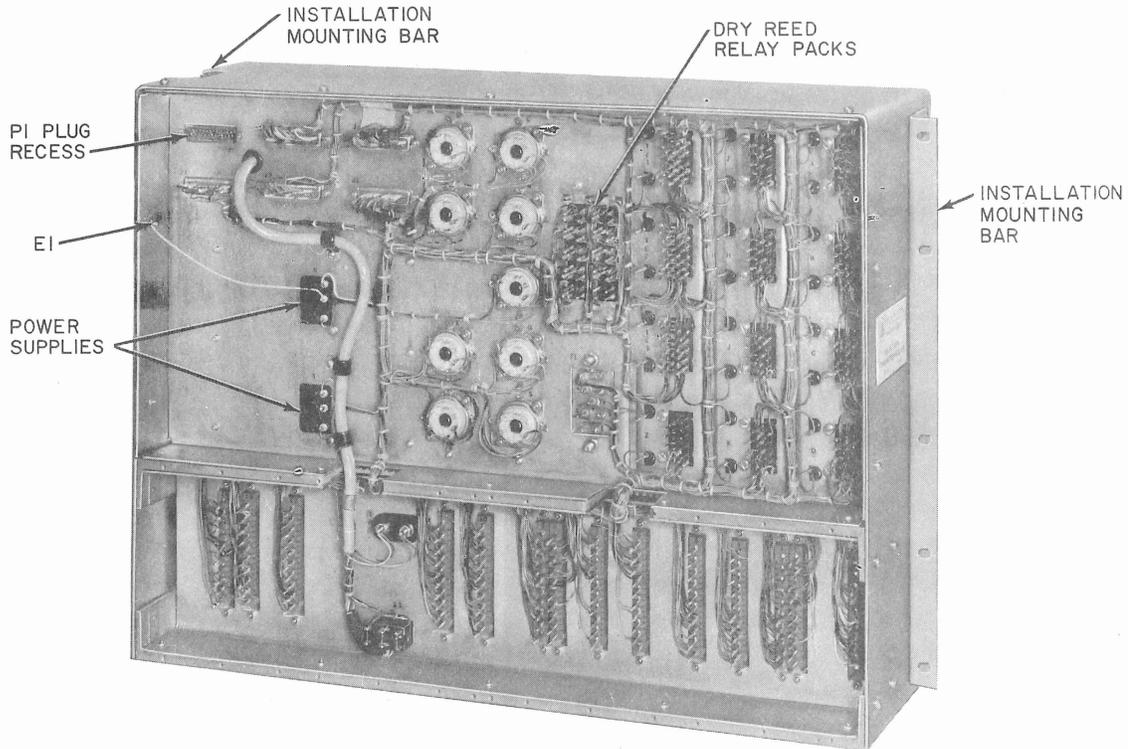


Fig. 2—Data Set 404A, Rear View

3. OPERATION

3.01 Refer to Fig. 3 for a block diagram of Data Set 404A.

3.02 The transmitter circuit of Data Set 404A is under the control of the business machine. Data input signals from the business machine to Data Set 404A are in voltage form. These voltages energize several of the polar type relays L, M, N, O, P, Q, R, S, and U which, in turn, allow the operation of the corresponding prime relays L', M', N', O', P', Q', R', S', and U'. The contact closures of the prime relays are held for a minimum of 50 milliseconds. These relays also drive the transmitter oscillators.

3.03 The two transmitter oscillators provide the frequency signals for transmission over the 4-wire facilities to operate the central office TOUCH-TONE® equipment.

3.04 The U relay must be operated whenever data is being sent. Its operation allows the data signal to appear at the transmit side of the telephone line facilities, provided that positive voltage is applied to the Request to Send (RS) lead on J1.

3.05 The receiver circuit is always ready to receive data. It converts the incoming frequency signals from a distant Data Set 404A into contact closures. These closures are changed into voltage form and are presented to the associated business machine.

3.06 In the remote test mode, the output of the receiver is looped to the input of the transmitter. The DTC sends valid signals to the data set and checks the tones which are being transmitted.

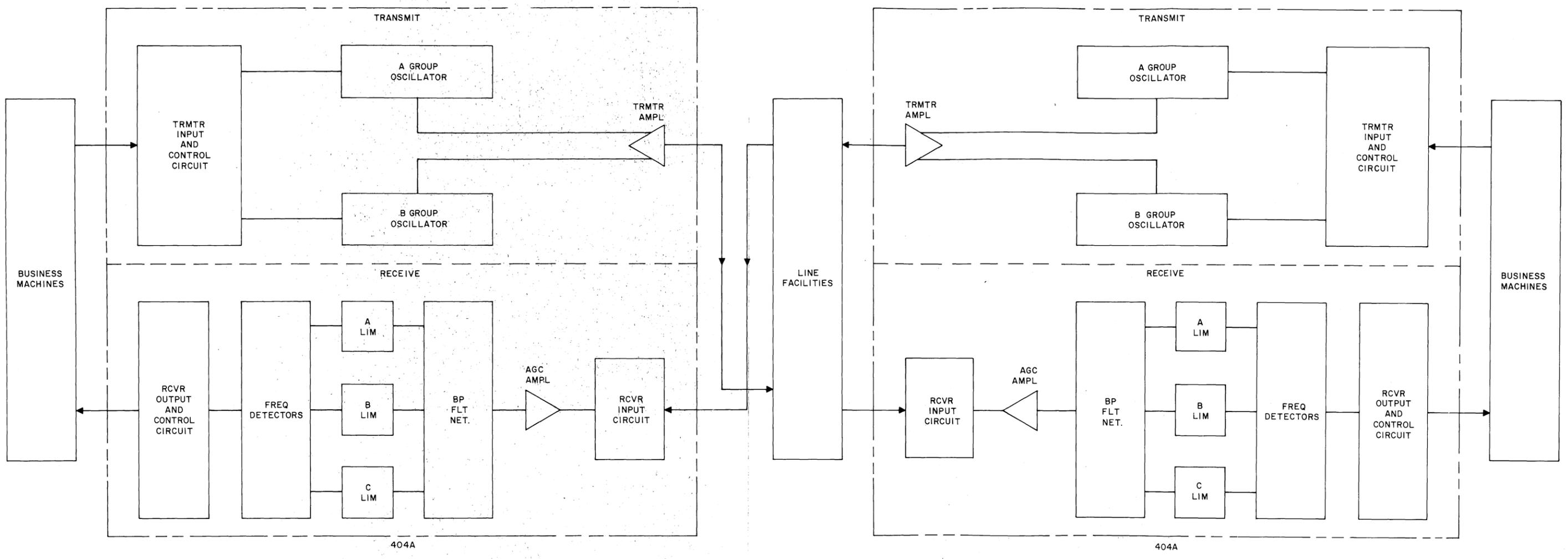


Fig. 3—Data Set 404A, Block Diagram