1A DATA STATION
MULTICHANNEL ARRANGEMENTS
INSTALLATION

1. GENERAL

1.001 This addendum supplements Section 591-813-200, Issue 2.

1.002 This addendum is issued to add:

(a) The station current interface circuit pack (DP69) which is used for 20-mA, 3-wire, full- or half-duplex, binary service. The DP69 replaces the DP56 circuit pack which is now rated manufacture discontinued (MD).

(b) The ED-73542-20 cable assembly which allows interconnection of the alarms between systems which are not mounted adjacent to each other.

(c) A procedure for installing the 1A data station multichannel arrangement when the major assembly and initial testing has been performed at a Western Electric Company Service Center.

1. GENERAL

The following changes apply to Part 1 of the Section:

(a) 1.03—revised.

(b) 1.04—revised.

(c) Note in Fig. 1—revised.

(d) Fig. 3—revised.

2. TOOLS AND APPARATUS

(a) 2.01 (e) and (g)—revised.

3. EQUIPMENT ASSEMBLY

The following changes apply to Part 3 of the Section

(a) 3.02.1—added.

(b) Table B—revised.

(c) Fig. 4—revised

(d) 3.03, Steps 2, 6, and 11—note added.

(e) Fig. 5—revised

(f) 3.04, Steps 2, 3, and 23—note added.

(g) 3.04, Step 26 and Table G—deleted.

(h) 3.04, Steps 27 through 31—renumbered.

(i) 3.05, Steps 4, 5, and 25—note added.

(j) Part C—added.

(k) Part D—added.

(l) Fig. 6.1—added.

4. STRAPPING AND OPTION CONNECTIONS

The following changes apply to Part 4 of the Section.

(a) 4.07 (a), (b), (i), and (j)—revised

(b) 4.07 (g)—note added.

(c) Part G.1—added.

(d) Fig. 12.1—added

(e) 4.14—revised.

(f) 4.15—revised.

(g) 4.16—revised and note added.

(h) Table J—note added.

(i) Table K—note added.

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5. ALIGNMENT

The following change applies to Part 5 of the Section.

(a) 5.04—THINK paragraph added.

Attached:

Pages 1, 2, and 3 dated February 1974, revised
Page 4 dated February 1974, reissued
Pages 5 through 20 dated February 1974, revised
Page 20.1 dated February 1974, added
Page 29 dated February 1974, revised
Page 30 dated February 1974, reissued
Page 43 dated February 1974, revised
Pages 45, 46, and 47 dated February 1974, revised
Page 47.1 dated February 1974, added
Page 49.1 dated February 1974, added

1A DATA STATION
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1. GENERAL

1.01 This section describes the procedures to be followed for installing a 1A data station, multichannel arrangements, on customer premises in a KS-20018-L7 or KS-20093-L1/L2/L5 cabinet. The 1A data station, multichannel arrangements (MCA), will hereafter be referred to as the 1A data station.

1.02 This section has been reissued to add:

(a) Data auxiliary set (DAS) 811J-L1

(b) Station balanced interface (DP63 circuit pack) (±3 mA, 2-wire, HDX or FDX).

(c) Station current interface (DP68 circuit pack) (62.5- or 20-mA, 2-wire, HDX, binary only)

(d) Station EIA interface (DP65 circuit pack) (EIA voltage, FDX or HDX, ternary or binary).

The station EIA interface (DP65 circuit pack) replaces the station EIA interface (DP55 circuit pack), now rated Manufacture Discontinued (MD).

1.03 This section describes the installation and initial lineup procedures and tests to be performed on a 1A data station, prior to placing the system in service. ▶An abbreviated procedure

for the installation of 1A data stations that have been previously assembled and tested at a telephone company (Telco) location or Western Electric Company (WE) service center is also included.

1.04 The 1A data station can be assembled on the customer premises by Telco personnel, or it can be assembled and tested in a Telco location or WE service center.

1.05 The customer must provide a standard 3-wire grounding-type power receptacle, 105 to 129 volts 57 to 63 Hz ac (to accept a plug equipped with two parallel blades and a round-shaped grounding pin). The receptacle should be adequately fused to provide at least 1 ampere for each 8-channel system (common equipment plus 8 channel terminals) in a cabinet. ***The receptacle shall not be under control of a switch.***

1.06 For general installation information, refer to the section entitled Data Sets, Multiple Installation Information (590-010-201).

1.07 The cabinet should be installed in a manner to permit easy access to both the front and rear of the cabinet.

1.08 Verify with the serving test center (STC) that the overall facilities meet transmission requirements (see Section 314-410-500).

1.09 The sending and receiving frequencies of the 1A data station are determined by the transmitter and demodulator circuit packs, respectively. Table A lists the frequencies and the channels, and the proper transmitter and demodulator, by number, to be used with each respective channel.

1.10 Figure 1 is a block diagram showing the signal paths through the transmit and receive portions of a channel for the binary mode of operation. Figure 2 is a block diagram showing the signal paths through the transmit and receive portions of a channel for the ternary mode of operation. Figure 3 shows in block diagram format the station interfaces that may be used in Fig. 1 and 2. These figures are presented to give an overall picture of the data circuit in the channel. See Section 591-813-100 for a detailed discussion of the data transmission through the channels.

Caution: Care should be exercised in handling the circuit packs, particularly the transmitter and/or demodulator packs, to avoid dropping them. The property of the ferrite core inductors used on these cards is such that a shock can change the inductance sufficiently to change the BIAS by a few percent and to change the frequency of the oscillator. A severe shock can crack the ferrite structure. It is possible for a hairline crack to develop and not be noticeable to the naked eye.

1.11 Information pertaining to the terminal, such as business machine or computer, is not included in this section.

2. TOOLS AND APPARATUS

2.01 The tools and apparatus required to perform the lineup procedures are listed in (a) through (i):

(a) Small flat-nose (duckbill) pliers for installing jumper wires into quick-clip 216A terminals

(b) KS-20538-L1 volt-ohm-milliammeter or equivalent, 20,000 ohms-per-volt meter

(c) Hewlett Packard 403A voltmeter, or equivalent, for measuring ac voltages below 3 volts

(d) 901B Data test set (cover only)

(e) Screw starter, Kedman Co. No. 1736, or equivalent

(f) 600-ohm or 900-ohm terminating resistor corresponding to the impedance of the facility

(g) KS-19935 Stelma telegraph carrier test set (Section 103-825-100), or equivalent transmission measuring set (TMS) capable of measuring signals down to −32 dBm. The KS-19935-L7 portable Stelma is desirable for installation personnel.

(h) 911A data test sets, or equivalent

(i) 2P14A patching cord, or equivalent (dial for DOTC).

Note: Items (g), (h), and (i) are located in telegraph testroom for installation of 43B1 to 1A data station.

TABLE A

CORRELATION OF TRANSMITTER AND DEMODULATOR FREQUENCIES WITH RESPECT TO CHANNEL NUMBERS AND CIRCUIT PACK DESIGNATION

CHANNEL NUMBER	SPACE FREQUENCY	CENTER FREQUENCY	MARK FREQUENCY	TRMTR NUMBER	DEM NUMBER
SINGLE BANDWIDTH					
1	390	425	460	DP1	DP26
2	560	595	630	DP2	DP27
3	730	765	800	DP3	DP28
4	900	935	970	DP4	DP29
5	1070	1105	1140	DP5	DP30
6	1240	1275	1310	DP6	DP31
7	1410	1445	1480	DP7	DP32
8	1580	1615	1650	DP8	DP33
9	1750	1785	1820	DP9	DP34
10	1920	1955	1990	DP10	DP35
11	2090	2125	2160	DP11	DP36
12	2260	2295	2330	DP12	DP37
13	2430	2465	2500	DP13	DP38
14	2600	2635	2670	DP14	DP39
15	2770	2805	2840	DP15	DP40
16	2940	2975	3010	DP16	DP41
17	3110	3145	3180	DP17	DP42
DOUBLE BANDWIDTH					
21(57)	610	680	750	DP18	DP43
22(58)	950	1020	1090	DP19	DP44
23(51)	1290	1360	1430	DP20	DP45
24(52)	1630	1700	1770	DP21	DP46
25(53)	1970	2040	2110	DP22	DP47
26(54)	2310	2380	2450	DP23	DP48
27(55)	2650	2720	2790	DP24	DP49
28(56)	2990	3060	3130	DP25	DP50

( ) These designations appear on the Stelma KS-19935 Telegraph Carrier Test Set. Designations 51 through 56 correspond to double width channels of the 43A1 System. Channels 57 and 58 are available in the 43B1 System.

3. EQUIPMENT ASSEMBLY

A. General

3.01 For general installation information, refer to the section entitled Data Sets, General Installation and Connection Information (590-010-201).

3.02 The components utilized in assembling a 1A data station are listed in Table B. The quantity of any one component will depend upon the customer requirements and will be so noted on the circuit layout record or engineering service order.

TABLE B

COMPONENTS FOR 1A DATA STATION

NOMENCLATURE	CODE
Cabinet	KS-20018-L7
Cabinet	KS-20093-L1/L2/L5
Power Strip	KS-20129-L1
Data Mounting Unit	29A1
Data Mounting Unit	29B1
Rectifier	KS-20575-L1
Circuit Pack (Transmitter)	See Table A
Circuit Pack (Demodulator)	See Table A
Circuit Pack (Line Circuit)	DP52
Circuit Pack (Receive Interface)	DP51
Circuit Pack (Ternary Receive Interface)	DP57
Circuit Pack (Station EIA Interface)	DP65
Circuit Pack (Station Current Interface) (62.5- or 20-mA, 2-Wire Loop)	DP68
Circuit Pack (Station Balanced Interface) (±3 mA, 2-Wire Loop)	DP63
Circuit Pack (Station Current Interface) (20-mA, 3-Wire)	DP56 (MD) or DP69
Circuit Pack (System Alarm)	DP62
Circuit Pack (Alarm Indicator)	DP59
Circuit Pack (Channel Check)	DP58
Data Auxiliary Set	811G-L1
Data Auxiliary Set	811H-L1
Data Auxiliary Set	811J-L1
Adapter	202A
Adapter	202B
Adapter	202C
Panel	599A
Indicator	18B-49
Cord (for Indicator), 5 ft. 6 in., 9 ft., 13 ft., 25 ft. lengths	D4BD-49
Cord (for connecting DAS 811J-L1 and 29A1 or 29B1 Data Mounting)	Double-Ended A25D*
Cord (for extending alarms to a non-adjacent mounting)	ED-73542-20
Lamps (3 Required per Indicator)	A1
Balancing Network	4066G

* Must be ordered separately.

3.02.1 ▶When the 1A data station is to be completely assembled on the customer premises, refer to Part 3B. If the 1A data station has been previously assembled and tested at a Telco location or WE service center, refer to Part 3C.◀

B. Equipment Assembly

3.03 The following procedure is an example of a 10-channel installation in the KS-20018-L7 cabinet. The equipment should be mounted according to the following procedure (see Fig. 4):

STEP	PROCEDURE
1	Mount the KS-20575 rectifier in the 29A1 data mounting by means of brackets provided.
2	Connect the +24 volt, common, and −24 volt terminals of the KS-20575 rectifier to terminals 1, 3, and 2, respectively, on TS(D) of the 29A1 data mounting, using wires provided. (Note that the frame ground terminal of the KS-20575 rectifier is left unconnected unless otherwise specified on the CLR or Engineering Work Order.) ▶***Note:*** See Fig. 4 for the designations on the KS-20575 rectifier terminal strip.◀
3	Feed the power cable of the rectifier under and inside the 29A1 data mounting along the right side to the rear.
4	Prior to mounting the DAS 811G-L1, verify that the shorting wire between the terminals of the channel check meter has been removed. ***Note:*** Meter will not function during test and alignment procedure if strap is not removed.
5	Mount DAS 811G-L1 on the right rear of the 29A1 data mounting, using the spacers provided. The DAS is mounted by removing the binding head screws on the right rear side of the data mounting, and replacing them with longer screws and spacers furnished.
6	Feed DAS 811G-L1 cable and plug along the rear bottom of the 29A1 data mounting to the left rear corner, then forward through the slot in the channel housing and plug into J15 on bottom of the 29A1 data mounting, locking the plug in place by means of the blade lock. Fasten the cable to the rear of the data mounting unit by means of the two cable clamps on the rear. ▶***Note:*** If the ED-73542-20 cord is to be used to extend the alarm system to a 29A1 data mounting that ***is not*** adjacent, refer to Part 3D.◀
7	Mount the 29A1 data mounting in the top space of the cabinet.
8	Feed the KS-20575 rectifier power cord down and through the back of the 29A1 data mounting to the customer-furnished receptacle. ***Do not insert power cord plug into power strip until all installation work and connections have been completed.***
9	Mount DAS 811H-L1 on the right rear of the 29B1 data mounting using the spacers provided. The DAS is mounted by removing the binding head screws on the right rear side of the data mounting and replacing them with longer screws and spacers provided.
10	Route cable as given in Step 6.

STEP	PROCEDURE
11	Mount the 29B1 data mounting directly under the 29A1 data mounting. ▶***Note:*** If the ED-73542-20 cord is to be used to extend the alarm system to a 29B1 data mounting that ***is not*** adjacent, refer to Part 3D.◀
12	Repeat Steps 9, 10, and 11 for the second 29B1 data mounting.
13	If required, mount 599A panel in bottom of cabinet.
14	Plug in 4066G balancing network in first left-hand square hole of the 599A panel. Align properly by observing alignment pins on the base of the 4066G network.
15	Connect the D4BD-49 cord to 18B-49 indicator as shown in Table C. Be sure to fasten strain relief clamp under screw provided in indicator assembly. Insert an A1 switchboard lamp in each lamp indicator (18B-49) and replace cover. Remove the strain hardware at the other end and connect to TS(C) ***and*** TS(D) on the 29A1 data mounting as shown in Table C. ***Note:*** The 18B-49 indicator may be mounted in any convenient location at the discretion of the customer and within range of the length of the D4BD-49 cord.

TABLE C

18B-49 INDICATOR CONNECTIONS

18B-49 INDICATOR TERMINAL	D4BD CORD CONDUCTOR	29A1 DM TERMINAL NUMBER
1	R	TS(C)-3
2	GN	TS(C)-2
3	Y	TS(C)-4
0	BK	TS(D)-1

16	Connect terminals 3 and 4 of TS(D) together by means of a jumper wire on the 29A1 data mounting.
17	For a 4-wire facility, connect 4-wire line (voice frequency facility) to TS(A) on the 29A1 data mounting as shown in Table D.
18	For a 2-wire facility (private line telegraph only), connect the 2-wire line (voice frequency facility) to TS(A) on the 29A1 data mounting as shown in Table E.
19	Interconnect J14 of 29A1 data mounting to J13 of top 29B1 data mounting by using a 202A adapter with the arrow pointing up.
20	Interconnect J14 of the top 29B1 data mounting to J13 of the bottom 29B1 data mounting using a 202A adapter with the arrow pointing up.

TABLE D

4-WIRE LINE CONNECTIONS

CABLE OR LEAD	CONNECT TO 29A1 DATA MOUNTING TS(A) TERMINAL NUMBER
T, R — SEND	4 3
T1, R1 — RECEIVE	2 1

TABLE E

2-WIRE LINE CONNECTIONS

CABLE OR LEAD	CONNECT TO 29A1 DATA MOUNTING TS(A) TERMINAL NUMBER
T, R — 2-wire pair	4 1
Used to terminate facility in a specified impedance (resistor and capacitor) when VOICE BAND LOOP AROUND switch is operated	3 2

STEP	PROCEDURE
21	As shown in Table F, connect TS(A) on the 599A panel (if required) to TS(B) on the 29A1 data mounting (or use a D4BD-49 cord with the station hardware removed at both ends) by routing along left-hand edge between the cabinet and the data mountings.
22	Install the circuit packs in their respective slots per the Engineering Work Order or equivalent, ***after*** options have been installed. See Part 4.

TABLE F

4066G NETWORK CONNECTIONS

LEAD CONNECTED TO 29A1 TS(B)	CONNECTED TO TERMINAL STRIP ON 599A PANEL			
	TS(A)		TS(B)	
	FROM 1ST 29A1	FROM 2ND* 29A1	FROM 3RD* 29A1	FROM 4TH* 29A1
1	2	5	2	5
2	1	4	1	4
3	3	6	3	6

* If equipped. Normally, a 10-channel system would have one 29A1 data mounting, but if a KS-20093-L1/L2/L5 cabinet is used, more than one 29A1 data mounting could be used.

3.04 The following is an example of a multichannel and multisystem installation in a KS-20093-L1/L2/L5 cabinet (each with KS-20129 power strip), using DAS 811G-L1 and 811H-L1. Figure 5 shows a possible combination of 16 SW channels in System I and 8 DW channels each in Systems II and III.

STEP	PROCEDURE
1	Mount a KS-20575 rectifier in a 29A1 data mounting by means of brackets provided.
2	Connect the +24 volt, common, and −24 volt terminals of the KS-20575 rectifier to terminals 1, 3, and 2, respectively, on TS(D) of the 29A1 data mounting, using wires provided. (Note that the frame ground terminal of the KS-20575 rectifier is left unconnected.) ▶***Note:*** See Fig. 4 for the designations on the KS-20575 rectifier terminal strip.◀
3	Feed the power cable of the rectifier under and inside the 29A1 data mounting along the right side to the rear. ▶***Note:*** If the ED-73542-20 cord is to be used to extend the alarm system to a 29A1 data mounting that ***is not*** adjacent, refer to Part 3D.◀
4	Mount the 29A1 data mounting in the top space of the equipment area in the front of the cabinet by means of the hardware provided.
5	Feed the KS-20575 rectifier power cord down and through the 29A1 data mounting to cabinet power strip. ***Do not insert power cord plug into power strip until all installation work and connections have been completed.***
6	Insert an A1 switchboard lamp in each lamp indicator (18B-49) and replace cover.
7	Feed the D4BD-49 cord through the right-hand access hole on top of the KS-20093-L1 cabinet, and under the left-hand side of the 29A1 data mounting to TS(C) and TS(D).
8	Connect the D4BD-49 cord to the 18B-49 indicator as shown in Table C. Be sure to fasten the strain relief clamp under the screw provided in the indicator assembly. (See 3.03, Step 15 for 18B-49 mounting information.)
9	At the other end of the D4BD-49 cord, remove the strain relief hardware and connect the cord to TS(C) and TS(D) on the 29A1 data mounting as shown in Table C.
10	For a 4-wire facility, connect the 4-wire line (voice frequency facility) to TS(A) on the 29A1 data mounting as shown in Table D.
11	For a 2-wire facility, connect the 2-wire line (voice frequency facility) to TS(A) on the 29A1 data mounting as shown in Table E.
12	Prior to mounting DAS 811G-L1, verify that the shorting wire between the terminals of the channel check meter has been removed. ***Note:*** Meter will not function during test and alignment procedures if strap is not removed.

STEP	PROCEDURE
13	With the short screws provided, mount the DAS 811G-L1 in the top space in the customer access area in the left-hand door of the cabinet. ***Note:*** Do ***not*** use the spacers provided with DAS 811G-L1.
14	Feed the plug on the end of the DAS 811G-L1 cord through a rectangular hole in the wall separating the customer access area and the data mounting area. Choose the hole which is nearest the DAS. Bring the cord forward along the bottom left side and through the notch in the channel under the 29A1 data mounting.
15	Connect the DAS 811G-L1 plug into J15 connector on the topmost 29A1 data mounting and lock in place by means of blade lock.
16	Mount a 29B1 data mounting under the previously installed 29A1 data mounting with the hardware provided.
17	Mount a DAS 811H-L1 under the previously installed DAS 811G-L1 with the short screws provided. ***Note:*** Do ***not*** use the spacers provided with the DAS 811H-L1.
18	Repeat Steps 14 and 15 for the DAS 811H-L1 cord and 29B1 mounting.
19	Repeat Steps 16, 17, and 18 for the second 29B1 data mounting and DAS 811H-L1.
20	Repeat Steps 1, 2, and 3 for installing the KS-20575 rectifier in the third 29B1 data mounting.
21	Install the circuit packs in their respective slots per the Engineering Work Order or equivalent ***after*** the options have been installed. See Part 4.
22	Repeat Steps 16, 17, and 18 for the third and fourth 29B1 data mounting and associated DAS 811H-L1.
23	For System II, repeat Steps 1 through 5 and 10 through 19. ***Note:*** It will be noted that for this particular example and configuration, 64 inches of the 68-inch mounting space is occupied, while the customer access area still has 22 inches of mounting space available; therefore, space is still available for the installation of one DAS 811G-L1 and two DAS 811H-L1 for a third system. The data mountings associated with these DASs are mounted in the rear compartment of the KS-20093-L1 cabinet. ▶***Note:*** If the ED-73542-20 cord is to be used to extend the alarm system to a 29B1 data mounting that ***is not*** adjacent, refer to Part 3D.◀
24	At the rear of the cabinet, repeat Steps 1 through 5 and 10 through 18.
25	If a 599A panel is required, mount it at the bottom front of the cabinet.
26	Connect terminals 3 and 4 of TS(D) together on the rear-mounted 29A1 data mounting.

STEP	PROCEDURE
27	Plug in 202-type adapters into connectors J13 and J14, as indicated in Fig. 5, on the front data mountings.
28	Plug in 202A adapters (two) into J13 and J14 on the data mountings at the rear of the cabinet (one between the 29A1 and 29B1 data mountings and the second one between the two 29B1 data mountings).
29	If a 4066G network is required for a system, connect a 3-wire cable between TS(B) of 29A1 data mounting of the system to TS(A) of the 599A panel as shown in Table F.
30	Install the circuit packs in their respective slots per the Engineering Work Order, or equivalent, ***after*** options have been installed. See Part 4.

3.05 The following is an example of a multichannel and multisystem installation in a KS-20093-L1/L5 cabinet (with KS-20129 power strip) using a DAS 811J-L1. Figure 6 shows a possible combination of 8 DW channels in System I, and 8 DW channels in System II.

STEP	PROCEDURE
1	Arrange the DAS 811J-L1 side brackets for 25-inch mounting centers.
2	Mount the DAS 811J-L1 in the top space of the equipment area in the front of the cabinet by means of the hardware provided.
3	Mount a KS-20575 rectifier in a 29A1 data mounting by means of brackets provided.
4	Connect the +24 volt, common, and −24 volt terminals of the KS-20575 rectifier to terminals 1, 3, and 2, respectively, on TS(D) of the 29A1 data mounting, using wires provided. (Note that the frame ground terminal of the KS-20575 rectifier is left unconnected.) ▶***Note:*** See Fig. 4 for the designations for the KS-20575 terminal strip.◀
5	Feed the power cable of the rectifier under and inside the 29A1 data mounting along the right side to the rear. ▶***Note:*** If the ED-73542-20 cord is to be used to extend the alarm system to a 29A1 data mounting that ***is not*** adjacent, refer to Part 3D.◀
6	Mount a 29A1 data mounting immediately under the DAS 811J-L1 by means of the hardware provided.
7	Feed the KS-20575 rectifier power cord down and through the 29A1 data mounting to cabinet power strip. ***Do not insert power cord plug into power strip until all installation work and connections have been completed.***

STEP	PROCEDURE
8	Insert an A1 switchboard lamp in each lamp indicator (18B-49) and replace cover.
9	Feed the D4BD-49 cord through the right-hand access hole on top of the KS-20093-L1 cabinet and under the left-hand side of the 29A1 data mounting to TS(C) and TS(D).
10	Connect the D4BD-49 cord to the 18B-49 indicator as shown in Table C. Be sure to fasten the strain relief clamp under the screw provided in the indicator assembly. (See 3.03, Step 15 for 18B-49 mounting information.)
11	At the other end of the D4BD-49 cord, remove the strain relief hardware and connect the cord to TS(C) and TS(D) on the 29A1 data mounting as shown in Table C.
12	For a 4-wire facility, connect the 4-wire line (voice frequency facility) to TS(A) on the 29A1 data mounting as shown in Table D.
13	For a 2-wire facility, connect the 2-wire line (voice frequency facility) to TS(A) on the 29A1 data mounting as shown in Table E.
14	Mount the first 29B1 data mounting under the previously installed first 29A1 data mounting with the hardware provided.
15	Mount a second 29B1 data mounting under the first 29B1 with the hardware provided.
16	For the second 29A1 data mounting, repeat Steps 3, 4, and 5.
17	Mount the second 29A1 data mounting under the second 2B1 data mounting with the hardware provided.
18	Repeat Steps 7 and 12 or 13.
19	Mount the third 29B1 data mounting under the second 29A1 data mounting with the hardware provided.
20	Plug in 202-type adapters into connectors J13 and J14, as indicated in Fig. 6, on the data mountings.
21	Make cable connections from DAS 811J-L1 to data mountings as shown in Table H.
22	Connect A25D cable (plug on one end only) to J6.
23	Connect wires at the other end of connector J6 (A25D connector cable) to connector block per the CLR or Engineering Service Order.
	10A Data Line Concentrator Connections
24	On the ***line*** side of a 10A data line concentrator, pins 1 through 16 and 26 through 41 at connector J6 of DAS 811J-L1 are connected, via a connector block, to pins 1 through 16 and 26 through 41, ***respectively,*** at connector J7A on 19A1 or 20A1 data mounting of the concentrator.

TABLE H

A25D* CABLE CONNECTIONS

BETWEEN DAS 811J-L1 AND 29-TYPE DATA MOUNTINGS

CONNECTIONS ON DAS 811J-L1	J15 CONNECTIONS ON 29-TYPE DATA MOUNTINGS
J1	29A1 Data Mounting, System I
J2	First 29B1 Data Mounting, System I
J3	Second 29B1 Data Mounting, System I
J4A	Third 29B1 Data Mounting, System I
J4B	(Not used in this arrangement)
J5	29A1 Data Mounting, System II

*A25D Connector Cable must be ordered separately.

STEP	PROCEDURE
25	On the ***trunk*** side of a 10A data line concentrator, pins 1 through 16 and 26 through 41 at J6 on DAS 811J-L1 are connected, via a connector block, to pins 1 through 16 and 26 through 41, ***respectively,*** at connector J4A or 21A1 or 22A1 data mounting. ▶***Note:*** If the ED-73542-20 cord is to be used to extend the alarm system to a 29B1 data mounting that ***is not*** adjacent, refer to Part 3D.◀ ***EXCEPTION TO STEP 25: When an 8-trunk, maximum, 10A data line concentrator (equipped with an 18A1 data mounting) is used, the first 8 trunk slots of the 21A1 data mounting are NOT utilized. Therefore, on the TRUNK side, pins 1 through 16 and 26 through 41 at connector J6 on DAS 811J-L1 are connected VIA A CONNECTOR BLOCK to points 9 through 16 and 34 through 41, respectively, at connector J4A of 21A1 data mounting of the concentrator.***

C. ▶Reassembly of Systems Previously Assembled and Tested at Telco Location or WE Service Center

3.06 The following is an example of how to reassemble a 1A data station that has previously been assembled and tested at a Telco location or WE service center.

STEP	PROCEDURE
1	Remove shipping wrapping from all components.
2	Remove the shorting wire from between the terminals of the channel check meter on the DAS 811G-L1.
3	Remove the shorting wire from between the terminals of the channel check meter on the channel check DP58 circuit packs.
4	If mounting a DAS 811G-L1 in a KS-20018-L7 cabinet, perform Steps 5 and 6 of 3.03.
5	If mounting a DAS 811G-L1 in a KS-20093-L1/L2/L5 cabinet, perform Steps 13, 14, 15, 18, and 22 of 3.04.
6	Insert the channel check circuit packs (DP58) into the ***SAME*** slots in which they were previously tested.
7	Install the send level adjustment strapping on the line circuit (DP52) circuit pack per 4.13 through 4.16.
8	Insert the line circuit (DP52) circuit packs into the ***SAME*** slots in which they were previously tested.
9	Install the cabinet door(s).
10	If not used, tape and store the ED-73542-20 cord.
11	Insert the ac power cord in the 117-volt, 60-Hz customer-provided outlet.
12	Proceed with the alignment procedures given in Part 5.

D. Installation of the ED-73542-20 Cord

3.07 When the alarm system is to be physically extended to another system and the 29A1 and 29B1 data mountings are not mounted vertically adjacent to each other, the ED-73542-20 cord must be installed.

3.08 The following procedure is for assembly of the ED-73542-20 cord to the 29A1 data mounting. However, the same procedures can be used to assemble the cord to the 29B1 data mounting by substituting the 29B1 data mounting for the 29A1 data mounting and J14 of the 29B1 data mounting (located in the lower right hand corner of the front panel) for J13 of the 29A1 data mounting (located in the upper right hand corner of the front panel).

Note: Fig. 6.1 shows J13 of the 29A1 data mounting. When assembling, J14 of the 29B1 data mounting, Fig. 6.1, ***must*** be inverted.

3.09 To install the ED-73542-20 cord, proceed as follows:

STEP	PROCEDURE
1	Prior to installing the 29A1 data mounting of the next system, remove and discard the hexnuts, washers, and screws holding J13 to the 29A1 data mounting.
2	Remove and discard the two P-43J181 U-shaped retainers that hold J13 in the rectangular hole on the data mounting faceplate.
3	Refer to Fig. 6.1 and reassemble J13 as follows. (a) Insert the L-148699, Fig. A, and L-148699, Fig. B, retainers into the rectangular hole in the data mounting faceplate. (b) Using two L-148699, Fig. C, shoulder screws, secure J13 to the lower threaded holes in the retainers.
4	Remove and discard the two hexnuts holding the 906E connector at one end of the ED-73542-20 cord to the strain relief clamp. ***Note:*** Retain the screws and washers.
5	Using the screws and washers retained in Step 4, secure the strain relief clamp and 906E connectors to the retainers installed in Step 3(a).
6	Route the ED-73542-20 cord over the top of the 29A1 data mounting allowing it to hang down the back of the mounting.

4. STRAPPING AND OPTION CONNECTIONS

A. General

4.01 Quick-clip terminals (code 216A) are provided on the circuit packs for strapping options and are designated by E numbers. ***A 24-gauge insulated wire with stripped ends should be used with these terminals.*** Short runs may be bare wire if there is no danger of shorting to components. The wire is securely inserted into the terminals with a small flat-nose pliers while the board is resting on a firm flat surface.

Soldering of wire to the quick-clip terminal is prohibited. The circuit board may be damaged and the terminal may come loose.

4.02 The CLR will call for the options to be installed. The following paragraphs give instructions on ***how*** to install these specific options.

B. Options on Transmitter (DP1-DP25 Circuit Packs) (Fig. 7)

4.03 Options pertaining to the transmitter are as follows:

(a) Set switch S1 to HDX for ternary operation or 2-wire current operation (DP68 circuit pack).

(b) Set switch S1 to FDX for operation with all other binary station interfaces.

Note: A switch (S1) is provided on the transmitter with the designation FDX and HDX appearing in a front panel window. ***These designations have no functional meaning for the ternary mode of operation other than to identify the state of the switch.*** In order to change the state of the switch, the circuit card is removed and the proper setting is made by loosening three

screws behind the panel, sliding the switch to the desired position as indicated on the front panel, and retightening the three lock (and contact) screws on the board behind the panel.

(c) For carrier squelch operation, strap terminal E3 to E4.

Note: The squelch strapping shall ***not*** be applied to ***both*** ends of a channel. The channel will lock itself out upon loss of carrier in either direction. The toll circuit layout record (TCLR) will designate the terminal or station at which the squelch strapping will be applied, if any.

(d) Strapping options E1 and E2 are not used.

C. Options on Demodulator (DP26-DP50 Circuit Packs) (Fig. 8)

4.04 The options pertaining to the demodulator are as follows:

(a) For binary operation, operate HOLD slide switch to MARK for mark-hold upon carrier failure or to SPACE for space-hold upon carrier failure.

(b) For ternary operation, operate HOLD switch to MARK.

D. Option on Receive Interface (Binary) (DP51 Circuit Pack) (Fig. 9)

4.05 The option pertaining to the receive interface (binary) is as follows:

(a) Check that E1 and E2 are ***not*** strapped together.

E. Options on Ternary Receive Interface (DP57 Circuit Pack) (Fig. 10)

4.06 Options pertaining to the ternary receive interface provide for the following:

(a) For double width (DW) channel operation, strap E1 to E2.

(b) For single width (SW) channel operation, leave E1 and E2 ***unstrapped.***

F. Options on Station EIA Interface (DP65 or DP55 Circuit Pack) (Fig. 11)

4.07 Options pertaining to the station EIA interface are as follows:

(a) ▶To provide terminal monitoring of the line while in the test mode, strap E1 to E2.

(b) To provide ***no*** terminal monitoring of the line while in the test mode, ***do not*** strap E1 to E2.◀

(c) For local copy, eg, half-duplex operation, strap E3 to E4.

(d) To provide for CB lead (clear-to-send) to follow CA lead (request-to-send), strap E6 to E5.

(e) To provide for CB lead (clear-to-send) to follow CC lead (data set ready), strap E7 to E6.

(f) To provide for CC lead (data set ready) to follow CF lead (data carrier detector), strap E8 to E9.

Note: For ternary operation the strapping of E8 to E9 is mandatory. For binary operation the strapping of E8 to E9 is optional.

(g) To provide for binary operation, or for ternary operation when CD lead is not terminated by the customer, or for receive only, strap E10 to E11.

▶***Note:*** The E10 to E11 strap ***must*** be installed while performing the initial lineup of the station.◀

(h) To provide for the option of forcing transmission of the data-on supervision signal in the test mode, strap E12 to E13.

Note: The data-on signal in test mode strapping is applied only at the end designated ***primary*** (see 5.02).

(i) ▶To provide for reception of data on BB lead when CD lead is off (ternary mode only—DP65 circuit pack), strap E10 to E15.

(j) To provide for transmission of data on BA lead while receiving a carrier fail (ternary mode only—DP65 circuit pack), strap E10 to E11 and E14 to E15.◀

G. Options on DP56 (MD) Station Current Interface Circuit Pack (20-mA, 3-Wire) (Fig. 12)

4.08 Options provided pertaining to the station current interface (DP56 circuit pack) are as follows:

(a) For local copy, eg, half-duplex, strap E1 to E2.

(b) For holding BB lead (received data) marking during the test mode, strap E3 to E5.

(c) For the terminal monitoring the line while in the test mode, strap E4 to E5.

(d) For receive only operation, strap E6 to E7.

(e) For send only operation, strap E7 to E8.

G.1 ▶Options on DP69 Station Current Interface Circuit Pack (20-mA, 3-Wire) (Fig. 12.1)

4.08.1 Options pertaining to the station current interface circuit pack (DP69) are as follows:

(a) For send only operation, strap E1 to E2.

(b) For receive only operation, strap E1 to E7.

(c) To provide terminal monitoring of the line while in the test mode, strap E3 to D4.

(d) For local copy, eg, half duplex, strap E5 to E6.◀

H. Options on Station Current Interface (62.5- or 20-mA, 2-Wire) (DP68 Circuit Pack) (Fig. 13)

4.09 Options provided pertaining to the station current interface (DP68 circuit pack) are as follows:

(a) For 62.5-mA operation, ensure strap A to B is in place.

(b) For 20-mA operation, points A and B are unstrapped.

I. Options on Station Balanced Interface (±3 mA, 2-Wire) (DP63 Circuit Pack) (Fig. 14 and 15)

4.10 Options provided pertaining to the station balanced interface (DP63 circuit pack) are as follows:

(a) When the station balanced interface is installed on either the ***line*** or ***trunk*** side of a ***primary*** 10-type data line concentrator or with applications other than with 10-type data line concentrators, strap E1 to E2.

(b) When the station balanced interface is installed on the ***trunk*** side of a ***tandem*** 10-type concentrator, E1 to E2 are ***unstrapped.***

(c) For padding out loop resistance to 2000 ohms, Table I shows the strapping that may be applied.

(d) For no crossover shift (camp-on signal for 10-type data line concentrator), strap E14 to E15.

(e) For space crossover shift, strap E14 to E16.

(f) For mark crossover shift, E14 is ***unstrapped.***

(g) For a looped-back supervisory signal when in test mode, strap E17 to E18.

(h) For distortion reduction when an extremely short metallic loop is used (eg, when installed ***at*** a concentrator on either the line or trunk side), strap E19 to E20.

(i) For zero voltage to be applied to the loop and a data-off signal (center frequency) towards the voice facility upon loss of loop current, strap E1 to E13.

J. Options on the Alarm Indicator (DP59 Circuit Pack) (Fig. 16)

4.11 Options provided pertaining to the alarm indicator are as follows:

(a) If a system alarm (DP62 circuit pack) is provided, strap E1 to E2.

(b) If a system alarm (DP62 circuit pack) is ***not*** provided, strap E1 to E3.

TABLE I

LOOP PAD RESISTANCE STRAPPING FOR STATION BALANCED INTERFACE
(DP63 CIRCUIT PACK)

LOOP PAD RESISTANCE	LOOP PAD ARRANGEMENT STRAP
0	E8 to E12; E3 to E7
136	E9 to E12; E4 to E7
266	E10 to E12; E8 to E9; E13 to E4; E5 to E7
402	E10 to E12; E5 to E7
522	E11 to E12; E8 to E10; E3 to E5; E6 to E7
658	E11 to E12; E9 to E10; E4 to E5; E6 to E7
788	E11 to E12; E8 to E9; E3 to E4; E6 to E7
924	E11 to E12; E6 to E7
1022	E3 to E6; E8 to E11
1158	E9 to E11; E4 to E6
1288	E5 to E6; E10 to E11; E8 to E9; E3 to E4
1424	E5 to E6; E10 to E11
1544	E3 to E5; E8 to E10
1680	E4 to E5; E9 to E10
1810	E3 to E4; E8 to E9
1946	No Straps

K. Options on Line Circuit (DP52 Circuit Pack) (Fig. 17)

4.12 Options pertaining to the line circuit are a little more involved than those on the other circuits. An outline of the adjustments and connections is presented to indicate the order in which the operations should be performed and to assist in presenting a mental picture of the descriptive material to follow.

(a) Send level adjustments

(b) 2- and 4-wire connections, either 600- or 900-ohm termination

(c) Balancing adjustments

(1) Balancing 2-wire ***nonloaded*** facilities with compromise hybrid balancing network ***on*** the line circuit (DP52)

(2) Balancing 2-wire ***loaded*** facilities with compromise hybrid network ***on*** the line circuit (DP52)

(3) Balancing 2-wire ***nonloaded*** facilities with 4066G ***external*** balancing network

(a) 4066G network adjustment when the layout of cable ***is*** accurately known

(b) 4066G network adjustment when the layout of cable ***is not*** known.

Send Level Adjustments

4.13 Send levels, as described in this practice with respect to the 1A Data Station Multichannel Arrangements (MCA), will refer to the level of the mark or space frequency. The send level of the mark and space frequencies is down approximately 1 dB from the center frequency level due to the transmit bandpass filter characteristics.

4.14 While levels are generally standardized for ease of administration and to permit use of standard test equipment, individual systems may have different ▶composite power◀ level requirements for specific applications at the output of the line circuit. The desired sending levels are specified on the TCLR or Engineering Service Order. To meet ▶the various◀ requirements, the line circuit may be strapped to provide for different ▶per-channel◀ output levels within the limits given in Table J. Strap E28 and E24 accordingly as directed (see Fig. 17).

Note: The strapping provides for changes in send level in 1.5-dB steps. Therefore, should the exact level not be listed in Table J, select the strapping which will provide the next ***lower*** level of output send level.

▶When the maximum allowable composite power level is other than 0 dBm, the value of the maximum permitted per-channel level should be computed and provided by the Telco supervisor.◀

4.15 A specific example of strapping ▶when the ***per-channel level*** is specified is as follows:◀ Assume that the desired per-channel transmit level at the output of the line circuit is −22 dBm for an SW channel and −19 dBm for a DW channel into a 600-ohm line. Table J shows that E24 strapped to E5 and E28 strapped to E29 will provide a −22.5 dBm and −19.5 dBm send level for SW and DW channels, respectively, at the output of the line circuit into a 600-ohm facility (see Fig. 18). Note that there is no strapping which will provide for exactly −22 dBm and −19 dBm, and that strapping was chosen for the next ***lower*** level of output send level.

4.16 ▶A specific example of strapping when the ***composite power*** is specified is as follows.◀ In order not to exceed 0 dBm composite power, the maximum permitted per-channel transmit level, in dBm, at the line circuit output is determined by reference to Table K. When the level is determined, strap as per Table J. For example, in order for a system with 17 binary SW channels not to exceed 0 dBm composite power, the per-channel send level must not exceed −12.3 dBm, as indicated in Table K.

▶***Note:*** There is no strapping option that will provide a send level of exactly −12.3 dBm. Therefore, strapping must be chosen to provide the next lower level (−13.5 dBm). Reference to Table J shows that when the line circuit is operating into a 600-ohm facility, strapping E28 to E35 and E10 to E24 will provide (at the output of the line circuit) a −13.5 dBm send level for an SW channel.◀

2- and 4-Wire Connections for Either 600- or 900-Ohm Terminations

4.17 ***General:*** The line circuit also contains strapping options to permit connection to 2- and 4-wire facilities. The compromise hybrid balancing network provided on the line circuit (DP52 circuit pack) will permit satisfactory 2-wire operation on ***non***loaded cable, when the difference between the per-channel transmitted and received signals on the voice facility side of the line circuit is 20 dB or less, which is explained in 4.18.

4.18 The difference in per-channel send and receive levels is referred to in connection with hybrid balancing. The per-channel receive level will vary between channels depending upon its location in the VF spectrum. The per-channel receive level that should be used in calculating this difference is that of the channel used in the adjustment of the RCV GAIN potentiometer (usually a channel near the center of the voiceband). The per-channel send level used in the calculation is that of a channel of the same type, SW or DW, used in the determination of the receive level. In subsequent paragraphs, differences in per-channel send and receive levels will be determined in this same manner.

4.19 With an external hybrid balancing network (4066G) connected to the line circuit, 2-wire operation over ***nonloaded*** facilities with differences in the per-channel transmitted and received signals of up to 30 dB is permissible. When required, this hybrid balancing network is plugged into a connector mounted on the 599A panel and is wired to the desired line circuit per the instructions given in 3.03, Step 21.

4.20 Two-wire operation over ***loaded*** cable is possible with the compromise network [built into the line circuit pack (DP52)] with differences as large as 30 dB between the transmitted and received signals measured on the voice facility side of the line circuit. ***The external balancing network (4066G) is not used with loaded cable.***

4.21 ***Connections:*** Refer to Fig. 19 and Table L for strapping connections on the line circuit (DP52 circuit pack) for 2- and 4-wire and 600- and 900-ohm connections. Table L completes the instructions for 4-wire operation. ***For 2-wire operation the following additional steps must be performed.***

TABLE J

LINE CIRCUIT STRAPPING OPTIONS* FOR PER-CHANNEL TRANSMIT LEVEL IN DBM§ FOR MARK AND SPACE FREQUENCIES†

2- OR 4-WIRE CONNECTIONS				STRAP	
DW CHANNEL		SW CHANNEL		E28 TO	E24 TO
600Ω	900Ω	600Ω	900Ω		
‡	‡	‡	‡	E30	None
‡	‡	‡	−0.5	E29	None
‡	‡	0	−2.0	E32	None
‡	−0.5	−1.5	−3.5	E35	None
0	−2.0	−3.0	−5.0	E30	E15
−1.5	−3.5	−4.5	−6.5	E29	E15
−3.0	−5.0	−6.0	−8.0	E32	E15
−4.5	−6.5	−7.5	−9.5	E35	E15
−6.0	−8.0	−9.0	−11.0	E30	E10
−7.5	−9.5	−10.5	−12.5	E29	E10
−9.0	−11.0	−12.0	−14.0	E32	E10
−10.5	−12.5	−13.5	−15.5	E35	E10
−12.0	−14.0	−15.0	−17.0	E30	E9
−13.5	−15.5	−16.5	−18.5	E29	E9
−15.0	−17.0	−18.0	−20.0	E32	E9
−16.5	−19.5	−19.5	−21.5	E35	E9
−18.0	−20.0	−21.0	−23.0	E30	E5
−19.5	−21.5	−22.5	−24.5	E29	E5
−21.0	−23.0	−24.0	−26.0	E32	E5
−22.5	−24.5	−25.5	−27.5	E35	E5
−24.0	−26.0	−27.0	−29.0	E30	E1
−25.5	−27.5	−28.5	−30.5	E29	E1
−27.0	−29.0	−30.0	−32.0	E32	E1
−28.5	−30.5	−31.5	−33.5	E35	E1

* Depending upon the number of channels, not all options are permissible. See Table K.

† For center frequencies, increase each value by 1 dB.

‡ Strapping options not permissible due to excessively high output levels.

§ At terminals 3 and 4 of TS(A) on the 29A1 data mounting. If measured at the SEND test points, the values will be 4 dB higher for 600-ohm facilities on 2 dB higher for 900-ohm facilities.

TABLE K

MAXIMUM PERMITTED PER-CHANNEL TRANSMIT LEVEL AT THE LINE CIRCUIT OUTPUT IN DBM‡ IN ORDER NOT TO EXCEED 0 DBM COMPOSITE POWER

NUMBER OF SW CHAN IN VF SYS*	NUMBER OF DW CHAN IN VF SYS	MAX PER CHAN LEVEL IN DBM†	
		BINARY	TERNARY
1		0.0	−1.0
2	1	−3.0	−4.0
3		−4.9	−5.9
4	2	−6.0	−7.0
5		−7.0	−8.0
6	3	−7.8	−8.8
7		−8 5	−9.5
8	4	−9.0	−10.0
9		−9.5	−10.5
10	5	−10.0	−11.0
11		−10.4	−11.4
12	6	−10.8	−11.8
13		−11.0	−12.0
14	7	−11.5	−12.5
15		−11.8	−12.8
16	8	−12.0	−13.0
17		−12.3	−13.3

* Note that two SW CHAN can be replaced with one DW CHAN.

† Mark and space frequencies. For ternary operation, the center frequency is approximately 1 dB higher than mark or space frequencies.

◗ ‡ At terminals 3 and 4 of TS(A) on the 29A1 data mounting. If measured at the SEND test points, values will be 4 dB higher for 600-ohm facilities and 2 dB higher for 900-ohm facilities.

Note: If the initial installation is less than a full complement of channels, strap the line circuit to accommodate the maximum number of channels. This allows the addition of channels at a later date without restrapping the line circuit. ◖

primary end is that 1A data station location having control of the test and alignment procedures. The ***far*** end receives instructions, if any are required, from the ***primary*** end. This distinction is only required for ternary channels. Data-on or data-off supervision is transmitted from the ***primary*** end, under control of the maintenance employee, while the supervisory signals are looped back at the ***far*** end. This distinction is accomplished by the option strapping noted in 4.07(h).

5.03 The following checks should be made before inserting the circuit packs:

(a) Verify that none of the terminals have been bent or misaligned to cause any two terminals to be in contact.

(b) The ac power cord should be connected and the proper dc polarities should exist at the terminal strips on the data mountings as shown in Table S.

(c) Verify that the shorting wire has been removed from between the terminals of the channel check meter mounted on the channel check DP58 circuit pack.

5.04 The strapping and option connections described in Part 4 must have been completed prior to proceeding with the alignment and adjustments. Install circuit packs as shown in table on Fig. 4.

THINK

The interface circuit pack (DP65) must have E10 strapped to E11 prior to the performance of these alignment procedures. Once the alignment is complete, remove this strap if it is not required by the service order or CLRC.

TABLE S

VOLTAGE POLARITY AT DATA MOUNTING TERMINAL STRIPS

DATA MOUNTING	TERMINAL STRIP	TERMINAL NUMBER	VOLTAGE POLARITY
29A1	TS (D)	1 2 3	+24V −24V Common
29B1	TS (A)	1 2 3	+24V −24V Common

5.05 The following procedures are for making gain adjustments in the receive side of the 1A Data Station, MCA.

B. Receive Gain Adjustments

5.06 The basic purpose is to verify that the level of the received composite signal at the line circuit (DP52 circuit pack) is within specifications as required, and then adjust the receive gain of the line circuit receive amplifier to provide the proper level as required by the individual channels at the receive interface (DP51 or DP57 circuit pack) LIM IN test points.

5.07 ***Receiver Gain Adjustments:*** The following gain adjustments must be performed at both ends. They may be done simultaneously except when the transmitter circuit packs at one end are strapped for carrier squelch upon carrier fail.

STEP	PROCEDURE
	Receive Voice Frequency Level ***Note:*** Transmit level at distant end must be correct before the following adjustments are made, and the facility lineup made.
1	Determine the required per-channel receive voice frequency level at input to the line circuit (DP52 circuit pack) from the circuit order.

STEP	PROCEDURE
2	For 4-wire connections, bridge the 403A TVM, or equivalent, across terminals 1 and 2 of TS(A) on the 29A1 data mounting and read the received voice frequency level.
3	For 2-wire connections, remove the local transmitter circuit packs, bridge the 403A TVM, or equivalent, to terminals 1 and 4 of TS(A) on the 29A1 data mounting and read the received voice frequency level. Replace the transmitter circuit packs after the measurements have been made. ***Requirement:*** Table T provides the power of the composite signal above the per-channel level (the per-channel level is provided on the circuit order). For example, if the received per-channel level is required to be −20 dBm and 8 channels are operating, then from Table T it will be found that the measured composite signal should indicate 9 dB above the per-channel level of −20 dBm, ie, −11 dBm. ***Since this assumes a facility with a flat frequency characteristic,*** an actual reading of the composite power within ±4 dB of the computed value is satisfactory.

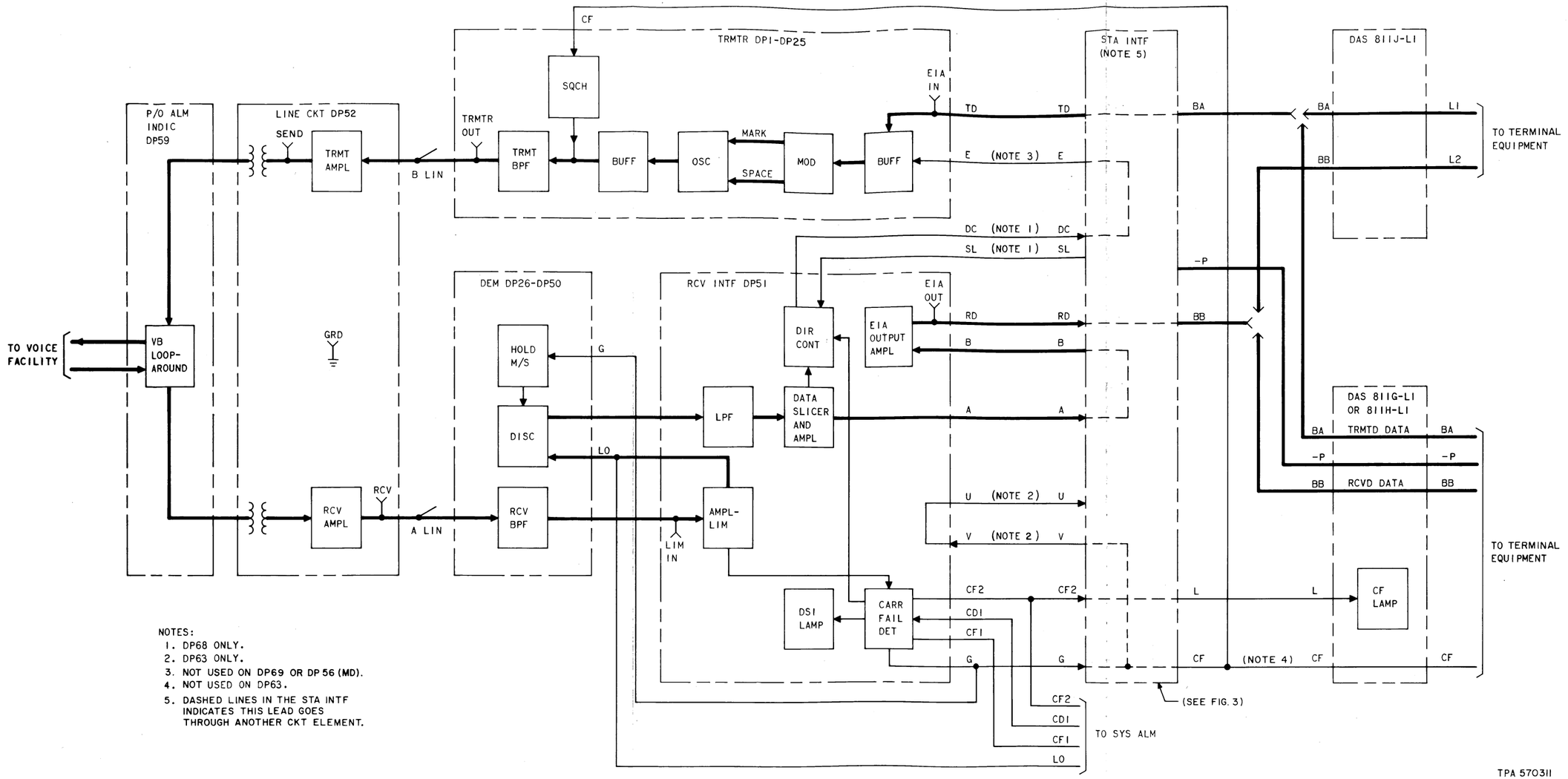
TABLE T

POWER IN dB OF COMPOSITE SIGNAL ABOVE THE PER-CHANNEL LEVEL ± 1 dB

QUANTITY OF CHANNELS		POWER IN dB OF COMPOSITE SIGNAL ABOVE THE PER-CHANNEL LEVEL
SW	DW	
1		0.0
2	1	3.0
3		4.8
4	2	6.0
5		7.0
6	3	7.8
7		8.5
8	4	9.0
9		9.5
10	5	10.0
11		10.4
12	6	10.8
13		11.0
14	7	11.5
15		11.8
16	8	12.0
17		12.3

Adjust Receive Level Gain

4	Connect the 403A TVM, or equivalent high impedance meter, from the LIM IN test point on the receive interface (DP51 or DP57 circuit pack) of a channel near the center of the voiceband (in the range of 700 to 2500 Hz) to the GRD test point.



NOTES:
1. DP68 ONLY.
2. DP63 ONLY.
3. NOT USED ON DP69 OR DP56 (MD).
4. NOT USED ON DP63.
5. DASHED LINES IN THE STA INTF INDICATES THIS LEAD GOES THROUGH ANOTHER CKT ELEMENT.

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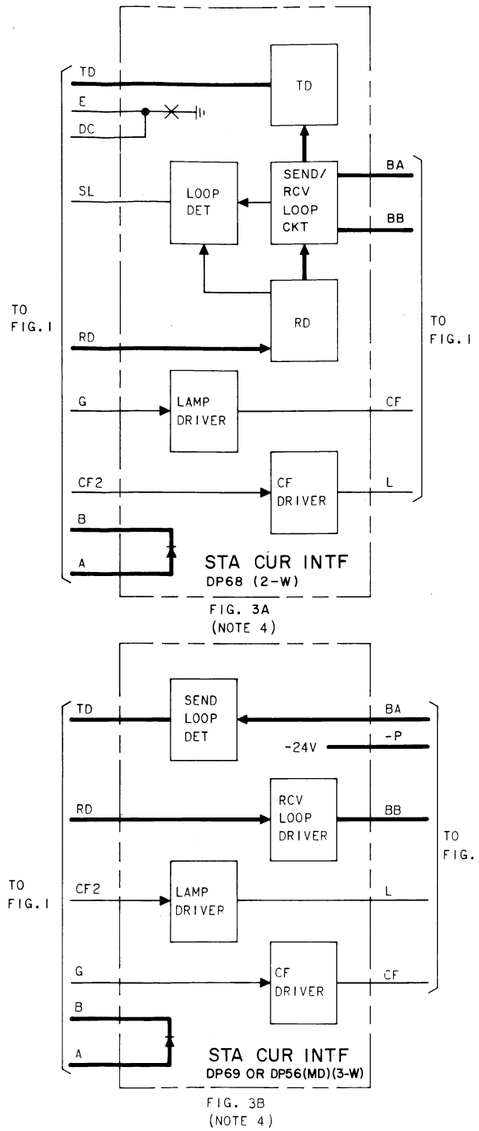
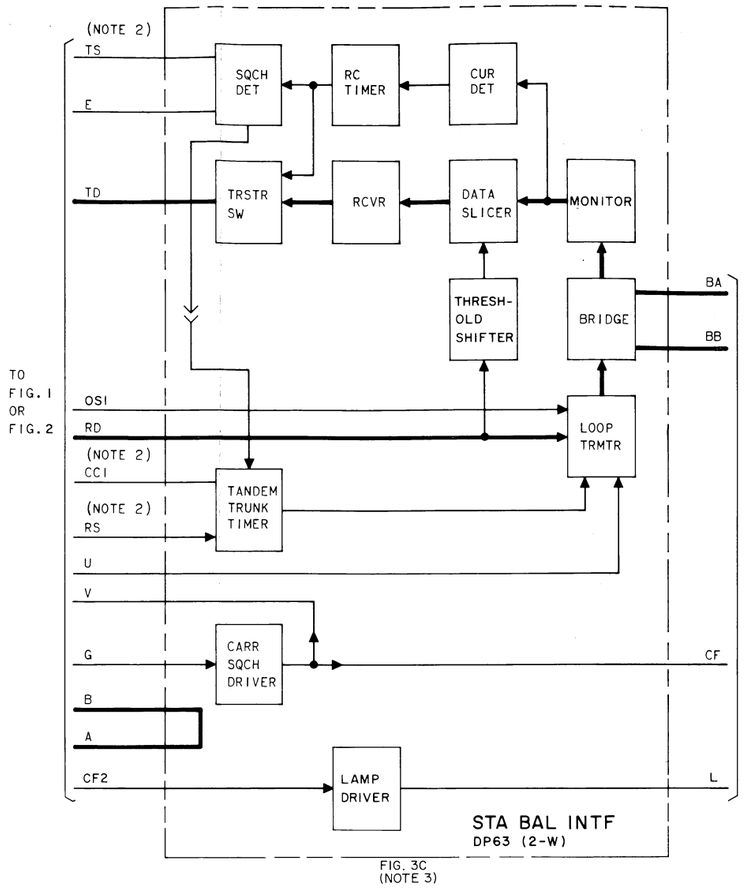
Fig. 1—Transmit and Receive Signal Paths—Binary Data Channel—1A Data Station, MCA—Block Diagram





NOTES:
1. CIRCUITS SHOWN IN SOLID LINES ARE USED IN BINARY OPERATION. BOTH SOLID AND DOTTED CIRCUITS ARE USED IN TERNARY OPERATION.
2. USED IN TERNARY MODE ONLY.
3. PART OF FIG. 1 AND 2 WHEN APPLICABLE.
4. PART OF FIG. 1.

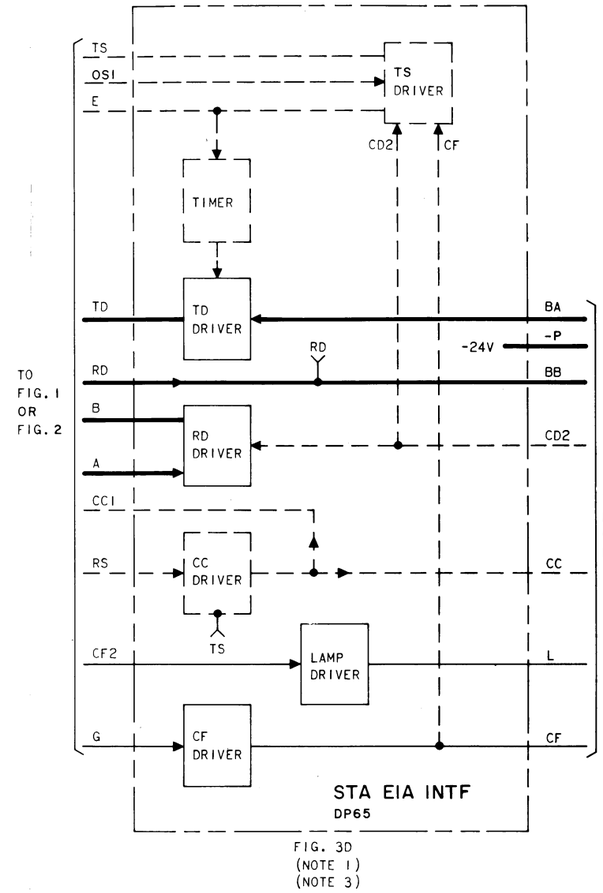


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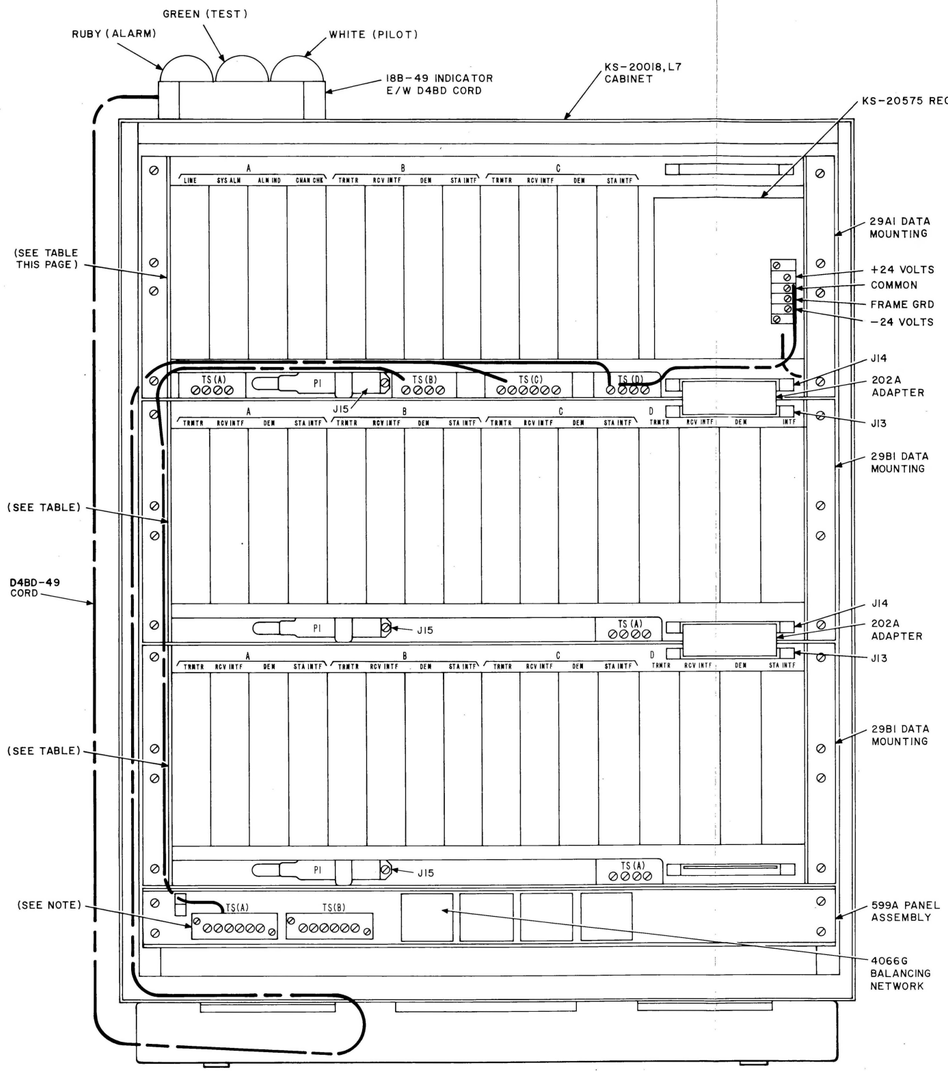
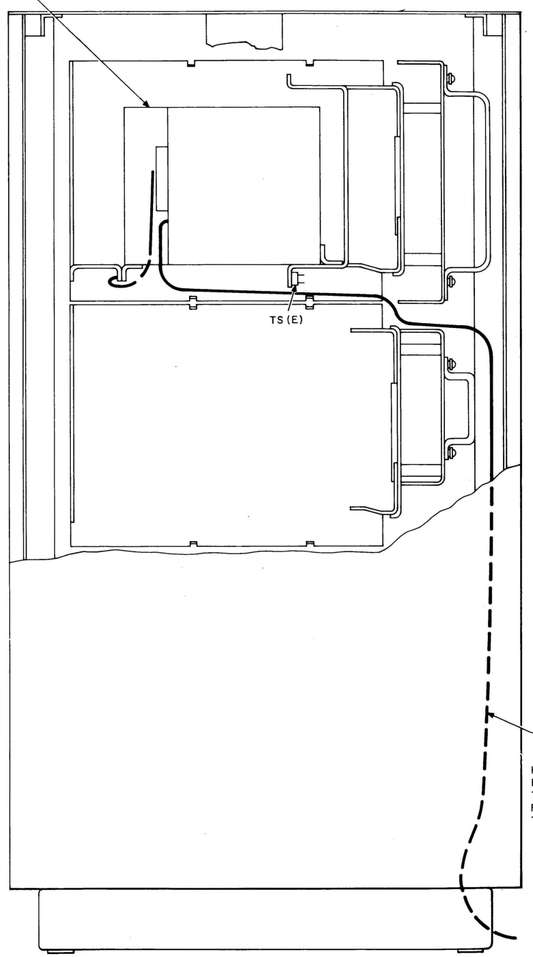
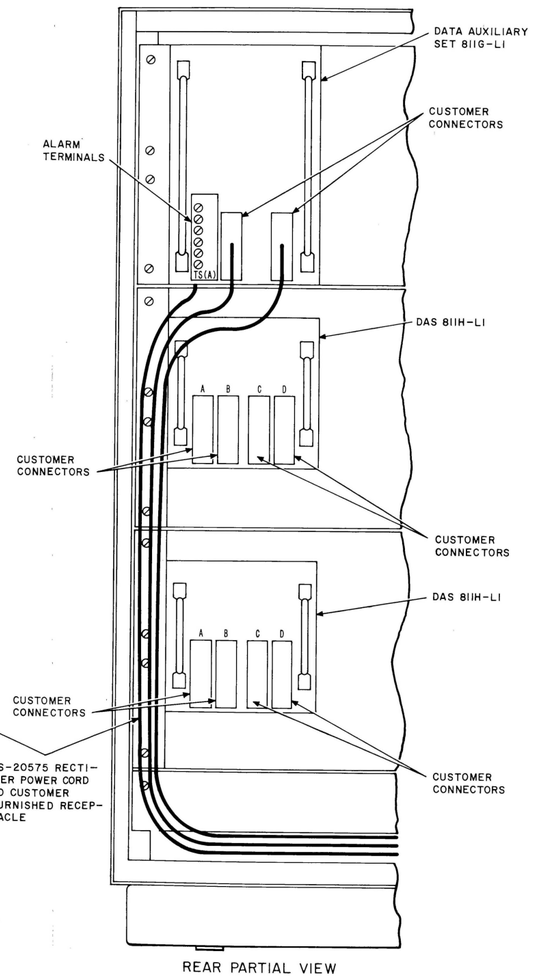
Fig. 3—Station Interface Circuit Packs—1A Data Station, MCA—Block Diagram







NOTE:
ALL TERMINALS NUMBERED FROM LEFT TO RIGHT.

TABLE

CIRCUIT PACKS	
CODE	TITLE
DP1-DP25	TRMTR
DP26-DP50	DEMOD
DP51	RCV INTF
DP52	LINE CKT
DP65	STA EIA INTF
DP69	STA CUR INTF
DP57	TERN INTF
DP58	CHAN CHK
DP59	ALARM INDIC
DP62	SYS ALM

Fig. 4—Typical Installation—KS-20018-L7 Cabinet—1A Data Station, MCA4

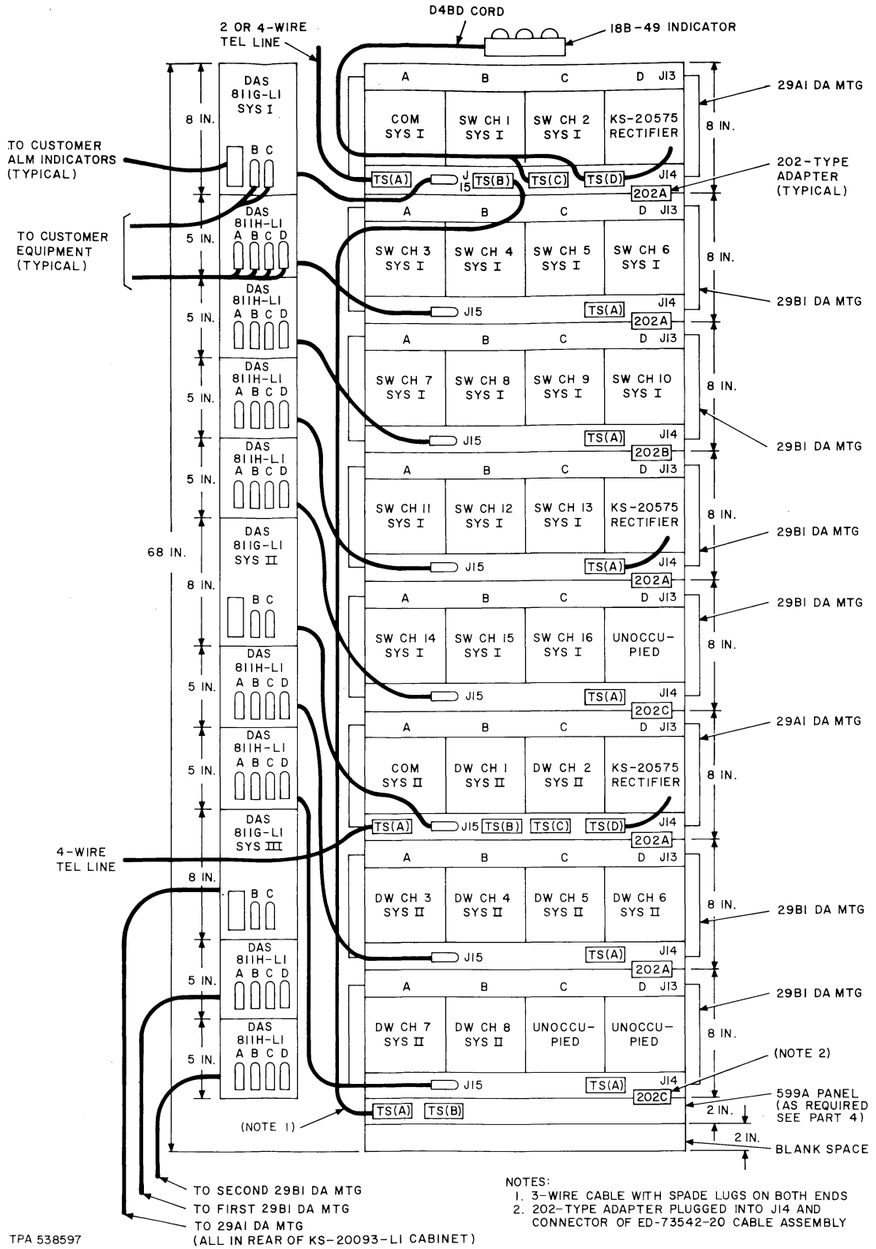


Fig. 5—Example of Multichannel and Multisystem Installation and Interconnection Using DAS 811G-L1 and 811H-L1

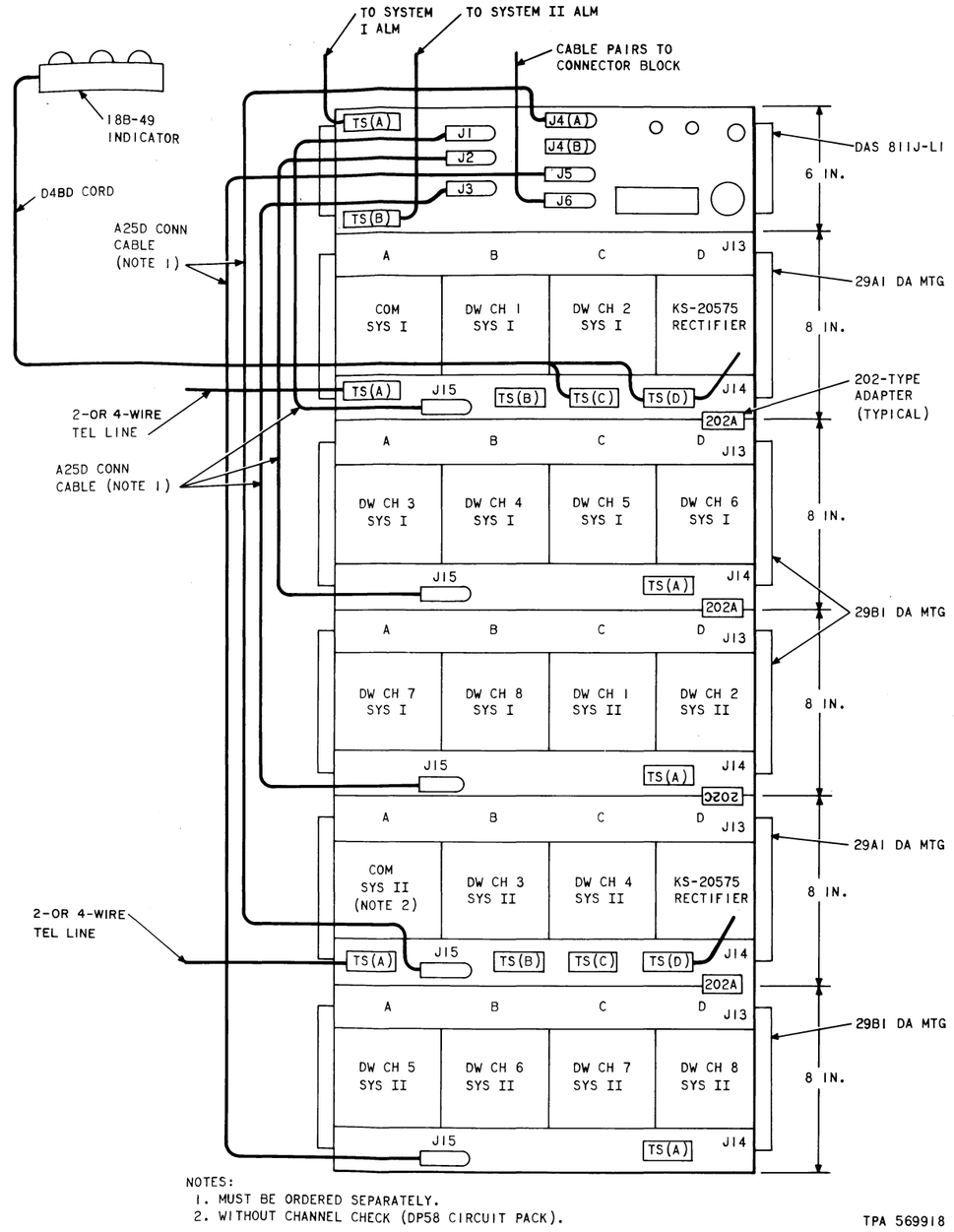


Fig. 6—Example of Multichannel and Multisystem Installation and Interconnection Using DAS 811J-L1

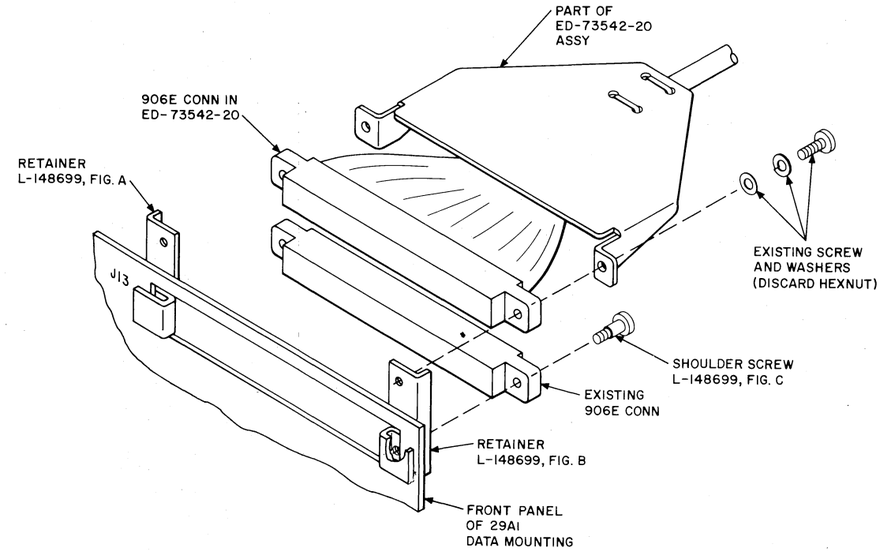


Fig 6.1—Assembly of ED-73542-20 Cord to 29A1 Data Mounting

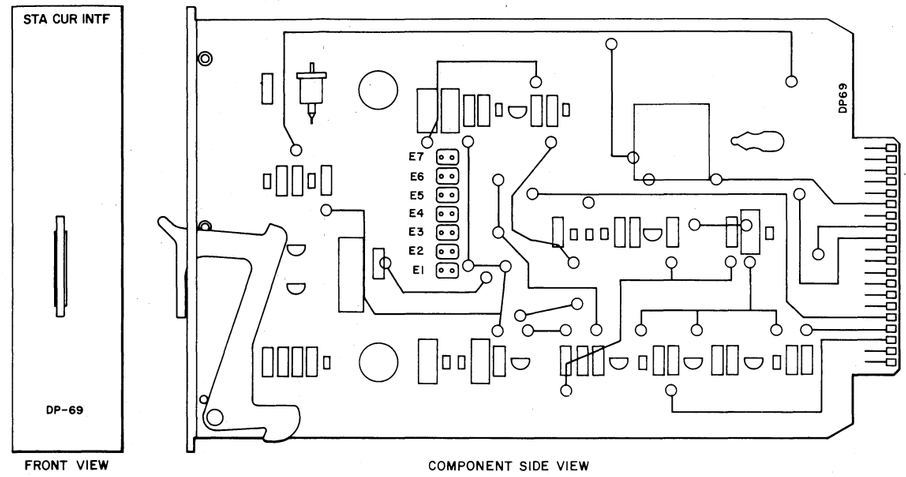


Fig. 12.1—Strapping Points—Station Current Interface (20 mA, 3-Wire) DP69 Circuit Pack