WIDEBAND DATA STATION USING DATA SET 303-TYPE TWO-WIRE SWITCHED SERVICE (DATA-PHONE® 50 SERVICE) INSTALLATION AND CONNECTIONS

CONTENTS PAGE

1. GENERAL

1.01 This practice describes basic data station equipment and various combinations of equipment for the more complicated configurations. The connections and options found in this section pertain to DATA-PHONE 50 service. The DATA-PHONE 50 service is a 4-wire wideband channel with a 2-wire voice coordination channel.

1.02 This section does not replace other installation and connection sections for Data Set (DS) 303-type. Connections and options found in this section apply to both the restored polar and dc-coupled balanced line signal applications, unless otherwise noted, plus the various data auxiliary sets (DAS) that make up a wideband station.

1.03 The data station configuration used in this section is for DATA-PHONE 50 service. Other commercial and governmental types of service are covered in other sections entitled Wideband Data Station Using Data Set 303 (593-800-ZZZ). Information pertaining to the business machine is not included.

1.04 For information concerning general installation and connections of data sets, refer to General Installation and Connection, Section 590-010-200, and Multiple Installation Information, Section 590-010-201.

1.05 This section includes installation and connection information for the T1WM-4 modem and T1 carrier line terminating unit (LTU) when applicable. Refer to Sections 365-121-100 and 365-200-103 for additional information.

1.06 Data Auxiliary Set 806B7 has been rated Manufacture Discontinued and its function provided by DAS 806D1. The following procedure applies to either DAS 806B7 or DAS 806D1 except when DAS 806B7 is used in conjunction with DAS 804A7. If DAS 806B7 and DAS 804A7 are used and the simultaneous talk/wideband data feature is to be incorporated, then DAS 804A7 must be modified. Also, when DAS 806B7 is used in conjunction with an Automatic Calling Unit (ACU), wiring is required in addition to the standard cabling. When DAS 806D1 is used in conjunction with DAS 804A7 or an ACU, no modification or additional wiring is required.

2. MECHANICAL ASSEMBLY

2.01 This part describes the installation and location of the cabinet and equipment which are common to all configurations of the wideband data station. The equipment can be arranged to provide either a restored polar or dc-coupled balanced line signal type of data station. Individual components and their various mounting arrangements as indicated in Section 593-800-110 will be covered in later paragraphs.

2.02 The equipment may be installed in a KS-20018-L2, -L3, or -L4 cabinet or on a 19-inch, 23-inch, or 25-inch Bell System relay rack. Table A shows mounting hardware required to assemble the components for either arrangement. The bracket code provides all brackets and screws required to mount the specified units. A description of cabinets and other equipment is found in Section 593-800-110.

2.03 The restored polar line signal type wideband data station can be installed in the KS-20018-L2 cabinet; however, it must be installed in the L3 cabinet when the DS 103F2 is used.

2.04 Where the T1 line is available at the customer's location, the wideband station makeup will consist of a T1WM-4 modem and a T1 carrier line terminating unit (LTU), a DS 303-type of the appropriate code (dc-coupled balanced line signal) and associated apparatus. The T1 modem and LTU can be mounted with the DS 303-type in a KS-20018-L4 cabinet or at a nearby location within specified limits.

2.05 When the T1WM-4 and the LTU are installed at a remote location, the separation between the T1WM-4 and the DS 303-type is limited to 1000 cable feet. The maximum separation between the LTU and the T1WM-4 is 750 cable feet.

2.06 The cabinet (Fig. 1) should be located within range of the interface cable which is to be supplied by the customer. This cable should not exceed 50 feet in length. A well-lighted and well-ventilated floor space is to be selected. Easy access to both the front and back of the set, after the panels have been removed, is of prime importance.

2.07 The power outlet is to be furnished by the customer. It must be equipped with a 3-wire, U-ground duplex receptacle (UL approved and rated at 60 Hz, 117 volts ac, 15 amp). This outlet should not be under the control of a switch.

2.08 To avoid the possibility of data errors due to potential difference between data set ground and business machine ground, the outlet for the data set power cord should be served from the same ac distribution panel as the business machine. If they are not served from the same panel, a test using the 6A impulse counter should be made to detect the presence of noise potentials. If test requirements are not met, data set ground

TABLE A

HARDWARE REQUIRED FOR ASSEMBLING DATA SETS AND DATA AUXILIARY SETS WHICH COMPRISE A WIDEBAND DATA STATION USING DATA SET 303-TYPE

STATION APPARATUS / TYPE OF MOUNTING	303-TYPE	806B-TYPE	806B AND 806B*
	CODE OF MOUNTING BRACKETS REQUIRED		
#5 Crossbar-Type Frame (23″ Mtg. Plates)	87T†	87B	87D
KS-20018-Type Cabinet (23″ Mtg. Plates)			
Bulb Angle-Type Frame (23″ Mtg. Plates)	87U†	87F	87H
Bulb Angle-Type Frame (12″ Mtg. Plates)	87J	87K	—
KS-20093-Type Cabinet (25″ Mtg. Plates)	87W†	87N	87R

* Indicates units mounted adjacent to each other in the same horizontal space. Two P-46M668 brackets are used to fasten the two sets together.

† Indicates change to a new type of bracket used to accommodate the mounting of KS-20598-L1 outlet box for equipment in DS 303-type cabinets. The 87A, 87E, and 87M-type brackets are Manufacture Discontinued.

and business machine ground must be bonded together.

The method of providing this bond must be in accordance with local instructions.

2.09 Station power can be obtained from a distribution panel mounted in the bottom of the cabinet (Fig. 2) or an outlet box mounted at the left of DS 303-type (Fig. 3).

2.10 Power distribution panel 590B or 591B is fastened to the mounting strips (located on the sides of the cabinet) by four bolts which screw into prethreaded holes (two on each side). The 590B and 591B panels are used on 23-inch and 19-inch mountings, respectively. Outlet box KS-20598-L1 is mounted on the data set mounting bracket. Both panel and outlet box are powered from a customer-provided ac outlet. Refer to Fig. 4 for cabling and Table A for mounting hardware.

2.11 The power panel or outlet box can be used with the KS-20018-L2 and -L3 cabinet. The KS-20598-L1 outlet box must be used in the

Fig. 1—Wideband Data Station Using Data Set 303-Type (2-Wire Switched Service)

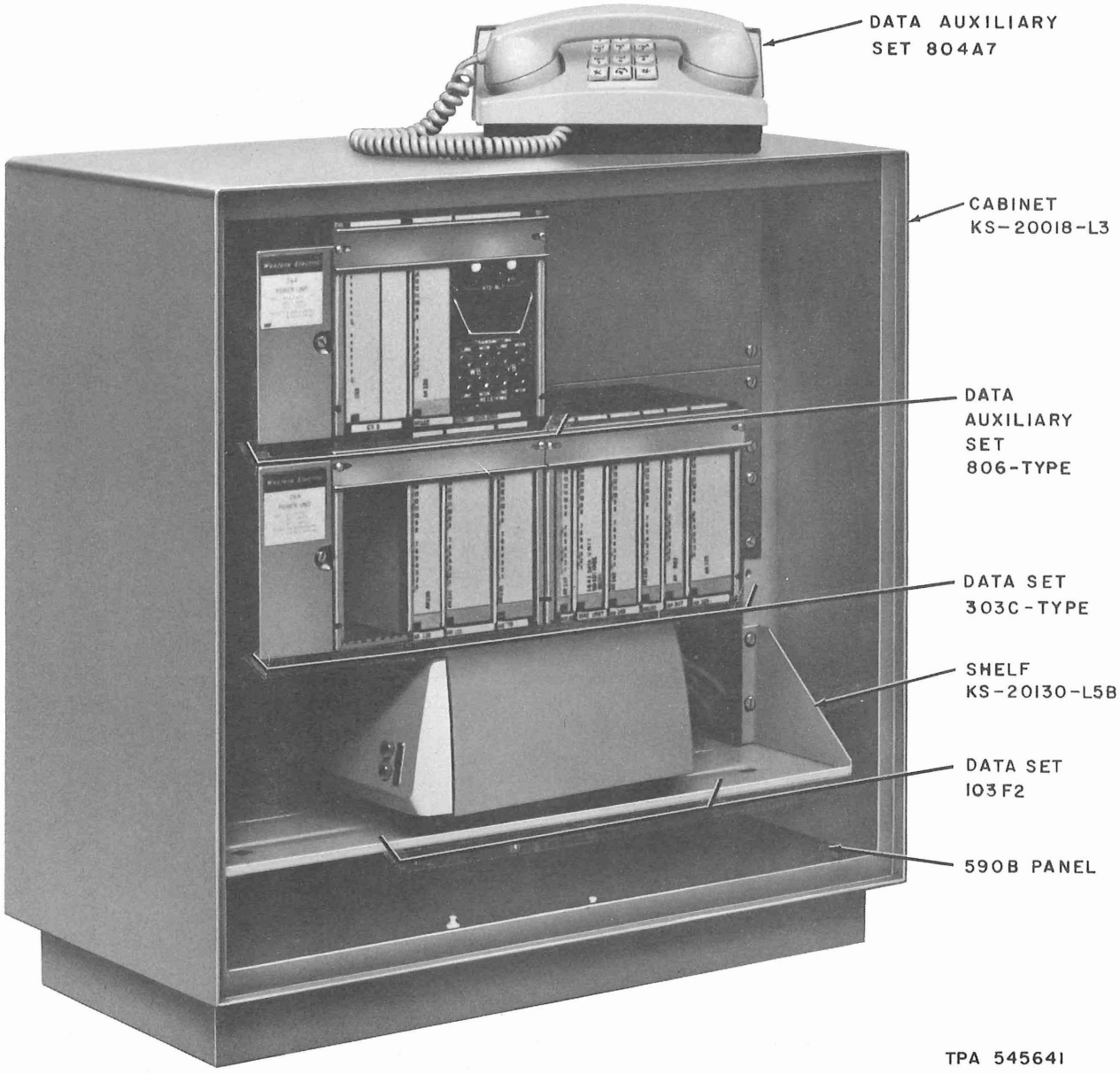


Fig. 2—Wideband Data Station—Restored Polar—Switched Service—Front View

KS-20018-L4 cabinet when a T1WM-4 and LTU are physically located in the data station cabinet.

2.12 Cable 761A-type, or equivalent, is to be used for all data signals. Where possible, cable runs with other services and power cables should be avoided. Shielding continuity must be maintained in cabling between underground or extension terminals and the data station.

3. COMPONENT INSTALLATION

GENERAL

3.01 For purposes of this description, assembly of all components which comprise a wideband data station will be presented as two basic stations, with or without DS 103F2. The DS 303-type, DAS 806-type, T1WM-4, and LTU are mounted in the appropriate cabinet. The DAS 804A7 and the

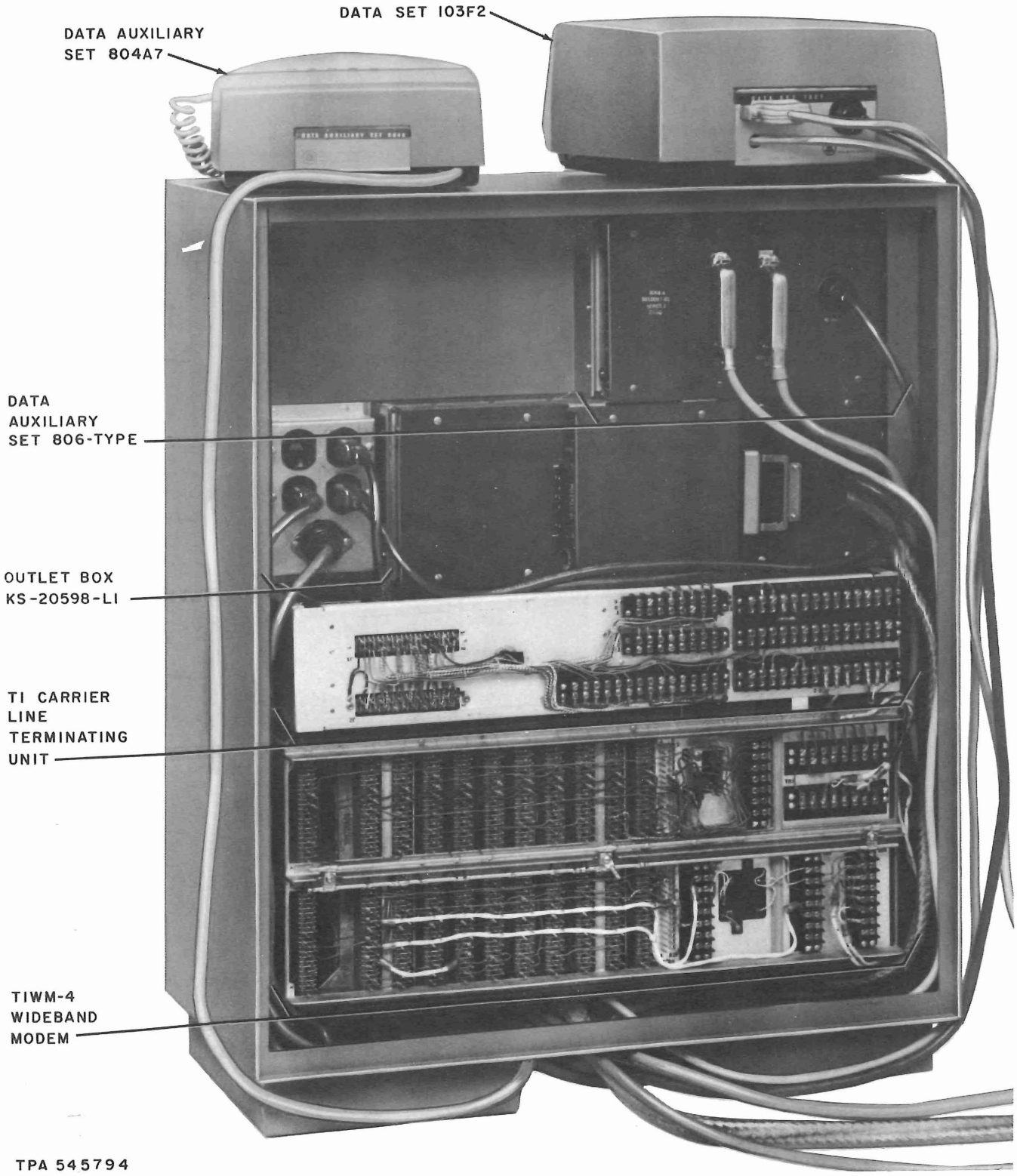


Fig. 3—Wideband Data Station—DC-Coupled Balanced Line Signal—Switched Service—Rear View

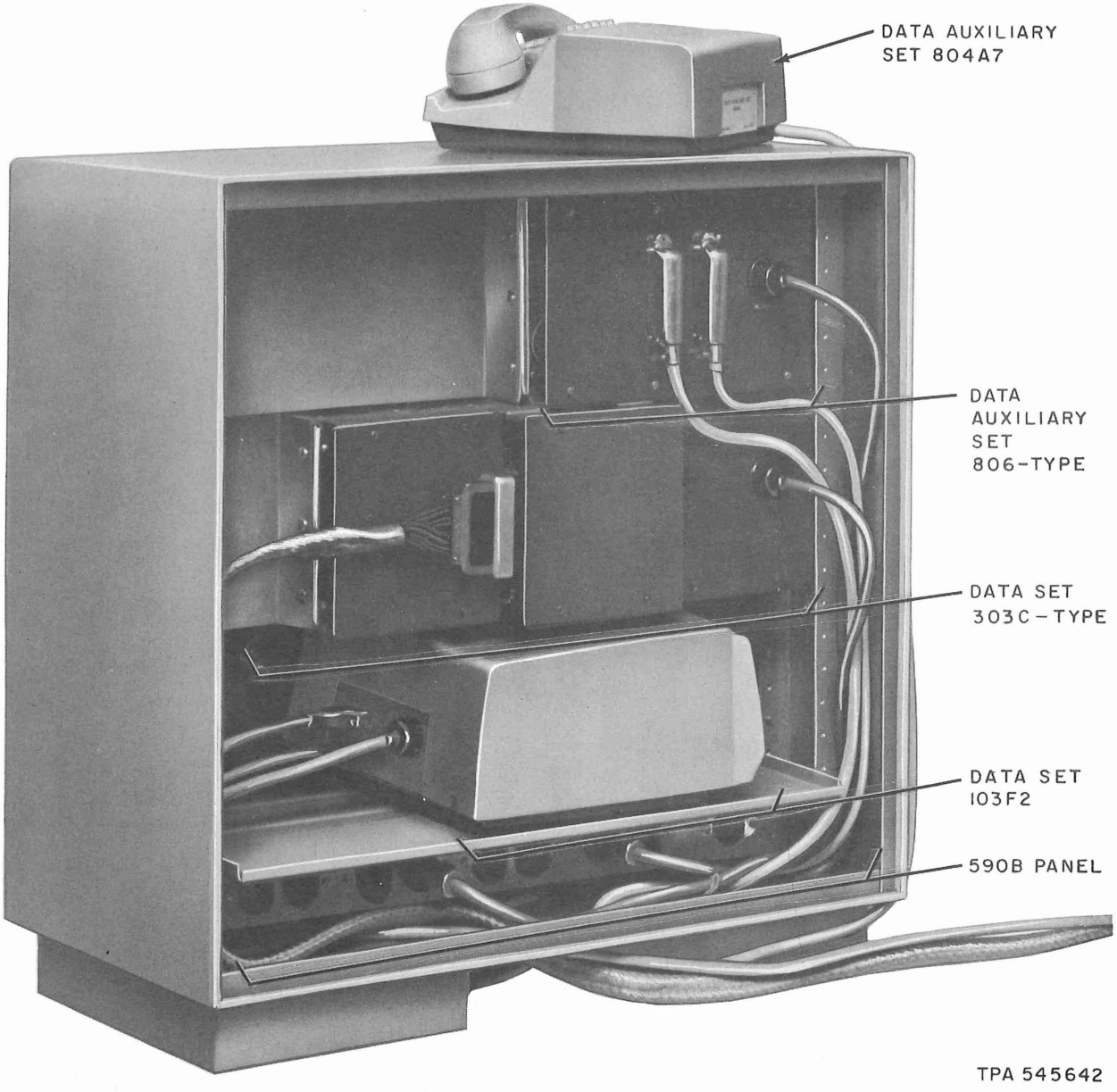


Fig. 4—Wideband Data Station—Restored Polar—Switched Service—Rear View

automatic calling unit (ACU) are externally located on top of the cabinet or desk. The DS 103F2 may or may not be located within the cabinet.

3.02 The basic components and their mounting arrangement within the cabinet for a restored polar line signal wideband data set are the same for both stations. Figures 2 and 4 show a typical restored polar line signal data station arrangement.

3.03 The arrangement will vary somewhat when the station uses a dc-coupled balanced line signal code of DS 303 and includes the added equipment required for operation over a T1 line. Figures 3 and 5 show a typical dc-coupled balanced line signal data station.

3.04 When the equipment is rack-mounted, the same general arrangement should be used. Unless otherwise noted, the arrangements shown

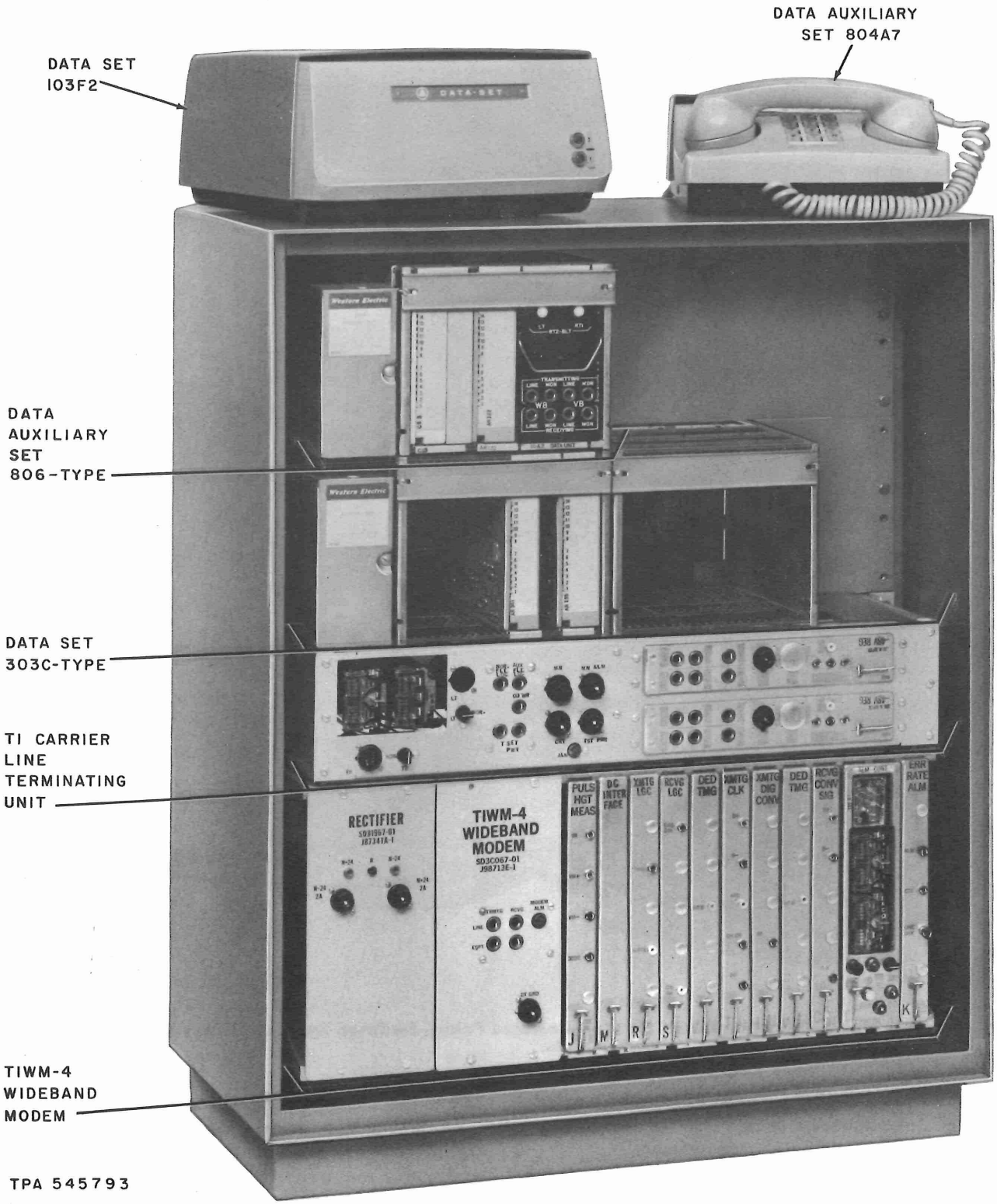


Fig. 5—Wideband Data Station—DC-Coupled Balanced Line Signal—Switched Service—Front View

are to be used as a guide for convenient cabling and accessibility.

3.05 The data set should be installed and all connections made to conform with existing practices covering the installation of station sets.

3.06 When the installation of the data sets and/or data auxiliary sets is completed, the set should be inspected and tested as described under the installation test of Section 593-800-510.

DATA SET 303, DATA AUXILIARY SET 806, AND DATA AUXILIARY SET 804A7 (T1WM-4 MODEM AND LTU)

A. General

3.07 The following part of this practice will describe the installation of DS 303-type restored polar line signal codes and DS 303-type dc-coupled balanced line signal codes, DAS 806B7 or DAS 806D1, and DAS 804A7. In some installations, a T1WM-4 modem and LTU may be required. The installation of this equipment will be covered in later parts of this practice. Figures 2 and 5 show a complete data station. Figure 6 shows a typical block wiring diagram of a complete wideband data station using DAS 806B7. Figure 7 shows a typical block wiring diagram of a complete wideband data station using DAS 806D1.

B. Installation

3.08 The chassis of DS 303-type with its mounting bracket attached (Fig. 8) is fastened to the mounting strips (located on the side of the cabinet) by four or eight bolts which screw into prethreaded holes (a minimum of two on each side) above the power panel (Fig. 4). When a DS 303-type is mounted together with a T1 modem or T1 modem and LTU in the same cabinet (KS-20018-L4), the T1 modem and LTU will be located at the bottom of the cabinet (Fig. 3). Power panel 590B will be replaced by an outlet box, KS-20598-L1, mounted on the mounting bracket attached to DS 303-type. Refer to Table A for mounting bracket hardware codes. When viewing the station from the front, the 26A power unit (part of DS 303) is to be located on the left side.

3.09 Circuit packs must be mounted and shipped in their proper positions in the data mounting according to the coding of the data set. Verify locations of all circuit packs prior to placing options and cabling. Refer to Section 593-012-100. Refer to Fig. 8 for illustration of circuit pack numbers and locations.

3.10 The DAS 806B7 or DAS 806D1 will be mounted directly above DS 303-type. The 26A power unit (part of DAS 806) will be located on the lefthand side of the cabinet as viewed from the front. (See Table A for mounting bracket hardware.)

3.11 The DAS 804A7 is desk-top type telephone apparatus and is not to be mounted in the cabinet (Fig. 1). It may be placed on top of the cabinet with cord provided. Data Auxiliary Set 804A7 can be located within 75 cable feet of DAS 806 by use of appropriate B25A connector cable.

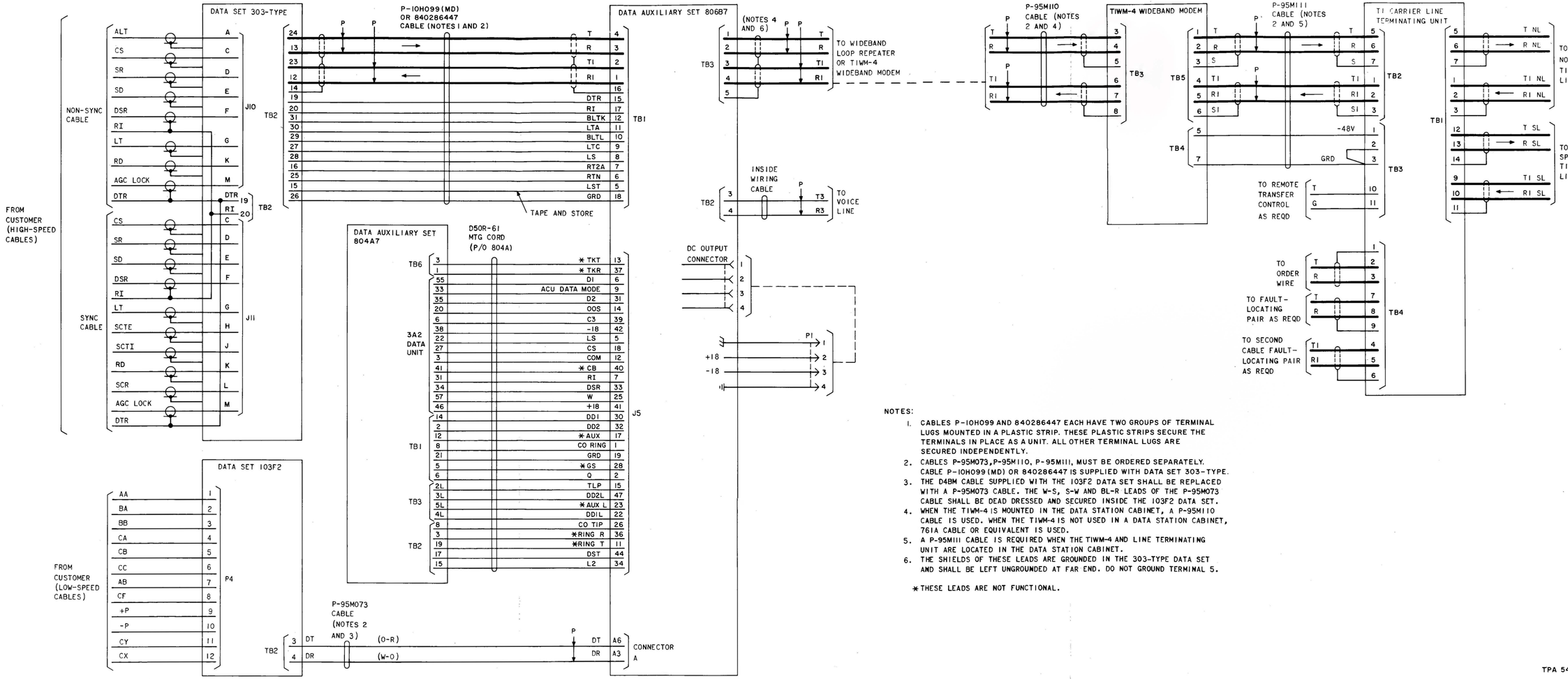
C. Connections

Data Set 303-Type Restored Polar and DC-Coupled Balanced Line Signal Applications

3.12 All connections to the components in the station are made from the rear. Options wired into the sets are made on terminal boards located at the rear of the sets.

3.13 The 9A3 Data Mounting is standard. Both the 9A2 and 9A3 Data Mountings provide connections for both restored polar and dc-coupled balanced line signal codes. The 9A2 Data Mounting has been rated Manufacture Discontinued (MD) and replaced by the 9A3 Data Mounting. The 9A1 Data Mounting applies to restored polar codes only and is rated Manufacture Discontinued. The 9A1 Data Mounting is replaced by the 9A3 Data Mounting.

3.14 Access to the customer's interface cables is made through one of the two rectangular access ports in the front and rear center of the base. Interface cables should be dressed neatly up the rear of the cabinet. The customer-provided, high-speed data cable equipped with a KS-19402-L1 plug is connected to either the synchronous or nonsynchronous connector. All power cables should be located and dressed to the sides of the cabinet (as viewed from the rear) near the mounting strip



NOTES:

1. CABLES P-10H099 AND 840286447 EACH HAVE TWO GROUPS OF TERMINAL LUGS MOUNTED IN A PLASTIC STRIP. THESE PLASTIC STRIPS SECURE THE TERMINALS IN PLACE AS A UNIT. ALL OTHER TERMINAL LUGS ARE SECURED INDEPENDENTLY.
2. CABLES P-95M073, P-95M110, P-95M111, MUST BE ORDERED SEPARATELY. CABLE P-10H099(MD) OR 840286447 IS SUPPLIED WITH DATA SET 303-TYPE.
3. THE D4BM CABLE SUPPLIED WITH THE 103F2 DATA SET SHALL BE REPLACED WITH A P-95M073 CABLE. THE W-S, S-W AND BL-R LEADS OF THE P-95M073 CABLE SHALL BE DEAD DRESSED AND SECURED INSIDE THE 103F2 DATA SET.
4. WHEN THE TIWM-4 IS MOUNTED IN THE DATA STATION CABINET, A P-95M110 CABLE IS USED. WHEN THE TIWM-4 IS NOT USED IN A DATA STATION CABINET, 761A CABLE OR EQUIVALENT IS USED.
5. A P-95M111 CABLE IS REQUIRED WHEN THE TIWM-4 AND LINE TERMINATING UNIT ARE LOCATED IN THE DATA STATION CABINET.
6. THE SHIELDS OF THESE LEADS ARE GROUNDED IN THE 303-TYPE DATA SET AND SHALL BE LEFT UNGROUNDED AT FAR END. DO NOT GROUND TERMINAL 5.

*THESE LEADS ARE NOT FUNCTIONAL.

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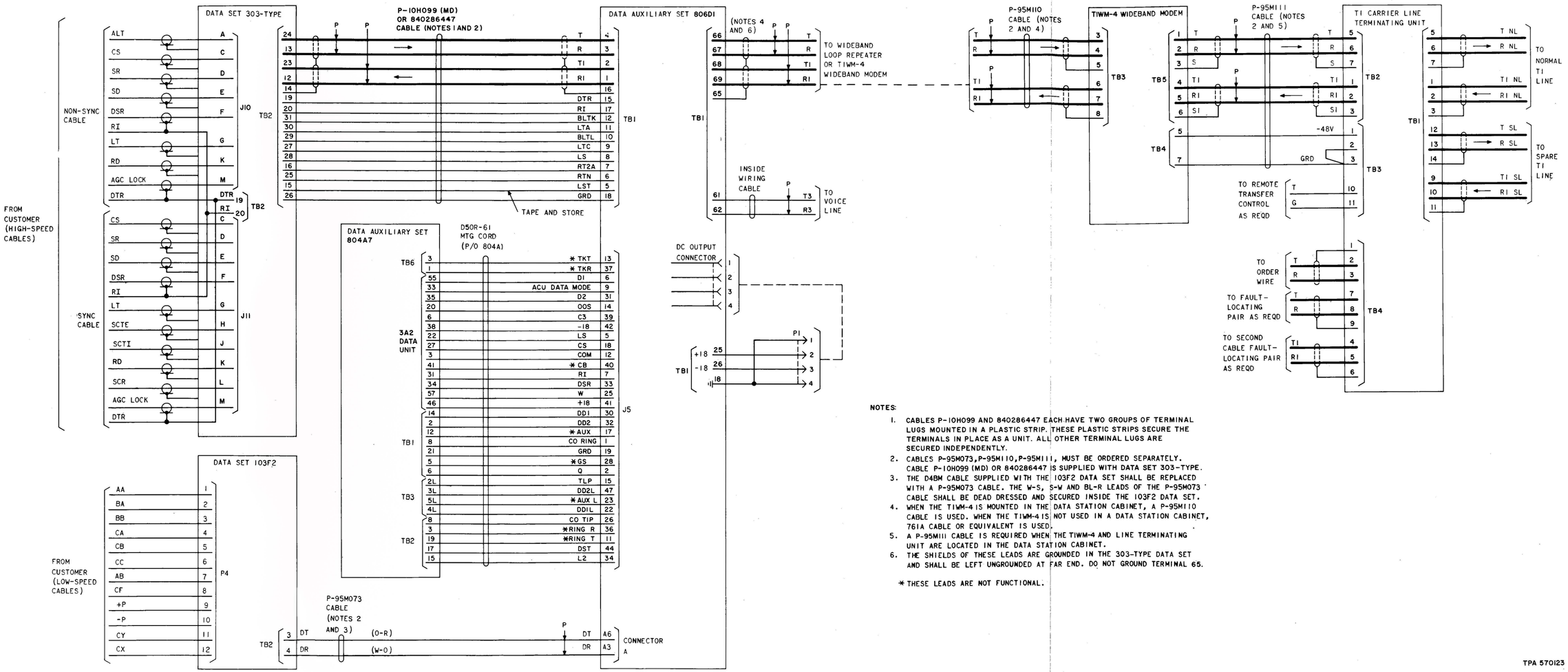
Fig. 6—Connection Diagram—Wideband Data Station Using DAS 806B7



NOTES:

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5. A P-95M111 CABLE IS REQUIRED WHEN THE TIWM-4 AND LINE TERMINATING UNIT ARE LOCATED IN THE DATA STATION CABINET.
6. THE SHIELDS OF THESE LEADS ARE GROUNDED IN THE 303-TYPE DATA SET AND SHALL BE LEFT UNGROUNDED AT FAR END. DO NOT GROUND TERMINAL 65.

* THESE LEADS ARE NOT FUNCTIONAL.

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Fig. 7—Connection Diagram—Wideband Data Station Using DAS 806D1

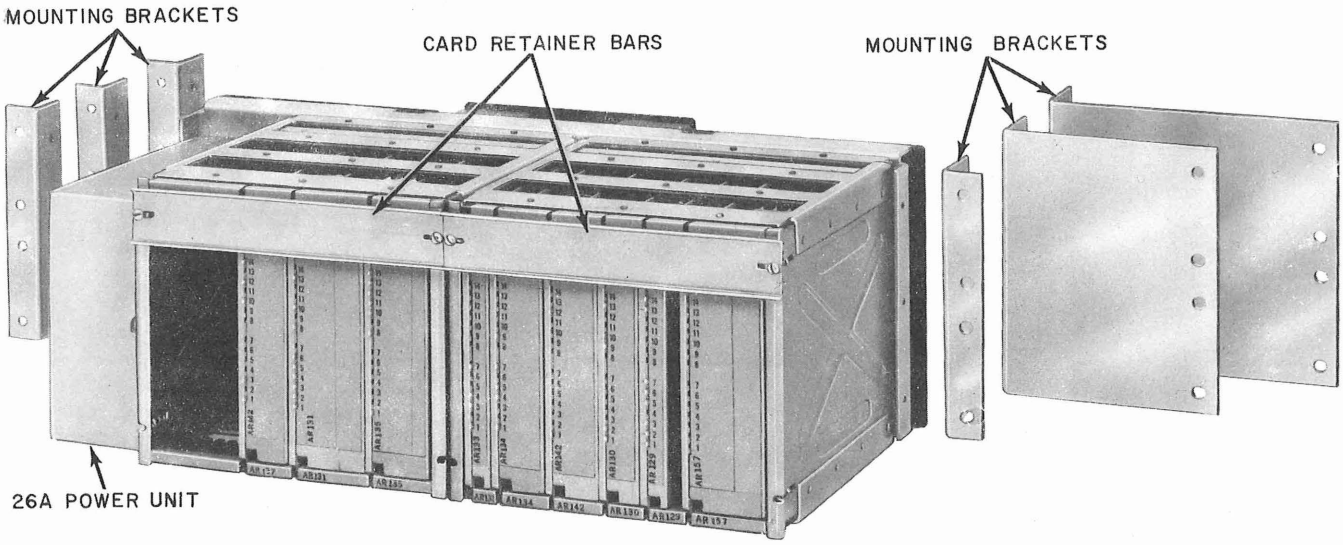


Fig. 8—Data Set 303-Type—Front View

and should be plugged into the power panel or outlet box. Figures 3 and 5 show the proper routing of all cables. The interconnecting cable between DS 303 and DAS 806 is supplied with DS 303-type. Cables and connectors associated with data auxiliary sets are listed under their individual categories. All shielded pair wiring not specified as part of a coded cable shall be 761A or equivalent.

To prevent possible damage to electronic components within the data set, do not make power connections until all other connections have been made.

3.15 Location of the interface connectors and terminal blocks corresponds to those shown in Fig. 9. Options for DS 303-type will be found in Table B.

Note: Options wired into DS 303-type and associated apparatus should be recorded on the label placed in the data station cabinet. If circuit packs are changed, this should also be noted. Such notations will aid in identifying options and changes on subsequent repair visits.

3.16 When DS 303-type is to be used in conjunction with a T1WM-4 modem, DS 303-type must be appropriately coded dc-coupled balanced line signal type data set.

3.17 Data Set 303-type, using a dc-coupled balanced line signal, is shipped with proper cards

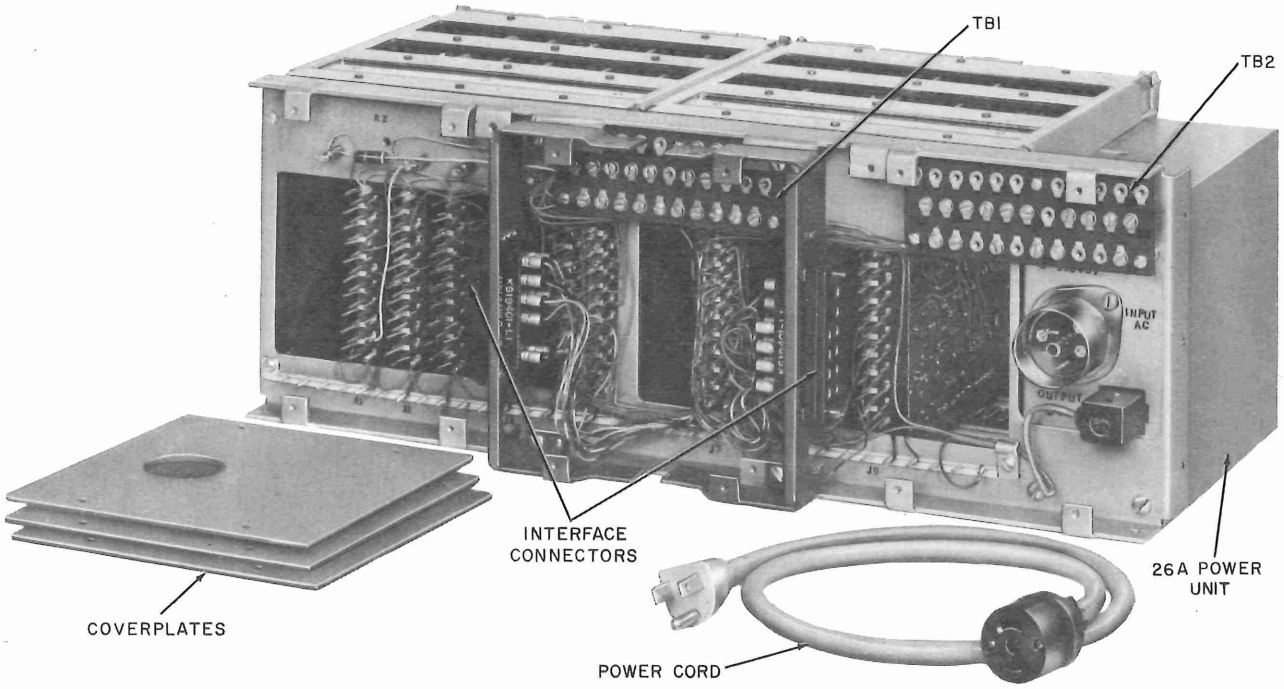


Fig. 9—Data Set 303-Type—Rear View

TABLE B

OPTIONS FOR DATA SET 303-TYPE

WIRING OPTIONS		FEATURES	TERMINAL BLOCK CONNECTIONS (Note)	
			TB1	TB2
E	One Per Station	External Transmitter Clock	7-8	—
Z		Internal Transmitter Clock	—	10-11
J		Sync Logic Normal	4-13	—
Q		Free-Running Scrambler	17-19	—
V		No VSB (no DAS 809B1)	25-26 28-29	—

Note: See Fig. 9 for option terminal boards on DS 303-type.

and installed per individually ordered coded apparatus.

Note: Check that cards are in the proper location and that strapping on CP AR361 is installed properly as follows:

CP AR361 STRAPPING		
A1	to	B1
A2	to	B2
D1	to	E1
D2	to	E2

Data Auxiliary Set 806B7 or 806D1

3.18 One cable which is supplied with DS 303 is required to connect either DAS 806B7 or DAS 806D1 to DS 303. Refer to Table C for connections. The power cable and all external cabling will be fastened as prescribed in this BSP. Refer to Tables D and E for options and telephone line connections when using DAS 806B7. Refer to Tables F and G for options and telephone line connections when using DAS 806D1. Options wired into the sets are made on the specified terminal boards located at the rear of the sets, with the exception of the 10A-type Data Unit in DAS 806. Options pertaining to the 10A-type Data Unit are made on the data unit itself. Figure 10 depicts the option board for DAS 806B7. Figure 11 depicts the option board for DAS 806D1.

Note: DAS 806D-type consists of a 32A-type Data Unit plus a 26A power unit. All connections are made to TB1 on the 32A-type Data Unit. Figure 11 illustrates only the 32A-type Data Unit.

Data Auxiliary Set 804A7

3.19 In this practice, reference is made to DAS 804A7. Unless otherwise specified, reference to DAS 804A7 applies to both DAS 804A3 and DAS 804A7. DAS 804A7 is rated Standard, while DAS 804A3 is rated MD. The same cabling and connections apply to both data auxiliary sets. Options are the same in both data auxiliary sets with the exception of option ZM which does not exist in DAS 804A3. Data Auxiliary Set 804A3 can be used for most installations; however, the DAS 804A7 must be used with long UNIGAUGE lines and ESS central offices.

3.20 Data Auxiliary Set 804A7 is equipped with a D50R-61 cord. Access for the cord to the data set is through either the front or rear opening at the base of the cabinet. The cable is plugged into TEL SET connector (J5) at the rear of DAS 806.

3.21 Power for DAS 804A7 is obtained from the associated DAS 806 with the exception of the talk battery. This power is supplied by the central office equipment.

3.22 Options required for DAS 804A7 for this particular installation are B, F, G, H, J, Q, W, X or Y or Z, ZA, ZD, and ZM.

3.23 For additional information on the options, refer to Section 598-030-100.

3.24 When the simultaneous talk/wideband data feature is to be incorporated while using DAS 804A7 in conjunction with DAS 806B7, a field modification to the wiring of DAS 804A7 must be made. No modification to DAS 804A7 is required when it is used in conjunction with DAS 806D1 since this feature is provided in DAS 806D1. Refer to Section 593-800-110 for this application. Following is a description of the modification:

(1) Remove the S-Y mounting cord and the W strap on the 3A-type Data Unit from terminal 14, tape, and store in sets series 1, 2, 3, and 4. In series 5 and above, remove the S-Y mounting cord and the W-S strap on 3A-type Data Unit terminal 14, tape and store.

(2) Move the Y-O mounting cord lead and the R strap on the 3A-type Data Unit, terminal 38 to 14. This move requires unlacing the local cable.

(3) Move the BL-W strap on the 3A-type Data Unit from terminal 39 to 4 in sets series 1, 2, 3, and 4. In series 5 and above, remove the G strap on the 3A-type Data Unit from terminal 39 to 4.

(4) Remove all leads on the 3A-type Data Unit terminal 19, connect together, tape, and

TABLE C

CABLE* CONNECTIONS BETWEEN DAS 806B7 OR 806D1 AND DS 303-TYPE

DAS 806B-TYPE	DESIGNATIONS	DS 303-TYPE
TB1		TB2
4	T	24
3	R	13
2	T1	23
1	R1	12
11	LTA	30
9	LTC	27
6	RTN	25
7	RT2A	16
18	GRD	26
15	DTR	19
17	RI	20
12	BLTK	31
10	BLTL	29
8	LS	28
5	LST†	15
16	SHIELD	14

* Interconnecting cable is supplied with DS 303-type.
† Tape and store the DS 303 end of this lead.

store. Add a lead between TB1-21 and the 3A-type Data Unit, terminal 36.

(5) Remove the O lead on 3A-type Data Unit terminal 24, tape, and store in sets series 1 and 2. In series 3 and above, remove S lead on 3A-type Data Unit terminal 24, tape and store.

(6) Add a lead about 3 inches long on the 3A-type Data Unit between terminals 28 and 24.

(7) Add a lead about 15 inches long between the 3A-type Data Unit terminal 19 and TB2-18, if the H option is specified, or to TB2-17 if the K option is specified.

(8) Add a lead about 3 inches long on the 3A-type Data Unit between terminals 23 and 38.

(9) Remove the BK-S mounting cord lead on the 3A-type Data Unit terminal 41, tape, and store.

(10) Remove the lamp under the DATA button.

3.25 When the voiceband coordinating channel is never used for the transmission of data, a modification must be made in DAS 804A7 to provide a termination for voice line when the data station is in the data mode and receiver is on-hook. Place a 600-ohm, 10 percent, 1/2 watt resistor on TB2, between terminals 17 and 18.

Remove power from associated data sets when changing option straps in DAS 804A7.

3.26 The DAS 804A7 contains a 589AA key unit with six illuminating keys that provide the control functions shown on the key labels in Fig.

TABLE D

OPTIONS FOR DAS 806B7

WIRING OPTIONS	FEATURES	CONNECTIONS	
		DAS 806B7 (Note)	10A-TYPE DATA UNIT
		TB1	TB1
W	2-Wire voiceband circuit	—	2-3 5-6 8-9 11-12
X	Wideband 0-dB transmit line pad	Factory-installed	
S*	Data terminal ready signal provided by customer data terminal	28-29	—
J*	Completes the voice-frequency data path in DAS 804A	13-14 30-31-32	—

Note: See Fig. 10 for location of option terminal boards on DAS 806B7.

* Factory-installed.

TABLE E

TELEPHONE LINE CONNECTIONS FOR DAS 806B7

FUNCTIONS	DESIGNATION	REMARKS	CONNECTIONS	
			TB2	TB3
WB TRMTG LINE	T	Shielded leads will be used on all data input and output levels. Lead dress of the shielded pair will not exceed one inch after termination at terminal. Cable will be 761A-type or equivalent. Ground shield at DS 303-type end only. Leave ungrounded at the far end. Do not ground terminal 5 of TB3 on DAS 806B7.	—	1
	R		—	2
WB RECVG LINE	T1		—	3
	R1		—	4
VOICE LINE	T3	—	3	—
	R3	—	4	—

TABLE F

OPTIONS FOR DAS 806D1

WIRING OPTIONS		FEATURES	CONNECTIONS DAS 806D1		
			32A DATA UNIT	10A3 DATA UNIT	CP CS4
			TB1	TB1	
	B*	Routes path of wideband line circuit in 10A3 DU through test relay contacts. Used when 32A DU is part of DAS 806D1.	—	22-23, 25-26, 28-29, 31-32	—
	W	2-Wire voiceband circuit	—	2-3 5-6	—
	X*	0-dB Wideband transmit line pad	—	"Plug-in" Pad	—
	S*	Data terminal ready signal provided by customer data terminal.	28-29	—	—
	J*	Completes the voice-frequency data path in DAS 804A.	13-14, 30-31-32	—	—
	ZA	Provides drive for WB CHAN lamp. Used when 32A1 DU is part of DAS 806D1.	45-46	—	—
	ZB	Provides ACU TLK IND from DAS 804A-type. Used when DAS 804A-type is provided.	52-53	—	—
One Per Station	ZC†	Simultaneous wideband data/talk operation when 32A1 DU is used in DAS 806D1. Synchronous service with DS 303.	—	—	18-19
One Per Station	ZD†	Simultaneous wideband data/talk operation when 32A1 DU is used in DAS 806D1. Under control of alternate-use signal to DS 303.	—	—	18-20
	ZE‡	Termination for voice line when no voiceband data set is provided.	—	—	10-11, 12-13

Note: See Fig. 11 for location of option terminal boards on DAS 806D1.

* Factory-installed.

† Neither the ZC nor the ZD option should be provided when the simultaneous wideband data/talk capability is not required as is the case when a voiceband data set is provided. Option ZC should be used when the simultaneous wideband data/talk capability is required as a permanent arrangement. Option ZD should be used when control of this capability is from the alternate-use (ALT) signal to DS 303.

‡ Do not install the ZE option when DS 103 is provided.

TABLE G

TELEPHONE LINE CONNECTIONS FOR DAS 806D1

FUNCTIONS	DESIGNATION	REMARKS	CONNECTIONS
			TB1
WB TRMTG LINE	T	Shielded leads will be used on all data input and output leads. Lead dress of the shielded pair will not exceed one inch after termination at terminal.	66
	R		67
WB RECVG LINE	T1	Cable will be 761A-type or equivalent. Ground shield at DS 303-type end only. Leave ungrounded at the far end. Do not ground terminal 65 of TB1 on DAS 806D1.	68
	R1		69
VOICE LINE	T3	—	61
	R3	—	62

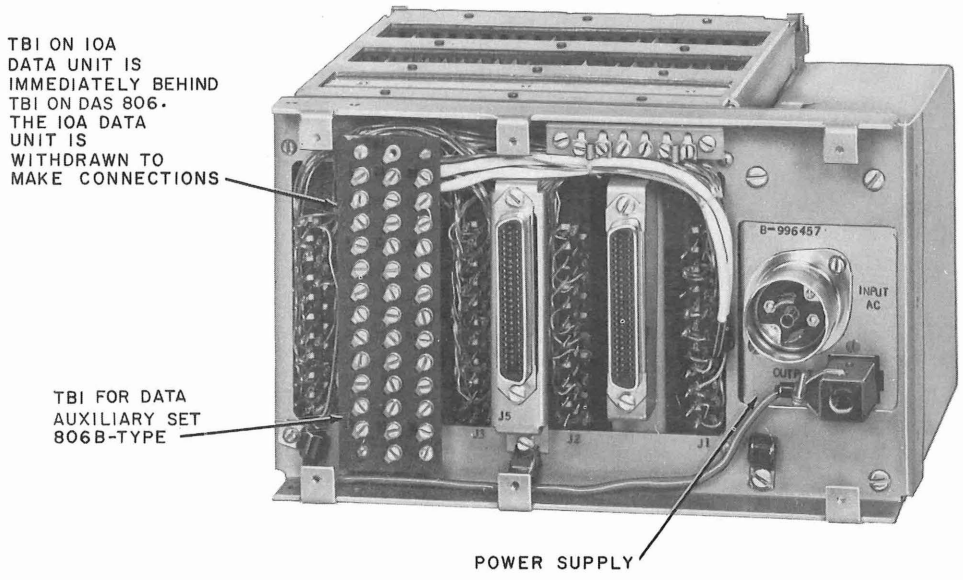


Fig. 10—Option Board on Data Auxiliary Set 806B7

12. The physical appearance is changed by the addition of decals on the press-fit, plastic key number strip. To place or replace the decal, pry plastic key strip from the edge slightly and lift over keys. Remove decal, substitute information shown in Fig. 12, and then replace.

3.27 The key marked WB CHAN should be blocked by inserting blocking ring P-12A858. The TEST and AUTO keys should be made locking by installing a P-10E837 screw. For additional information concerning DAS 804A7, refer to Section 598-030-100.

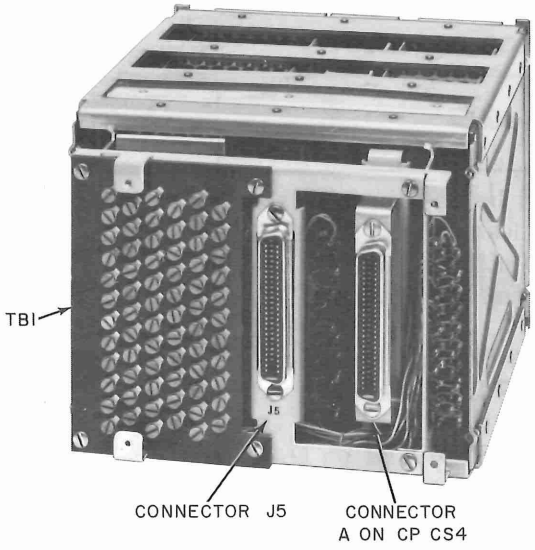


Fig. 11—Option Board on Data Auxiliary Set 806D1 (32A1 Data Unit)

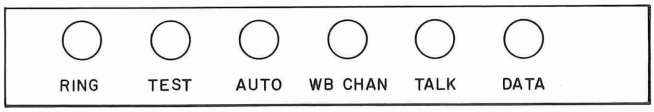


Fig. 12—Key Designations on Data Auxiliary Set 804A7

DATA SET 303, DATA AUXILIARY SET 806, DATA AUXILIARY SET 804A7 (T1WM-4 MODEM AND LTU), AND DATA SET 103F2

A. General

3.28 The following part of this practice will describe the installation of Data Set 303-type with either restored polar line signal or dc-coupled balanced line signal, DAS 806, DAS 804A7, and Data Set 103F2. This arrangement adds low-speed data capability to the wideband (50-kilobit) data station. Refer to Section 593-800-110 for requirements and restrictions. In some installations, a T1WM-4 modem and an LTU may be required. The installation of this equipment will be covered in later parts of this practice. Figures 2 and 5 show a complete data station.

B. Installation

3.29 The installation of DS 303-type, either restored polar or dc-coupled balanced line signal type, is covered in 3.09 and 3.10. There are no changes to this basic installation arrangement.

3.30 The DAS 806 will be installed in the same manner as described in 3.10.

3.31 The DAS 804A7 is desk-top type apparatus and requires no exceptional mounting arrangements. It must, however, be placed in a convenient location within 75 cable feet of the associated DAS 806. Refer to Fig. 1.

3.32 Data Set 103F2 is a desk-top type apparatus. It may be placed either on top or within the associated wideband data cabinet or at any other convenient location within the limits of the cable supplied. If vertical mounting is desired, use a 180A backboard. When the data station employs restored polar line signal type apparatus, Data Set 103F2 is to be located on a shelf (KS-20130-L5B) within the cabinet. Refer to Fig. 2 and 3.

3.33 The data station installation will conform to the standard station installation practices. For information on the description and installation of DS 103F2, refer to Sections 591-019-100 and 591-019-200.

C. Connections

Data Set 303-Type Restored Polar and DC-Coupled Balanced Line Signals

3.34 All connections to the components in the station are made from the rear. Options wired into the sets are made on terminal boards located at the rear of the sets.

3.35 The cabling and options in 3.14 through 3.17 of this practice will be used for DS 303-type, either restored polar or dc-coupled balanced line signal codes.

Data Auxiliary Set 806B7 or 806D1

3.36 The same restrictions and qualifications apply to DAS 806B7 and/or DAS 806D1 here as described in 3.18.

Data Auxiliary Set 804A7

3.37 In this practice, reference is made to DAS 804A7. The same cabling and connection information applies equally to DAS 804A3 (MD) and DAS 804A7 unless otherwise specified. Options are the same in both data auxiliary sets with the exception of option ZM which does not exist in DAS 804A3. The DAS 804A3 can be used for most installations; however, the DAS 804A7 must be used with long UNIGAUGE lines and ESS central offices.

3.38 Cabling and connections for DAS 804A7 will be made in the same manner as that described in 3.20 and 3.21.

3.39 Options required for DAS 804A7 for this particular installation are B, F, G, H, J, Q, W, X or Y or Z, ZA, ZD, and ZM. No field wiring modifications are required for this particular arrangement. Information for option strapping will be found in Section 598-030-100.

Remove power from associated data sets when changing option straps in the DAS 804A7.

3.40 The physical appearance will be changed by altering the key number strip. The mechanical operation of the key must also be changed. The procedure for making the physical and mechanical changes will be found in 3.26 and 3.27 of this practice.

Data Set 103F2

3.41 Data Set 103F2 requires three connecting cables for its operation. Options are provided by straps on a connecting block on the inside of the data set.

3.42 The business machine connections to the data set are made through a KS-19087-L2 connector designated CUST EQUIP at the rear of the set. The customer-supplied cord must be equipped with a Cinch or Cannon DB-19604-432 plug. The distance between business machine and data set will not exceed 50 cable feet.

3.43 Connections from DS 103F2 to DAS 806 are made with a P-97M073 cable. Cable P-97M073 replaces the D4BM cord with which the set comes equipped. The cable P-97M073 must be ordered separately. One end of the cable is terminated on TB2 within the data set. The other end of the cable will terminate at the A connector of DAS 806. Access for the P-97M073 cable to DAS 806 is made through one of the two rectangular access ports in the front and rear center of the base on the wideband data cabinet.

3.44 Terminal assignments and cable color codes are shown in Fig. 6 and 7.

3.45 Service option for DS 103F2 must provide business machine control of originating and answering mode by strapping MD to XC on TB1.

3.46 Power for DS 103F2 is supplied to the set by a KS-14532-L16 gray cord assembly (10 feet long). One end connects to the PWR CONNECTOR at the rear of the DS 103F2. The other end connects to the 117-volt ac, 3-wire receptacle on the power panel in the wideband data cabinet. The power cable will be routed in the same manner as previously described.

T1WM-4 WIDEBAND MODEM

A. General

3.47 When DS 303-type is to be used with a T1WM-4 modem, DS 303 must be a properly coded dc-coupled balanced line signal type.

3.48 The T1WM-4 modem converts the 2-level dc-coupled balanced line signal from the DS 303-type into a signal suitable for transmission over a T1 line facility. Data Set 303-type with a T1WM-4 modem can be added to any station complement in any arrangement of DS 303-type found in the preceding parts of this practice.

3.49 Description, maintenance, and testing of the T1WM-4 will be found in Sections 365-121-100, 365-121-500, and 365-121-502.

3.50 An LTU may be mounted in a data station cabinet. It is required as terminal equipment for a repeatered line of a T1 Carrier System. Refer to Sections 365-121-100 and 365-200-103 for the description and operation of the LTU.

B. Installation

3.51 A T1WM-4 modem is installed in the lower part of the standard Bell System cabinet KS-20018-L4. Data Set 303-type and other components are mounted above as described previously in this practice. The same general arrangement should be utilized when all components are rack-mounted. This arrangement can best utilize those cables furnished with the various components of a wideband data station.

3.52 If necessary, the T1WM-4 modem can be located away from the wideband data station. The distance between the modem and the wideband data station should not exceed 1000 cable feet.

C. Connections

3.53 All connections between the DS 303-type and the T1WM-4 modem are made in the rear of the equipment as shown in Fig. 6 and 7. The arrangements will vary according to equipment location and application.

D. Installation and Connections—LTU

3.54 When the data station is used with a T1 line, the line is engineered to provide a T1 LTU at the data station. The LTU is the equivalent of an office repeater. Maximum allowable separation between the T1WM-4 modem and the LTU is 750 cable feet.

3.55 If the LTU is used in the data cabinet, it will be mounted directly above the modem. Refer to Fig. 3.

3.56 For information pertaining to cabling and terminal assignments, refer to Fig. 6 and 7.

4. SPURIOUS VOLTAGE INTERFERENCE SUPPRESSION

GENERAL

4.01 When false operation of the associated business machine is encountered due to spurious voltage spikes on the data set ready (DSR) lead, certain remedial measures may be necessary. These measures are described in Section 593-800-110. If the apparatus does not meet requirements or does not have the series changes as described in Section 593-800-110, the modifications shown in the following paragraphs are provided as corrective measures. Filtering of the RI lead is required only when the RI function is used and false operation of the business machine persists when the apparatus includes the series changes described in Section 593-800-110.

A. Filtering of the RI Lead

4.02 The following changes are made to filter the RI lead in DAS 804A7:

(1) Move the RI lead (O-R) from the 3A-type Data Unit terminal 31 to TB1-16.

(2) Place a strap from the 3A-type Data Unit terminal 31 to TB2-6.

(3) Place a 270-ohm, 10 percent, 1/2 watt resistor between TB2-6 and TB2-7.

(4) Place a 0.02 microfarad, 200-volt capacitor between TB2-7 and TB2-1.

(5) Place a strap between TB2-7 and TB1-16.

4.03 If DAS 806B7 contains CS3 series 2 or if DAS 806D1 is used, this change is not necessary. If DAS 806B7 contains CS3 series 1, then do the following:

(1) Place a 0.01 microfarad, 200-volt capacitor between TB1-17 and TB1-18.

B. Filtering of the LS Lead

4.04 The following changes are made in DS 303-type:

(1) Move the LS lead from TB2-28 to TB2-18.

(2) Place a 1000-ohm, 10 percent, 1/2 watt resistor between TB2-18 and TB2-28.

(3) Place a 0.1 microfarad, 200-volt capacitor between TB2-28 and TB2-26.

5. AUTOMATIC CALLING CAPABILITY

A. General

5.01 Data Auxiliary Set (DAS) 801C4 may be provided with any arrangement found in this practice. However, when DAS 801C4 is used

with DAS 806B7, special wiring arrangements are necessary. Figure 13 shows the recommended wiring procedure. The recommended wiring procedure when DAS 801C4 is used with DAS 806D1 is shown in Fig. 14. For application of the automatic calling unit (ACU), refer to Section 593-800-110.

B. Installation

5.02 Data Auxiliary Set 801C4 is desk-top type apparatus and can be placed on top of the wideband data station cabinet or any other convenient location.

5.03 A complete description of the automatic calling unit will be found in the Description and Operation, Section 598-012-101. For installation of DAS 801C4, refer to Installation, Section 598-012-201.

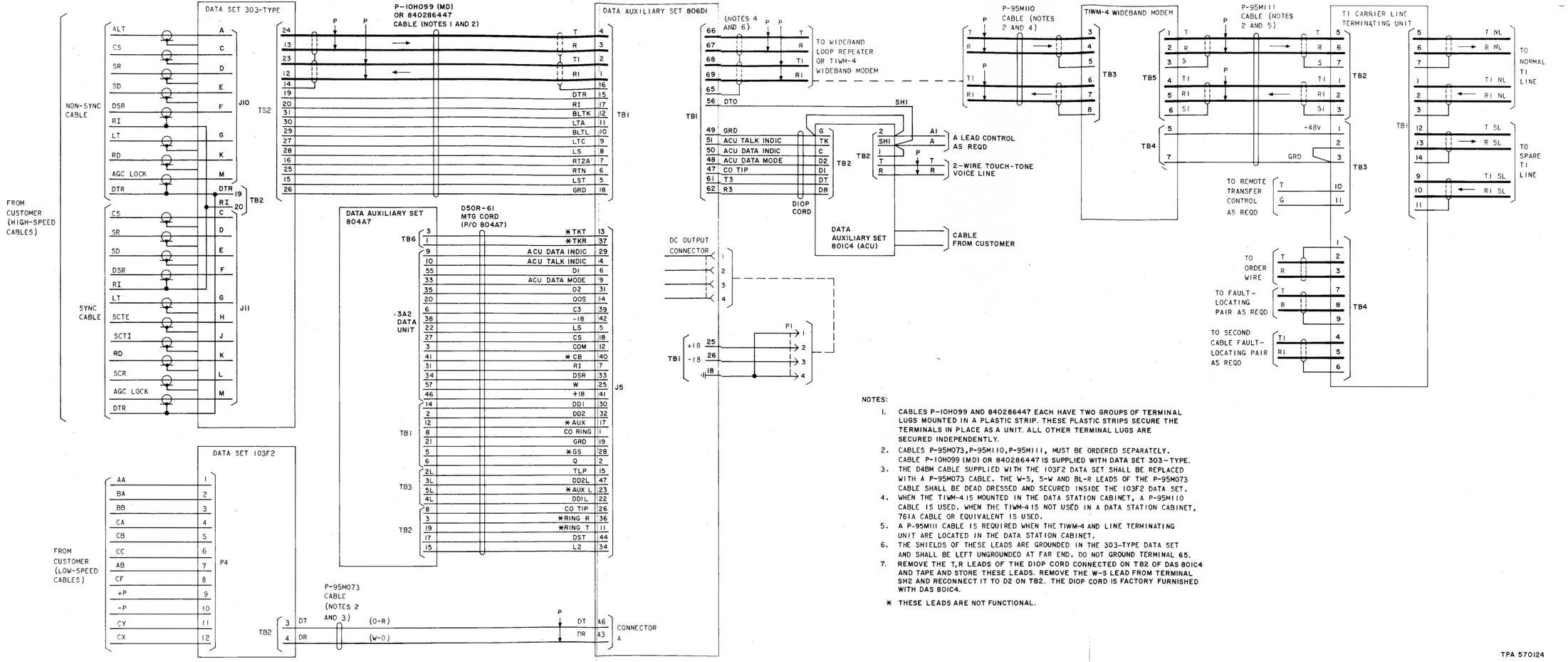
C. Connections

5.04 The automatic calling unit, DAS 801C4, requires three cord connections for operation. Two of the cords are factory-furnished with DAS 801C4. Interface connection between the business machine and the automatic calling unit must be provided by the customer. The interface cord shall be equipped with a plug to match the KS-19087-L6 connector located on the rear panel of the ACU. Maximum length of the interface cord shall not exceed 50 cable feet.

5.05 Factory-provided D10P-61 mounting cord comes equipped with spade tips at both ends. One end is terminated on TB2 in the DAS 801C4. When DAS 801C4 is used with DAS 806B7, the spade tips of the other end are terminated on the 66E3 connecting block with 161A adapter as shown in Fig. 13. When DAS 801C4 is used with DAS 806D1, the D10P-61 mounting cord connects directly to DAS 806D1 as shown in Fig. 14.

5.06 The factory-provided KS-14532-L16 power cord is equipped with a Twist-Lock plug for power connection at the rear panel of DAS 801C4. The other end of KS-14532-L16 power cord is equipped with a plug for terminating at the power panel in the data station cabinet. The power cord will be dressed in the manner shown in Fig. 4.

5.07 Options required for DAS 801C4 are as follows: B, F, R, S, W, Y, ZD, ZH, ZM, and M. Factory-provided options Z, ZA, Q, and X must be removed. Do not use T option in associated DAS 804A7. The 801C4 must include the 12 combination TOUCH-TONE® transmitter and control circuit CP AS64. For information on the installation of options, refer to Section 598-012-201.



NOTES:

1. CABLES P-10H099 AND 840286447 EACH HAVE TWO GROUPS OF TERMINAL LUGS MOUNTED IN A PLASTIC STRIP. THESE PLASTIC STRIPS SECURE THE TERMINALS IN PLACE AS A UNIT. ALL OTHER TERMINAL LUGS ARE SECURED INDEPENDENTLY.
2. CABLES P-95M073, P-95M110, P-95M111, MUST BE ORDERED SEPARATELY. CABLE P-10H099 (MD) OR 840286447 IS SUPPLIED WITH DATA SET 303-TYPE.
3. THE D4BM CABLE SUPPLIED WITH THE 103F2 DATA SET SHALL BE REPLACED WITH A P-95M073 CABLE. THE W-S, S-W AND BL-R LEADS OF THE P-95M073 CABLE SHALL BE DEAD DRESSED AND SECURED INSIDE THE 103F2 DATA SET.
4. WHEN THE TIWM-4 IS MOUNTED IN THE DATA STATION CABINET, A P-95M110 CABLE IS USED. WHEN THE TIWM-4 IS NOT USED IN A DATA STATION CABINET, 76IA CABLE OR EQUIVALENT IS USED.
5. A P-95M111 CABLE IS REQUIRED WHEN THE TIWM-4 AND LINE TERMINATING UNIT ARE LOCATED IN THE DATA STATION CABINET.
6. THE SHIELDS OF THESE LEADS ARE GROUNDED IN THE 303-TYPE DATA SET AND SHALL BE LEFT UNGROUNDED AT FAR END. DO NOT GROUND TERMINAL 65.
7. REMOVE THE T,R LEADS OF THE DIOP CORD CONNECTED ON TB2 OF DAS 801C4 AND TAPE AND STORE THESE LEADS. REMOVE THE W-S LEAD FROM TERMINAL SH2 AND RECONNECT IT TO D2 ON TB2. THE DIOP CORD IS FACTORY FURNISHED WITH DAS 801C4.

* THESE LEADS ARE NOT FUNCTIONAL.

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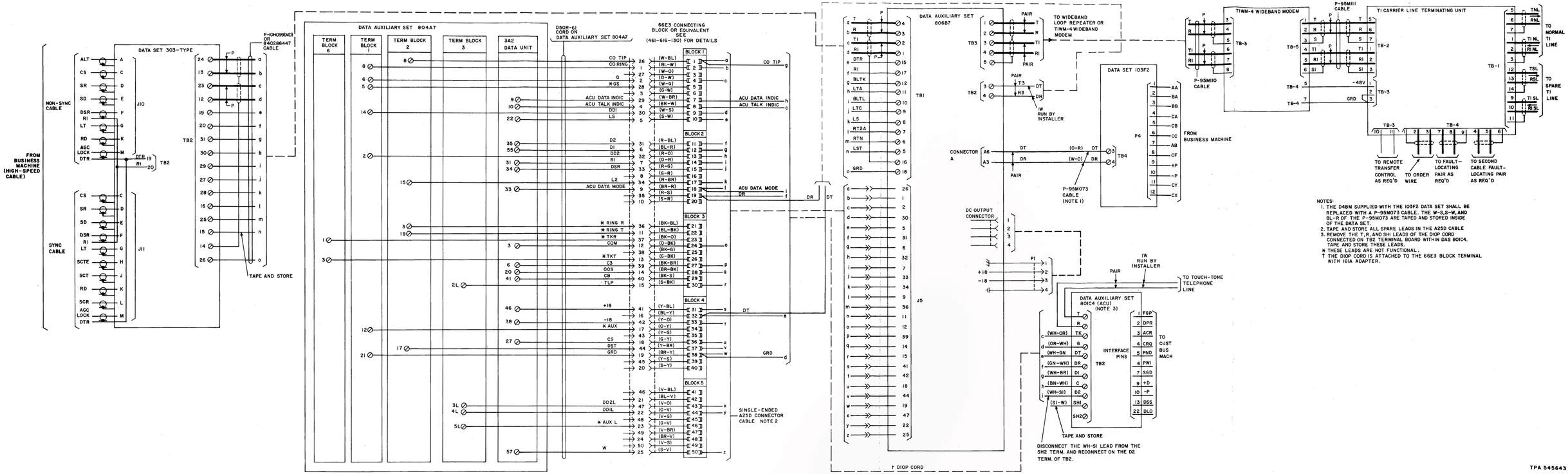
Fig. 13—Connection Diagram—Wideband Data Station (With DAS 806D1 and ACU)



NOTES:
1. THE D48M SUPPLIED WITH THE 103F2 DATA SET SHALL BE REPLACED WITH A P-95M073 CABLE. THE W-S,S-W, AND BL-R OF THE P-95M073 ARE TAPED AND STORED INSIDE OF THE DATA SET.
2. TAPE AND STORE ALL SPARE LEADS IN THE A25D CABLE
3. REMOVE THE T,R, AND SHI LEADS OF THE DIOP CORD CONNECTED ON TB2 TERMINAL BOARD WITHIN DAS 801C4. TAPE AND STORE THESE LEADS.

✱ THESE LEADS ARE NOT FUNCTIONAL.

† THE DIOP CORD IS ATTACHED TO THE 66E3 BLOCK TERMINAL WITH 161A ADAPTER.

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Fig. 14—Connection Diagram—Wideband Data Station (With ACU)