

**“DATAPHONE®” SELECT-A-STATION SERVICE**  
**833A DATA STATION**  
**DESCRIPTION**

CONTENTS	PAGE	CONTENTS	PAGE
1. GENERAL . . . . .	1	E. Data Set 202T Features . . . . .	16
A. Service Description . . . . .	1	F. SC2 CP Features . . . . .	16
B. Service Offerings . . . . .	2	5. REFERENCES . . . . .	16
2. PHYSICAL DESCRIPTION . . . . .	3	6. GLOSSARY . . . . .	17
A. 56A1 Data Mounting . . . . .	3		
B. Data Auxiliary Set 833A-Type . . . . .	4	1. GENERAL	
C. Data Auxiliary Set 829-Type L1A . . . . .	5	1.01 This section describes the physical and functional features of the 833A data station. The data station, located on customer premises, provides an interface between the customer-provided equipment (CPE) and a J70180AA data station selector (DSS) [Fig. 1].	
D. Data Set 202T . . . . .	5	1.02 Whenever this section is reissued, the reason for reissue will be listed in this paragraph.	
E. SC2 CP . . . . .	6	1.03 One or more selector control units (SCUs) and power supply/oscillator units (SC2 circuit pack [CP]) are housed in each data station. Each SCU provides a range of control over the DSS and the connections to remote stations. The amount of control depends on the service offering option selected by the customer.	
3. FUNCTIONAL DESCRIPTION . . . . .	7	A. Service Description	
A. Selector Control Unit (SCU) . . . . .	7	1.04 The DATAPHONE® Select-A-Station service provides a private line, multistation data network over voice bandwidth channels. This service allows a series of 2-point connections to be made between a master station and a number of remote stations. A dc continuity connection cannot be furnished between the master and remote stations. In addition, the master station cannot simultaneously transmit (broadcast) to all remote stations. A	
B. Customer Interface . . . . .	10		
C. Status and Test Indicators . . . . .	10		
4. OPERATION AND MAINTENANCE FEATURES . . . . .	12		
A. A/S (Addressable/Sequential) Switch . . . . .	12		
B. Oscillator Switches . . . . .	12		
C. TRANSFER TO SPARE/NORMAL Switch . . . . .	13		
D. DAS 833A-Type Features . . . . .	14		

**NOTICE**

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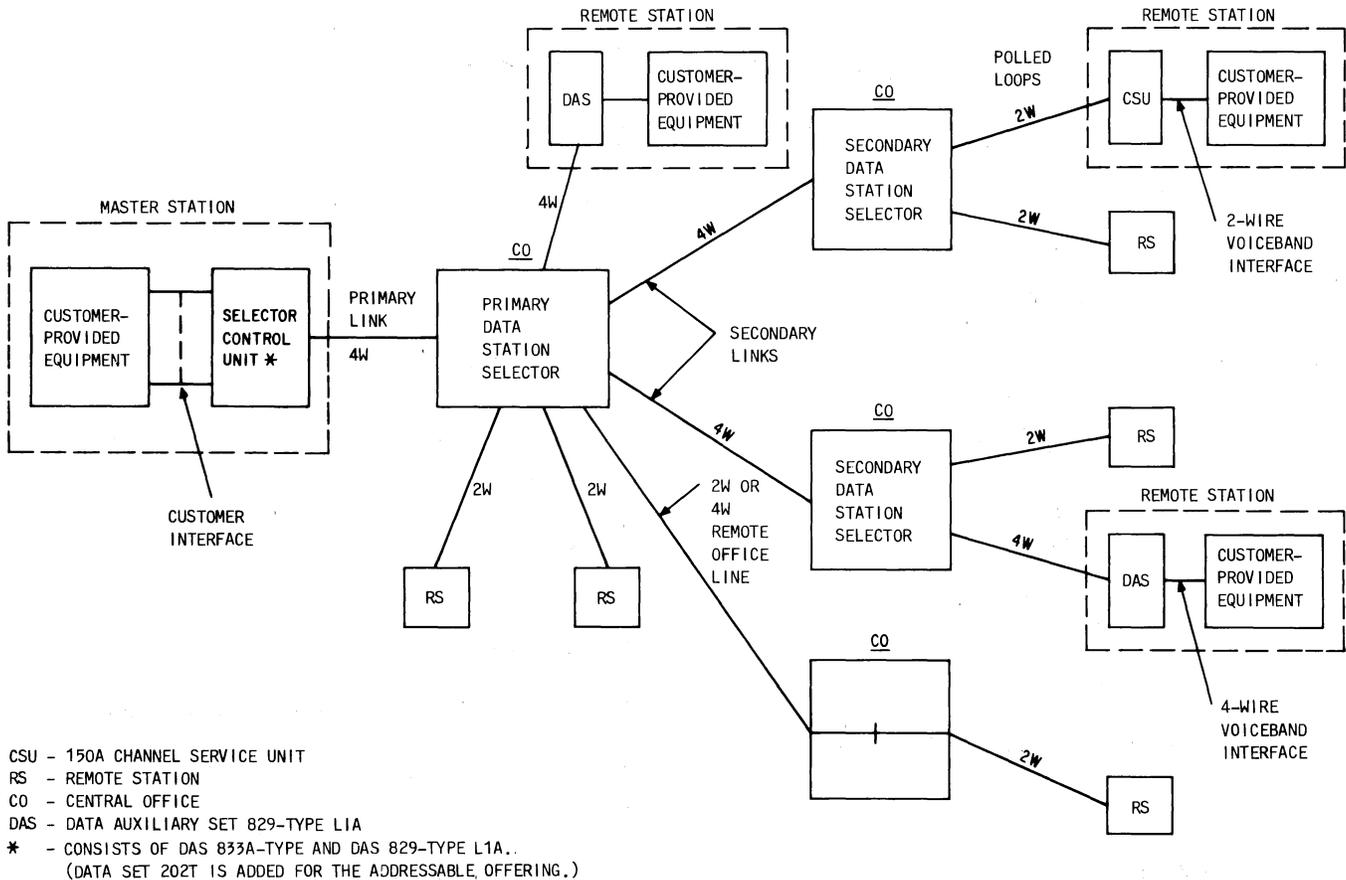


Fig. 1—DATAPHONE® Select-A-Station Service-Overall Block Diagram

remote station cannot communicate directly with another remote station.

**B. Service Offerings**

1.05 Two service offerings and several options are available to accommodate customer operating procedures and system structure. The service offerings and options are as follows:

- (a) Sequential
  - Automatic Step DSS option (Auto Step)
  - Automatic Step with Reset DSS option
  - Controlled Step DSS option.
- (b) Addressable
  - Single Address Error Control DSS option

- Double Address Error Control DSS option

**Note:** Both service offerings and all DSS options have the advantage that no remote station can control the operation of the DSSs. This assures maximum security for the system and prevents outside tampering.

**Sequential Offering**

1.06 In the sequential offering, the connection sequence to remote stations is determined by the customer. Initial assignment of remote stations is given on the service order. The auto step option provides for automatic operation of the DSS on a continuous basis. The sequence of connections and the connection hold time are fixed, and the hold time is the same for each connection. The hold time can only be changed by changing the setting of a hold time option switch in the DSS.

**1.07** The sequential offering, auto step with reset option, permits the CPE to reset the DSS to the beginning of the connection sequence.

**1.08** The third type of sequential operation is the controlled step option. This option allows the customer to control the connection time between the master station and a remote station.

#### **Addressable Offering**

**1.09** In the addressable service offering, the connection hold time and the order of connections is controlled by the customer. Each port (connection to a remote station) is assigned an address, and the DSS will connect to a specific port when it receives a specific port address. Three ports (125, 126, and 127) are reserved for special functions. Port 125 causes the DSS to operate in the sequential mode when addressed. (Operation in the sequential mode of the addressable offering is similar to that described in 1.06.) Port 126 and port 127 are reserved for test functions.

**1.10** Address errors received by the DSS are detected by a comparison circuit that is part of RL9-CP. When an error is detected, the DSS will inhibit the address and continue to send the acknowledgement tone to the SCU. A control signal followed by a valid address must then be sent to restore DSS operation. The DSS will also detect some customer-generated errors. For example, if the instruction following the address of port 125 exceeds the optional number of ports-per-cycle, an error will be detected.

**1.11** The double address error control option provides a comparison of two addresses sent in sequence. If the addresses are not identical, an error will be detected by the DSS. In some cases more than one address is required, then the first and second addresses must be sent twice.

**1.12** To communicate with a remote station, customer signals may only have to pass through one DSS. In that case the DSS is designated a primary DSS. To more economically serve geographical groupings of remote stations, customer transmissions are sometimes routed through a second or secondary DSS. The primary DSS must remain connected to the secondary DSS long enough for the secondary DSS to make all of its port connections. This tandem DSS arrangement is allowed only in

the controlled step option and addressable offering which provide for the longer connecting time at the primary DSS. Operating design does not permit tandeming of any third-level DSSs. Fig. 1 is a block diagram of a typical DATAPHONE Select-A-Station service.

**1.13** A glossary of the most commonly encountered terms and acronyms relating to DATAPHONE Select-A-Station service is given in Part 6 of this Section.

## **2. PHYSICAL DESCRIPTION**

**2.01** An 833A data station consists of one or more 56A1 data mountings, each equipped with data auxiliary set (DAS) 833A-type, DAS 829-type L1A, and an SC2 CP. Data set 202T must be added for the addressable service. The data station provides the following features:

- Mountings for up to five SCUs
- Provision for spare SCU (optional)
- Provision for test line (optional) terminated by a DAS 829-type L1A
- Dual power supply and dual oscillator source (SC2 CP)
- Status indicators for the power supplies and oscillators, SCU tests, and TRANSFER-TO-SPARE SCU operations.

**2.02** An 833A data station is shown in Fig. 2 equipped with an addressable offering SCU and a sequential offering SCU. A standard 23-inch rack or a KS 20018-type cabinet may be used to house the data station. The L11A-type cabinet will house up to three data mountings and the L12A-type cabinet will house up to two data mountings.

### **A. 56A1 Data Mountings**

**2.03** The 56A1 data mounting is a black sheet metal chassis 7 inches high, 23 inches wide, and 11.5 inches deep, which weighs 43.5 pounds when fully equipped. The mounting accepts one SC2 CP and up to five SCUs. A 7 inch high by 18 inch wide backplane (Fig. 3) is attached at the rear of the data mounting. This backplane is

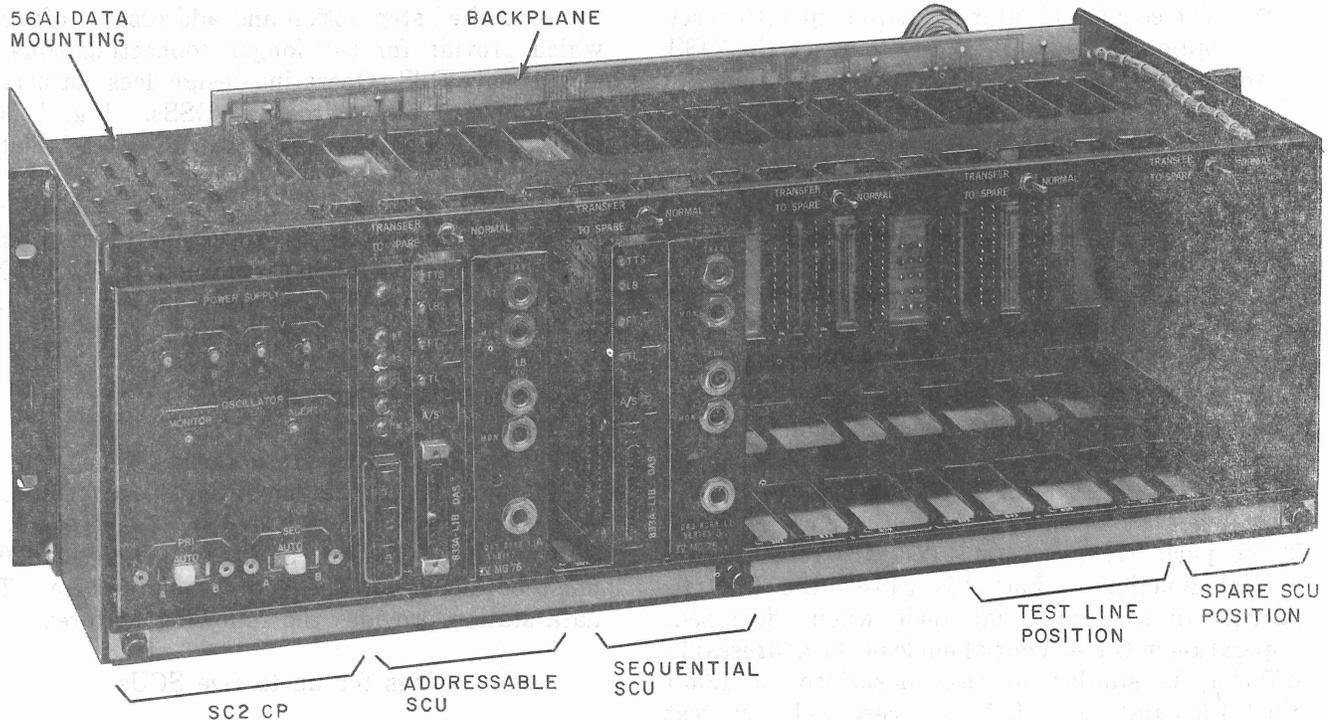


Fig. 2—833A Data Station

equipped with ten relays which are used for maintenance and testing.

**2.04** Sixteen 908W connectors are provided which make electrical connections for the plug-in units. Fifteen of these connectors are mounted vertically on the backplane, and one connector is mounted on the chassis. Also mounted on the backplane are a 50-pin connector (J1), three plugs (P2, P3, and P4), and two connector-ended cables (20-pin J2 and 10-pin J3). Connector J1 provides connections to five 4-wire primary links. Connectors J2 and J3, and plugs P2, P3, and P4 are used to interconnect multiple data mountings.

**2.05** An 833A data station may have up to three data mountings. In a multiple arrangement, the data mountings are usually stacked on top of each other. A 1-inch space should be provided between each data mounting in the data station. This space allows the customer's interface cable to enter from behind the data mounting and be drawn through to the front and plugged into the DAS 833A-type.

**2.06** The fourth position in the mounting may be utilized as a test position. A single DAS 829-type L1A is equipped in this position to terminate the test line from the testing central office. The fifth SCU position of the mounting may be used to hold a spare SCU. Both of these positions may be shared with other data mountings in a multiple arrangement.

**2.07** Above each DAS 833A-type at each SCU position is a TRANSFER TO SPARE/NORMAL switch. This switch is used to transfer the operation of a suspected defective SCU to a spare SCU.

#### B. Data Auxiliary Set 833A-Type

**2.08** The DAS 833A-type (Fig. 4) has component parts mounted on two printed wiring boards (PWBs) arranged in a mother-daughter type CP. The mother board contains the primary tone detection, secondary tone detection, and hazardous voltage protection circuits. (See Section 314-410-550 for information on primary and secondary tones.) The daughter board contains the customer interface, control signal logic, and test circuits. Four status indicators (TTS, LB, FT, and TL) and four test

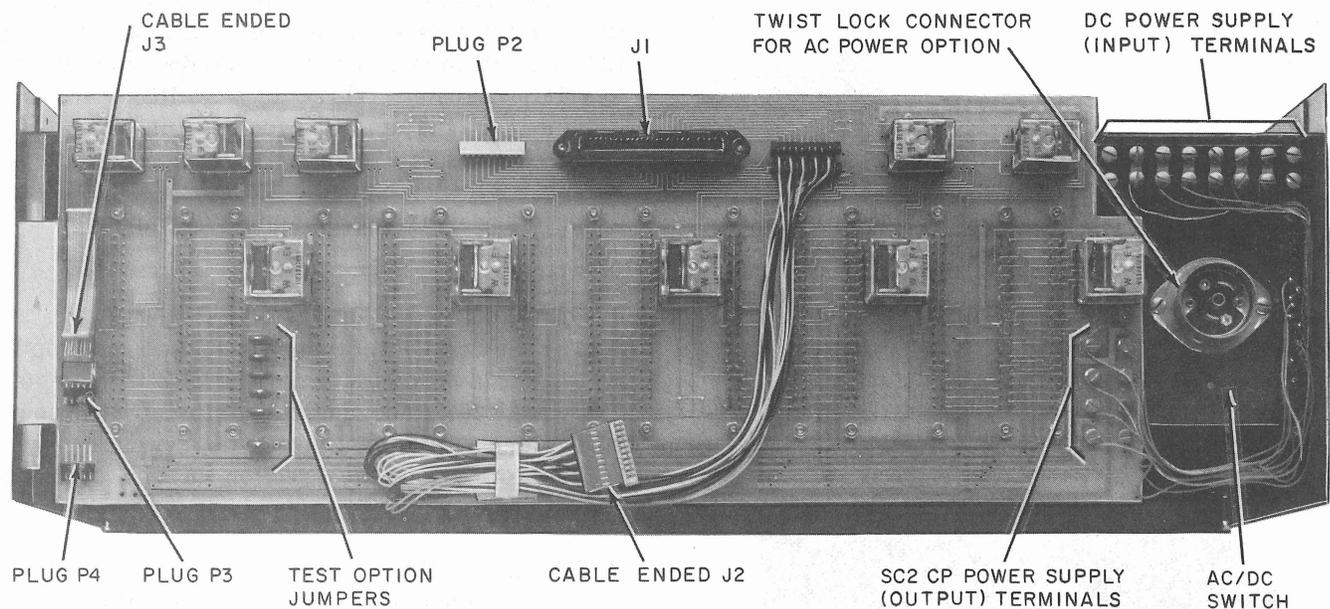


Fig. 3—56A1 Data Mounting Backplane

and function switches (LB, FT, TL, and A/S) are mounted on the faceplate of the PWBs. The A/S switch is recessed behind the faceplate to prevent its accidental operation. The 25-pin customer interface connector is also mounted on the front of the PWBs. A 40-pin connector joins the mother and daughter boards and attaches through a short flat cable. The DAS 833A-type is 5.5 inches high, 1.1 inches wide, 9.6 inches deep, and weighs about 1 pound.

**2.09** Early versions of the 833A data station may be equipped with DAS 833A-L1. The DAS 833A-L1 will operate only in the sequential offering, and the A/S switch must always be fully depressed. The -L1 code of the DAS 833A-type will be discontinued to be replaced by the -L1B code. The DAS 833A-L1B may be operated in either the addressable or sequential offering. The A/S switch should be fully depressed for the sequential offering and released for the addressable offering.

#### C. Data Auxiliary Set 829-Type L1A

**2.10** Each DAS 829-type L1A (Fig. 5) terminates the SCU end of a primary link and consists of component parts mounted on a plug-in PWB. The four jacks (TRANS TST, TRANS MON, REC TST, REC MON) mounted in the faceplate of the

DAS 829-type L1A provide access for testing and monitoring the transmit and receive circuit paths. The jacks will accept a standard 310 plug. An LB (loopback) indicator is also mounted on the faceplate.

**2.11** The DAS 829-type L1A is available in three basic codes; DAS 829A-L1A, DAS 829B-L1A, and DAS 829C-L1A depending on the type of loop it interfaces.

**Note:** The DAS 829-type L1s are not to be used in this service.

DAS 829B-L1A and DAS 829C-L1A have a REC IN jack that provides access for adjusting the receive level. A 10-dB variable-gain adjustment is also provided in the receive path and is accessible through the faceplate. The dimensions of each DAS 829-type L1A are 6-3/8 inches high, 1-3/8 inches wide, and 10 inches deep. The weight of each PWB with components varies from 15 ounces to 1-5/8 pounds depending on the code.

#### D. Data Set 202T

**2.12** The Data Set 202T is a transmitter-receiver for the address information sent between the DSS and the master station. Frequency Shift Keying (FSK) modulation is used to send and receive

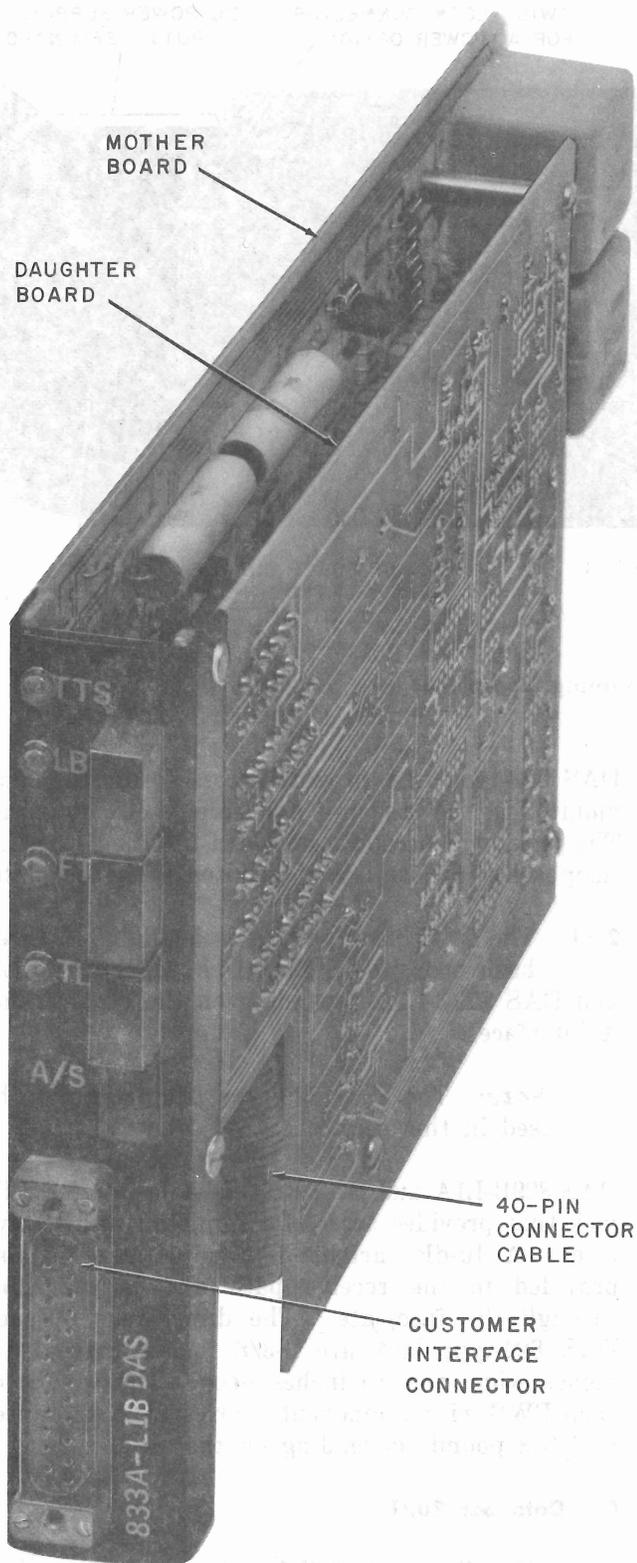


Fig. 4—Data Auxiliary Set 833A-Type

the information. The faceplate of the data set (Fig. 6) provides six indicators (ON, MR, RS, CS, CO, and TM) to monitor test functions and customer interface signals. Three test switches are also provided (AL, LT, and RT) for test functions which are used to isolate system trouble. The data set 202T is 5.6 inches high, 1.5 inches wide, 10.4 inches deep, and weighs approximately 1 pound.

#### E. SC2 CP

**2.13** The SC2 CP contains the dual power supplies and dual oscillators. The SC2 CP faceplate has 6 indicators showing the status of each power supply and oscillator. Two slide switches provide manual or automatic selection of the operating oscillator.

**2.14** The oscillators generate the primary and secondary control signals for the various service offerings and DSS options. One oscillator generates the primary control signal (2975 Hz) and the secondary control signal (2800 Hz). One oscillator is used as backup. The automatic working oscillator is designated "A", and the backup oscillator is designated "B".

**2.15** Dual feed is provided for each power supply of the SC2 CP. The working supply of each polarity is designated "A". The backup supply of each polarity is designated "B". The SC2 CP is fused with four 3-ampere slow-blow fuses.

**2.16** The power supplied to the SC2 CP may be either ac or dc (not both), but the choice must be made at installation. The ac supply (if chosen) should be a 110-volt ac source supplied from a nonswitched 3-prong outlet. If dc power is supplied, it must be furnished in both polarities (relative to signal ground) within the range of 19 to 21 volts. Marked terminal screws are provided on the data mounting for connecting a dc power source. An ac-dc switch is provided on the rear of the SC2B CP for manual selection of an ac or dc source. Therefore, if a backup power supply with automatic changeover is used, it must be the same type (ac or dc) as the primary source.

**2.17** A separate ac power cord is required for each 56A1 data mounting even in a multiple arrangement. Each ac cord should be plugged directly into the ac supply. An ac power strip should not be used on the rack or on the KS 20018-type cabinet. This precaution insures that

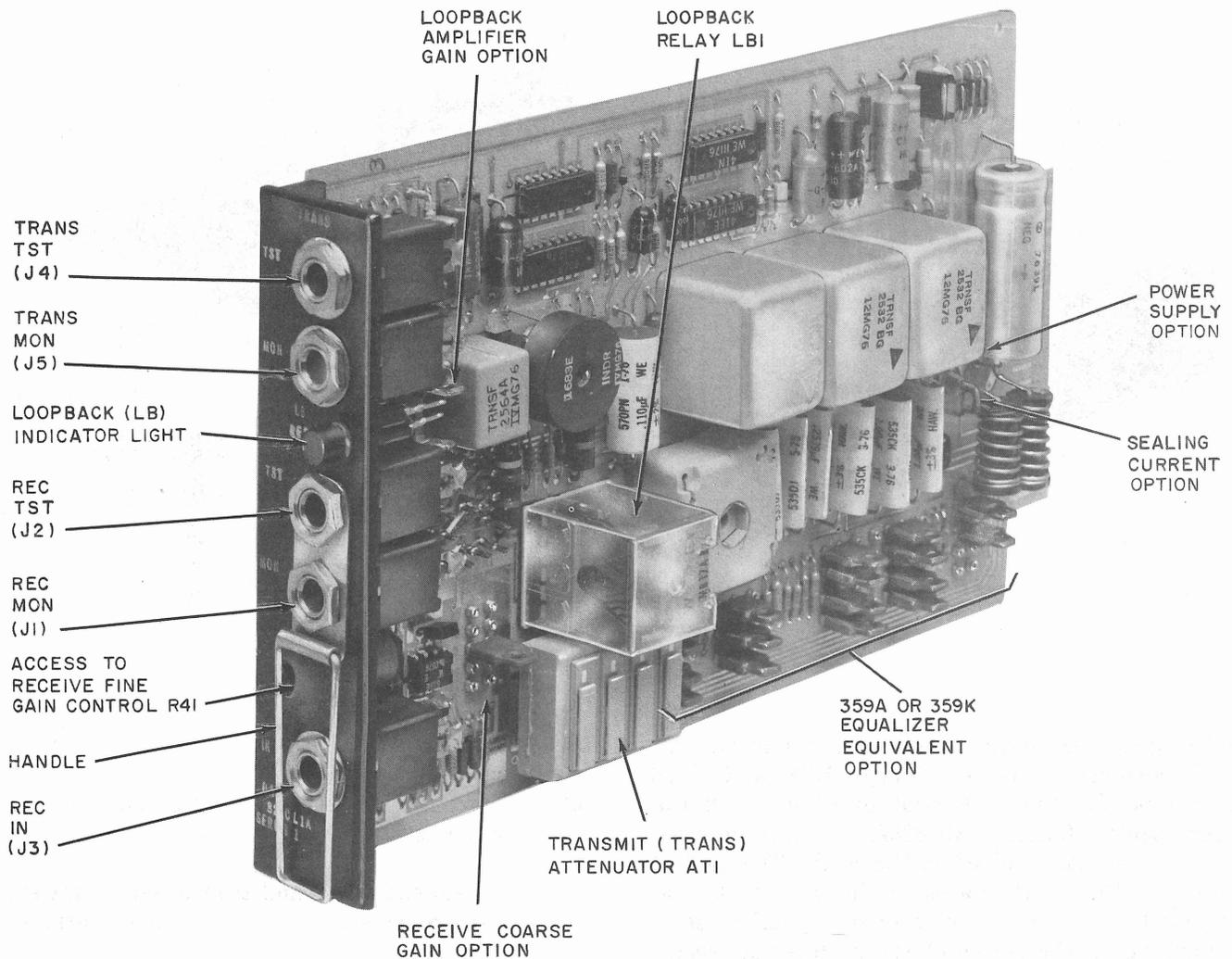


Fig. 5—Data Auxiliary Set 829-Type L1A

the 833A data station cannot be completely disabled by accidentally unplugging a single power cord.

### 3. FUNCTIONAL DESCRIPTION

**3.01** The 833A data station is part of the master station (Fig. 7) which includes the CPE. The SCU is the functional unit of the data station and provides the physical interface between the CPE and the 4-wire primary link with the DSS. In addition to control functions, the 833A data station provides the following functional features:

- Two-way protection against hazardous voltages from the CPE

- Signal level adjustment
- DC isolation between the primary link and the CPE
- Equal level channel loopback.

#### A. Selector Control Unit (SCU)

**3.02** Each SCU provides the master station with control and voiceband signaling for a maximum of 16,384 remotely located stations (sequential offering) or a maximum of 15,625 remote stations (addressable offering). This is made possible by connecting secondary DSSs beyond the primary DSS. Five SCUs for the addressable or sequential

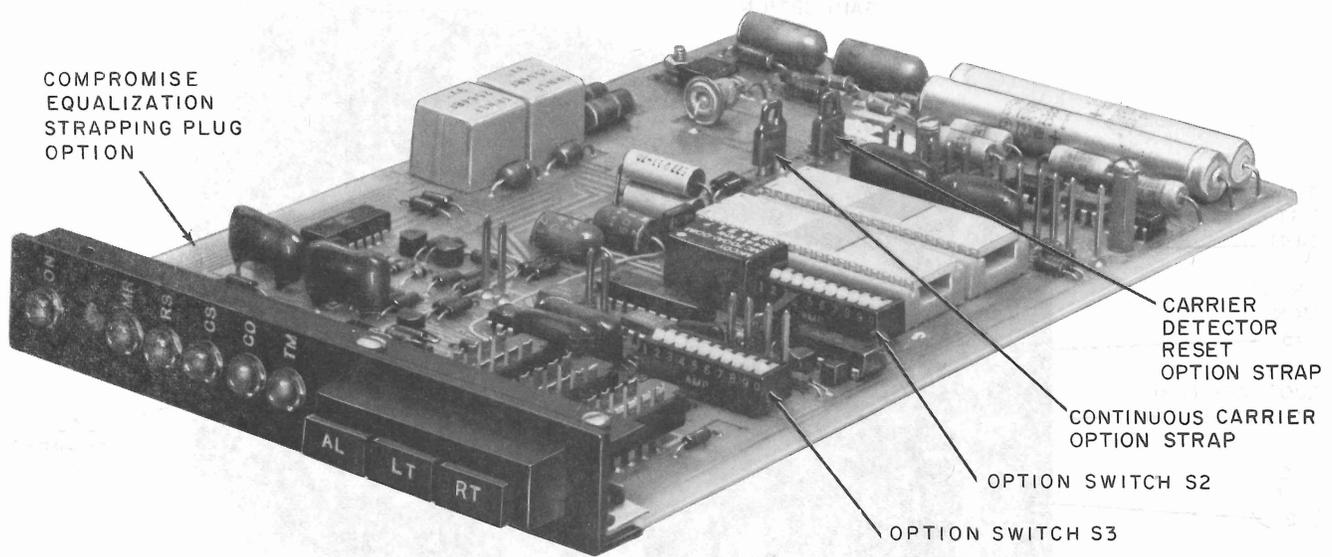


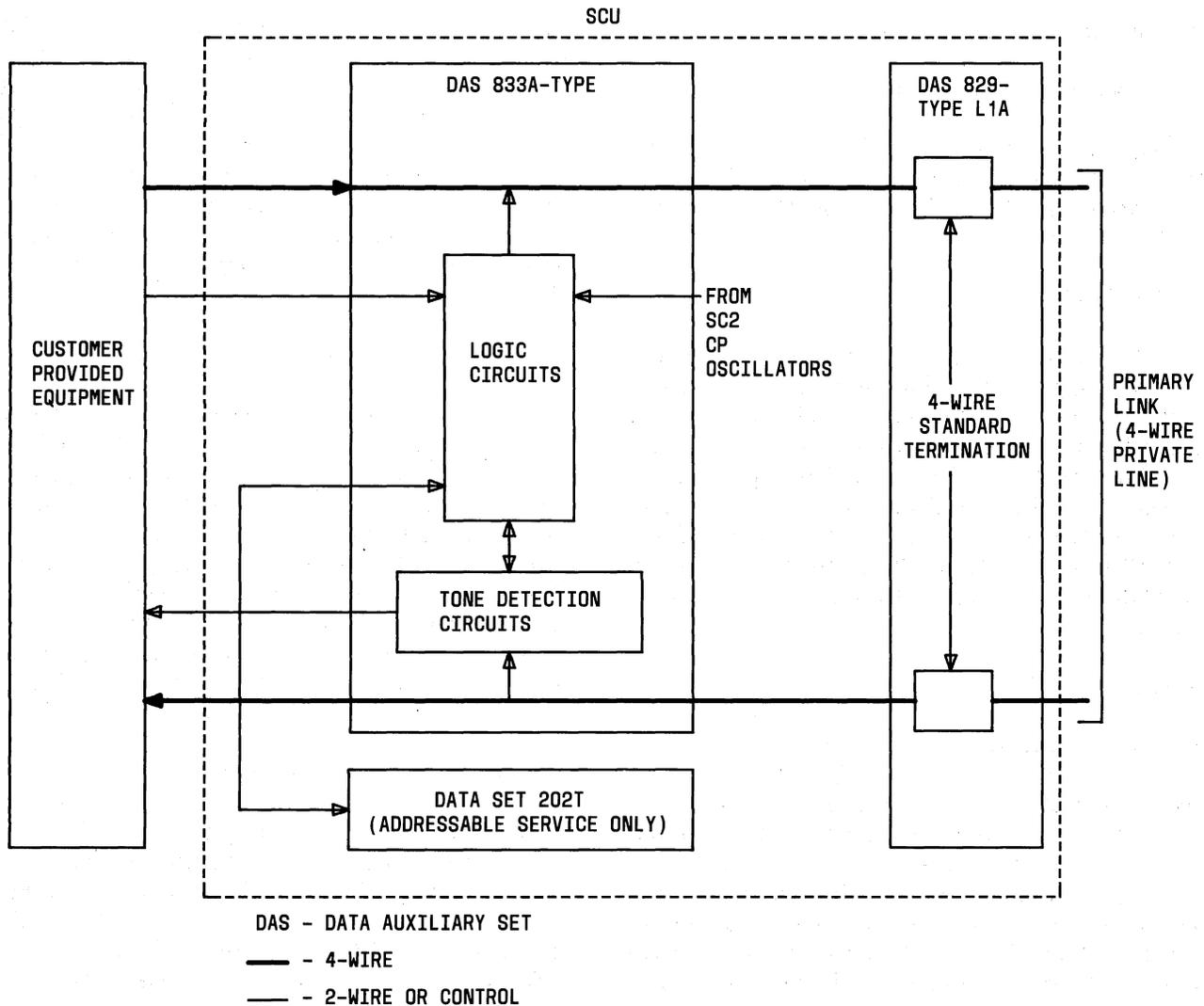
Fig. 6—Data Set 202T

offering can be mixed in one data mounting. An SCU consists of DAS 829-type L1A and DAS 833A-type for the sequential offering. For the addressable offering, DAS 833A-L1B must be used and data set 202T added to the SCU. The control logic of the SCU places it in an end-to-end transmit-receive state or control signaling state depending on the status of the dc interface leads. DC interface occurs between the DAS 833A-type and both the CPE and data set 202T.

#### DAS 833A-Type

3.03 The DAS 833A-type provides the following features:

- End-to-end voiceband transmission between the master station and a remote station
- Primary or secondary control signal logic to control the DSS operation



- Connection to data set 202T in the addressable offering using DAS 833A-L1B
- Selection of test modes
- Frame and acknowledgement tone detection.

In addition, the DAS 833A-type receives dc signals from the CPE and activates the proper unit. The analog signals from the primary link are also translated by the DAS 833A-type into dc signals for the CPE.

#### DAS 829-type L1A

3.04 The DAS 829-type L1A provides:

- 4-wire standard termination
- Hazardous voltage protection
- Longitudinal balance
- Equal level loopback (manual control)
- Level adjustment in transmit and receive paths

## SECTION 598-083-105

- Amplitude equalization
- Test and monitor access.

The major function of the DAS 829-type L1A is to interface with the 4-wire primary link. The 833A data station and the DSS use the DAS 829-type L1A for this purpose.

### Data Set 202T

**3.05** The data set 202T is a transmitter-receiver of nonsynchronous (intermittent) medium-speed binary serial data. Frequency Shift Key (FSK) modulation is used for transmitting and receiving data at a maximum speed of 1200 bits per second. Mode of operation is full duplex (4-wire send and receive operations occur at the same time). Data set 202T is used only in the addressable offering to modulate and demodulate the signals containing addresses.

### SCU Options

#### *Customer Options*

**3.06** There are five customer options associated with the 833A data station. These options involve the service offering, grounding, power, mounting, and spare SCU. The customer may select either the addressable offering or the sequential offering. Grounding may be provided through the power cord ground wire (ac), through the frame ground screw terminal (dc), or through a ground strap. The ground strap normally connects the signal ground to the protective ground. The option allows the ground strap to be disconnected according to local conditions. The data station may be powered with an ac or dc source as described in 2.16. The customer may select either the 23-inch racks or the DATAPHONE KS-20018-type cabinet to house the data station. (See 2.02.) The last option concerns a spare SCU. The customer may want a spare SCU that can be used to take over the operation of a suspected defective SCU.

#### *Telephone Company Options*

**3.07** There are several telco options, all relating to equipment. The DAS 829-type L1A is available in three codes as described in 2.11. In addition, each DAS 829-type L1A provides level adjustment, and equalization. These options are described in Section 598-082-100. The DAS 833-type

should be provided as described in 2.09. Table A shows the option settings for data set 202T that are required for the addressable service. The test line option allows a test line to be terminated in a DAS 829-type L1A is located in the fourth SCU position. The test line allows the telco to access the primary links for testing and maintenance. The test line is enabled by moving six jumpers located on the backplane from the NORM to the TST position.

### B. Customer Interface

**3.08** The customer interface (described in Technical Reference PUB 41014) is the point of connection between the 833A data station and the CPE. These dc interface leads are compatible with EIA Standard RS-232-C. The interface is a 25-pin female connector (mounted on the DAS 833A-type). Tables B and C provide a brief description of each pin function in the addressable and sequential service offerings. The customer must supply the plug and cable to connect the CPE to the DAS 833A-type.

### C. Status and Test Indicators

**3.09** The DAS 833A-type has four status light-emitting diodes (LEDs). The functions of these four LEDs are given in Table D. In normal operation, these LEDs will be off. When the TRANSFER TO SPARE/NORMAL switch is operated, the TTS LED will go on. The other three LEDs will go on when the associated pushbutton is depressed.

**3.10** The DAS 829-type L1A has a single LED mounted on the faceplate. This LED will go on when the LB pushbutton is depressed.

**3.11** The data set 202T has six status LEDs on the faceplate. The functions of these LEDs are listed in Table E. The LEDs operate as follows. The ON LED will be on as long as power is supplied to data set 202T. The RS and CS LEDs go on to indicate the status of the CA and CB leads from and to the DAS 833A-type. When report words are received from the DSS, the CO LED goes on. The TM LED goes on when the SCU is in analog loopback test (AL), local self-test (LT), or remote test (RT). The TM LED will go off when the test buttons are released except in the LT mode. If an error is made, the TM LED will go off before the LT is ended. All LEDs go on in the LT mode irrespective of actual conditions.

TABLE A  
DATA SET 202T INSTALLER OPTIONS

FEATURE	OPTIONS	DESCRIPTION	SWITCH SETTING	PROVIDE
			S3 Switch Contact Setting On Transmitter-Receiver	One Per Data Set
			1 2 3 4 5 6 7 8 9 0	
4-Wire Operation	ZK*		0 0 X X 0 0 0 0 X X X	
			S2 Switch Contact Setting On Transmitter-Receiver	One Per Data Set
			1 2 3 4 5 6 7 8 9 0	
4-Wire Operation	ZK*		X - - - - - - - - -	
Soft Turnoff and Squelch Intervals		Soft Turnoff Squelch		
	Y*	8 ms 0	- - 0 X - - - - 0 0	
Fast Carrier Detection	Q*	IN	- - - - 0 - - - -	One Per Data Set
Clear-to-Send Interval	M*	8 ms	- - - - - 0 0 - - -	
Control by DAS 828- or 829-Type				One Per Data Set
	A	OUT	- - - - - - X - -	
Clamp	F*	IN	- 0 - - - - - - -	One Per Data Set
Carrier Detector Reset	ZL	IN	Strapping On Transmitter-Receiver CP	One Per Data Set
			Install E21-E23	
Continuous Carrier	ZO*	OUT	Install E25-E26	One Per Data Set
Compromise Equalization	ZV	Minimum	Install E28	One Per Data Set
Grounding Option	ZG*	Signal Ground Connected Frame Ground	Screw Switch S1 Setting on Interface Circuit	One Per Data Set
			S1 Closed	

- X Rocker down on side adjacent to numbers.
- 0 Rocker up on side adjacent to numbers.
- Rocker may be in either position.
- \* Factory furnished.

TABLE B

## SEQUENTIAL INTERFACE LEADS

PIN NO.	DIRECTION	LEAD
1		Not used
2-5		Reserved for Addressable Offering
6	From SCU	Data Set Ready (CC)
7		Signal Ground (AB)
8		Reserved for Addressable Offering
9-11		Not Used
12	From SCU	Primary Frame (PF)
13		Not Used
14	To SCU	Send Secondary Control Signal (SC)
15		Not Used
16	From SCU	Secondary Frame (SF)
17-18	From SCU	End-to-End Receive Pair
19	To SCU	Send Primary Control Signal (PC)
20		Reserved for Addressable Offering
21-22		Not Used
23-24	To SCU	End-to-End Transmit Pair
25		Reserved for Addressable Offering

**3.12** The common power supply and oscillator module (SC2 CP) has a top row of four green LEDs indicating the status of the dualized power supply. The bottom row of two LEDs, one green MONITOR and one red ALERT, indicate the status of the oscillators that generate the control signals. Tables F and G are a summary of the respective LED functions.

#### 4. OPERATION AND MAINTENANCE FEATURES

**4.01** This part describes the test and maintenance switches which are part of the SCU.

**Note:** All of the following test and maintenance operations are to be carried out only under the direction of a telco test center. These operations will interrupt service.

#### A. A/S (Addressable/Sequential) Switch

**4.02** This pushbutton switch on the DAS 833A-type is set at installation. The switch is recessed to guard against accidental operation. Depressing the A/S switch selects the logic of the DAS 833-type for sequential offering operation. On the DAS 833A-L1B, this switch is released for addressable service operation.

#### B. Oscillator Switches

**4.03** Normally, these slide switches on the SC2 CP are both left in the "AUTO" position. The "A" oscillator will then operate unless one or both frequencies fail. The "B" oscillator will automatically take over operation in that case. The slide switch also provides manual override of the sensing and switchover circuits. The customer may manually select the "A" or "B" oscillator by

TABLE C

## ADDRESSABLE INTERFACE LEADS

PIN NO.	DIRECTION	LEAD
1		Not Used
2	To SCU	Transmitted Data (BA)
3	From SCU	Received Data (BB)
4	To SCU	Request-to-Send (CA)
5	From SCU	Clear-to-Send (CB)
6	From SCU	Data Set Ready (CC)
7		Signal Ground (AB)
8	From SCU	Received Line Signal Detector (CF)
9-11		Not Used
12	From SCU	Primary Acknowledgement (PA)
13		Not Used
14	To SCU	Send Secondary Control Signal (SC)
15		Not Used
16	From SCU	Secondary Acknowledgement (SA)
17-18	From SCU	End-to-End Receive Pair
19	To SCU	Send Primary Control Signal (PC)
20	To SCU	Data Terminal Ready (CD)
21-22		Not Used
23-24	To SCU	End-to-End Transmit Pair
25	To SCU	Carrier Detector Reset

moving the slide switch to the "A" or "B" position. This is useful for direct testing of a particular oscillator or frequency.

#### C. TRANSFER TO SPARE/NORMAL Switch

**4.04** The customer may transfer the operation of one circuit from an SCU believed to be defective to the spare SCU by the following procedure:

- (1) Place the TRANSFER TO SPARE/NORMAL switch in the TRANSFER TO SPARE position. The TTS LED should light on the DAS 833A-type of the suspected SCU. This action will put the suspected SCU out of service.

- (2) The 25-pin customer interface connector should be removed from the DAS 833A-type of the replaced SCU. This connector is then transferred manually to the DAS 833A-type of the spare SCU. The circuit connections are now controlled through the spare SCU.

- (3) The A/S switch on the spare SCU should be set to the same position as the A/S switch of the replaced SCU. If this has already been done, no change in the switch setting is necessary.

**Note:** The spare SCU must be equipped for the same service offering as the defective SCU or improper operation will result.

TABLE D

## DAS 833A-TYPE LED FUNCTIONS

ASSOCIATED SWITCH	LED	STATUS	INDICATION
TRANSFER TO SPARE/ NORMAL	TTS	ON	SCU operation has been taken over by spare SCU.
LB	LB	ON	DAS 829-type LIA is in loopback test condition.
FT	FT	ON	833A data station is in functional test mode.
TL	TL	ON	SCU is connected to test line from the telco test center.

TABLE E

## DATA SET 202T LED FUNCTIONS

LED	INDICATION
ON	Power is applied to data set.
MR — Modem Ready	SCU is not in a test condition. Data set is ready to transmit or receive.
RS — Request to Send	Signal from CPE indicating it has data to transmit.
CS — Clear to Send	Data set is ready to transmit.
CO — Carrier On	A line signal is being received (carrier detected—not necessarily valid data).
TM — Test Mode	SCU is in an AL, LT, or RT test mode. Also indicates an error in the local self-test.

**D. DAS 833A-Type Features**

**4.05 LB (Loopback) Switch:** Depressing this test switch causes an equal level loopback at the channel termination (DAS 829-type L1A).

The switch operates a loopback relay on the DAS 829-type L1A. The relay transfers the receive leads of DAS 829-type L1A from the DAS 833-type input to the output of the loopback amplifier in the DAS 829-type L1A. This operation causes a

TABLE F

## CP-SC2 LED FUNCTIONS (POWER SUPPLIES)

LED STATUS				POWER SUPPLY OPERATION
+V		-V		
A	B	A	B	
ON	ON	ON	ON	Normal — all supplies functioning.
OFF	ON	ON	ON	Working unit of one polarity has failed. Backup unit has taken over operation.
ON	ON	OFF	ON	
OFF	OFF	ON	ON	<b>Caution: Service interruption indicated — SCUs are nonoperational. Both supplies of at least one polarity have failed.</b> May indicate no power being supplied to SC2.
ON	ON	OFF	OFF	
OFF	OFF	OFF	ON	
ON	OFF	OFF	OFF	
OFF	OFF	OFF	OFF	

**Note:** As long as A or B of each polarity is operational (LED ON), the SCUs will continue to function.

TABLE G

## CP-SC2 LED FUNCTIONS (OSCILLATORS)

LED		OSCILLATOR OPERATION
MONITOR	ALERT	
ON	OFF	Normal — Both oscillators (A and B) are operational.
ON	ON	One oscillator (either A or B), or two different control frequencies (either primary or secondary) of the A and B oscillators are nonoperational.
OFF	ON	<b>Caution: Service interruption may be indicated. Both oscillators (A and B) of one control frequency (primary or secondary) have failed.</b>

signal received by the DAS 829-type L1A to be returned to its source at the proper transmit level.

**4.06 FT (Functional Test) Switch:** When this switch is depressed, both control signal

leads and both acknowledgement tone leads are disconnected from the customer interface connector. The primary acknowledgement tone lead is then connected to the secondary control signal lead. The secondary acknowledgement tone lead is

connected to the primary control signal lead. This operation causes the SCU to send a secondary control signal after it receives the primary acknowledgement tone. The SCU will also send a primary control signal after receiving the secondary acknowledgement tone. This functional test will remotely verify the operation of the tone detection circuits and select logic of the DAS 833A-type. This operation also verifies the control signal frequencies.

**4.07 TL (Test Line) Switch:** When this switch is depressed, it transfers the customer's receive and transmit leads from the customer interface connection through a DAS 829-type L1A to a test line. If this option is to be used, a DAS 829-type L1A must be located at the fourth SCU position of the 56A1 data mounting. The DAS 829-type L1A is used to terminate the test line and may be shared among several data mountings. The test line option allows the test center to perform remote testing functions by gaining access to the 4-wire facilities at the SCU 4-wire interface. The DAS 833A-type provides automatic level compensation when switching to the test line. (Level compensation is needed to correct the difference between the SCU receive and transmit signals.)

**E. Data Set 202T Features**

**4.08 AL (Analog Loopback) Switch:** When this pushbutton is depressed, the output of the data set 202T transmitter is connected to the input of the data set receiver. This action permits testing of the SCU addressing circuitry with the aid of the customer data terminal. In this test mode, the TM LED lights on the data set and the MR LED goes off. The other LEDs on the data set go on and off according to the instructions from the DAS 833A-type. The customer data terminal must be able to provide these instructions in order to perform this test.

**4.09 LT (Local Self-Test) Switch:** This pushbutton switch is nonlocking and must be kept manually depressed during the test. All LEDs on the data set are on during the test to check for LED failures. The output of the data set transmitter is connected to the input of the receiver. During the test, the data set generates a random address. This address is processed by the transmit and receive circuitry of the data set. If an error occurs during the test, the TM LED

goes off and remains off. The LT pushbutton must be released and again depressed for the TM LED to go on again. If an error occurs in a 15-second test, the test should be repeated. The SCU should pass (TM LED stays on) four out of five 15-second tests. Releasing the LT pushbutton restores normal operation.

**4.10 RT (Remote Test) Switch:** The remote test is made in conjunction with a test center. As in the LT test mode, when the RT pushbutton is depressed, it causes a digital loopback within the data set. The TM LED goes on, and the customer interface leads are disabled. The random address is processed by the transmit and receive circuits as described for the LT. In addition, the random address is transmitted to the test center. The test center can then check for errors and perform a digital loopback test.

**F. SC2 CP Features**

**4.11** A set of marked screw terminals (+15, +12, -15, -12, GRD, +5, -5,) is provided on the backplane to the left of the SC2 CP. The power supply output voltages can be measured at these screw terminals.

**5. REFERENCES**

**5.01** The following documents provide additional information on facilities and equipment that are associated with DATAPHONE® Select-A-Station service and the 833A Data Station.

NUMBER	TITLE
CD & SD-1D276-01	833 Data Station—Description
107-104-010	178A Test Set—Description and Operation
107-402-100	921 Data Test Set—Description and Operation
314-410-550	DATAPHONE® Select-A-Station Service —Overall System Description
590-101-000	150A Channel Service Unit—Description, Installation, Maintenance and Tests

590-105-100	DATAPHONE® Select-A-Station Service—Data Station Selector J70180AA—Description
590-105-101	Data Station Selector J70180AA—TOP
592-031-100	Data Set 202T Transmitter — Receiver — Description
598-082-100	Data Auxiliary Set 829-Type—Channel Interface Units—Voice-band Private Line Channels—Description
598-083-106	833A Data Station—TOP
598-083-180	833A DATA STATION—Summarizing Specification-Data System
666-617-100	DATAPHONE® Select-A-Station Service—Test Centers—Administrative Procedures
666-617-101	DATAPHONE® Select-A-Station Service—Test Center Procedures—TOP
807-702-150	Data Station Selector—Equipment Design Requirements—J70180
880-480-010	DATAPHONE® Station-A-Station Service—Description and Engineering Considerations
999-100-147	833A Data Station—How to Operate Manual

## 6. GLOSSARY

**6.01** A list of unique terms and their definitions as used in this section are as follows:

**Address**—A bit sequence that activates digital control circuitry. Used generally, address may refer to port addresses, instructions, and control words.

**Addressable**—A service offering in which the customer has in-service control of both the duration and order of connections to remote stations.

**Automatic Step**—A DSS option of the sequential offering in which the duration and order of connections are fixed.

**Automatic Step with Reset**—A DSS option of the sequential offering in which the duration and order of connections are fixed, but the DSS will reset to the beginning of the connection cycle upon command from the master station.

**Control Signal**—A signal transmitted from the master station (SCU) to reset the DSS, step the DSS to the next port, or implement a DSS control function.

**Controlled Step**—A DSS option of the sequential offering which allows the customer to have in-service control over the duration of the connection. However, the connection sequence is fixed.

**Customer Provided Equipment (CPE)**—Customer equipment located on the customer side of the telephone company interface and provided by the customer. Examples are digital computers, communication controllers, and magnetic tape readers and recorders.

**Data Auxiliary Set 829-Type-L1A**—circuit packs used to provide 4-wire terminations for 4-wire facilities.

**Data Auxiliary Set 833A-Type**—circuit packs that provide control signaling functions in the SCU at the master station.

**Data Set 202T**—A CP that provides modulation and demodulation for signals containing addresses.

**Data Station Selector (DSS)**—A switching device located in central offices and having the capability of making connections between a 4-wire input and up to 128 outputs (sequential offering) or 125 outputs (addressable offering) which may be 2-wire or 4-wire.

**Master Station**—The station (containing CPE and SCUs) which controls the DSS operation and communicates with remote stations.

**Primary Link**—The 4-wire transmission facility between the master station and SCU and a primary DSS.

**Primary Tone**—A frame tone or acknowledgement tone sent to the master station by a primary DSS.

**Remote Station**—One of many remotely-located stations on a multistation circuit that is connected to the master station by DSSs.

**Secondary Link**—The 4-wire transmission facility between DSSs.

**Secondary Tone**—Similar to the primary tone except that it is sent by a secondary DSS.

**Selector Control Unit (SCU)**—The equipment associated with one circuit located at the master station and used by the customer to transmit control signals to DSSs and receive supervisory signals from DSSs.

**Sequential**—A service offering to a customer in which the order of connections from the master station to the remote stations is fixed by that initial assignment to the DSS output ports.