DATA SET 603A-TYPE
FOR TRANSMISSION OF MEDICAL ANALOG DATA
DESCRIPTION AND OPERATION

1. GENERAL

1.01 This section covers the description and operation of Data Sets 603A1 and 603A2. The data sets are functionally similar, except that the 603A1 is equipped with a rotary dial, while the 603A2 is equipped with a TOUCH-TONE® dial.

1.02 This section is reissued to show signal output level reduced to –12 dBm, in compliance with FCC Tariff No. 263.

1.03 Data Set 603A-type provides a means for voiceband transmission of narrowband analog information that is originated by a business machine. In this case, the business machine is primarily electrocardiographic equipment. The data set contains a reverse-channel receiver which allows signaling from the data receiver during data transmission. The telephone subscriber set is used to establish data calls and may be used as a normal telephone.

1.04 Operation of the business machine is not covered in this section.

2. DESCRIPTION

PHYSICAL DESCRIPTION

2.01 Data Sets 603A1 and 603A2 are both integrated units which combine a data transmitter, a reverse-channel receiver, a line control circuit, a telephone handset, and six pushbuttons for function control. The 603A1 and 603A are shown in Fig. 1 and 2, respectively.

2.02 A 25-pin interface connector is provided for connecting the data set to the business machine. Table A shows the lead assignments. Pins not shown in Table A are not assigned.

2.03 These data sets are housed in a 2-tone gray plastic case which is held in place by six retaining screws in the base of the set (Fig. 3). They weigh approximately 10 pounds each. For removal of cover and installation procedures, refer to the section entitled Data Set 603A-Type For Transmission of Medical Analog Data—Maintenance (596-012-300).

2.04 The telephone line cord supplied with the data set is a D4BJ-61, 4-conductor cord which is 5-1/2 feet long.

2.05 Factory-installed features and options, and options which may be installed in the field, are listed in Table B.

FUNCTIONAL DESCRIPTION

2.06 A block diagram showing the functional relationship of the major components which make up the data set is shown in Fig. 4. This block diagram shows the data set divided into four basic units—the transmitter, the reverse-channel receiver, the telephone set and control buttons, and the rectifier. The transmitter accepts a 0- to 100-Hz analog signal from the business machine and modulates the 1988-Hz carrier for voiceband transmission. Coordination between transmitting and receiving locations during data transmission is accomplished by the reverse-channel receiver. Power for operation and control of the data set is furnished by the rectifier. Operation of these units is controlled by the 6-button control unit. The designation and function of these control buttons are shown in Fig. 5.

2.07 Power is supplied to the data set by an externally located transformer and connecting cord. The transformer is a 2012B-type that connects directly to the customer-furnished 117-volt 60-Hz source. The power cord with the transformer attached is coded M2EP.

2.08 The data set is designed to operate in an ambient temperature ranging from 40 to

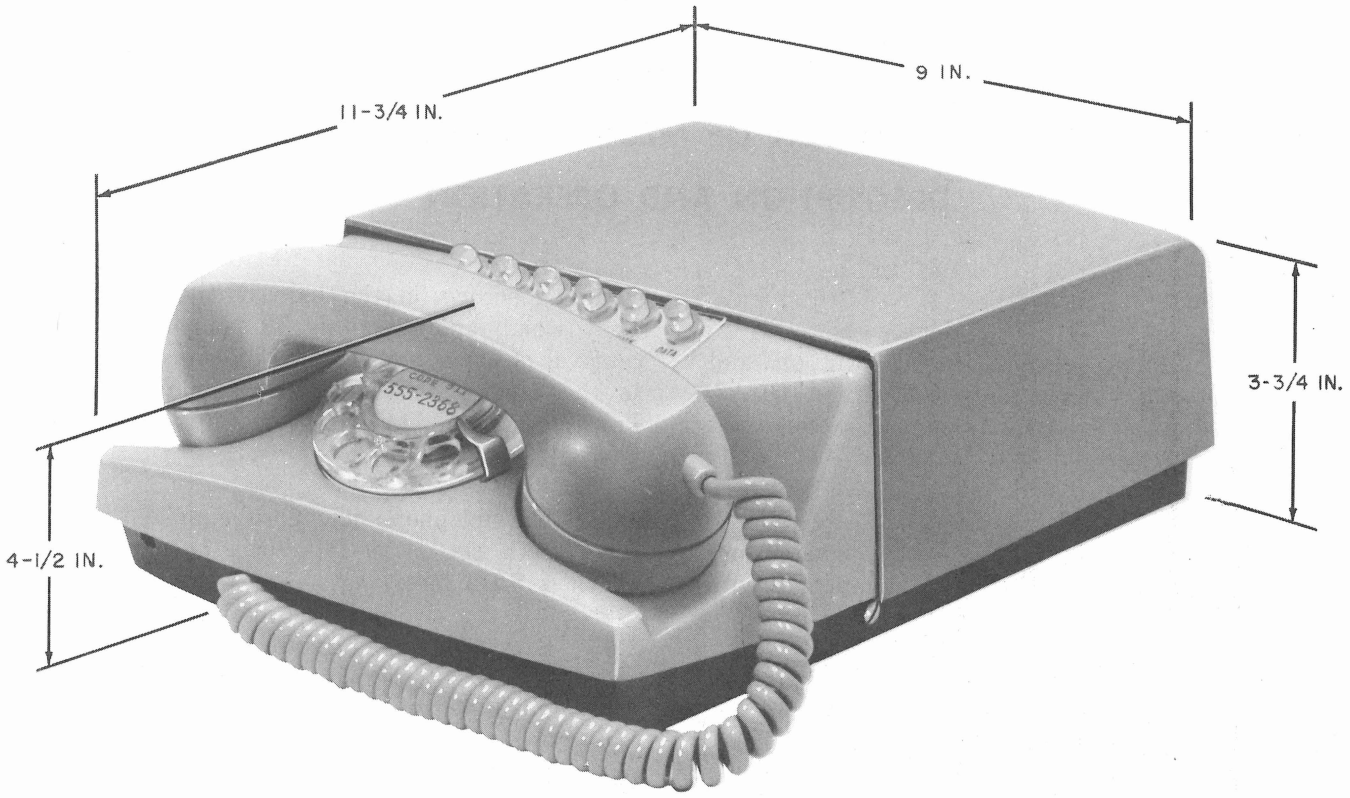


Fig. 1—Data Set 603A1—Front View

120°F. Environments with a high relative humidity or a quick drop in temperature should be avoided, as the resulting condensation inside the data set case could cause a malfunction of the data set circuits.

3. OPERATION

3.01 To initiate or receive a call with the data set, the unit must first be placed in the talk mode. This is accomplished by depressing the TALK button, using the handset, and dialing in the normal manner.

3.02 When data is to be transmitted, the call is originated or received in the same way as if a normal voice communication call were being made. When both parties have agreed to begin data transmission, the attendant at the receiving data set (603B) location should place the 603B in the data mode before the transmitting station (603A) is placed in the data mode. When the 603B is placed in the data mode, a 2025-Hz answer-back tone is transmitted by the 603B and received by the 603A. After approximately 3 seconds, the 2025-Hz answer-back tone will cease and the 387-Hz reverse-channel tone will be heard. At this time, the transmitting station (603A) should be placed in the data mode by depressing the DATA key and hanging up the handset.

3.03 Absence of a 387-Hz tone, which is normally transmitted from the 603B receiver unit, is indicated by the reverse-channel receiver circuit. A visual or audible indication may be selected by using the LAMP or TONE button located on the data set. When option V is installed, a contact closure, which is connected to the interface connector, provides an alternate means of indicating the presence or absence of a reverse-channel signal. When a reverse-channel signal is present, no indication results. The absence of the reverse-channel signal results in a reverse-channel indication. The reverse channel can be used either to indicate that the 603B receiver is not connected to the line or to signal the attendant at the 603A, during data transmission, to return to the voice mode or perform functions previously agreed upon.

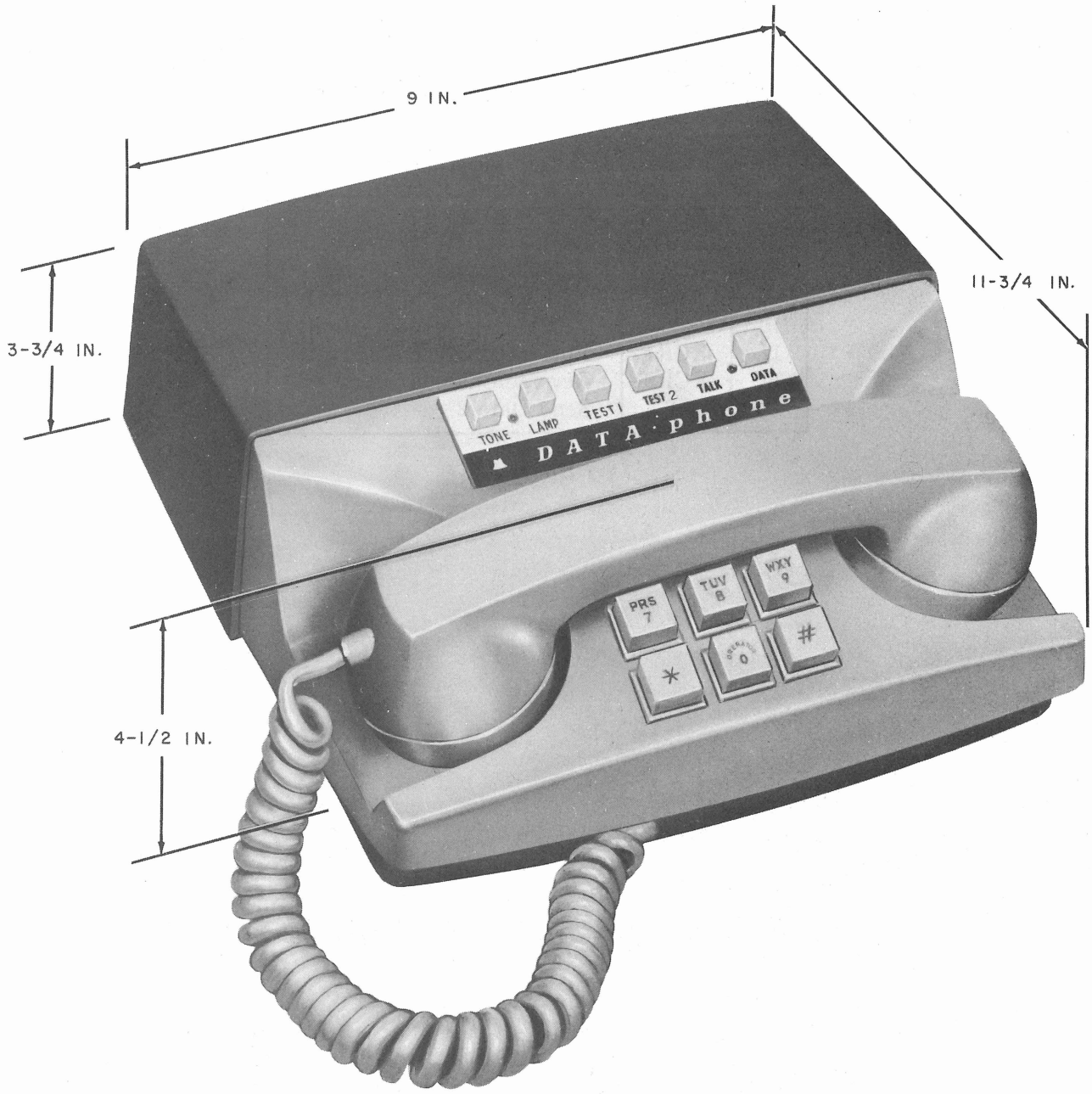


Fig. 2—Data Set 603A2—Front View

3.04 Termination of the call is accomplished by returning to the talk mode and placing the handset back on the cradle.

3.05 The data set is designed to facilitate testing of this unit by a data test center. TEST 1 and TEST 2 buttons are provided for this purpose. To perform this test, refer to the section entitled Data Set 603A-Type For Transmission of Medical Analog Data—Test Procedures (596-012-500).

TABLE A

INTERFACE CONNECTOR LEAD ASSIGNMENT

PIN NO.	DESIG	LEAD ASSIGNMENT
1	FG	Frame Ground
2	SD1	Send Data 1
7	SG	Signal Ground
9	+20	+20 volts (for testing only)
10	−20	−20 volts (for testing only)
11	RCR1	Reverse-Channel Receive 1
12	RCR2	Reverse-Channel Receive 2
17	SD2	Send Data 2

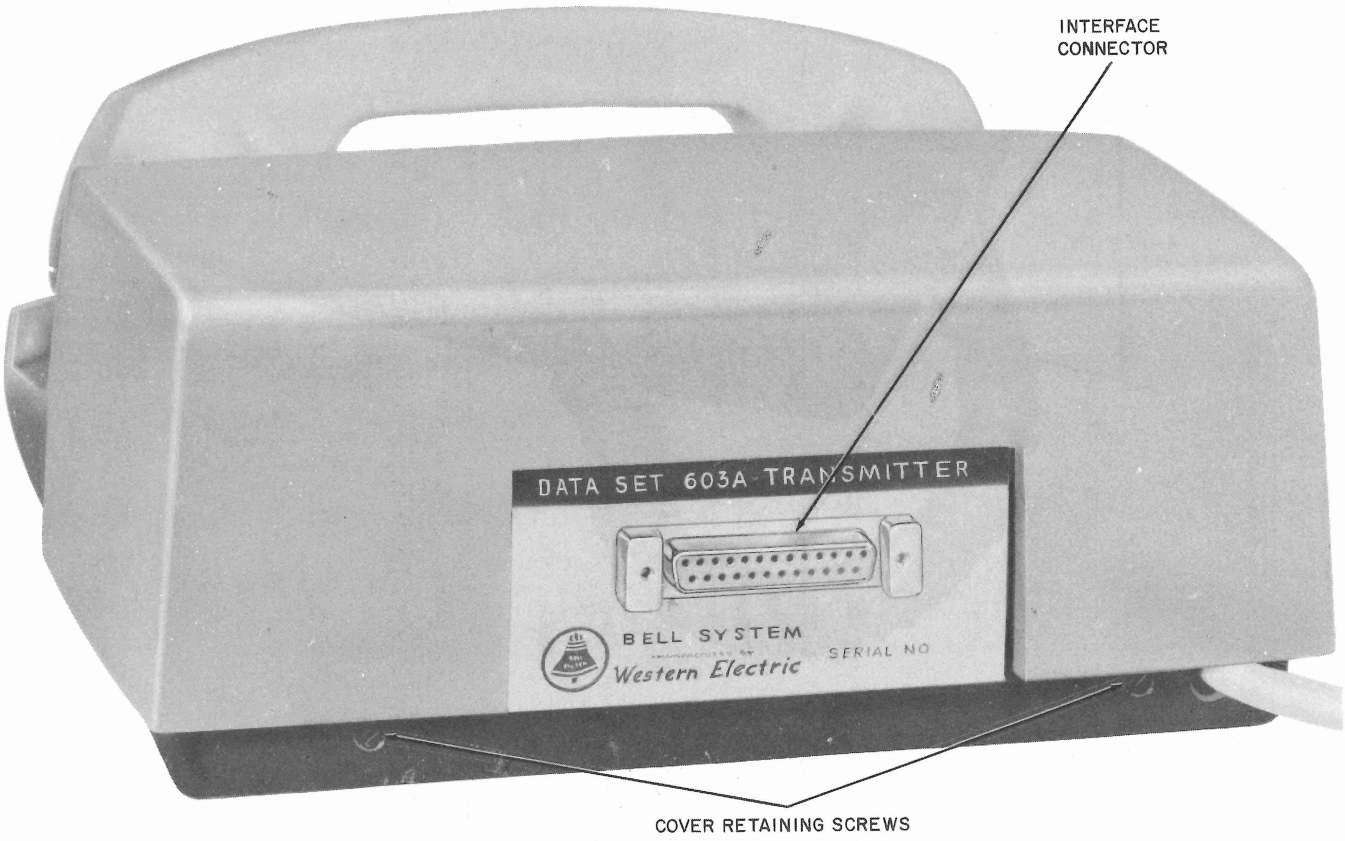


Fig. 3—Data Set 603A-Type—Rear View

TABLE B

FACTORY- AND FIELD-INSTALLED FEATURES AND OPTIONS

FEATURE OR OPTION		DESIG	603A1	603A2
Termination	600Ω	N	*	*
	900Ω	Q	†	†
Reverse-Channel Indication	Lamp-Tone	T	†	†
	Contact	V	*	*
Output Level	—12 dBm ‡	Z	*	*
	—3 dBm	Y	*	*
	—6 dBm	X	†	†
	—9 dBm	W	*	*
Dial	Rotary	S	†	§
	TOUCH-TONE	R	§	†

* Options which can be installed in field.
† Factory-installed.
‡ 0 dBm for series 3 and lower; —12 dBm for series 4 and higher.
§ Cannot be converted in field.

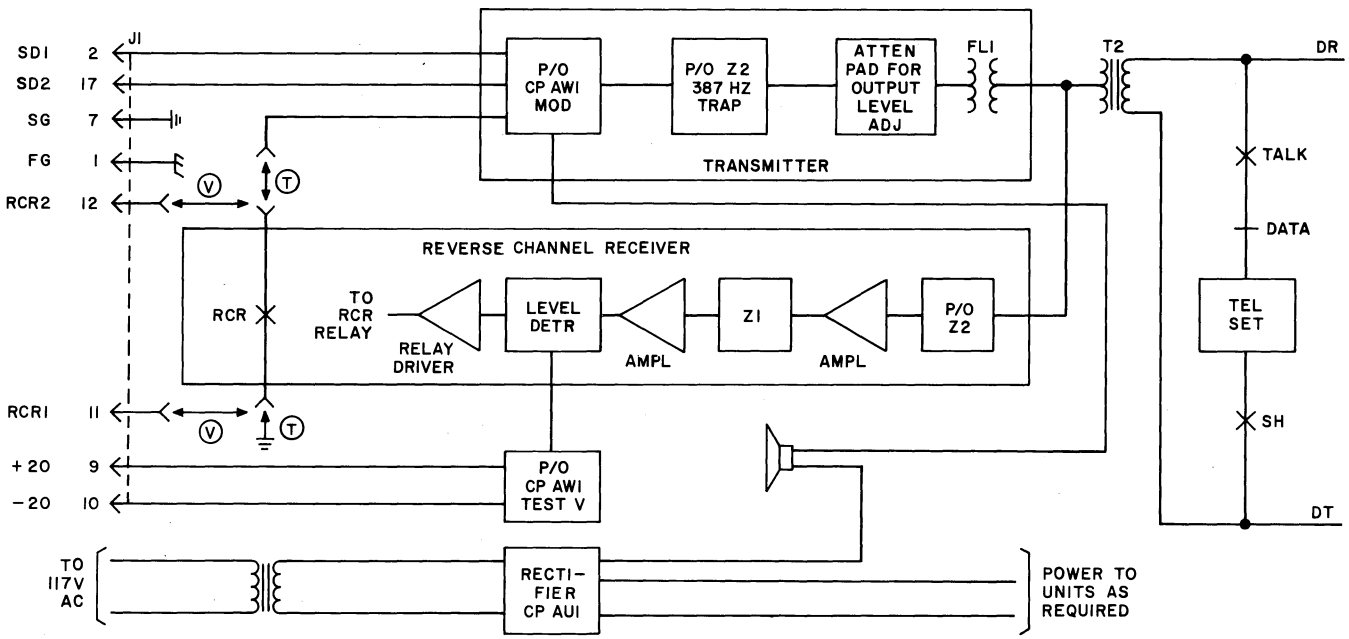
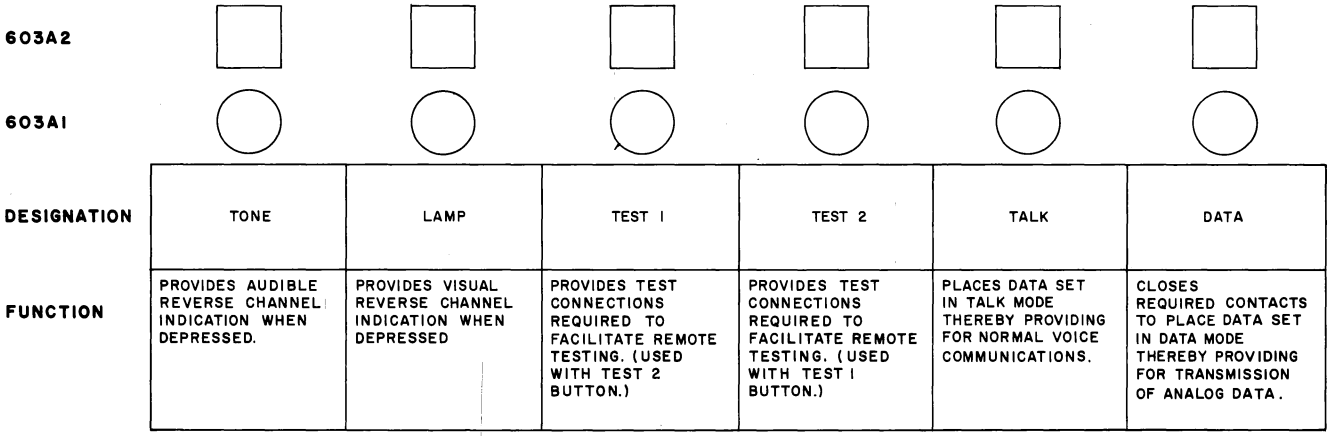


Fig. 4—Data Set 603A-Type—Block Diagram



603A2	□	□	□	□	□	□
603A1	○	○	○	○	○	○
DESIGNATION	TONE	LAMP	TEST 1	TEST 2	TALK	DATA
FUNCTION	PROVIDES AUDIBLE REVERSE CHANNEL INDICATION WHEN DEPRESSED.	PROVIDES VISUAL REVERSE CHANNEL INDICATION WHEN DEPRESSED	PROVIDES TEST CONNECTIONS REQUIRED TO FACILITATE REMOTE TESTING. (USED WITH TEST 2 BUTTON.)	PROVIDES TEST CONNECTIONS REQUIRED TO FACILITATE REMOTE TESTING. (USED WITH TEST 1 BUTTON.)	PLACES DATA SET IN TALK MODE THEREBY PROVIDING FOR NORMAL VOICE COMMUNICATIONS.	CLOSES REQUIRED CONTACTS TO PLACE DATA SET IN DATA MODE THEREBY PROVIDING FOR TRANSMISSION OF ANALOG DATA.

Fig. 5—Data Set 603A-Type—Control Button Designations and Functions