

ADC 260

ACOUSTIC DATA COUPLER

GENERAL OPERATING INSTRUCTIONS

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## GENERAL OPERATING INSTRUCTIONS

### ADC 260 ACOUSTIC DATA COUPLER

The ADC 260 is designed to originate data calls from a remote terminal to a time-sharing computer or to another remote terminal. It is operated as follows:

- 1) There are separate connection cables into the ADC 260 depending on the type of remote terminal being used, as follows:
  - (a) If you are using a Model 33 Teletype terminal, connect the C260-33 cable furnished with the ADC 260 to the Teletype machine as specified in the attached instructions and plug the end of the cable into the upper jack of the ADC 260. Power for the ADC 260 is obtained from the Teletype machine through this cable as well as data signals.
  - (b) For remote terminals having an EIA RS-232-B interface manufactured by Friden, Dura, Datel, IBM, and others, as well as Teletypes which already have been modified to work into a 103-A Dataphone, plug the connecting cable from the teleprinter directly into the EIA interface jack of the ADC 260. This is the lower jack and the only one which will fit this plug. The ADC 260 power cord (C260-EIA-110) is connected into the upper (Teletype) jack with the other end going to the 110 volt wall outlet.
- 2) Power is turned "on" (or "off") through use of the small toggle switch under the red power "on" light of the ADC 260. When used with a Teletype machine, the ADC 260 turns on and off with the Teletype and the ADC 260 power switch should be left in the "on" position.
- 3) Contact your time-sharing computer center for general instructions for dialing up the computer, logging in, and to ascertain whether:
  - (a) upright or inverted code is required,
  - (b) full or half duplex transmission should be used, and
  - (c) the computing center will accept signals from the type of remote terminal being used with the coupler.

4) Position "CODE" and "DUPLEX" switches on ADC 260 to correct setting for computer center you are addressing.

5) After dialing into the computer center and receiving the high pitched answering signal (2225 Hz), place the telephone handset securely inside the foam holder of the ADC 260, observing correct position of the phone cord end of the handset. The handset should be pushed as far down as it will go without forcing it; then close the ADC 260 lid securely. The green "carrier on" light located on the left side will come on in approximately 1 1/2 seconds after the coupler receives a good carrier signal from the phone line. At the end of the call or should the computer be accidentally disconnected from the phone line, this light will go out. The transmitter tones from the ADC 260 are present only when the "carrier on" lamp is on.

The "carrier on" light will remain bright and steady as long as good data signals are being received and detected. If the data signals become weak, this light will immediately indicate this by turning "off" completely. When the light is "on" steady, you are ready to proceed with keyboard communication to the computer center.

CAUTION: Like all fine furniture, the finish on the wood cabinet of the ADC 260 may be damaged by extremely high temperature (130° to 160°F). Even though the electronic components will not be damaged by such temperatures, it is suggested that, when the unit is left in an automobile on hot days, the windows be left open at least an inch from the top to permit heat to escape and thus protect the wood. The unit should not be left in an automobile trunk in hot weather.

#### COUPLER TROUBLE DIAGNOSIS

The ADC 260 has built in features which make it easy to detect possible troubles with the coupler.

If in doubt about proper operation of the coupler, the following checks are in order:

1. Power. Turn the power "on". This should cause the red light to be illuminated. If it does not light up, check the fuse inside the cabinet.
2. Receiver. When the power is "on", the operator should whistle with variable pitch to cover the frequency spectrum of about 2,000 to 2,300 Hz. It may be difficult

to whistle with a tone in the passband for the minimum time of 1 1/2 seconds required to turn on the tone. As an alternate, the time-sharing computer may be called and the tone received (2225 Hz) may be briefly used as a test signal by placing the telephone earpiece near the ADC 260 microphone. This should cause the green "carrier on" light to be illuminated. If it does not light up, this indicates probable trouble with the receiver (top circuit board) or microphone connection to the receiver. Check first, however, to be sure receiver board is well seated in connector.

3. Transmitter. The transmitter output tones are present only when a carrier signal is being received, i.e., the carrier lamp is on. To accomplish this a 2000 Hz to 2,300 Hz signal is required. The computer tone may be briefly used as described in 1. above. With the power light "on" and a carrier signal applied to the microphone, listen for an audible transmitter tone from the coupler. With the switch in "Upright Code", the tone is 1270 Hz, or "Mark". When the switch is turned to "Inverted Code", the tone shifts to 1070 Hz. If either tone is absent at the appropriate setting, this indicates trouble in the transmitter (bottom circuit board). Check to be sure transmitter board is well seated in the bottom connector.

An additional transmitter test to show the adequacy of frequency shift keying with teleprinter terminals using ASCII code, put the switch in the "upright Code" position. With the coupler connected to the teleprinter, depress the teleprinter "break" key intermittently. This should cause the 1270 Hz signal to shift back and forth from 1270 to 1070 Hz.

4. Mechanical Troubles. Before returning equipment for repair, be sure a possible trouble is not due merely to a printed circuit board not being snugly seated in its connector. Check for cracked or broken connectors, loose connections, or components that may have come loose in shipment.

5. Telephone Microphone Sensitivity. The sensitivity of the carbon microphones used in telephone handsets can sometimes decrease if they are left in one position for long periods of time. In extreme cases, this can conceivably introduce errors in data transmission. The signal strength, quality of telephone line, the particular handset being used, and the length of time used will have an influence on whether this may be a problem or not. If it is suspected that telephone microphone sensitivity might be a problem, the user should occasionally tap the microphone end (mouthpiece) of the telephone receiver once or twice to restore sensitivity. Alternatively, he can, during transmission, stand the coupler on end (handle up) for

awhile to change its orientation with respect to the force of gravity. Normally, in the great majority of cases, it will be unnecessary to take the precautions as the telephone microphone output will not change significantly enough to cause problems during computer calls of up to a few hours' duration.

### SYSTEM TROUBLE SHOOTING

In general, the "power on" and "carrier on" indicator lights will help to diagnose possible systems troubles.

If the "carrier on" indicator light is "on", this means a good carrier signal is being received over the telephone line from the computer. If errors are being made, the fault is probably the teleprinter or a very noisy line.

If the light is "off", this means either a very weak or no signal is being received by the teleprinter so that nothing is wrong with the latter, but there may be a problem with the coupler receiver, phone line, computer dataset, or computer.

In case of operating difficulty of any kind, the following possibilities for error should be checked out:

1. Is the remote terminal which is being used with the coupler operating properly? If errors are being made even though the "carrier on" indicator is on and steady, this would imply one should take a close look at the teleprinter or other terminal. It is, however, possible to have a bright steady light and still get errors with a good teleprinter if the signal is strong but very noisy. This can be checked by lifting up the phone and listening to the line. In this case, one should dial up the computer again in hopes of getting a better line.
2. Has the connection cable between terminal and coupler been connected correctly?
3. Does the teleprinter have a proper interface for use with the ADC 260?
4. Is the time-sharing computer temporarily out of operation? This usually can be verified by calling the time-sharing center.

5. Does the computer have the appropriate software to handle the type of terminal being used?

6. Is your teleprinter terminal transmitting properly? Listen to the audible output of the coupler while alternately depressing and releasing certain keys. For terminals using ASCII code, use the "break" key. If the "Mark 1270" and "Space 1070" tones are heard, the teleprinter is transmitting. For this test a carrier tone must be received at the microphone in order to activate the transmitter.

7. Are the Half/Full Duplex and Upright/Inverted Code switches in the correct position for the computer being addressed? When working into a Full Duplex computer, the Full/Half Duplex switch feature permits the operator both to transmit input data and receive computer data simultaneously. It also makes it possible to verify the correct reception by the computer of the signal being transmitted because the teleprinter printout should be an echo of the signal received by the computer. However, if the switch is placed in the Full Duplex position and the teleprinter is being used with a computer working in Half Duplex, no teleprinter originating signal will be printed out at the teleprinter. When working with a Half Duplex computer, the switch is in the Half Duplex position if one wishes to see the originating signal printout.

8. If the teleprinter cable is properly connected to the coupler and the power switch on both devices is "on", the teleprinter will remain relatively quiet waiting for input data. If the teleprinter connection cable is disconnected from the coupler or has a loose solder connection at the connector or if the power switch on the coupler is "off", but the teleprinter power cord is connected and the teleprinter power switch is in "line" position, the teleprinter will run wild as there is no "Mark Hold" signal generated from the coupler to the teleprinter. If this happens, check the various switches to see they are "on" and connections to see they are secure and remove hood from teleprinter cable to see whether any wires are loose. Caution: Remove power from the coupler and terminal before handling cable connections.

9. When using certain teleprinters having an EIA interface, a locked keyboard can be unlocked by turning the power to the teleprinter "off" for an instant and then switching it "on" again. When this is done, with certain terminals one can hear a relay "click" signifying the unlocking of the keyboard.

10. In a quite room, if the green "carrier on" indicator light goes "on" with no telephone in the coupler and the teleprinter prints randomly, this indicates hypersensitivity of the coupler receiver, and the coupler should be returned to the factory for re-calibration. This would not apply, of course, in a noisy area.

## SERVICE AND REPAIR

### ADC 260 ACOUSTIC DATA COUPLER

The ADC 260 has been designed to provide long, trouble-free performance. The circuitry is all solid-state and semi-conductor components are silicon. There are no moving parts. The design is modular making it easy to exchange circuit boards. As with any electronic instrument, however, service problems may arise from time to time.

In such an event, it is preferable that the unit be returned for repair to the factory or to the nearest sales engineering office. Normally, factory repairs are made within two days after receipt of a coupler. The cognizant office will either replace the malfunctioning component on the spot or provide a temporary demonstrator for use during the repair interval. The cost of repair will be charged on a time and material basis plus transportation charges. If the unit is within warranty and shows no mishandling, only transportation will be charged.

For customers using a quantity of data couplers, it is often a convenience to have one or two spares available on standby or at least a spare set of printed circuit boards.

If for any reason it is necessary to inspect the electronic circuitry, the back section of the coupler cover can be made to swing open on its hinge, thus exposing the circuitry. To accomplish this, only one 6-32 machine screw located near the center of the bottom needs to be removed. This releases the maintenance cover.

## WARRANTY

A warranty applies on the ADC 260 to cover parts and workmanship for a period of one year after date of delivery.

## PATENTS

Patents covering the design of the ADC 260 have been applied for by Stanford Research Institute. Anderson Jacobson, Inc., is their exclusive licensee for these patents. Anderson Jacobson has also applied for certain patents covering the ADC 260.

INSTRUCTIONS FOR CONNECTING THE ADC 260, 262, & 300  
ACOUSTIC DATA COUPLERS TO A MODEL 33 TELETYPEWRITER

CAUTION: POWER SHOULD BE DISCONNECTED FROM TELETYPEWRITER  
BEFORE MAKING CONNECTIONS DESCRIBED BELOW.

For an illustration of the terminal locations referenced below, see the Teletype Corporation's Bulletin 273B Vol. I, entitled "Technical Manual 32 and 33 Teletypewriter Sets." Refer to Fig. 12 entitled "Typical Call Control Unit" on page 14, Section 574-100-102 in this manual.

- 1) Move blue wire from terminal 3 to terminal 4 on power resistor (181816) located near center of Call Control Unit. Terminal 3 is usually marked 1450 $\Omega$ . Terminal 4 is the unmarked terminal without a connecting wire.
- 2) Move purple wire of Teletype from terminal 8 to terminal 9 on terminal strip 151411 at rear of Call Control Unit.
- 3) Move brown-yellow wire of Teletype from terminal 3 to terminal 5 on terminal strip 151411.
- 4) Move white-blue wire of Teletype from terminal 4 to terminal 5 on terminal strip 151411.
- 5) Connect the C260-33 cable furnished with the ADC 260 to terminal strip 151411 as follows:
  - Purple wire to Terminal 7
  - Blue wire to Terminal 6
  - Yellow wire to Terminal 4
  - Orange wire to Terminal 3
  - Brown wire to Terminal 1
  - Ground Black wire to frame of Teletypewriter
- 6) Connect the long red wire of the C260-33 cable to Terminal 1 (orange-slate) of Power Switch (190781) at front of Call Control Unit.

WARNING

THESE INSTRUCTIONS ARE INTENDED ONLY FOR TYPE 33 TELETYPES SUCH AS KSR MODELS TA, TA-1, TAF, AND ASR MODELS TZ, TC, TC-1, TBE, AND TBF. CERTAIN TYPE 33 TELETYPE MACHINES SUCH AS THOSE MADE FOR THE TELEPHONE AND TELEGRAPH COMPANIES, HAVE DIFFERENT ELECTRICAL PANELS AND TERMINAL STRIPS FROM THOSE MODELS REFERRED TO ABOVE. THESE INSTRUCTIONS SHOULD NOT BE USED FOR CONNECTING THE ADC 260 CABLE TO SUCH UNITS.

WHEN INSTALLING AN ELAPSED TIME METER (PART 182044), ALWAYS USE INSTRUCTIONS FURNISHED BY ANDERSON JACOBSON FOR THIS PURPOSE. INSTRUCTIONS FURNISHED BY THE TELETYPE CORPORATION AND INCLUDED WITH ELAPSED TIME METER KIT 182044 DO NOT APPLY TO THOSE TELETYPE MODELS NORMALLY USED WITH ACOUSTICAL COUPLERS. IF THE ELAPSED TIME METER IS IMPROPERLY INSTALLED, IT CAN CAUSE MALFUNCTIONING AND DAMAGE TO BOTH THE TELETYPE AND THE COUPLER.



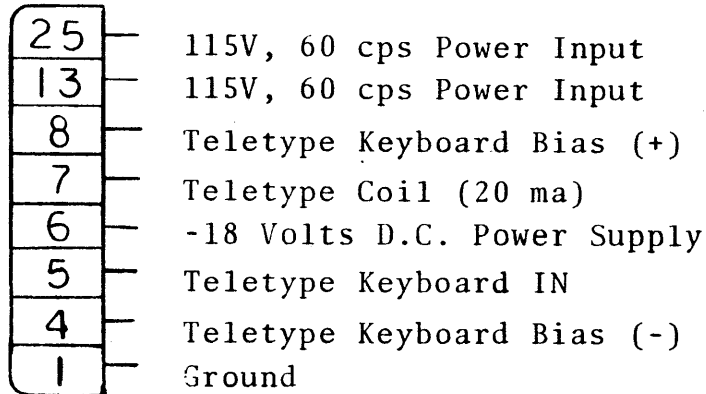
CORRECT LOCATION OF WIRES ON  
MODEL 33 TELETYPE TERMINAL STRIP 151411  
AFTER C260-33 CONNECTION CABLE INSTALLED

<u>TERMINAL</u>	<u>WIRES</u>
1	1 Brown (to ADC 260 or ADC 300) 2 White
2	2 Black
3	1 Orange (to ADC 260 or ADC 300) 1 Slate 1 Red/White
4	1 Yellow (to ADC 260 or ADC 300) 1 Orange/Green 1 Red
5	1 Brown/Yellow 1 Blue/White
6	1 Blue (to ADC 260 or ADC 300) 1 Yellow/White 1 Black/White
7	1 Violet (to ADC 260 or ADC 300) 1 Red/Green 1 Brown/White
8	1 Black/Green
9	1 Violet 1 Yellow

A	Removed Pins 2, 3, 14-16 on J1.
6/	Removed NOTE from J1.
10/	Added (Standard EIA Levels) to Pins 5 &
68	8 of J2.

TELETYPE INTERFACE JACK

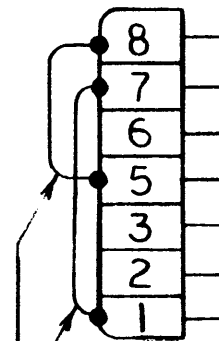
J1



NOTE: Teletype Jack J1 is upper jack on ADC 260 and is also used for power input for either Teletype or EIA interface.

EIA INTERFACE JACK

J2



Carrier On (Standard EIA Levels)  
 Ground  
 Acoustic Coupler Ready  
 Clear to Send (Standard EIA Levels)  
 EIA Standard Data OUT (Receive)  
 EIA Standard Data IN (Transmit)  
 Ground

NOTES: 1) EIA Interface Jack J2 is lower jack on ADC 260.  
 2) Terminal 6 provides +18 V in series with 4.7K when the ADC 260 is turned on.

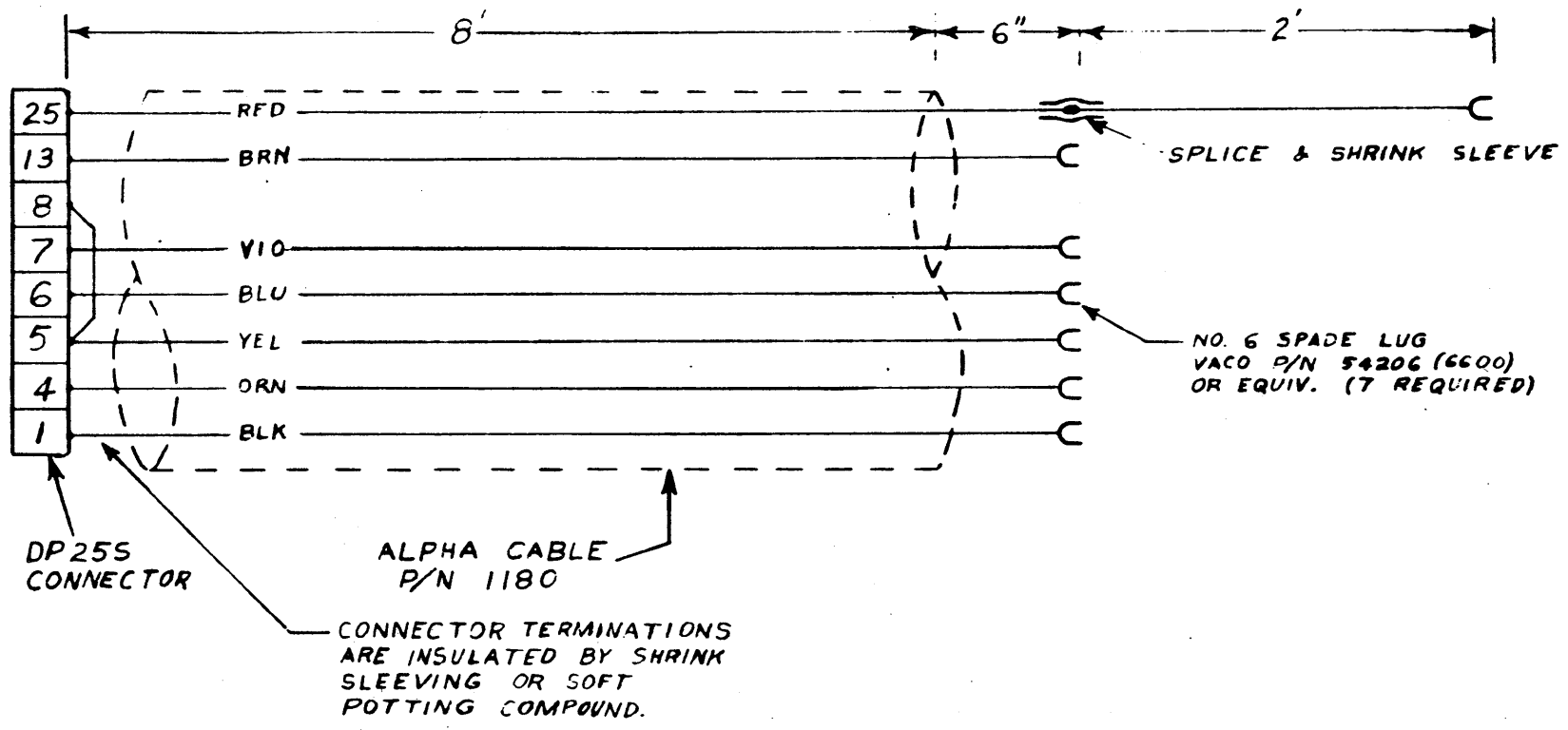
ANDERSON JACOBSON  
 SUNNYVALE, CALIF

SCALE: —	APPROVED BY: <i>W. Seppeler</i> 6/11/68	DRAWN BY: <i>A. Cate</i>
DATE: 8-5-67		REVISED: (A) 6/10/68

ADC 260 OUTPUT JACKS

DRAWING NUMBER  
 260170-1

DATE	SYM	REVISION	RECD	CP	APPD
4-15-63	A	REVISED & REDRAWN		RJM	WJ



NOTE:  
CABLE INCLUDES THREE ADDITIONAL  
WIRES.

**ANDERSON JACOBSON**  
SUNNYVALE, CALIF.

SCALE: NONE	APPROVED BY:	DRAWN BY RJM
DATE: ORIG 4-26-67		REVISED 4-15-63
TELETYPE CONNECTION CABLE		
	REV. A	DRAWING NUMBER C260-33



# ANDERSON JACOBSON, INC.

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## ACOUSTIC COUPLER/MODEM PRICE LIST

### ACOUSTIC DATA COUPLERS

(Bell 103 Dataphone Compatible)

<u>MODEL</u>	<u>MODE</u>	<u>INTERFACE</u>	<u>COMMENTS</u>	<u>PRICE</u>
ADC 240	Originate	Teletype	-----	\$ 375.00
ADC 241	Originate	EIA RS232B Devices	-----	415.00
ADC 242	Originate	Teletype & EIA RS232B Devices	Teletype & EIA Device can be used simultaneously	425.00
ADC 260	Originate	Teletype & EIA RS232B Devices	Accepts inverted or upright code, acoustic shield, walnut cabinet. Specify EIA or TTY cable	450.00
ADC 262	Originate	Teletype & EIA RS232B Devices	Same as ADC 260. ADC 300 TTY & EIA can be used simultaneously	475.00
ADC 300	Originate & Answer	Teletype & EIA RS232B Devices	Same as ADC 260. ADC 300 has both originate & answer modes	570.00

Extra 8' connection cable for the ADC 260, ADC 262, or ADC 300 -  
Order C260-33 for TTY or C260-EIA-110 for EIA Devices.

### COMBINATION ACOUSTIC COUPLER AND DATA ACCESS ARRANGEMENT MODEMS

(Bell 103 Dataphone and Bell DAA Compatible)

<u>MODEL</u>	<u>MODE</u>	<u>INTERFACE</u>	<u>COMMENTS</u>	<u>PRICE</u>
ADAC 240	Originate	Teletype	Acoustic or DAA	\$ 415.00
ADAC 241	Originate	EIA RS232B Devices	Acoustic or DAA	445.00
ADAC 242	Originate	Teletype & EIA RS232B Devices	Acoustic or DAA	475.00

### HIGH SPEED COMBINATION ACOUSTIC COUPLER AND DATA ACCESS ARRANGEMENT MODEMS

(Bell 202 C/D Dataphone and Bell DAA Compatible)

<u>MODEL</u>	<u>INTERFACE</u>	<u>COMMENTS</u>	<u>PRICE</u>
ADAC 1200	EIA RS232B Devices	1200 baud half duplex transmit & receive. 10 baud half duplex supervisory channel. Can be used either acoustically or via the DAA	\$ 985.00
ADAC 1210	EIA RS232B Devices	1200 baud transmit only. 10 baud receive only supervisory channel. Can be used either acoustically or via the DAA	785.00

See also  
Directories