22A-TYPE DATA UNIT
(TRANSMITTER)
IDENTIFICATION

1. GENERAL

1.01 This section contains descriptive information to provide identification and related features of the 22A-type Data Unit (hereafter referred to as "transmitter"). This section does not include information regarding associated data sets, associated equipment, or telephone customer business machines.

1.02 This section is being reissued to correct Table A, add Table B, and indicate that list option codes L4, L5, and L6 are now available.

1.03 The transmitter (Fig. 1), when supplied with an appropriate oscillator circuit pack and complementary network, is designed to provide transmission of digital data over telephone facilities. The transmitter uses amplitude modulation techniques with vestigial sideband (VSB) line signal filtering. The transmitter requires the conditioning, operating voltages, and control circuitry provided by the 24A-type Data Unit ("common control equipment"). The transmitter was initially designed to be part of Data Sets 203A- and 203B-type.

2. DESCRIPTION

2.01 The transmitter consists of a mounting frame containing a network connection and a nest holding three circuit packs as shown in Fig. 1. A fourth circuit pack and applicable network are required to complete the transmitter circuitry. The approximate overall dimensions are 6.5 inches wide, 6 inches high, and 9 inches deep. The weight of the transmitter is approximately ▶10.7◀ pounds including the optional network and circuit pack.

2.02 Circuit packs common to all transmitter configurations designed for Data Set 203A- and 203B-type code listings are as follows and are shown in Table A:

(a) AR325—Digital-to-analog converter, Modulator, and Summer amplifier

(b) AR473—Serial-to-parallel converter, Scrambler, and Start sequence generator

(c) AR327—Bit speed and Sample generator.

2.03 Optional circuit packs and networks required to complete the transmitter circuit according to the established Data Set 203-type list coding are presented in Table B.

2.04 The transmitter uses an amplitude-modulating technique to provide synchronous transmission of serial digital data over switched or private line telephone facilities. Serial data from the customer is clocked into the transmitter using a bit clock which is internally generated or externally supplied by the customer.

2.05 The data is then scrambled with a quasi-random word in order to maintain constant line power and ensure a sufficient number of level transitions to maintain bit synchronization at the receiver. The scrambled data is converted into parallel form and applied to a digital-to-analog converter.

2.06 The digital-to-analog converter output is applied to a low-pass filter for baseband shaping and then to a balanced modulator. The modulated carrier is applied to a VSB filter which provides half of the passband shaping, the other half being provided by the far-end receiver.

2.07 The output of the VSB filter is applied to a summing amplifier along with two pilot tones. These tones have a precise frequency relationship with the carrier and are used at the far-end receiver for carrier recovery.

2.08 The transmitter circuitry requires operating voltages of +18.5 Vdc, −18.5 Vdc, and +4.5 Vdc. Both 18.5 Vdc voltages are applied to the transmitter circuitry through the connecting cord. The +4.5 Vdc and ground are supplied to the

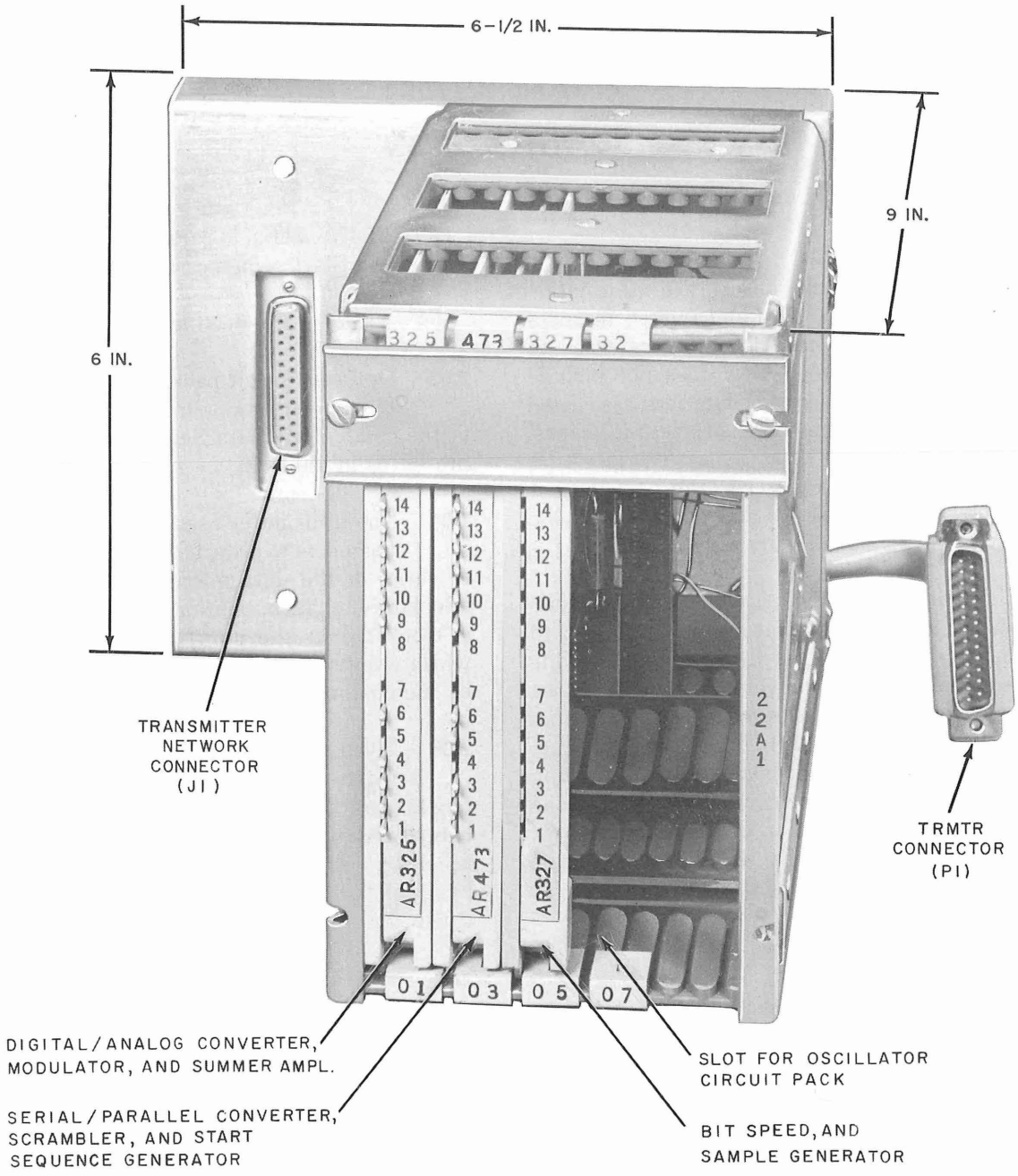

Fig. 1—22A-Type Data Unit

TABLE A

STANDARD APPARATUS FOR 22A-TYPE DATA UNIT

CIRCUIT PACK	CIRCUIT PACK POSITION	CIRCUIT PACK FUNCTION
AR325	01	Digital-to-analog converter, Modulator, and Summer amplifier
AR473	03	Serial-to-parallel converter, Scrambler, and Start sequence generator
AR327	05	Bit speed and Sample generator

TABLE B

OPTIONAL APPARATUS FOR 22A-TYPE DATA UNIT

DATA SET 203 LIST NUMBER	OSCILLATOR CIRCUIT PACK	CIRCUIT PACK POSITION	COMPLEMENTARY NETWORK	NETWORK CONNECTOR
L2	AR321	07	4164A	J1
L3	AR322	07	4164B	J1
L4	AR323	07	4164C	J1
L5	AR324	07	4164D	J1
L6	AR411	07	4164E	J1

transmitter through a special flexible tape conductor which is secured to a terminal strip on the rear of the transmitter. All operating voltages are provided from the 41A-type power unit contained in the 24A-type Data Unit.

3. REFERENCES

3.01 The following publications and documents provide detailed information regarding various aspects of the transmitter and related equipment:

592-019-100 Data Set 203-Type, Description and Operation

592-019-150 Data Set 203-Type, Theory of Operation and Supplementary Information

592-019-180 Data Set 203-Type, Transmitter/Receiver Summarizing Specification, Data Systems Station

592-019-200 Data Set 203-Type, Installation and Connections

592-019-300 Data Set 203-Type, Maintenance

592-019-500 Data Set 203-Type, Test Procedures

CD- & SD-1D151-01 Circuit Description and Schematic Drawing for Data Systems Station—Data Set 203-Type

CD- & SD-1D152-01 Circuit Description and Schematic Drawing for Data Systems Station—22A-Type Data Unit

CD- & SD-1D153-01 Circuit Description and Schematic Drawing for Data Systems Station—23A-Type Data Unit

CD- & SD-1D154-01 Circuit Description and Schematic Drawing for Data Systems Station—24A-Type Data Unit