DATA AUXILIARY SET 801A-TYPE

REFERENCE GUIDE

Fig. 1—Data Auxiliary Set 801A-Type

1. GENERAL

1.01 Data Auxiliary Set (DAS) 801A-type is a dial pulse Automatic Calling Unit (ACU) which may be used with most data sets. The ACU enables business machines to originate, automatically, DATA-PHONE® service calls on facilities equipped for dial pulse signaling.

1.02 This section is reissued to add option ZU, to correct reference to option F in 4.04(b)(2), and to make minor editorial changes throughout to comply with present format, including combining former Tables A and D.

1.03 The ACU is capable of calling any telephone number using information furnished by the business machine.

1.04 The current standard models of the Data Auxiliary Set 801A-type are the 801A5 and 801A6. They are compatible with business machines that conform to EIA Standard RS-232A. The ACU also provides an optional contact interface.

1.05 Data Auxiliary Sets 801A1 through 801A4 have been rated Manufacture Discontinued (MD), and are replaced by Data Auxiliary Sets 801A5 and 801A6.

1.06 Data Auxiliary Sets 801A5 and 801A6 have a full range of options that permit operation with most current 2-wire data sets in the 100, 200, 400, and 600 series (Table A).

1.07 ▶Data Set 801A-type ACUs are not compatible with:

→TABLE A←

DATA SETS COMPATIBLE WITH 801A5 AND 801A6

DATA SET	RESTRICTIONS
103A	801-type must be equipped with Q option when a 10-conductor cord (M option) is used with the ACU.
103E 103G 202C 401J 402C 602C	None
201A 202D 402D	When used with DAS 804A
101A 101B 101C	When used with DAS 811B

(a) Step-by-step (SXS) common control or with

(b) SXS non-common control arranged for TOUCH-TONE® service.

To provide service in these offices, an 801C2 or 801C4 TOUCH-TONE ACU, arranged for loop start, must be used.◀

1.08 ▶An ACU cannot be used on a telephone line to dial calls that will require operator assistance. For example: Where automatic number identification (ANI) is not provided, and all toll calls are switched to a CAMA operator so that the calling number can be obtained.◀

2. PHYSICAL AND ELECTRICAL CHARACTERISTICS

2.01 Data Auxiliary Set 801A-type is 11 inches wide, 10-1/2 inches deep, and 5-1/2 inches high. It is enclosed in a 2-tone gray plastic case and weighs approximately 16 pounds.

2.02 Data Auxiliary Set 801A-type requires approximately 15 watts of 117-volt 60-Hz power supplied by the customer through a common 3-wire grounding-type receptacle.

2.03 Environmental conditions required for proper operation of Data Auxiliary Set 801A-type are as follows:

- Ambient temperature range—+40 to 120°F
- Relative humidity range—20 to 95 percent

3. OPERATION

3.01 Operation of the ACU is dependent on control signals furnished by the business machine. The test buttons are used only when a test is being performed by either the customer or telephone company personnel. The test buttons are used to simulate the control signals that are usually furnished by the business machine. These buttons can be used to generate the numbers 1 through 9 and zero. For information on making a test of the data auxiliary set using the test buttons, refer to the section entitled Data Auxiliary Sets 801A5 and 801A6 for Automatic Calling—Test Procedures (598-010-501).

3.02 When the data auxiliary set is placed in the test mode, all call progress tones (dial tone, ringing, etc) can be monitored on the test call speaker. This speaker is located inside the cover of the ACU.

3.03 The data auxiliary set has an abandon-call and retry timing circuit that is referred to in this section as an ACR circuit. The function of this circuit is to supply a signal to the business machine when dial tone, interdigital, or call completion time exceeds a preset time interval.

3.04 The ACR timer can be adjusted to give 7-, 10-, 15-, 25-, or 40-second time intervals with a tolerance of +30, −0 percent. For information on making this adjustment, refer to the section entitled Data Auxiliary Sets 801A5 and 801A6 for Automatic Calling—Installation and Connections (598-010-201).

4. SERVICE ORDER INFORMATION

4.01 Refer to the section entitled Reference Guide—Description of Data Set Features and Options (590-000-101) for a more detailed explanation of features and options common to most data sets. Service offerings and customer options are outlined in Tables B and C, respectively. The

ITEM column provides a reference to descriptive information contained in Section 590-000-101.

4.02 The following paragraphs provide detailed information on customer options.

(a) ***Decision A—Voltage or Contact Interface:***

(1) ***1. EIA Interface (Option ZF):*** This is an option used with all business machines generating voltage signals. Signals are passed between the ACU and business machine via bi-polar voltages conforming to EIA standard RS-232A.

(2) ***2. Contact Interface (Option ZE):*** This option is specified when the ACU is used with business machines designed for a contact interface. Signals are passed between the ACU and the business machine via contact closures to signal ground.

(b) ***Decision B—Call Terminated Either Through ACU or Data Set After Data Set Status (DSS) On:***

(1) ***3. Through ACU (Option Z or A):*** The business machine can, through the ACU, terminate calls originated by the ACU if the call request (CRQ) lead is held on for the duration of the call.

(2) ***4. Through Data Set (Option G or ZD):*** The business machine can terminate ACU-originated calls through the data set should the programmer wish to drop CRQ after receipt of DSS on. This mode of operation (terminating the call through the data set) is the normal procedure.

(c) ***Decision C—ACR Timer Stopped or Not Stopped After DSS On:***

(1) ***5. Stop ACR Timer (Option R):*** With this option, the ACR timer, which is adjustable from 7 to 40 seconds, is stopped

TABLE B

SERVICE OFFERINGS — CURRENT STANDARD AND SUBSTITUTE

801A-TYPE AUTOMATIC CALLING UNITS

USOC	MODEL	FEATURE	NOTES	ITEM
DAY	801A5 801A3 (MD) 801A4 (MD) 801A6	Without answer-tone detection	1 2, 3, 4, 5 2, 3, 4, 7 6	A7
DLB	801A6 801A1 (MD) 801A2 (MD)	With answer-tone detection	1 2, 3, 4, 7 2, 3, 4, 5	A6

Notes:

1. Current standard model.
2. Data Auxiliary Sets 801A1, A2, A3, and A4 should be upgraded to Series 3. See PEMs 9169 and 9198.
3. Cannot be used with Data Sets 103E, 103G, and 101C.
4. Recommend that Data Auxiliary Sets 801A1, A2, A3, and A4 be substituted only on "originate only" service because of glare problem (see PEL 7555).
5. Contact interface only.
6. Answer-tone detection not used.
7. EIA interface only.

TABLE C

CUSTOMER OPTION DECISION TABLE

DECISION	OPTION	DESIGNATION	ITEM
A	1. EIA Voltage Interface	ZF*	B2
	2. Contact Interface	ZE	
B	3. Call terminated through ACU after DSS on	Z* or A	
	4. Call terminated through data set after DSS on	G or ZD	
C	5. ACR timer stopped after DSS on	R*	
	6. ACR timer not stopped after DSS on	H	
D	7. End-of-number signal from customer terminal	B*	
	8. No end-of-number signal from customer terminal (see note)		
E	9. ACU answer-tone detection (DAS 801A6 only)	B*	
	10. Data set answer-tone detection without EON signal (DAS 801A5 only)	E	

*Factory-supplied option.

Note: If D decision is 7, no E decision is required. If D decision is 8, E decision is made.

or disabled when DSS turns on. This option is normally specified for all cases except where the end of number (EON) mode is used.

(2) ***6. Continue ACR Timer (Option H):*** With this option, the ACR timer continues to run for its specified time even though the associated data set has signaled the ACU that it has connected by turning on DSS.

(d) ***Decision D—Customer Terminal Generates EON Code to ACU or No EON Code Generated:***

(1) ***7. EON Code (Option B):*** This mode is used when the data set is to be placed off-hook upon receipt of an EON code from the business machine. However, this is not recommended for two reasons:

- Except for Data Sets 101C (811B) or 103E and 103G, most data sets cannot hold the line during dc loop interrupts that may occur shortly after dialing.
- Except for Data Sets 101C (811B) or 103E and 103G, an ACU with answer-tone detection provides the most reliable means of ensuring that the called station has been reached.

(2) ***8. No EON Code:*** With this mode, the data set or ACU detects the answering signal without requiring that the terminal

generate an EON signal. This is the mode normally used.

(e) ***Decision E— ACU Answer Detection or Data Set Answer Detection Without EON Code:***

(1) ***9. ACU Answer Detection (Option B):*** This mode is recommended for Data Sets 103A and all 200, 400, and 600 series. When this option is used, the frequency of the answer-tone detector circuit must be selected and the choice made whether to transfer the telephone line to the data set at the beginning or end of the answer tone. Data Set 103A2 uses the 2225-Hz detector; all others use 2025-Hz detection. Data Set 103-type uses beginning of tone; all others use end of tone.

(2) ***10. Data Set Answer Detection Without EON (Option E):*** When the ACU seizes the line and starts dialing, the data set is placed off-hook to monitor the call. When the called station transmits an answer tone, the data set detects the tone and signals the ACU to turn DSS on and remove itself from the line so that data transmission can start. This option was designed for certain data sets that "handshake". Therefore it should be specified for installations using Data Sets 101 (with DAS 811B), 103E, and 103G.

4.03 ***Telco Option:*** Telephone company options are listed in Table D.

4.04 The following paragraphs provide additional information on the Telco options listed in Table D.

(a) ***10-Conductor or 14-Conductor Mounting Cord:*** The 10-conductor cord (option M) is standard and should be specified for all except the following installations:

- DS 101 (with DAS 811B)
- DS 103A (only if supplied with D25C cord)
- DS 402C and DS 402D Transmit-Receive Terminal
- DS 402D Receive Terminal

These installations require a 14-conductor cord M14C-61 (option N), except DS 101 (with DAS 811B) uses a M14D-61. These M14-type cords must be ordered separately.

(b) ***Data Set to Data Mode by Contact to DT or by Isolated Contact or by Grounded Contact:***

(1) ***By Contact to DT (Option Q):*** With this option, a contact of the ANS relay in the ACU is connected to the DT lead. This provides a path for the line hold (H) relay in the data set to operate and start the sequence which places the data set on-line in the data mode. This option is required for Data Sets 103A (with D35C cord) and all 200, 400, and 600 series.

(2) ***By Isolated Contact (Option F):*** This option provides an isolated contact of the ANS relay to transfer the data set to the data mode. It should be specified for Data Sets 101 (with DAS 811B), and 103A (with D25C cord).

(3) ***By Grounded Contact (Option ZG):*** This option provides a grounded contact of the ANS relay to transfer the data set to the data mode. It should be specified for installations using Data Sets 103E and 103G.

(c) ***Grounded TK and CL Contacts or Isolated TK Contact or Isolated CL Contact:***

(1) ***Grounded TK and CL Contacts (Option ZB):*** This option provides a grounded contact of the CL and TK relays. It should be specified for DS 103E and DS 103G. The grounded TK contact is not used. The grounded CL contact is used to clear (disconnect) these specific data sets.

(2) ***Isolated TK Contact (Option ZA):*** This option is required only for Data Set 103A. This contact was provided for DS 103A to control the ACU since DS 103A does not provide sufficient contacts to perform the complete function.

(3) ***Isolated CL Contact (Option ZC):*** This option is required for DS 101 (with DAS 811B).

TABLE D

TELCO ENGINEERING OPTIONS

OPTION	DESIGNATION
Mounting Cord	
10-conductor	M*
14-conductor	N
Data Mode	
Data set to data mode by contact to DT	Q*
Data set to data mode by grounded contact	ZG
Data set to data mode by isolated contact	F
Contact	
Isolated TK contact	ZA*
Isolated CL contact	ZC
Grounded TK and CL contacts	ZB
Call Termination	
Terminate call via data set — line XFER	G
Terminate call via CRQ — line XFER	Z*
Terminate call via data set — clear contact	ZD
Terminate call via CRQ — clear contact	A
Answer-Tone (DAS 801A6 only)	
Detect 2025-Hz answer-tone	S*
Detect 2225-Hz answer-tone	T
Detect beginning of answer-tone	X*
Detect end of answer-tone	W
Contact Protection	
Subscriber loop resistance more than 400 ohms	ZU

*Factory-supplied option.

Note: Leave factory-wired options installed unless service order specifies other options in the above groups.

(d) ***Terminate Call Either by Line Transfer Method (via Data Set, Option G, or CRQ, Option Z) or by CL Contact Method (via Data Set, Option ZD, or CRQ, Option A):*** The business machine can terminate ACU-originated calls via the ACU if the CRQ lead is held on for the duration of the call, or via the data set if the programmer wishes to drop CRQ after receipt of DSS on. In order to be compatible with all data sets, Data Sets 801A5 and 801A6 provide both the line transfer method and CL contact method to terminate the call either via the ACU or the data set.

(1) ***Via CRQ After DSS On (Option Z or A):*** This mode requires the business machine to maintain the CRQ lead in an on condition for the duration of the call. When the business machine turns CRQ off, the ACU opens the line and holds it open until the data set goes on-hook (line transfer method), or the ACU notifies the data set to

go on-hook via a contact closure (CL contact method). Data line occupied (DLO) is turned off when the data set goes on-hook, notifying the business machine that the line is free for another call. If this option is desired, specify one of the following:

- ***Option Z*** for Data Sets 103A and all 200, 400, and 600 series

- ***Option A*** for Data Sets 101 (with DAS 811B), 103E, and 103G.

(2) ***Via Data Set After DSS On (Option G or ZD):*** This option is available if the business machine programmer wishes to transfer control of the call from the ACU to the data set after DSS goes on. In this case, CRQ may be turned off at any time after receipt of DSS on, and it must be held off until DLO is turned off at the termination of the call. The call is terminated in the manner normally prescribed for the data set [ie, by turning data terminal ready (DTR) off]. It must be used if Data Set 103A is operated with the long space disconnect option. If this option is desired, specify one of the following:

- ***Option G*** for Data Sets 103A and all 200, 400, and 600 series

- ***Option ZD*** for Data Sets 101 (with DAS 811B), 103E, and 103G.

(e) ***Detect 2025- or 2225-Hz Answer Tone (DAS 801A6 Only):***

(1) ***2025-Hz Answer Tone (Option S):*** This option conditions the ACU answer detector to respond to 2025 Hz. It should be used for Data Sets 103A1 and all 200, 400, and 600 series.

(2) ***2225-Hz Answer Tone (Option T):*** This option conditions the ACU answer detector to respond to 2225 Hz. It should be used with Data Set 103A2.

(f) ***Detect Beginning or End of Answer Tone (DAS 801A6 Only):***

(1) ***Beginning of Answer Tone (Option X):*** This option causes the ACU to transfer the line to the data set after receipt of approximately 200 milliseconds of valid answer tone. It should be specified for Data Set 103A-type.

(2) ***End of Answer Tone (Option W):*** This option causes the ACU to transfer the line to the data set after completion of a valid answer tone. This option should be specified for Data Sets 200, 400, and 600 series.

(g) ***Relay Contact Protection:***

(1) ***Option ZU:*** The network previously used in CP BM1 for contact protection of ST-8B relay is removed by ZT wiring because it caused false tip party indications at some central offices. ZT wiring also provided a resistor (R4) to ground for contact protection on short loops (less than 400 ohms). The ST-8B contact is used to provide the ring ground when a call is initiated. On long loops, option ZU straps out the resistance.

5. SUBSTITUTE AUTOMATIC CALLING UNITS

5.01 The ACUs listed in Table B may be used to supply the services described in this section. The customer options and Telco options listed do not necessarily apply when substitute models listed in Table B are used.

6. REFERENCES

6.01 The following drawings, specifications, and sections provide additional information on Data Auxiliary Set 801A-type and associated equipment:

(a) Schematic diagrams—SD-1D082-01 (DAS 801A5, 801A6); SD-1D042-01 (DAS 801A1- 801A4)

(b) PEL 7555, 7265

(c) PEM 9198, 9169

(d) EM 134, 495

(e) BPSs 598-010-100, -200, -300, -500 (DAS 801A1-801A4)

(f) BSPs 598-010-101, -201, -301, -501 (DAS 801A5, 801A6)