407-TYPE MULTIPLE DATA STATION

REFERENCE GUIDE

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1. GENERAL

1.01 The 407-type multiple data station is used primarily for Digital Inquiry Voice Answer-Back (DIVA) systems. These systems may be used in such applications as credit checking or retrieving information from a customer-provided computer. Using a Touch-Tone® telephone set dial or TRANSACTION* telephone as the input device, a customer may call the computer and receive a voice answer over the telephone handset. This answer may consist of machine-generated or prerecorded phrases. These phrases are under the control of a customer-provided computer equipped with an audio response unit.

Note: The data set (DS) 407A-L1 will not work with early Transaction telephones, but may be factory modified to DS 407A-L1A, which will work with all Transaction telephones.

*Trademark of AT&TCo

1.02 This section is reissued to add coverage on DS 407B, and 41A2 and 41B2 data mountings. Since this is a general revision, arrows ordinarily used to indicate changes have been omitted.

1.03 A 407-type multiple data station (Fig. 1) consists of the following units:

(a) Data set 407A or 407B

(b) 41A1 and 41B1 data mountings [rated Manufacture Discontinued (MD)], may be used to house a maximum of eight data sets 407A per data mounting. The 41A2 and 41B2 data mountings replace the 41A1 and 41B1, respectively, and may be used to house a like number of data sets 407A or 407B. The data mountings are equipped with the following:

- 101A power unit.
- P3BJ power cord (one supplied ***only*** with the 41B-type data mountings). This power cord enables interconnection to other power units.
- KS-14532-L16 power cord (one supplied ***only*** with the 41A-type data mountings). This 10-foot power cord is used for connection to the customer-provided ac power outlet.
- 46A1 data unit (one supplied ***only with 41A-type data mountings). The 46A1 data unit provides local, remote, and light emitting diode (LED) testing of the 407-type multiple data station.***
- 47A1 data unit (one supplied ***only*** with 41A-type data mountings). The 47A1 data unit provides a means for local testing by the customer or telephone company (telco) employee.

(c) A 23-inch rack mounting, such as a KS-20018-L11A or -L12A cabinet, as required.

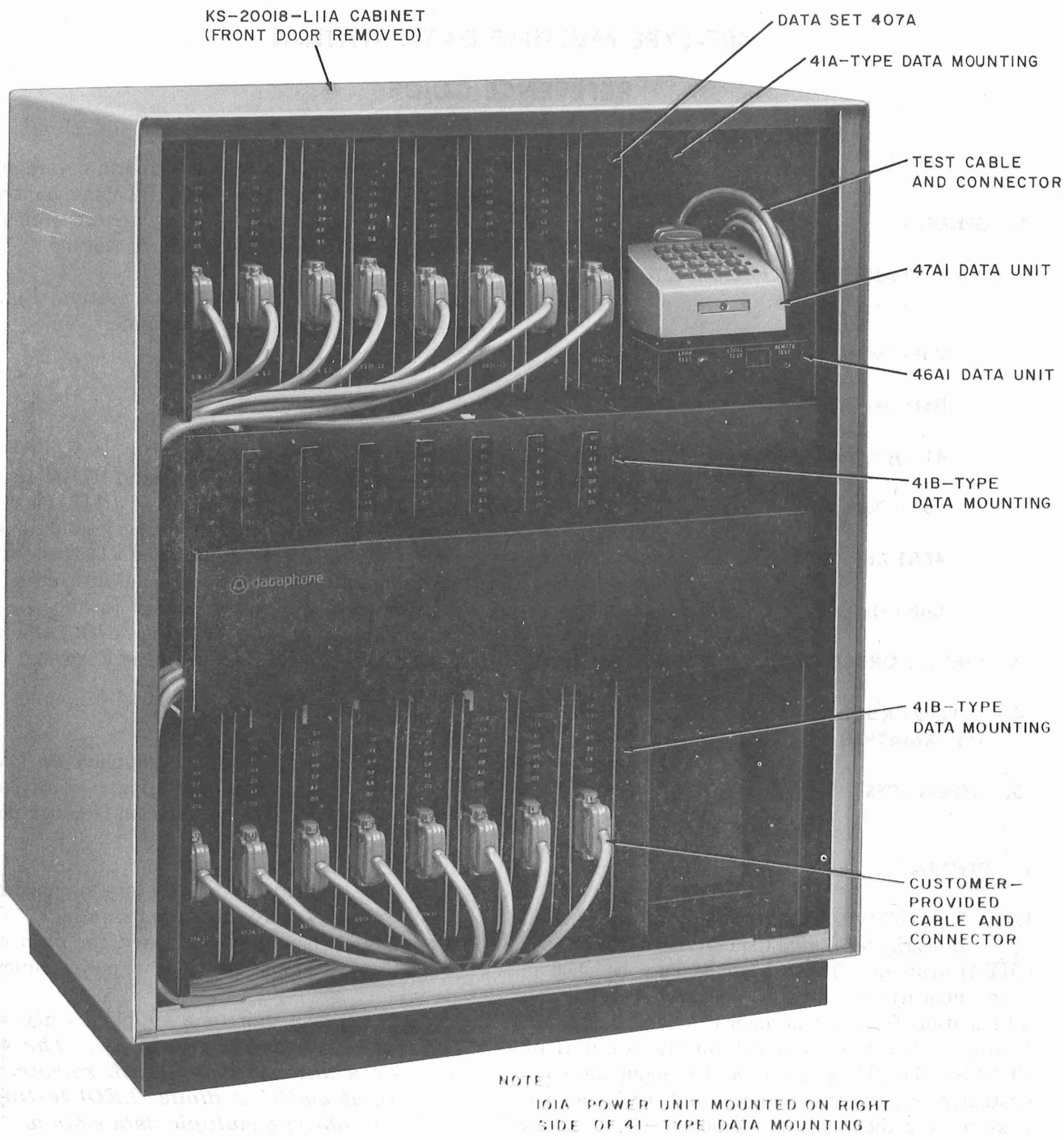

Fig. 1—407A-Type Multiple Data Station Mounted in a KS-20018-L11A Cabinet—Typical

1.04 Data set 407-type is a low-speed, parallel receiver that detects two-out-of-eight multifrequency signals generated primarily by a Touch-Tone or Transaction telephone. The data set may be used with either an Electronic Industries Association (EIA) voltage or a contact ***equivalent*** customer interface. The data set receives data from the switched network or an unconditioned private line facility, as required. The data set provides a two-way voice channel as well as full

time remote operation. This feature enables the data set to receive Touch-Tone signals in the presence of outgoing voice or tone answer-back. The data set has the capability of generating a 2025-Hz answer-back tone. Status lamps are provided on the front panel of data set 407-type to indicate the state of various functions and customer interface signals.

1.05 A test unit (46A1 and 47A1 data units) is provided with the 41A-type data mountings. This test unit enables the customer or telco employee to obtain a rapid check of a data set suspected of malfunctioning. An instruction decal, titled CUSTOMER DATAPHONE TEST, provides the local testing information required to enable the customer to perform this test. The instruction decal is located on the inside of the front cover of the 41A-type data mountings.

1.06 A second decal, located on the inside of the front cover of the 41-type data mountings, provides data set number location and computer port assignment blanks. The computer port assignment blanks are filled in by the customer and provide a convenient means of assigning a data set to a computer port.

1.07 The 407-type multiple data station may be housed in a KS-20018-L11A, or -L12A cabinet, or equivalent, or any mounting rack arrangement that will accept the 23-inch, 41-type data mountings. Only one 41A1 or 41A2 data mounting is required in each cabinet. Additional data sets are housed in the 41B1 or 41B2 data mounting (KS-20018-L11A cabinet).

1.08 The 407-type multiple data station is compatible with the following:

- 565HK-type telephone set, or equivalent.
- Call Director.®
- 2B automatic call distributor (ACD).

2. PHYSICAL AND ELECTRICAL CHARACTERISTICS

2.01 The 407-type multiple data station will operate in an ambient temperature range from 40 to 120°F. The relative humidity operating ranges for the data station are as follows:

- Between 40 to 75°F, the humidity may vary from 20 to 95 percent.
- At 100°F, the humidity may vary from 20 to 70 percent.
- At 120°F, the humidity may vary from 20 to 40 percent.

Data Set 407A

2.02 Data set 407A consists of two printed wiring circuit packs mounted together in sandwich fashion. A KS-19087-type 25-pin connector is located on the front of the data set and provides the interface with the customer-provided terminal equipment. A printed wiring board terminal is also located on the rear of the data set which enables the data set to plug into the 41-type data mounting. The data set is 8 inches high, 12.1 inches deep, 1.45 inches wide, and weighs approximately 2.5 pounds. The data sets require power sources of +12 volts, −12 volts, and +5 volts.

Data Set 407B

2.03 Data set 407B consists of two printed wiring boards similar to DS 407A, with a daughter board CM1 (circuit module) between them. Dimensionally, DS 407B is the same as DS 407A, and the power sources are the same. A 25-pin connector (KS-19087-type) is located on the front of the data set, and provides the interface with customer-provided terminal equipment.

41-Type Data Mountings

2.04 The 41A-type data mountings are approximately 23 inches wide, 8.67 inches high, 16.5 inches deep and contain a test unit. They mount on a 23-inch rack and weigh approximately 42 pounds. The 41A1 and 41A2 data mountings are supplied with a KS-14532-L16 power cord. The 41B1 and 41B2 data mountings have the same physical dimensions as the 41A1 and 41A2 data mountings and weigh approximately 38 pounds. The 41B1 and 41B2 data mountings are supplied with a P3BJ power cord. The P3BJ power cord consists of a Hubbell Twist-lock receptacle and a male three-prong plug. The 41B1 and 41B2 data mountings do ***not*** contain a test unit. The 407B data station uses

41A2 and 41B2 data mountings instead of the 41A1 and 41B1 data mountings used with DS 407A. The 41A1 and 41B1 data mountings are rated MD and are replaced by the 41A2 and 41B2 data mountings, respectively.

2.05 The 41-type data mounting is provided with eight 908J1 connectors, two KS-16672-L3 50-pin connectors, and one 101A power unit. All of the 41-type data mountings provide a locking strip across the front of the mountings to ensure that the data sets remain properly connected in the nest. The 41-type data mountings are also provided with a removable front cover.

2.06 The dc voltages are supplied to the data sets via the data mountings by the 101A power unit. The 101A power unit is mounted on the right side of the data mounting and weighs 20 pounds. If more than one data mounting is required, the 101A power units are interconnected (via P3BJ power cords) with the bottom power unit supplying the external power connection via the KS-14532-L16 power cord.

46A1 Data Unit

2.07 The 46A1 data unit is approximately 5.2 inches wide, 2 inches high, 4.2 inches deep, and weighs 1.5 pounds. This data unit contains a test circuit, LOCAL-REMOTE TEST switch, test indication LEDs, a LAMP TEST switch for testing all LEDs on the data sets and on the 47A1 data unit and a test cord to connect the data set under test.

47A1 Data Unit

2.08 The 47A1 data unit is approximately 4.5 inches wide, 2.5 inches high, 4.5 inches deep and weighs 1.5 pounds. This data unit is a modified 16-button Touch-Tone dial. The data unit contains LEDs across the top and down the right side of the dial.

Cabinets

2.09 The 407-type multiple data station may be housed in one of two KS-20018-type cabinets. The front panel of each cabinet is see-through tinted plastic, while the back panel is perforated metal. The cabinet exteriors are textured aluminum with a clear finish. The cabinets and physical characteristics are as follows:

- KS-20018-L11A cabinet can house one 41A1 or 41A2 and up to two 41B1 or 41B2 data mountings with a maximum of 24 data sets 407A. Due to thermal limitations, only 16 data sets 407B can be mounted in this cabinet. The cabinet is approximately 24 inches wide, 30 inches high, 19 inches deep, and weighs 31 pounds.

- KS-20018-L12A cabinet can house one 41A1 or 41A2 data mounting with a maximum of eight DS 407A or DS 407B. The cabinet is approximately 24 inches wide, 17 inches high, 19 inches deep, and weighs 22 pounds.

3. SERVICE ORDER INFORMATION

3.01 Service orders for data services should describe the desired service by uniform service order codes (USOC) and should not specify particular data set codes. The ***encoding procedure*** to determine the appropriate USOC is described in Section 590-000-100. USOC decoding procedures are also described in Section 590-000-100. Customer option decisions which must be made to determine the USOC suffix are listed in 3.03. A rapid cross-reference between USOC, data sets, and reference guides is presented in Section 590-000-102. Intercity Service Manual (ISM) Section 87 gives customer billing nomenclature, shows tariff listings for data services, and provides general reference information.

Engineering or Plant Department personnel responsible for selecting data sets are not compelled to use any particular data set codes specified or suggested on the service order. To achieve maximum reuse of data station apparatus, the first choice in selecting apparatus should be the oldest available model that will satisfy the service requirements as identified by USOC. When the desired data set model is not available from telco stocks (field or class C), the use of an available substitute is preferred over the purchase of a new current model.

3.02 Service offerings are given in Table A. Customer options and option designations are

given in Table B. Telco engineering options are listed in Table C.

3.03 The following paragraphs provide detailed information on customer options for ***USOC suffix determination*** and are keyed to Table B.

Decision A—EIA Voltage or Contact Equivalent Interface

(a) ***1. EIA Voltage Interface:*** The data set works with a customer terminal having electrical characteristics as specified in EIA Standard RS-232-C.

(b) ***2. Contact Equivalent Interface:*** The data set works with certain customer terminals equipped for a contact closure interface.

Decision B—Switched Network (DDD) or Private Line Facility

(a) ***3. Switched Network:*** The data set provides a line impedance of 900 ohms for switched network operation.

(b) ***4. Private Line:*** The data set provides a line impedance of 600 ohms for private line service.

Decision C—Without or With 2B ACD

(a) ***5. Without 2B ACD:*** A 2B ACD is ***not*** associated with the data system. However, a Call Director or key telephone set may be required.

(b) ***6. With 2B ACD:*** A 2B ACD is associated with the data system. This equipment is used in place of a key telephone and usually denotes a larger data system (24 to 48 data sets 407-type). With the 2B ACD, the following additional functions are introduced into the data system:

- Concentration of incoming calls.
- Indication back to the business machine of referral clerk line selection.
- Ability to send data to the customer terminal when the referral clerk is on the line.
- Ability to free up data set once the referral attendant is on the line.

Decision D—Terminal Initiated Referral Always or During Computer Down Only

(a) ***7. Terminal Initiated Referral Always:*** Provides for referral to an attendant whether or not the computer is down.

TABLE A

407-TYPE MULTIPLE DATA STATION SERVICE OFFERINGS

USOC	DESIGNATION	APPLICATION	POWER SUPPLY	POWER CORD	DATA UNIT
4RZ	Data Set 407A	Touch-Tone Receiver	—	—	—
4B7	Data Set 407B	Touch-Tone Receiver	—	—	—
4QA	41A1 Data Mounting (MD)	Houses 8 Data Sets 407A	101A	KS-14532-L16	46A1 and 47A1
4QB	41B1 Data Mounting (MD)	Houses 8 Data Sets 407A	101A	P3BJ	—
4BA	41A2 Data Mounting	Houses 8 Data Sets 407B	101A	KS-14532-L16	46A1 and 47A1
4BB	41B2 Data Mounting	Houses 8 Data Sets 407B	101A	P3BJ	—

TABLE B

CUSTOMER OPTION DECISIONS
(USOCs 4RZ AND 4B7)

DECISION	CUSTOMER OPTION	OPTION DESIGNATION
A	1. EIA voltage interface 2. Contact equivalent interface	H J
B	3. Switched network (DDD) 4. Private line (Note 1)	A B
C	5. No 2B automatic call distributor (ACD) 6. 2B automatic call distributor (Note 2)	C D
D (Note 4)	7. Terminal initiated referral always 8. Terminal initiated referral during computer down only	K L
E (Note 4)	9. Out of service not controlled by DTR 10. Out of service controlled by DTR	M N
F (Note 4)	11. With computer down detection (Note 3) 12. Without computer down detection	AA or BB or CC DD

Note 1: If decision B is 4, decision C *must be* 5.

Note 2: When decision C is 6, coordination with PBX marketing personnel will be required to determine what 2B ACD options apply to the 407-type multiple data station.

Note 3: If decision F is 11, three choices are available for implementation. Option AA provides computer down detection by customer operated switch only. Option BB provides computer down detection by all DTR off only. Option CC provides computer down detection by either switch or all DTR off. This information must be included in the Remarks column of the service order.

Note 4: These decisions apply only to USOC 4B7. These options are available in DS 407B data stations but not in the DS 407A data stations.

(b) ***8. Terminal Initiated Referral During Computer Down Only:*** Provides for referral initiated by calling party, regardless of business machine interface, to an attendant only during computer down.

Decision E—Out-of-Service Control

(a) ***9. Out of Service Not Controlled by DTR:*** Out of service controlled by OS lead only.

(b) ***10. Out of Service Controlled by DTR:*** Out-of-service function is operated when DTR is OFF.

Decision F—With or Without Computer Down Detection

(a) ***11. With Computer Down Detection:*** This feature is provided by any one of three options, as follows:

(1) Option AA provides computer down detection by customer operated switch only.

(2) Option BB provides computer down detection by all data terminal ready leads being in the OFF state.

(3) Option CC provides computer down detection by either customer operated switch or all

TABLE C

TELCO ENGINEERING OPTIONS

OPTIONS	OPTION DESIGNATION	CONNECTED AT
Answer-back		
0 dB attenuation (≤ -3 dBm level at CO)	E	Data Set 407-Type
4 dB attenuation (≤ -7 dBm level at CO)	F	
9 dB attenuation (≤ -12 dBm level at CO)	G	
Out-of-Service Feature (Note)		
Tip-to-Ring Short	EE	Connecting Block or IDF
Third-Wire Ground	FF	
Separate Pair Short	GG	
Grounding		
Signal ground common to frame ground	HH	101A Power Unit
No signal ground common to frame ground	JJ	

Note: For non-ACD (Option C) systems only. There is *no* out-of-service option associated with Decision C6 (Option D).

data terminal ready leads being in the OFF state.

(b) ***12. Without Computer Down Detection:*** Computer down detection not used. (Option DD).

4. CONVERSION AND DISPOSITION INFORMATION

4.01 The 407-type multiple data station is designed to be the main Bell System Touch-Tone multiple data station receiver. The 407-type multiple data station performs functions similar to data set 403D-type multiple data station. Data set 407-type does ***not*** directly replace existing data sets 403D- or E-types.

4.02 There is no direct substitute or conversion scheme for the 407-type multiple data station. All malfunctioning components should be returned to a WECo distributing house for repair.

5. REFERENCES

5.01 The following documents pertain to the 407-type multiple data station.

SD & CD-1D240-01 Data System Station—Data Set 407-Type

SD & CD-1D241-01 Power Unit 101A

SECTION	TITLE
476-270-203	2B Automatic Call Distributing System Cabling And Cross Connects
590-000-100	Implementation of Data Services—Interdepartmental Coordination
590-000-101	Description of Data Set Features and Options—Reference Guide
590-000-102	Data Service—Reference Guides—Cross-Reference Information
590-100-132	46A1 Data Unit—Identification