

**“DATAPHONE®” MULTIPLEX SERVICE**  
**DATA MULTIPLEX SYSTEM**  
**USING 1200A-TYPE DATA MULTIPLEXER**  
**REFERENCE GUIDE**

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**1. GENERAL**

**1.01** This section covers the Data Multiplex System (DMS) which uses the 1200A-type Data Multiplexer (DM) to provide DATAPHONE Multiplex Service.

**1.02** Whenever this section is reissued, the reason for reissue will be listed in this paragraph.

**1.03** The DMS (Fig. 1) consists of up to four DMs, one 1800A-L1 Data Control Unit [hereafter referred to as the local control unit (LCU)], and the associated synchronous data sets (DSs), data auxiliary sets (DASs), and/or data service units (DSUs). The DMS provides a communication link between groups of asynchronous data terminals. The LCU is connected to the DM designated as the master multiplexer. The master DM may be connected to asynchronous type DSs or customer-provided equipment (CPE) such as a host computer.

The DMS features flexible rearrangement of asynchronous channel assignments through incorporation of a 1200A-type DM which is a digital, time division multiplexer capable of multiplexing up to 16 asynchronous (low speed) channels on up to 3 synchronous (high speed) lines. The system asynchronous channel capacity may be expanded to 32 by use of the 53A1 data mounting. In addition, one or two of the synchronous lines may be multiplexed along with the asynchronous channels. These synchronous lines are designated as “derived synchronous channels”.

**1.04** The DMS will multiplex asynchronous channels which serve both duplex and half-duplex terminals. The service will accommodate data channels with standard rates of 120 characters (1200 bits) per second and lower with transmission between the DMs being via high-speed analog or digital synchronous private lines. Table A summarizes the asynchronous, derived synchronous, and synchronous speeds permitted.

**1.05** The DMS can be optioned to provide certain pairs of the eight basic configuration net options shown in Fig. 2. Any combination of net options 1, 5, 6, and 7 may be used.

**1.06** There are 18 different equipment arrangements possible for use with the 8 basic configurations. The total number of high-speed lines between DMs plus derived synchronous channels in any configuration must be three or less. This limits the DMS to no more than three remote DMs to operate with one master DM in any of the equipment arrangements.

**1.07** The LCU is used only at the master DM. It provides controls, testing, and monitoring functions for the DMS. Controls are provided to

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Not for use or disclosure outside the  
Bell System except under written agreement

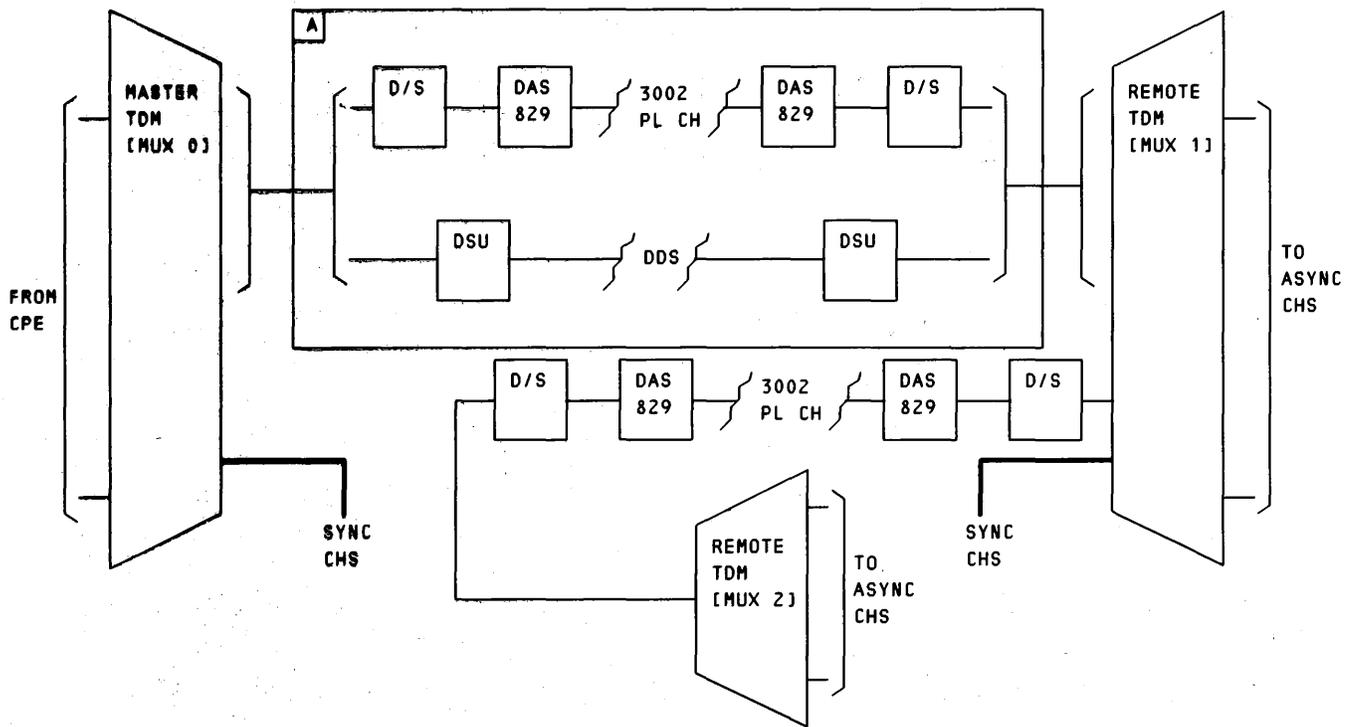


Fig. 1—Typical Data Multiplexer System

TABLE A  
DMS ASYNCHRONOUS & SYNCHRONOUS SPEEDS

ASYNCHRONOUS		SYNCHRONOUS (bps)	
bps	eps*	DERIVED CHANNELS	LINES
74.2	10	1200	1200
75	10	2400	2400
110	10	4800	4800
134.5	15		9600
150	15		
300	30		
600	60		
1200	120		

\* Character per second per standard character structure at that speed. Other supported character structures may be used provided that the CPS shown for a speed is not exceeded by more than 10%.

make channel speed, code, and destination assignments and to activate loopbacks for testing. Indicators are provided which display fault indications, asynchronous channel activity, and the state of interface leads for a selected asynchronous channel. Other indicators display the channel signal elements (autobaud—no autobaud, speed, code, and destination) of a selected asynchronous channel.

1.08 It is recommended that a number of each of the circuit pack (CP) codes be stocked as maintenance spares in order to meet DMS service objectives. The number of maintenance spares is determined by the number of active CPs of each code in each maintenance area as listed in Table B.

1.09 The DMS maintenance features provide the means to automatically activate loopbacks and use an internal test circuit in the master DM to troubleshoot the system. In addition, external test equipment may be used with an 1800B-L1 Data Control Unit located at a multiplexer test facility (MTF) or connected to a selected asynchronous channel interface connector.

1.10 Asynchronous interfaces which are supported by the DMS are either the Electronic Industries

Association (EIA) Standard RS 232C (25-pin) or the military specification MIL 188C. The synchronous lines are only provided with the EIA Standard RS 232C interface.

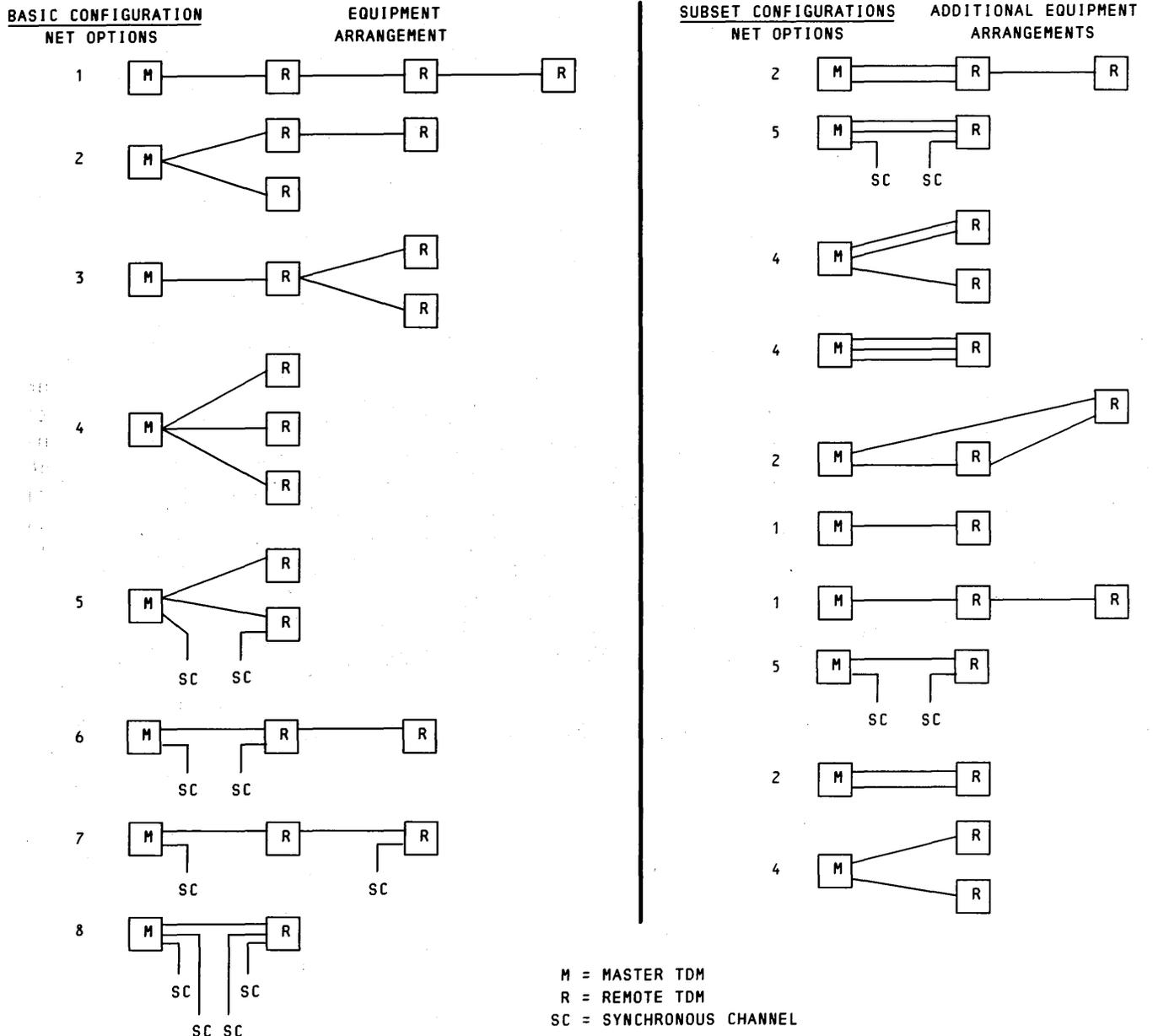
**2. PHYSICAL AND ELECTRICAL CHARACTERISTICS**

**A. 1200A-Type Data Multiplexer**

**2.01** The 1200A-type DM (Fig. 3) consists of a 224A power unit and a rigid backplane

mounted on a 101A apparatus mounting for accepting various CPs depending upon system configuration.

**2.02** The basic installations for the DMs use the KS-20018-type cabinet for customer premise installations and standard central office bay mounting for central office installations. These installations may include DSs, DASs, and/or DSUs with the DMs in which case specific placement of the apparatus in the cabinets and bays is required. Typical



**Fig. 2—Types of DMS Equipment Arrangements**

**SECTION 590-000-120**

recommended cabinet and bay arrangements may be found in task oriented practice (TOP) 590-104-104.

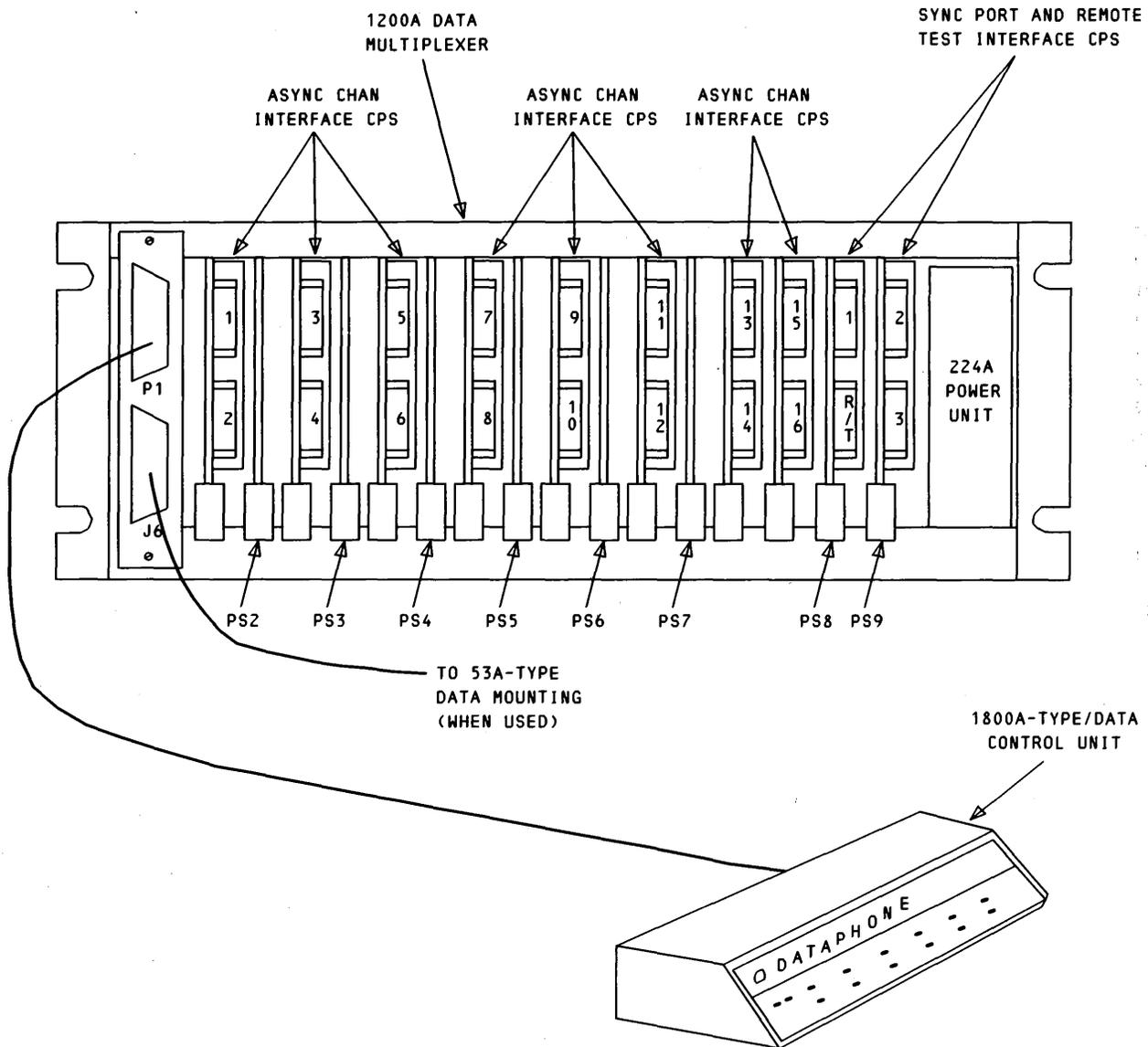
**2.03** The 1200A-type DM is 23 inches wide, 12 inches deep, 8 inches high and, when fully equipped with CPs weighs approximately 42 pounds. It will operate in an environment of 40 to 120° F, with a relative humidity of less than 95 percent.

**2.04** Power requirements for the self-contained 224A power unit are 105 to 129 Vac at 57 to 63 Hz. The KS-14532, L20 unshielded power cord, 10 feet in length, is provided with the 1200A-type DM. A shielded 3-conductor ac power

**TABLE B**

**RECOMMENDED SPARE STOCKAGE**

MINIMUM SPARE LEVELS ARE RECOMMENDED TO BE:		WHEN ACTIVE CIRCUIT PACKS ARE:	
BETWEEN	AND	BETWEEN	AND
1	2	1	10
3	12	11	100
13	80	101	1,000
83	394	1001	10,000



**Fig. 3—1200A-Type DM and 1800A-Type Data Control Unit**

cord (P3BJ), 5-1/2 feet in length, may be used in an electrically noisy environment.

**2.05** The asynchronous channel EIA interface is provided by a 25-pin connector on CP PS1. Each CP PS1 provides two asynchronous channel interfaces. The CPE used with the 1200A-type DM must be terminated in a Cinch or Cannon DB-19604-432, or Amp 205784-1, or equivalent plug, and a Cinch DB-51226-1 hood, or equivalent. When Bell System data sets are used, they must be connected to the DM with an M25J cord which must be ordered separately.

**2.06** The asynchronous channel MIL-188C interface is provided by a 15-pin connector on CP PS10. Each CP PS10 provides two asynchronous channel interfaces which accept the standard MIL SPEC connector.

#### B. Auxiliary Channel Unit (53A1 Data Mounting)

**2.07** The 53A1 data mounting is used with the 1200A-type DM to provide 16 additional asynchronous channels. It consists of the 101A apparatus mounting, 224B power unit, backplane, and extender board. The 53A1 data mounting is 23 inches wide, 12 inches deep, 8 inches high and, when fully equipped with CPs, weighs approximately 35 pounds. It will operate in an environment of 40 to 120°F, with a relative humidity of less than 95 percent. The 53A1 data mounting is connected to the 1200A-type DM by a 50-conductor (A25B) cord which is supplied with the 53A1 data mounting.

#### C. 1800A-L1 Data Control Unit (LCU)

**2.08** The LCU may be desk top or shelf mounted and is connected to the 1200A-type DM via a B25A (50 conductor) cable. The 10-foot B25A cable supplied with the LCU **must not** be extended beyond 50 feet in length.

**2.09** The LCU derives its power (5-volt dc at 2 amps) from the 1200A-type DM via the B25A connector cable supplied with the unit. Automatic voltage compensation is built into the DM power unit to adjust cable voltage drops for B25A cord lengths up to the limit specified in 2.08. The LCU is 10.6 inches wide, 7.0 inches deep, 3.3 inches high, and weighs approximately 5 pounds. It will operate in an environment of 40 to 120°F, with a relative humidity of less than 95 percent.

### 3. SERVICE ORDER INFORMATION

**3.01** Uniform services order code (USOC) must be used to determine the desired service for DATAPHONE Multiplex Service.



**The 1200A-type Data Multiplexer or 1800-type Data Control Unit apparatus codes must not be used.**

The encoding procedures for determining the appropriate USOCs are described in Section 590-000-100. An explanation of features and options common to most data services is given in Section 590-000-101. A rapid cross-reference between USOC, data sets, and reference guides is presented in Section 590-000-102. For customer billing nomenclature, data service tariff listings, and general reference information, refer to Section 87 of the Intercity Service Manual (ISM). The DMS requires no customer or telephone company (telco) option decisions.

**3.02** Service order information for both customer premises and telco central office (CO) installations is provided in Table C.

### 4. REFERENCES

**4.01** For additional information relating to the 1200-type DMs, refer to the following.

NUMBER	TITLE
SD- & CD-1D265-01	1200-Type Data Multiplexer
EL4445	Data Multiplex System—Description
EL4446	Data Multiplex System—Equipment, Description, Ordering, and Pricing Information
SECTION	TITLE
590-104-100	Data Multiplex System—Using 1200A-Type Data Multiplexer—Description
590-104-101	1200A Data Multiplexer—Description and Operation
590-104-103	1800A-L1 Data Control Unit—Description and Operation

SECTION	TITLE	SECTION	TITLE
590-104-104	Data Multiplexer System—Using 1200A-Type Data Multiplexer —Station Arrangements	682-300-015	Data Multiplex System—Plant Assignments
666-615-100	Data Multiplexer System—Using 1200A-Type Data Multiplexer -Control Center—Description and Operation	880-101-190	Data Multiplex System—Engineering and Implementation Methods System
666-615-101	Data Multiplex System—Using 1200A-Type Data Multiplexer —CSTC and MTF Procedure	999-100-161	Data Multiplex—How to Operate Manual

TABLE C

**SERVICE OFFERINGS  
CURRENT STANDARD MODELS**

USOC		EQUIPMENT	NOTES
CUST PREM	TELCO CO		
M3A	—	Master 1200A-type DM	1, 2, and 3
M3C	M3E	Remote 1200A-type DM	3
M3F	M3G	53A1 data mounting (auxiliary channel unit)	4
M3O	M3P	EIA interface CP	
M3T	M3V	MIL 188C — interface CP	
M3XSS	M3XSS	Short connecting cord	5
M3XSL	M3XSL	Long connecting cord	5

*Note 1:* Not available for CO installation.

*Note 2:* 1200A-type DM and 1800A-L1 Data Control Unit.

*Note 3:* Includes standard multiplexing feature.

*Note 4:* Takes on features of associated DM.

*Note 5:* Connects Bell System data sets to DM EIA interface connectors.