

**Comm-Pac™**  
**User's Manual**



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NOTES

no erase  
screen  
cont  
ES

OSBORNE COMM-PAC<sup>™</sup> USER'S MANUAL

OSBORNE Datacom<sup>®</sup> Modem + AMCAL<sup>®</sup> Communications Program

Osborne Computer Corporation  
Hayward, California

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This manual written by Joseph Caggiano.

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**Handshaking.** Exchange of predetermined control signals when connection is made between two systems.

**Line Speed.** The maximum rate of reliable data transmission over a communication line.

**Mode.** The overall condition in which one system is set up for communication with another. COMM-PAC has these operating modes: Initialization; Character TX/RX; File RX; File TX.

**Modem.** An acronym for the "modulator/demodulator" which interfaces between a computer and the telephone network.

**NAK** (Negative acknowledgement). A signal returned by the receiving system which indicates (1) the preceding data block has not been accepted; (2) the receiving system is not ready for the next block.

**Open.** An internal CP/M process in which a file is accessed for data addition or deletion.

**Parity check.** A technique which adds bits to a data block so the number of "ones" in the block is always odd (odd parity) or even (even parity). Data blocks which contain single errors are detected because they violate parity.

**Protocol.** A set of codes which must be transmitted correctly to carry out communication between two systems.

**Simplex.** The configuration in which data can be transmitted in only one direction between systems. This direction cannot be changed.

**Unattended operation.** Automatic operation of a system without a person being present.

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**ACK** (Affirmative acknowledgement). A signal returned by the receiving system which indicates: (1) the preceding data block has been accepted; (2) the receiving system is ready for the next data block.

**ASCII** (American Standard Code for Information Exchange). A standard character set used to encode information for transmission (7 bits + parity). See the Osborne User's Reference Guide for a list of ASCII character codes.

**Baud.** The number of signal events per second during data transmission.

**Bit.** The smallest unit of information in a binary system of notation.

**Buffer.** A storage area in memory which compensates for different data flow rates during transmission between systems. The buffer is always system RAM on the Osborne 1, but may differ on the remote system.

**Character TX/RX.** A system's operating mode after contact has been established with the remote system. This mode allows "character-at-a-time" conversation with the remote system using appropriate keyboard commands.

**Close.** An internal CP/M process which informs the operating system that a file is updated and complete.

**Echoplex.** A duplex mode feature in which the receiving system "echoes" a line feed to the transmitting system after each carriage return received. This allows transmission to continue.

**Error control.** The arrangement used by a system to detect errors during data transfer.

**FSK** (Frequency Shift Keying). A type of FM (frequency modulation) signal in which two possible states (1 and 0) are transmitted as separate frequencies.

**File TX/RX.** The operating modes for transmitting files to and receiving them from a remote system.

**Full duplex mode.** The configuration in which data can be transmitted simultaneously in both directions between systems.

**Half duplex mode.** The configuration in which data can be transmitted between systems in only one direction at a time. This direction can be changed.

Interface Connector  
(10-pin)

FCC NOTICE

Pin

1	Signal ground	SG
2	Transmit data	TxD
4	Modem status bit	MSB
6	Receive data	RxD
7	+12.6v DC	VDD
8	Modem control bit	MCB

Operating Environment

Temp: 0° to 50° C  
Relative humidity: 0 to 95%  
Altitude: 0 to 10,000 feet

This equipment generates and uses radio frequency energy. If not installed and used properly, that is, strictly according to the manufacturer's instructions, the equipment may cause interference with radio and television reception. The equipment has been type tested and found to comply with the limits for a class B computing device as specified in FCC Rules, Part 15, Subpart J, which is designed to provide reasonable protection against such interference in a residential installation. If the equipment does cause interference to radio or television reception, which can be determined by turning it on and off, try to correct the interference by doing one or more of the following:

Reorient the receiving antenna.

Relocate the computer with respect to the receiver.

Move the computer away from the receiver.

Plug the computer into a different outlet so the computer and receiver are on different branch circuits.

If necessary, the user should consult the dealer or an experienced radio/television technician for additional suggestions. The user may find the following booklet prepared by the Federal Communications Commission helpful:

"How to Identify and Resolve Radio-TV Interference Problems".

This booklet is available from the U.S. Government Printing Office, Washington, D.C. 20402, Stock No. 004-000-00345-4.



**USER NOTICE**

The Osborne Datacom Modem is registered with the Federal Communications Commission (FCC) for direct connection to a telephone line. When first installing the modem, the user must provide this information to the telephone company:

- 1) phone number at which the modem is connected
- 2) FCC registration number: CEF8E2-68583-DM-R
- 3) ringer equivalence: 0.8B
- 4) connecting jack used: RJ11C or equivalent

The FCC registration number, ringer equivalence, and the modem's serial number are also labelled on the modem itself.

Notify the phone company of each phone number and extension at which you'll use the modem.

Do not connect the modem to a party line or pay phone.

Notify the phone company when you permanently disconnect the modem from a phone line.

If problems develop with the modem or telephone line, disconnect the modem immediately. If the modem seems to be causing the difficulty, contact your Authorized Osborne Dealer.

The DATACOM<sup>®</sup> modem is federally licensed for connecton to the telephone network. Repairs/adjustments to the modem can be made **only** through your Authorized Osborne Dealer. User adjustments void the warranty and may violate the federal license for use of the modem.

The telephone company may sometimes change its equipment and operations in ways that affect the modem. In this case, the phone company will give you adequate written notice so uninterrupted service can be maintained.

**WARRANTY**

Osborne COMM-PAC<sup>™</sup> components are warranted against defects in workmanship or material for ninety (90) days from date of purchase. If repair/replacement becomes necessary, see your Authorized Osborne Dealer.

Type	FCC-approved for direct telephone line connection to RJ11C or equivalent jack.	
	Bell System 103A compatible in Originate or Answer mode.	
FCC Registration No.	CEF8E2-68583-DM-R	
Ringer Equivalence	0.8B	
Operation	Full duplex over two-wire, unconditioned telephone lines.	
Data Format	Serial, asynchronous binary transmission up to 300 bits per second	
Modulation	Frequency Shift Keying	
Carrier Frequencies		
	<u>Transmit</u>	<u>Receive</u>
Mark	1270, 2225 Hz	2225, 1270 Hz
Space	1070, 2025 Hz	2025, 1070 Hz
Transmit Level	-10dBm into 600 Ohm load.	
Receive Sensitivity	0dBm to -43dBm into 600 Ohm load.	

## INTRODUCTION

COMM-PAC<sup>™</sup> adds telecommunication to your Osborne's capabilities. This means you can send messages, exchange files, and access data nationwide - quickly and efficiently. COMM-PAC puts you in touch with other personal computers as well as electronic bulletin boards and timesharing networks. Your Osborne will have an electronic "window on the world" through which you can handle information in nearly unlimited ways.

COMM-PAC consists of the Osborne DATACOM Modem and the AMCALL<sup>®</sup> communications program. The DATACOM modem links your Osborne directly to the telephone network. AMCALL is a program written in C-language which provides software control of the modem. COMM-PAC'S two components work together to give you these capabilities:

- (1) Telephone auto-dial/auto-answer
- (2) Access to electronic information banks and bulletin boards
- (3) File transfer with timesharing or personal computers
- (4) Error checking during file transfer
- (5) CP/M commands during communication with other systems

(1) The AMCALL program allows you to create a file of frequently-called phone numbers. When you give the command, the modem dials any of these numbers automatically. You can also set up your Osborne to answer phone calls, even when you're not there.

(2) COMM-PAC gives you access to more than 200 electronic bulletin boards across the country. These provide various types of information as well as public domain software. You'll also have access to subscription information banks such as THE SOURCE and DOW JONES. The information banks provide up to the minute data on a tremendous range of topics. With COMM-PAC, this resource is at your fingertips when you need it.

(3) You can not only find information using COMM-PAC. You can also transfer it. COMM-PAC's data transmission functions allow you to send and receive messages or entire files. Information can be transferred between your Osborne and another personal computer or a timesharing system.

(4) The AMCALL program can automatically monitor file transfers for errors. Faulty portions of the transmission are repeated as necessary to minimize the probability of error in the transferred file. By displaying the error total, AMCALL lets you assess the quality of transmission.

(5) AMCALL includes a command which lets you move between it and CP/M during communication with another computer. You can do this without losing telephone contact with the other system. This makes CP/M commands available as supplements to AMCALL's.

COMM-PAC adds a new range of possibilities to your Osborne. Send electronic messages, check an information bank, or shop at home from electronic catalogues. The number of things you can do through telecommunications is increasing every day. Electronic banking, for example, is available in some parts of the country, and a number of businesses use electronic mail. With COMM-PAC you're in position to take advantage of these developments.

Telecommunication capability broadens your Osborne's scope and brings it into contact with other systems. COMM-PAC lets your computer "talk" with others over the phone line. Some of the terms which describe this process may be new to you. In this manual, you'll read about "protocols," "modes," and "configurations" in their telecommunication sense. These are explained in the text or defined in the glossary. We've confined the jargon to the places where it's the best correct description of what's happening.

COMM-PAC makes your Osborne even more effective for business and personal use. It extends your reach and gives you new information resources in the office and at home. It's a significant enhancement of your computer system.

## **ORGANIZATION OF THIS MANUAL**

Chapter One describes COMM-PAC and has instructions for installing it on your Osborne 1 computer. It also gives you a demonstration of how COMM-PAC is used to communicate with another computer system.

Chapter Two has instructions on preparing your Osborne for communication using the AMCALL program. This chapter explains the process of configuring your system using AMCALL's Initialization menus.

Chapter Three describes communications factors you should be aware of when transferring data between your system and another. This chapter also includes a file transfer checklist and file transfer examples.

RETURN. Your system will display this message:

Perform Conventional Dialing -----  
Enter CR After Dialing And Before Restoring Handset

Pick up the telephone and dial the number you're calling. When you hear the carrier tone, press RETURN, and hang up. After several moments AMCALL displays the message:

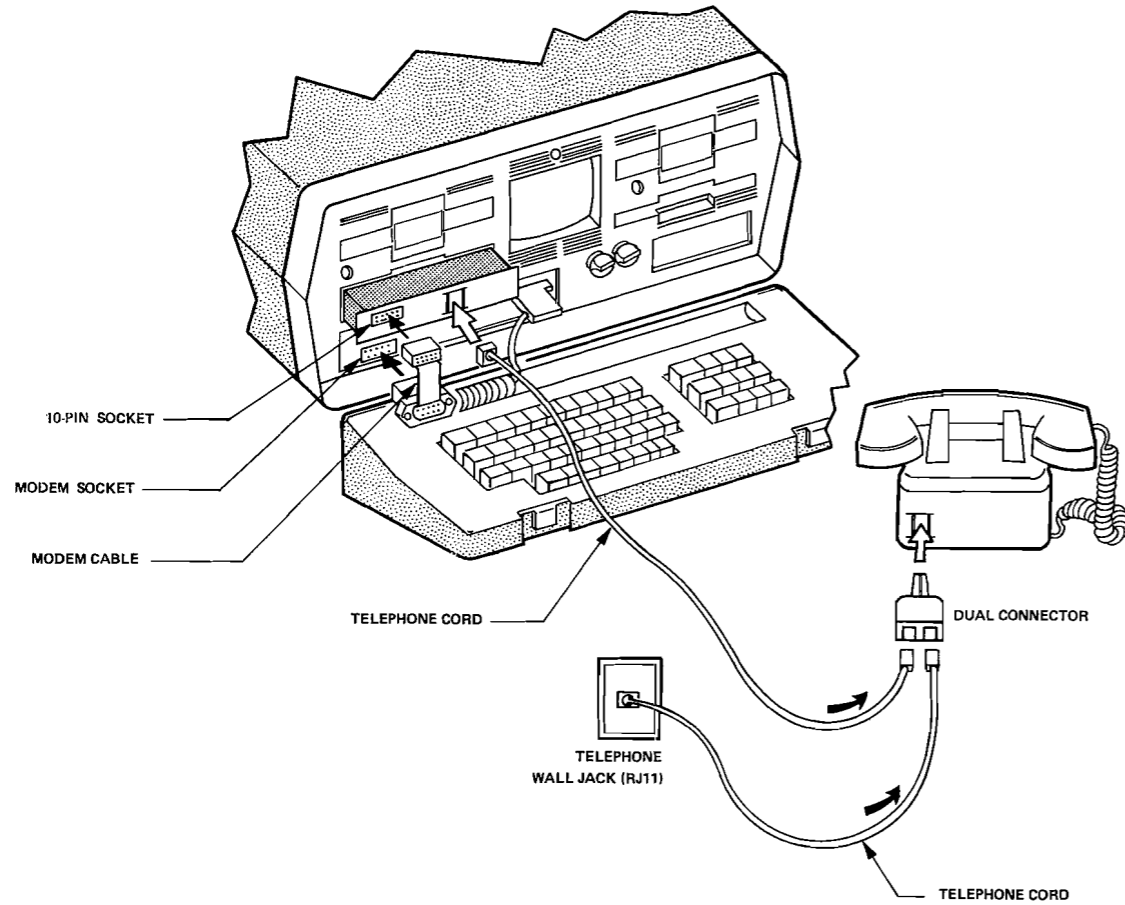
Connection Has Been Established, Begin Communication.

Press RETURN twice to prompt a response from the remote system and then continue communication.

Chapter Four details the commands for implementing communication and handling data after contact is made with another system. Experienced modem users may find Chapter Four of more immediate interest than the preceding chapters.

The Appendices provide relatively technical information about communication protocols and AMCALL functions.

The Glossary briefly defines some of the telecommunications terms used in the manual.



Modem Installation Using Dual Connector

### Dialing

Use AMCALL's Initialization menus to place your system in originate mode. When AMCALL's prompt "Enter Digit String or Letter Followed by CR" appears, press the @ key, then press

## APPENDIX III. ELECTRONIC SWITCHBOARDS

### TOUCH-TONE TELEPHONES

If your Touch-Tone phone is connected to a PBX system (electronic switchboard), AMCALL's auto-dial function may be impaired. In this case, you'll need a dual modular phone connector and a second phone cord with a modular connector on each end. These items are sold by most computer/electronics stores.

#### Modem Installation

Follow steps (1) through (4) in the modem installation Section at the beginning of this manual. Then proceed as follows.

- (1) Identify the wire running from the wall socket to the base of your telephone. Unplug it from the base of your phone and plug it into one of the sockets on the dual connector.
- (2) Plug the dual connector into the base of your telephone.
- (3) Plug one end of the second phone cord into the dual connector and the other end into the socket on the front of the modem.

This installation is shown on the following page.

NOTE: Also use this installation procedure if you wish to have voice communication capability while the modem is connected.

AMCALL is configured for Osborne computers and supports the Osborne DATACOM modem. Files are edited using non-document mode WordStar commands. AMCALL needs no modification for use with the Osborne 1 computer.

**THE COMM-PAC PACKAGE**

COMM-PAC includes the following items.

1. An Osborne DATACOM modem which fits in the diskette pocket below Drive A of your computer.
2. An AMCALL Communications Program diskette for software control of your DATACOM modem.
3. A flat ribbon cable for connecting the modem to the computer.
4. Literature packets from these electronic information services:

THE SOURCE<sup>™</sup>  
DOW JONES NEWS/RETRIEVAL<sup>®</sup>  
WESTERN UNION

This literature describes each of the services and offers COMM-PAC owners introductory free access to them.

**COPYING THE AMCALL DISKETTE**

It's always good practice to have copies of your software diskettes. Before going on, we suggest you make a copy of the AMCALL diskette.

Insert your CP/M System diskette in drive A, a blank diskette in drive B, and then press RETURN. Type COPY after the CP/M prompt and press RETURN. Follow the instructions on the screen to copy your AMCALL diskette. Store the original AMCALL diskette in a safe place.

You also need to copy CP/M onto the system tracks of the diskette you just made. Use the SYSGEN program described in the Osborne User's Reference Guide to do this. Place the CP/M System diskette in drive A and the AMCALL copy in drive B. Type SYSGEN after the CP/M prompt and follow the instructions on the screen.

Use the **copy** to run AMCALL. Never use the original.

## DISKETTE CONTENTS

The AMCALL diskette includes these files:

- AMCALL.HLP** - summarizes command line switches and format.
- MCALL-C.DOC** - describes the MCALL-C communication protocol.
- PHONE.NUM** - lists telephone numbers for automatic dialing.
- README.DOC** - summarizes systems which support the AMCALL and MCALL programs.
- AMCALL.COM** - the master program file for AMCALL.
- UNLOAD.COM** - a utility program for preparing non-ASCII files for file transfer.

## MODEM INSTALLATION

The Osborne DATACOM modem connects to an RJ11C or equivalent telephone jack. This is the standard jack installed by the phone company for "plug-in" connection of your phone wire. If you're not equipped with a plug-in phone connection, contact the telephone company to request that one be installed.

The DATACOM Modem fits securely in the diskette storage pocket below drive A of the Osborne 1. Remove all diskettes from the storage pocket and install the modem as follows.

- 1) Turn off power to the computer.
- 2) Tan Case Osbornes

Slide the modem into the diskette pocket so the 10-pin socket on the modem is directly over the MODEM socket on the front of the computer.

### Blue Case Osbornes

Carefully snap off the eight (8) plastic tabs on the top and bottom edges of the modem. If necessary, gently file these edges smooth after snapping off the tabs.

Slide the modem into the diskette pocket so the 10-pin socket on the modem is directly over the MODEM socket on the front of the computer.

- 2) ^F to specify the file on the remote system.
  - 3) ESC R to prepare the originating system for receiving the file.
  - 4) ^T to initiate file transfer from the remote system.
  - 5) ESC E to close the file after transfer from the remote system is complete.
- ^X Terminates file transfer at any point in the transmission (abnormal termination).
- ^Z Closes the transferred file and writes it to diskette on the remote system (normal termination).

## TRANSFERRING NON-ASCII FILES

Non-ASCII files (.COM, .REL, .CRL, .INT, .CAL and WordStar Document files) require an 8-bit protocol such as MODEM for transmission. Since AMCALL's other protocols use seven bits, they don't support non-ASCII file transfer unless the eighth bit is removed.

There are two ways to transfer a non-ASCII file:

- (1) use MODEM protocol, if both transmitting and receiving systems support it;
- (2) use the UNLOAD.COM utility to translate the file to ASCII hexadecimal and then transfer it with both systems under MCALL-C protocol.

There is an additional technique for transferring a WordStar Document (D) file in MCALL-C protocol. Strip the (high-order) eighth bit from the file by copying and renaming it as follows:

```
A> PIP <new file name> = <old file name> [VZ]
```

The Z function removes the eighth bit and allows transfer of the new file in MCALL-C protocol.

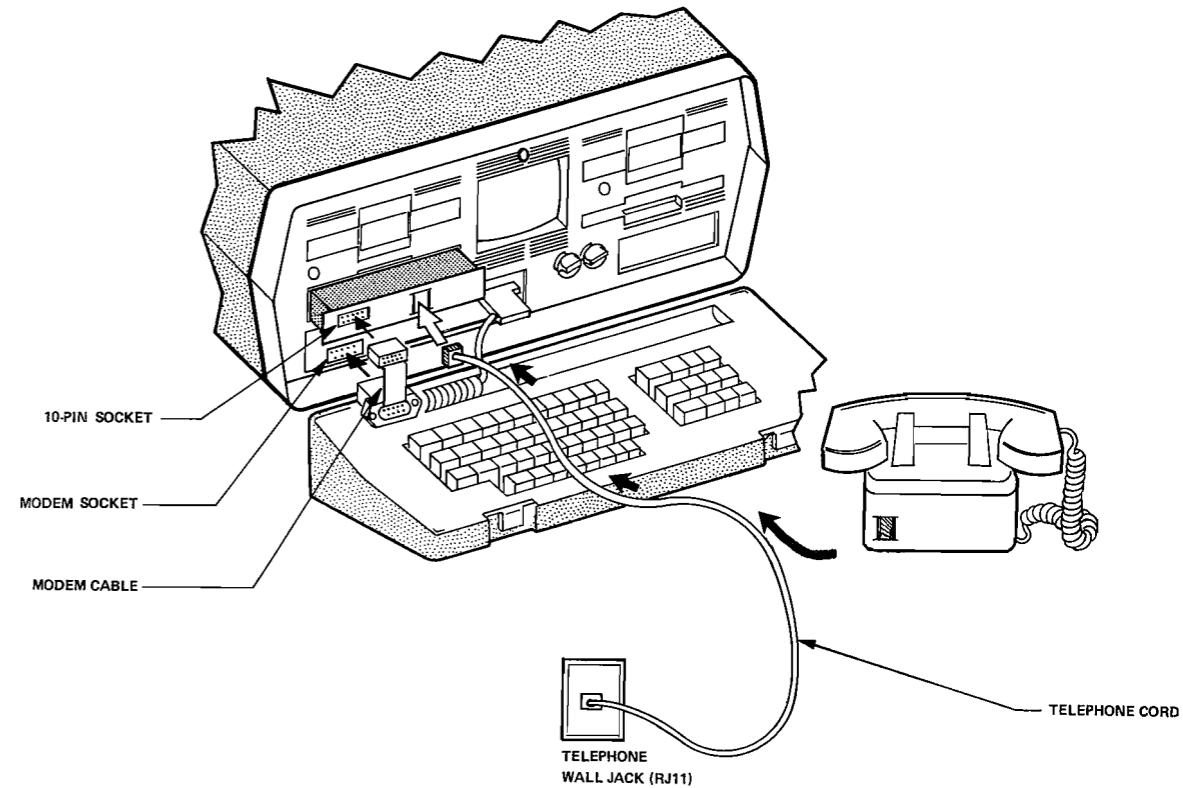
## REMOTE COMMANDS

Except in MODEM or MCALL-C protocol, the remote commands shown below are available in Answer mode. These commands are used by the originating operator to control the answering system. They allow file transfer between systems even when the remote system is unattended.

^C Cancel - terminates Answer mode  
^F File name specification  
^R Receive (RX) File  
^T Transmit (TX) File  
^X Exit File Transfer Mode (abnormal termination of RX Mode)  
^Z Normal termination of RX Mode

Use these commands by pressing the control key(CTRL) and the appropriate letter key simultaneously. The remote commands function as follows.

- ^C Terminates Answer mode on the remote system and returns it to Initialization mode.
- ^F Specifies the file to be accessed on the remote system.
- ^R Prepares the remote system to receive a file. The originating operator uses this sequence:
- 1) ESC F to specify the file for transfer.
  - 2) ^F to specify the name of the file to be received by the remote system.
  - 3) ^R to prepare the remote system for receiving the file.
  - 4) ESC T to initiate file transfer to the remote system.
  - 5) ^Z to close the file on the remote system and write it to diskette after transfer is completed.
- ^T Prepares the remote system to transfer a file to the originating one. The originating operator uses this sequence:
- 1) ESC F to specify the name of the file on the originating system.



DATACOM Modem Installation

- 3) The flat modem cable has a plastic connector on each end. Plug the small, rectangular connector on the modem cable into the 10-pin socket on the modem. This connector is grooved to fit only one way.

We suggest you leave this connector attached to the modem.



4) Plug the large connector on the modem cable into the MODEM socket on the front of the computer. This connector also fits only one way.

5) Identify the flat phone wire running from the wall socket to the base of your telephone.

Unplug this wire from your telephone and plug it into the socket on the front of the modem.

NOTE: If your telephone is connected to an electronic switchboard (PBX) or if you wish to use voice communication while the modem is connected, see the installation procedure in Appendix III.

#### A DEMONSTRATION

Before describing the AMCALL program in detail, we'll get some hands-on experience in using COMM-PAC. We'll do this by calling THE SOURCE, a nationwide information network which links hundreds of separate data banks.

For this demonstration, you need the following:

- a local phone number for THE SOURCE;
- a code;
- an account number;
- a password.

The informational literature included with COMM-PAC tells you how to obtain these from THE SOURCE. Once you have them, you're ready for the demonstration. The COMM-PAC package also includes an Introductory Guide to THE SOURCE. You should have this at hand during the demonstration.

Follow the instructions in the preceding Section to install the DATACOM modem. Then insert the copy you made of the AMCALL diskette in drive A of your Osborne.

Press RETURN.

After the A> prompt appears on your screen, type AMCALL, then press RETURN.

Your system displays the screen shown at the top of the next page.

#### UTILITY PROGRAMS

AMCALL includes the public-domain utility program UNLOAD.COM. In order to transfer a non-ASCII file to a remote system which does not support the MODEM protocol, the file must be converted to hex. Use UNLOAD.COM to make the conversion. After the file is received by the remote system, it can be returned to its original (binary) form using the standard CP/M utility LOAD.COM.

Enter UNLOAD.COM commands on the CP/M command line in this format:

```
A> UNLOAD filename.COM hhhh
      ^
      |
      program origin
      HEX address.
```

The program origin hex address is 0100 for standard CP/M COM-type files. Other types of file may have different addresses. UNLOAD.COM creates the file "filename.HEX", which you can then transmit to the remote system.

Note: If you don't include the hex address in the UNLOAD.COM command, the program assumes it to be 0000, and the receiving system may be unable to load it.

The file being "unloaded" must be .COM type. If the file is not, rename it with the CP/M REN function. For example, before using UNLOAD.COM to transfer the file Wordstar.DOC, you'd need to rename it as follows:

```
A> REN Wordstar.COM = Wordstar.DOC
```

The remote system operator could restore the name Wordstar.DOC before converting it to binary form using LOAD.COM.

(3) NETWORK CONTROL LEVEL

This protocol applies to distributed data processing over dispersed systems. It does not apply to AMCALL.

(4) USER LEVEL

User level protocol specifies the way in which an operator interfaces with the system. COMM-PAC's operating instructions define its User level protocol.

**AMCALL (Auto MicroCALL Communications Program)  
COPYRIGHT (C) 1982 by MicroCALL SERVICES  
VERSION: 2.06 OSBORNE1 <TP>**

**DEFAULT CONFIGURATION:**

<b>DUPLEX MODE:</b>	<b>FULL</b>
<b>SIGNAL RATE:</b>	<b>300 BAUD</b>
<b>PROTOCOL:</b>	<b>X-ON/X-OFF</b>
<b>UART MODE:</b>	<b>7 BITS, EVEN PARITY</b>
<b>FILENAME:</b>	<b>DEFAULT.FIL</b>
<b>SCREEN SWITCH:</b>	<b>OFF</b>

**ENTER ONE OF THE FOLLOWING:**

**SP (SPACE) CONFIGURATION MODIFICATION  
CR USE THE DEFAULT CONFIGURATION  
ESC EXIT TO CP/M**

This is the "Default Configuration" screen. It indicates how AMCALL is automatically set up for communication with other systems. You'll become well acquainted with this screen in Chapter Two. For now, simply press RETURN.

Your system displays another screen, the "Major Mode Selection".

<b>DUPLEX MODE:</b>	<b>FULL</b>
<b>SIGNAL RATE:</b>	<b>300 BAUD</b>
<b>PROTOCOL:</b>	<b>X-ON/X-OFF</b>
<b>UART MODE:</b>	<b>7 BITS, EVEN PARITY</b>
<b>FILENAME:</b>	<b>DEFAULT.FIL</b>
<b>SCREEN SWITCH:</b>	<b>OFF</b>

**ENTER ONE OF THE FOLLOWING:**

**SP (SPACE) CONFIGURATION MODIFICATION  
CR USE THE DEFAULT CONFIGURATION  
ESC EXIT TO CP/M**

**MAJOR MODE SELECTION**

**ENTER ONE OF THE FOLLOWING:**

**'A' Answer mode  
'O' Originate mode  
ESC exit - return to config. selection**

We'll describe this screen in detail later in the manual.

press the O key for Originate mode. This brings up the "Auto Dialing" menu.

## ORIGINATE MODE

### AUTO DIALING IS SUPPORTED FOR THE FOLLOWING:

'A' RCP/M Allentown PA	:	'M' RCP/M McLean VA
'B' RCP/M Beaverton OR	:	'P' RCP/M Pasadena CA
'D' RCP/M Dearborn MI	:	'R' RCP/M Rochester NY
'F' RCP/M Flanders NJ	:	'S' RCP/M San Diego CA
'H' RCP/M Hyde Park IL	:	'T' THE SOURCE
'K' RCP/M Mission KS	:	'J' DOW JONES
'L' RCP/M Logan Sq. IL	:	' '

'@' Use telephone dialer  
"" Redial previous number  
ESC Exit dialer function

### ENTER DIGIT STRING OR LETTER FOLLOWED BY CR

You system is now ready to initiate contact with another computer. Type your local THE SOURCE phone number and press RETURN.

The modem clicks as it dials the number you entered. When it makes connection with THE SOURCE, you'll see this message on your screen:

CONNECTION ESTABLISHED - BEGIN COMMUNICATION

If the line is busy, you'll see this message:

LINE APPEARS TO BE BUSY (No Carrier Detect)

In this case, wait for the prompt, "Enter Digit String or Enter Carriage Return." Then press the quotation mark key " and press RETURN. The modem redials THE SOURCE automatically.

The "Connection Established - Begin Communication" message means you're in contact with one of THE SOURCE's computers. Depending on where you're located, this might be through Telenet, Tymnet, or directly. The Introductory Guide to THE SOURCE shows the sign-on message used by each of these systems.

AMCALL continues to accumulate data until it determines that the pause has taken effect. At this point, AMCALL writes the buffer to diskette. After the buffer is cleared, AMCALL notifies the remote system to resume transmission. AMCALL repeats this cycle as needed until data transfer is completed.

### (b) High Level Protocols (HLP)

These protocols maintain the integrity of data transfer and minimize error probability during transmission, especially over long distance.

#### 1. MCALL-C Data Transfer

During file transfer between two personal computers using MCALL, the MCALL-C protocol automatically opens files at the start of transmission and closes them at the end. The transmitting operator simply specifies the file name and issues a transmit command (ESC T). The rest of the transmission is handled automatically.

AMCALL transfers data in blocks of 128 data bytes plus control characters. The transmitting and receiving systems each compute a 16 bit checksum for the data block. If these do not agree, the AMCALL protocol forces retransmission of the block.

Both transmitting and receiving consoles display the data being transferred except for handshaking characters associated with each data block. Since all 128 characters in the block, (including ASCII control characters) are displayed, you can see any noise in the transmission.

Both transmitting and receiving systems maintain a cumulative count of retransmissions. The transmitting system sends this value to the receiving system as the last data transfer. The receiving system responds with an "acknowledged", ACK, if the counts agree, or a "not acknowledged", NAK, if they don't. Both systems display an operator message after this test indicating the number of retransmissions and whether the file transfer was successful.

The diskette file, MCALL-C.DOC, has a detailed description of the MCALL-C protocol. Use CP/M's TYPE command followed by ^P ("control P") to print a copy of MCALL-C.DOC. To scroll this file on your screen, enter the instruction

A>TYPE MCALL-C <cr>

Use ^S to start and stop screen scrolling.

3. Echoplex is a full duplex feature in which the answering system inserts a line feed (LF) after each carriage return (CR) it receives.

AMCALL's default configuration is full duplex. Echoplex is in effect in Answer mode. Only the Answering system should configure in echoplex.

## (2) DATA LINK CONTROL LEVEL

There are two classes of communication protocol at this level: low level protocols (LLP) and high level protocols (HLP).

### (a) Low Level Protocols (LLP)

These involve special characters (such as control characters) or character strings (such as escape sequences) in messages.

#### 1. End-of-Line Protocol

Data may be lost if a remote timesharing computer is overloaded by a file it receives. The system prevents this with an end-of-line protocol which automatically inserts a line feed (LF) after each carriage return (CR) received. By "echoing" (transmitting) the LF to the originating system, the timesharing computer also indicates that it has accepted a line of data and is ready to receive the next.

AMCALL's usual protocols for file transfer to a timesharing computer (X-ON/X-OFF and BREAK/RETURN) use echoplex mode. This allows the answering system to transmit an acknowledging line feed.

If the remote system does not send an LF in response to a CR with one of these protocols in effect, AMCALL stops transmission. This may happen, for example, if an acknowledging LF is scrambled by line noise. Resume transmission by pressing any key other than ESC.

#### 2. End-of-Buffer Protocol

In the file RX mode, AMCALL accumulates data in buffer before writing it to diskette. If available memory between the end of the AMCALL program and the base of CP/M approaches overflow, AMCALL sends a "pause" request to the remote system.

Match the sign-on shown on your screen with one of those in the Introductory Guide. In this demonstration, we use Telenet. If you're signing on through Tymnet or directly, follow the instructions in the Introductory Guide at this point.

Press RETURN twice. Your screen displays the message

```
TELENET
xxxxxxx
TERMINAL =
```

Type D1, then press RETURN. Telenet responds with the @ sign prompt.

Type the code given to you by THE SOURCE, then press RETURN. This displays a welcome message.

THE SOURCE next requests your ID, account number, and password. Type ID and press the space bar. Type your account number and press the space bar. Type your password and press RETURN twice. This instruction line will be similar to the following:

```
ID TCP861 PASTST
```

THE SOURCE responds with a "logged-on" message and displays this Entry Screen:

```
Welcome, you are connected to THE SOURCE.
Last login Tuesday, 28 Sep 82 22:31:48.
```

```
(C) COPYRIGHT SOURCE TELECOMPUTING CORPORATION 1982
```

```
WELCOME TO THE SOURCE
```

```
1 OVERVIEW OF THE SOURCE
2 INSTRUCTIONS
3 THE SOURCE MENU
4 COMMAND LEVEL
5 TODAY
```

```
Enter item number or HELP _
```

Press one of the numbers shown on this screen to begin accessing THE SOURCE's data. Press 1, for example, and a description of THE SOURCE will be displayed on your screen.

You'll find that THE SOURCE, like most information banks and electronic bulletin boards, provides screen instructions to help you along. You can explore the system by following the instructions according to your interests.

When you decide to break contact with THE SOURCE, press the ESC key, and then the B key. This interrupts communication and displays the -> prompt.

To disconnect, type OFF and press RETURN.

THE SOURCE responds with a log-out message similar to this:

```
TCP 861 (user xx) logged out (date, time)
Time used: hr min connect, min sec CPU, min sec I/O
```

You see how simple it is to communicate with another system. As you gain experience with COMM-PAC, all its capabilities will be as easily at your disposal.

This Appendix provides supplementary information about communication protocols. There are several categories of communication protocol for data transmission:

- (1) Physical level
- (2) Data Link Control
- (3) Network Control
- (4) User level

(1) PHYSICAL LEVEL

(a) Modem-to-Modem Protocol

The Osborne Datacom Modem uses the Bell 103-A protocol to transmit data by Frequency Shift Keying (FSK) over voice-grade telephone lines. The modem-to-modem protocol is a design feature of the modem PC board which cannot be changed. Binary states (1,0) are defined as (1270 Hz, 1070 Hz) for ORIGINATE mode and (2225 Hz, 2025 Hz) for ANSWER mode.

(b) UART Configuration

This describes the bit configuration of an individual data word. UART configuration for ASCII character data is usually one start bit, seven data bits, one parity bit (even parity), one stop bit. The configuration for non-ASCII (binary) data is usually one start bit, eight data bits, no parity bit, one stop bit.

ASCII is the default UART configuration for AMCALL. Use the ESC U command to change this configuration if necessary. The MCALL-C protocol will not transfer binary files unless you convert them to Intel hex form using the UNLOAD utility. MODEM protocol transfers both binary and ASCII files.

(c) Duplex Modes

Data can be transmitted between two systems in one of these duplex modes:

1. Full duplex allows simultaneous data transmission in each direction.
2. Half duplex allows transmission in one direction at a time. This direction can be changed as needed.

## DISKETTE LOGGING

Data received from a remote system can be logged to diskette. Use the ESC F command to specify a file name for the data you'll receive. Then enter ESC R to place your system in receive (RX) mode. Doing this before you press RETURN to start transmission from the remote system will save all incoming data.

If you don't specify a file name for the data being received, it's stored as AMCALL's Default File in all protocols except MCALL-C. In MCALL-C, the file name used by the transmitting system will be transferred to yours.

We recommend diskette rather than printer logging since printer logging is slow and may introduce random print errors. You can print a file after a communications session by using CP/M's print commands.

## EXISTING FILE NAME

If you use the name of an existing file for data being received from a remote system, AMCALL displays this message after you enter ESC R:

```
*** DUPLICATE FILENAME --- CREATING BACKUP***
***READY TO RECEIVE FILE***
```

This situation often occurs when you're receiving many files during a session and forget to update file names. As the message indicates, AMCALL creates a backup copy (.BAK) of the existing file so it isn't erased. However, any existing backup file is erased. After completing file transfer, it's good practice to use ESC N to rename the file just received.

Now that you've had some practice in contacting another system, it's time for a detailed look at AMCALL. In this chapter, we'll go through procedures for setting up your computer to communicate with another one. This is called "configuring" your system.

The computer which you contact through the modem is known as the remote system. Think of telecommunication as your computer and the remote one "talking" to each other over the phone line. By configuring your system, you prepare it to speak in a way which a particular remote system understands.

Since AMCALL provides various configuration options, you can set up your Osborne to communicate with different kinds of remote system. This involves selecting various features from AMCALL's menu screens until the configuration is complete.

## STARTING UP

Follow the instructions in Chapter One to connect the DATACOM modem to your Osborne.

Insert the **copy** you made of the AMCALL diskette in the Osborne's left drive (drive A), and press RETURN. After the A> appears on the screen, type AMCALL and press RETURN. AMCALL responds with the Default Configuration Menu:

```
AMCALL (Auto MicroCALL Communications Program)
COPYRIGHT (C) 1982 by MicroCALL SERVICES
VERSION: 2.06 OSBORNE1 <TP>

DEFAULT CONFIGURATION:

DUPLX MODE:          FULL
SIGNAL RATE:        300 BAUD
PROTOCOL:           X-ON/X-OFF
UART MODE:          7 BITS, EVEN PARITY
FILENAME:           DEFAULT.FIL
SCREEN SWITCH:      OFF

ENTER ONE OF THE FOLLOWING:

SP  <SPACE> CONFIGURATION MODIFICATION
CR  USE THE DEFAULT CONFIGURATION
ESC EXIT TO CP/M
```

Fig.1. Default Configuration Menu

Figure 1 shows AMCALL's default configuration. It lists several items such as duplex mode, signal rate, protocol, etc. These items, which are known as parameters, define operating characteristics of your telecommunication system.

AMCALL takes the default values shown in Figure 1 because they apply to typical communication situations. However, you'll be able to change these as needed in individual cases.

Full duplex mode means that data can be transmitted simultaneously in each direction between your Osborne and the system you'll contact (the remote system).

X-ON/X-OFF protocol usually means that the system is configured for file transfer with a timesharing computer.

Three hundred baud refers to how fast data is transmitted between your Osborne and the remote system.

We'll define the other terms in Figure 1 later in the text or in the glossary of this manual.

The Default Configuration Menu asks you to "enter one of the following"

```
SP   (Space) CONFIGURATION MODIFICATION
CR   USE THE DEFAULT CONFIGURATION
ESC  EXIT TO CP/M
```

In actual practice, you'd need some information at this point about the system you plan to contact. Then you'd know whether AMCALL's default configuration was appropriate or needed to be changed. We'll consider how to make this decision later in the manual.

Although the default values are suitable in many cases, right now we're interested in how to change them.

### CONFIGURATION CHANGE

Your system can communicate with many others using AMCALL's default configuration. However, if you need to modify it, first be sure the Default Configuration Menu is on your screen. Then press the Space bar. AMCALL responds with the Configuration Selection Menu.

Sometimes you'll want to store data in the buffer only for quick review. At other times you'll store it with the intention of writing to diskette. It's good practice to have an uncluttered buffer so you can capture information you want as it's received from the remote system. A typical sequence of commands to manage the buffer would be:

```
ESC F           (specify file name)
ESC R           (begin buffer logging)
<cr><cr>       (prompts bulletin board response)
^S/^Q         (toggle switch commands to stop
              and start buffer display)
ESC C           (erase buffer contents)
HELP NEW       (a Help File which might be listed
              in the welcome message for first-
              time users)
ESC W           (write file to diskette and
              automatically empty buffer)
```

As you become familiar with AMCALL, you'll develop your own preferences for using ESC C and the other buffer management commands.

### WRITE BUFFER TO DISKETTE (ESC W)

Entering an ESC W while receiving data from a remote system writes the buffer contents to diskette. This allows you to write files to diskette in portions. To do this, send a pause command (^S) to the remote system. Then enter ESC W.

When running AMCALL, the Osborne's buffer capacity is

```
Memory size - AMCALL.COM size - CP/M size = 14K
              (64K)           (40K)           (10K)
```

At the modem transmission rate of 300 baud, it takes approximately 8 minutes for the Osborne's buffer to fill.\* The buffer then automatically writes to diskette. You should be aware of this time in deciding when to issue an ESC W command.

\*NOTE: Time (minutes) = B/(CPS x 60) where B is buffer capacity and CPS is characters per second. (CPS = baud rate/10).

**CONTROL CHARACTERS SUPPORTED [RX file mode]**

ESC B Break transmission (send a 'break')

ESC C Clear big\_buffer

ESC D Duplex mode selection

ESC E Exit current mode & close file

ESC G Get file directory

ESC H Help - display this command list

ESC K Kill (erase) disk file

ESC V View the big\_buffer contents

ESC W Write big\_buffer to disk

ESC # control character screen on/off switch

ESC ^ control character display on/off switch

ESC ESC send an ASCII ESC char. to remote device

UART MODE: 7 BITS, EVEN PARITY  
 FILENAME: DEFAULT.FIL  
 SCREEN SWITCH: OFF

ENTER ONE OF THE FOLLOWING:

SP (SPACE) CONFIGURATION MODIFICATION  
 CR USE THE DEFAULT CONFIGURATION  
 ESC EXIT TO CP/M

**CONFIGURATION SELECTION**

ENTER ONE OF THE FOLLOWING:

'D' Duplex mode selection  
 'F' File name specification  
 'P' Protocol selection  
 'U' UART data bits specification  
 '#' control character screen on/off switch  
 CR selection completed  
 ESC exit to CP/M

**VIEW BUFFER (ESC V)**

You may wish to see the contents of the buffer as data is received from the remote system. To do this, send a pause command (^S) to the remote system. Wait for the remote system to pause and then enter ESC V. The data accumulated in your system's buffer will be scrolled on your screen, but not on the remote one.

Use ^S ("control S") as a toggle switch to stop and resume the buffer display. When you've finished with the screen display, issue a continue command (^Q) to the remote system and data transfer will resume.

**CLEAR BUFFER (ESC C)**

ESC C allows you to clear buffer memory while in RX File mode. This is valuable for on-line editing of data you wish to record on disk. By viewing incoming data you can decide what (and whether) to record.

Most electronic bulletin boards, for example, display helpful information in their welcome messages. If you're calling a bulletin board, it's a good habit to place your system in Receive mode (ESC R) before sending a carriage return (CR) to prompt the remote system. This ensures that you'll record the welcome message in your buffer. You can then display it again by using the ESC V command. After you've finished with this information, enter an ESC C to clear the buffer before receiving more data you may want to store to diskette.

Fig. 2. Configuration Selection Menu

This menu lists the parameters shown on the Default Configuration screen. Select the parameter you wish to change by pressing the letter key corresponding to it. You can then change the parameter as needed for communication with a specific remote computer.

When you select a parameter to be changed, AMCALL displays a screen showing your options. There are five parameters listed on the Configuration Selection Menu and one screen for each of them. These system parameters or operating features are:

- Duplex mode
- File name
- Communication protocol
- UART data bit configuration
- Control character screen

We'll go through each of these individually. When you've finished specifying a parameter, AMCALL redisplay the Configuration



selection menu (fig. 2). you can cycle through the configuration this way until you've set the parameters as needed.

The Default Configuration Menu, the Configuration Selection Menu, and the five parameter menus are together known as "Initialization screens". This refers to the starting or initial state of your system before contact is made with a remote one.

#### DUPLEX MODE SELECTION

The first selection in Figure 2 allows you to change the duplex mode from its full duplex default value. Remember that full duplex means data can be transmitted simultaneously between your system and the remote one.

With the Configuration Selection Menu on screen, press the D key. AMCALL responds with the Duplex Mode Selection Menu (Fig.3 ).

#### CONFIGURATION SELECTION

ENTER ONE OF THE FOLLOWING:

'D' Duplex mode selection  
'F' File name specification  
'P' Protocol selection  
'U' UART data bits specification  
'#' control character screen on/off switch  
CA selection completed  
ESC exit to CP/M

D

#### DUPLEX MODE SELECTION

ENTER THE APPROPRIATE CHARACTER:

'F' Full duplex  
'H' Half duplex  
'E' Echoplex

#### DISPLAY CONTROL CHARACTERS (ESC ^)

The ESC ^ ("Escape caret") command allows you to see the control characters being transmitted by a timesharing computer to your Osborne. Control character display is off by default. Use ESC ^ as a toggle switch to turn it ON or OFF as needed.

With control character display ON, each control character (except CR, LF, and TAB) appears on your screen preceded by a ^ sign.

#### SEND ASCII ESC TO REMOTE SYSTEM (ESC ESC)

Use the ESC ESC command to transmit ESC itself to the remote system. When you press the ESC key, AMCALL expects a single letter command to follow. It doesn't transmit the ESC to the remote system. However, if you press the ESC key twice, AMCALL sends the second ESC to the remote system. This is very useful when you need to perform ESC functions on the remote system.

If you're running WordStar on the remote system, for example, you could set the right margin to the current cursor position with the instruction

^OR<esc><esc>

#### ESCAPE COMMANDS IN FILE RX (RECEIVE) MODE

The ESC commands we've described are available when your system is in Character TX/RX mode for data transmission to a remote system. Similar ESC commands are available when your system is in RX (receive) mode for file transfer from a remote system.

If you enter ESC H in RX file mode, AMCALL responds with the command list shown in Figure 12.

These commands are also available in Character TX/RX mode except for ESC C, ESC V, and ESC W. Use these commands to control the contents of your Osborne's buffer when receiving data from the remote system. (The buffer is an area in your Osborne's memory where this data is stored). To use these commands, first press the ESC key and then press the appropriate letter key.

Fig. 3. Duplex Mode Selection Menu

In either case, AMCALL responds with the message:

Resume Communication

**NOTE:** Some remote systems break contact if no input is received for several minutes. If you exit to CP/M, remember to resume communication within the required time period.

ESC Z makes CP/M's commands available to you as supplements to AMCALL's. Suppose, for example, you're receiving many files from the remote system and are nearing diskette capacity. You must notify CP/M before changing diskettes and writing to the new one. You can do this easily by entering ESC Z, changing diskettes, and then restarting with ^C (control C).

**CONTROL CHARACTER SCREEN ON/OFF (ESC #)**

The ESC # command engages/disengages the control character screen. We've already described this function in Chapter Two for Initialization mode. The control characters CR (carriage return), LF (line feed), and TAB are not affected by the screen.

**SYSTEM CONFIGURATION (ESC ?)**

The ESC ? ("Escape question mark") command is a convenient way to verify your Osborne's configuration. AMCALL responds to ESC ? in Character TX/RX mode by displaying the current system configuration. A sample screen is shown below:

**CURRENT SYSTEM CONFIGURATION**

<b>DUPLEX MODE:</b>	<b>FULL</b>
<b>SIGNAL RATE:</b>	<b>300 BAUD</b>
<b>PROTOCOL:</b>	<b>X-ON/X-OFF</b>
<b>UART MODE:</b>	<b>7 BITS, EVEN PARITY</b>
<b>FILENAME:</b>	<b>B:TEST.FIL</b>
<b>SCREEN SWITCH:</b>	<b>OFF</b>

Use the appropriate escape commands to alter your system's configuration if necessary.

By pressing the appropriate key (F, H, or E) on this menu, you establish a full duplex, half duplex, or echoplex communication mode. These terms refer to one of the transmission characteristics during communication between computers. They're defined in the glossary and explained more fully in Appendix I of the manual.

When two systems are in contact, only one of them - usually the one in Answer mode - should use echoplex.

Press the F key to select full duplex mode. AMCALL displays the Configuration Selection Menu (Fig. 2) again so you can continue setting up your system.

**FILE NAME SPECIFICATION**

The next item to specify is the file you'll send to the remote system or the file name you'll use for data transferred to you. If you don't specify otherwise, AMCALL stores this data under the name DEFAULT.FIL.

Press the F key when the Configuration Selection Menu is on screen. The system displays:

| ENTER <fname>.<typ> |

Type the file name in CP/M format and press RETURN when you're done. For example, to specify a text file named INFO.TXT on the diskette in drive B, type

B: INFO.TXT <cr>

By using the asterisk (\*) or question mark (?) file name characters in MCALL-C protocol, you can specify several ASCII files of a particular type for transfer. For example, to access all .ASM type files in drive B, enter the file name

B:\*.ASM <cr>

See the Osborne User's Reference Guide, if necessary, for a detailed explanation of these file name characters.

During transmission of multiple files, you'll notice a delay of several seconds between files. This delay allows the receiving system to close one file before starting the next.

## PROTOCOL SELECTION

Pressing RETURN after you make the file name specification displays the Configuration Selection Menu again. This time, press the P key to continue configuration selection. AMCALL displays the Protocol Selection Menu:

### ENTER ONE OF THE FOLLOWING:

'D' Duplex mode selection  
'F' File name specification  
'P' Protocol selection  
'U' UART data bits specification  
'#' control character screen on/off switch  
CR selection completed  
ESC exit to CP/M

P

### PROTOCOL SELECTION

#### ENTER THE APPROPRIATE CHARACTER:

'B' BREAK/RETURN (UNIVAC & IBM Computers)  
'C' MCALL-C (MICRO PROTOCOL - CHARACTER)  
'M' MODEM (RCP/M)  
'N' NULL (no end of line handshake)  
'X' X-ON/X-OFF (i.e. CTRL-Q/CTRL-S)

Fig. 4. Protocol Selection Menu

These communication protocols establish the signal patterns used in file transfer between two systems. Before selecting one of the protocols you'll need to know the type of system you're communicating with and its operating protocols.

The BREAK/RETURN protocol is required primarily by IBM and UNIVAC timesharing systems.

MCALL-C is used to transfer ASCII-type files between two personal computers which are both using AMCALL or MCALL, a related communications program.

Use MODEM protocol to transfer non-ASCII (binary) files and for transfers with remote CP/M systems which use XMODEM protocol. (XMODEM is a popular, high-level protocol available on most remote CP/M bulletin boards).

\*\*\*READY TO RECEIVE FILE\*\*\*

If you're in contact with another personal computer, transmission won't start until the remote operator enters an ESC T. With an electronic bulletin board, file transfer won't begin until you prompt the remote system with a carriage return (CR) or transmit an ESC R. See Chapter Three for examples of the file transfer sequence.

### TRANSMIT DISKETTE FILE TO REMOTE SYSTEM (ESC T)

The ESC T command places your system in File TX (transmit file) mode. Once your system and the remote one are configured for file transmission, the process is automatic after you enter an ESC T. Again, Chapter Three has examples of this procedure.

### UART DATA BIT CONFIGURATION (ESC U)

The ESC U command corresponds to the U key in Initialization mode. Use this command to change these serial data communication configurations: number of data bits, number of stop bits, parity enabled/disabled, parity select even/odd. The ESC U command is usually not needed since AMCALL's default configuration (7 data bits, even parity, 1 stop bit) is widely used for data transmission.

### ZIP TO CP/M (ESC Z)

You may wish to examine a file or perform a CP/M function without breaking contact with the remote system. You can do this by entering an ESC Z to exit temporarily from AMCALL to CP/M.

AMCALL also creates an "AMCALL.ZIP" file to store the system parameters in effect when you entered the ESC Z. When you've finished at the CP/M level, enter the following instruction to resume communication and restore system configuration:

A> AMCALL -Z <cr>

If you've renamed your AMCALL.COM file, enter the following instruction instead:

A> (New file name) -Z <cr>

Enter New <fname>.<typ>

To change the file name to AMCALL.TXT, for example, enter

A:AMCALL.TXT <cr>

AMCALL responds with

OK

You can check that AMCALL.HLP has been renamed by using ESC G to list the drive A file directory.

#### SELECT PROTOCOL (ESC P)

The ESC P command displays the Protocol Selection menu:

##### PROTOCOL SELECTION

###### ENTER THE APPROPRIATE CHARACTER:

'B' BREAK/RETURN (UNIVAC & IBM Computers)  
'C' MCALL-C (MICRO PROTOCOL - CHARACTER)  
'M' MODEM (BCP/M)  
'N' NULL (no end of line handshake)  
'X' X-ON/X-OFF (i.e. CTRL-Q/CTRL-S)

Since each protocol provides different AMCALL capabilities, it's important that you be able to switch between them when necessary.

For example, you may wish to transfer .COM files (binary) while in X-ON/X-OFF protocol. This protocol doesn't support binary file transfer but MODEM protocol does. To change the protocol, you'd enter ESC P and then press the M key for MODEM protocol. The "Protocols" section of Chapter Three has guidelines for selecting communication protocols.

#### RECEIVE DISKETTE FILE FROM REMOTE SYSTEM (ESC R)

After establishing contact with the remote system, enter an ESC R when you're prepared to receive a file. This places your system in File RX (Receive File) mode. AMCALL responds with the message

NULL protocol means that no conventions have been established between your system and the remote one. For example, you'd choose NULL protocol to transfer files between your Osborne and a "foreign" system, i.e., one not using the AMCALL program.

Finally, the X-ON/X-OFF protocol is used to transfer files between the Osborne and most timesharing computers other than IBM or UNIVAC.

If you're in doubt about the correct protocol, it's generally safe to use X-ON/X-OFF. Use the NULL protocol as a last choice since it does not automatically monitor for transmission errors during data transfer.

We'll return to these protocols again when describing file transfers. For now, press any of the keys in the Protocol Selection Menu to return to the Configuration Selection Menu.

#### UART CONFIGURATION

The next item we need to specify is the UART configuration (Universal Asynchronous Receiver/Transmitter). This parameter defines the bit configuration of each data "word". With the Configuration Selection Menu on screen, press the U key. This displays the UART Configuration Menu.

###### ENTER ONE OF THE FOLLOWING:

'D' Duplex mode selection  
'F' File name specification  
'P' Protocol selection  
'U' UART data bits specification  
'#' control character screen on/off switch  
CR selection completed  
ESC exit to CP/M

U

##### BIT CONFIGURATION SELECTION

###### ENTER THE APPROPRIATE NUMBER:

'1' (7 data, even parity, 1 stop)  
'2' (7 data, odd parity, 1 stop)  
'3' (8 data, no parity, 1 stop)  
'4' (8 data, even parity, 1 stop)  
'5' (8 data, odd parity, 1 stop)

Fig. 5. UART Configuration Menu

AMCALL's default configuration is seven data bits, even parity, one stop bit. This corresponds to number 1 on the UART Configuration Menu. Press the 1 key to confirm this configuration. After you press the key, the Configuration Selection Menu appears again.

### CONTROL CHARACTER SCREEN ON/OFF

The last parameter in the Configuration Selection Menu is the control character screen. The number symbol command # acts as a toggle switch to engage or disengage this screen on the receiving system. The screen is OFF in AMCALL's default configuration. This means that control characters are not screened out as data is received from the remote system.

Certain control characters transmitted by timesharing computers at the end of a data block may overwrite, scramble or clear your display screen. Turning the control character screen ON prevents this.

For example, some Hewlett-Packard systems transmit DEL (delete) characters (7F hex or 127 ASCII) instead of CR (carriage return) and LF (line feed). This DEL displays as a small square on the Osborne's screen. If you receive this or other unusual characters, use the # switch to screen them out.

The control characters CR (carriage return), LF (line feed), and TAB are not affected by the screen.

Press the # key to engage the control character screen. AMCALL responds with the SCREEN ON message and returns to the Configuration Selection Menu.

### COMPLETING INITIAL CONFIGURATION

Thusfar, we've used the Configuration Selection menu to set up the Osborne for communication with a remote system. By cycling through the Initialization menus, we've been able to change parameters from their default settings.

After we select a value for each parameter, AMCALL returns to the Configuration Selection Menu so we can choose the next. In this way we've specified these parameters:

- Duplex mode
- File name
- Protocol
- UART data bit configuration
- Control character screen ON/OFF

ESC G command is very convenient for finding out how much room is left on a disk. If more than 24 display lines are needed for the directory, press any key to provide additional directory space.

### HELP (ESC H)

Enter ESC H when you're in contact with another system to display the Escape commands for the mode you're in. Figure 10 lists the ESC commands in Character TX/RX mode. Figure 12 lists them for File RX mode.

### KILL (ERASE) DISKETTE FILE (ESC K)

Use ESC K to erase a file. In response to AMCALL's prompt, type the file name and press RETURN. You may also erase a file on a drive other than the logged one. In this case, simply specify the drive (A;B; etc.) before typing the file name.

### LIST (TYPE) DISKETTE FILE TO DISPLAY DEVICE (ESC L)

ESC L allows you to review the DEFAULT.FIL or any other non-ASCII file you've specified with the ESC F command. ESC L displays file contents as fast as the Osborne screen can handle it. Use ^S (control S) to stop this high-speed display and ^Q (control Q) to resume it as needed. The screen display is not seen on the remote system.

### NAME CHANGE (RENAME) A DISKETTE FILE (ESC N)

Use ESC N to rename a file when you're in character transfer mode. Enter ESC N. The system responds with

Enter Old <fname>.<typ>

Specify the drive containing the file, type the old file name, and press RETURN. For example, to rename the file AMCALL.HLP in drive A, enter

A:AMCALL.HLP <cr>

AMCALL responds with

A dot will appear on your screen each second for five seconds, giving you and the other operator a total of five seconds to pick up your telephones and make voice contact. If you don't make contact within this time, the phone line is lost.

After completing conversation with the other operator, press any key to release the line and return your system to Initialization mode. To resume digital communication, invoke AMCALL again.

NOTE: For voice communication, you need a dual modular connector to connect the modem and your telephone to the phone line. In this case, use the procedure in Appendix III to install the modem.

#### FILE NAME SPECIFICATION (ESC F)

In Initialization mode, we used the F key to specify a file for transfer or the name under which a file would be received. The ESC F command has the same function in character transfer mode. Enter ESC F. AMCALL will display

```
| ENTER <filename>.<typ>|
```

Type the name of the file you wish to access or transfer and press RETURN. For example, to access a text file named BOOK.TXT in drive B, you'd enter

```
B:BOOK.TXT <cr>
```

In MCALL-C protocol, you can transmit several ASCII files of a particular type by using the asterisk (\*) or question mark (?) file name characters. For example, to specify all .ASM type files in drive B, enter the file name

```
B:*.ASM <cr>
```

#### GET DISKETTE DIRECTORY (ESC G)

Enter ESC G to display this message:

```
Drive Select (A through P)
```

Press A or B to display a multi-column directory listing for the specified disk. The listing shows file sizes and summarizes the number of files on disk, storage used, and storage remaining. The

We've followed this procedure to set up the system before actually making contact with another one. The system's state before it makes contact is known as "Initialization mode".

Of course, it may not be necessary to change all five default parameters. In this case, select only the relevant ones from the Default Configuration Menu.

When you've finished with any changes from default configuration you're ready to make contact with a remote system.

With the Configuration Selection Menu on screen, press RETURN. Your system displays the Mode Selection Menu (Fig. 6).

#### MAJOR MODE SELECTION

We've just gone through the case where AMCALL's default settings need to be changed. Remember that the Default Configuration Menu (Fig. 1) asked us to "enter one of the following"

```
SP (Space) CONFIGURATION MODIFICATION  
CR USE THE DEFAULT CONFIGURATION  
ESC EXIT TO CP/M
```

We pressed the Space bar to display the Configuration Selection Menu and then cycled through the Initialization menus.

However, if the default configuration is suitable, you don't need to modify it. In this case, press RETURN when the Default Configuration Menu is on screen. AMCALL displays the Mode Selection Menu shown on the following page.

```

DUPLX MODE:          FULL
SIGNAL RATE:        300 BAUD
PROTOCOL:           X-ON/X-OFF
UART MODE:          7 BITS, EVEN PARITY
FILENAME:           DEFAULT.FIL
SCREEN SWITCH:      OFF

```

ENTER ONE OF THE FOLLOWING:

```

SP (SPACE) CONFIGURATION MODIFICATION
CR USE THE DEFAULT CONFIGURATION
ESC EXIT TO CP/M

```

#### MAJOR MODE SELECTION

ENTER ONE OF THE FOLLOWING:

```

'A' Answer mode
'O' Originate mode
ESC exit - return to config. selection

```

Fig. 6 Mode Selection Menu

You see there are two ways to arrive at this menu: by pressing RETURN at either (1) the Default Configuration or (2) the Configuration Selection Menu. It depends on whether you're keeping or changing AMCALL's default settings.

The Mode Selection Menu offers you the next choice in setting up your system for communication: whether to configure in Answer mode or Originate mode.

Pressing the A key puts your Osborne in Answer mode. This means you're preparing to receive a call from another system.

Pressing the O key places you in Originate mode. This means you're preparing to initiate contact with a remote system by calling it.

"Mode" is simply another word for the general state your system is in.

```

ESC Z Zip back to CP/M
ESC # control character screen on/off switch
ESC ? what is the current system configuration?
ESC ^ control character display on/off switch
ESC ESC send an ASCII ESC char. to remote device

```

#### EXIT MODE SELECTION

ENTER ONE OF THE FOLLOWING:

```

'D' Direct to auto-dial
'I' Initialization mode
'V' Voice communications
CR continue communications
ESC exit to CP/M

```

Fig. 11. Exit Mode Selection Menu

Pressing any letter in the Exit Mode selection menu takes you out of the communications mode you're in. The D, I, or ESC keys also break connection with the remote system. The D key, for example, returns you to Auto-dial and allows you to make another call under the same configuration you last used.

If you wish to exit from current mode and check or change system configuration before making another call, press the I key. This returns you to Initialization mode so you can reset parameters if necessary.

Pressing RETURN as your Exit mode selection cancels your exit request and restores character TX/RX (transmit/receive) mode. If, for example, you enter ESC E unintentionally, press RETURN to prevent breaking contact with the remote system.

#### VOICE COMMUNICATION

Press the V key when the Mode Selection menu is on screen to switch from data transmission to voice contact with the remote operator.

If you and the remote operator are using AMCALL, you must each press the V key. Both operators must coordinate their action at this point so contact isn't broken. When you press the V key, AMCALL responds with the message:

.....

TIME OUT COMPLETED, GO TO VOICE COMM..

ENTER ANY CHARACTER TO RELEASE THE LINE

AMCALL responds with the above list when you enter an ESC H or issue an unrecognized command in Character TX/RX mode. Neither this list nor any command prompts appear on the remote system, so your escape command won't have effects on it. In this chapter we'll explain each of these escape commands.

#### BREAK (ESC B)

The break command, ESC B, has the same function as the BREAK key used by remote systems such as IBM and UNIVAC. Use ESC B in MODEM protocol to interrupt transmission with these systems. If you're communicating with a Bulletin Board in X-ON/X-OFF protocol, an ESC B may terminate communication.

#### DUPLEX MODE CHANGE (ESC D)

Use ESC D to change the duplex mode once communication is in progress. AMCALL's default mode is full duplex. If you're not sure of the duplex mode required for a given remote system, configure for full duplex.

#### EXIT CURRENT MODE (ESC E)

AMCALL has the operating modes described in Chapter Three:

- (1) Initialization
- (2) Character TX/RX
- (3) File TX (transmit)
- (4) File RX (receive)

In Initialization mode, press ESC to return your system to CP/M. In the other modes, enter ESC E to exit as follows.

<u>Mode</u>	<u>Effect of ESC E</u>
FileTX	Terminates mode Restores Character TX/RX
File RX	Closes received file Restores Character TX/RX
Character TX/RX	Displays Exit Mode Selection menu

With the Mode Selection Menu on screen, press the A key. Your system goes into Answer mode and displays this message:

ANSWER MODE - AWAITING RING DETECT

In Answer mode, your Osborne is ready to respond to an incoming call from a remote system. When the remote system calls, your screen displays the message

Waiting for Carrier Detect

Then, when contact is established, you'll see the AMCALL sign-on:

AMCALL (Auto MicroCALL Communications Program)  
COPYRIGHT (C) 1982 by MicroCALL Services  
VERSION: 2.06 OSBORNE 1 <TP>

When you're actually communicating with another system, your screen next displays whatever is being sent to you. Type in your replies at the keyboard, and you'll be in conversation with the remote system.

At the moment, however, press the ESC key to terminate Answer mode. AMCALL returns to Initialization mode and displays the Default Configuration Menu.

#### ORIGINATE MODE

With the Default Configuration Menu on screen, press RETURN to confirm the default settings and display the Mode Selection Menu.

When the Mode Selection Menu appears this time, press the O key. AMCALL responds with the Auto Dialing Menu.

This menu is shown on the next page.



## ORIGINATE MODE

## AUTO DIALING IS SUPPORTED FOR THE FOLLOWING:

```

'A' RCP/M Allentown PA : 'M' RCP/M McLean VA
'B' RCP/M Beaverton OR : 'P' RCP/M Pasadena CA
'D' RCP/M Dearborn MI : 'R' RCP/M Rochester NY
'F' RCP/M Flanders NJ : 'S' RCP/M San Diego CA
'H' RCP/M Hyde Park IL : 'T' THE SOURCE
'K' RCP/M Mission KS : 'J' BOB JONES
'L' RCP/M Logan Sq. IL : ''

'@' Use telephone dialer
'''' Redial previous number
ESC Exit dialer function

```

ENTER DIGIT STRING OR LETTER FOLLOWED BY CR

Fig. 7. Auto Dialing Menu

The entries in this menu are the current contents of the PHONE.NUM file on the AMCALL diskette. Your Osborne is now in Originate mode for initiating contact with a remote system.

## AUTO DIALING

Each entry in Fig. 7 includes a letter of the alphabet and a name. To call one of these entries, press the letter assigned to it, then press RETURN. The modem dials the number automatically.

When the modem has dialed the number you chose, AMCALL displays the message:

```

WAITING FOR DIAL TONE

DIAL TONE DELAY COMPLETED

[phone number]

```

## ESCAPE COMMANDS

Once you're in contact with a remote system, AMCALL provides various control commands. Since these are implemented using the ESC key, they're called "Escape commands". The commands allow you to perform various functions while in contact with the remote system. This includes sending and receiving files, changing protocols, writing to diskette, and exiting to CP/M without breaking contact. The Escape commands make AMCALL extremely versatile for communication and file handling.

To use an Escape command, press the ESC key first and then press the letter key of the command you want. Don't press the ESC key and the letter key simultaneously. AMCALL may interpret this as an "exit" command and take you to CP/M.

Enter an ESC H to display a list of Escape commands available for the mode your system is in. Figure 10 shows the Escape commands in Character TX/RX mode. The Escape commands for File RX mode are shown in Figure 12 later in the manual.

## CONTROL CHARACTERS SUPPORTED

```

ESC B Break transmission (send a 'break')
ESC D Duplex mode selection
ESC E Exit current mode
ESC F Filename specification
ESC G Get file directory
ESC H Help - display this command list
ESC K Kill (erase) disk file
ESC L List (type) disk file to display device
ESC N Name change (rename) a disk file
ESC P Protocol selection
ESC R Receive (RX) a disk file from remote device
ESC T Transmit (TX) a disk file to remote device
ESC U UART data bits specification
ESC Z Zip back to CP/M
ESC # control character screen on/off switch
ESC ? what is the current system configuration?
ESC ^ control character display on/off switch
ESC ESC send an ASCII ESC char. to remote device

```

Fig. 10. Escape (ESC) Commands, Character TX/RX Mode

The messages you receive next depend on whether AMCALL gets a busy signal or actually makes contact with another system. These are described in the following Sections of the manual.

You can also call numbers not listed in the Auto Dialing menu. Just type the number at the keyboard and press RETURN. Your system dials the number and again displays the WAITING FOR DIAL TONE message.

Some PBX systems (electronic switchboards) don't support pulse dialing at the modem's rate (10 pulses per second). In this case, follow the procedures in Appendix III for manual dialing through a PBX switchboard.

### **DIALING COMPLETED**

After dialing automatically, AMCALL displays the message

WAITING FOR CARRIER DETECT -

When the remote system answers your call, this message appears on your screen:

CONNECTION HAS BEEN ESTABLISHED, BEGIN COMMUNICATIONS

You're now in contact (on line) with the other computer. Press the RETURN key twice to prompt the remote system's response.

### **AUTOMATIC REDIALING**

If AMCALL gets a busy signal, it displays the following message several seconds after the "Waiting for Carrier Detect" one:

LINE APPEARS TO BE BUSY (No Carrier Detect)

Wait until AMCALL prompts you to "Enter Digit String or Enter Carriage Return". To redial the number automatically, press the quotation mark key ", then press RETURN.

AMCALL considers a phone line to be busy if it doesn't detect a carrier tone for that number. This may mean that the number actually is busy or that it's a phone not connected to a computer.

Before using the automatic redial command ", be sure the number called is equipped to answer. If your own phone connection is loose, AMCALL will also report a busy signal. Check your system's

connections if you're having busy signal problems.

AMCALL continues to redial a busy number indefinitely. If it makes connection while in the redial mode, your system alerts you by "beeping" repeatedly. This allows you to leave the system unattended while AMCALL redials, yet still be notified when the call goes through.

Before leaving AMCALL unattended this way, be sure you've dialed the right number and that it actually is busy. The best way to do this is to manually call the number once to confirm the busy signal.

#### PHONE NUMBER FILE

Phone numbers for automatic dialing are listed in the PHONE.NUM file, which must be on the same disk as AMCALL.COM. To list the PHONE.NUM file, enter this command after the CP/M prompt:

```
A> TYPE PHONE.NUM <cr>
```

The AMCALL diskette already has these entries in the PHONE.NUM file:

```
A, RCP/M Allentown PA,215-398-3937;  
B, RCP/M Beaverton OR,503-641-7276;  
D, RCP/M Dearborn MI,313-846-6127;  
F, RCP/M Flanders NJ,201-584-9227;  
H, RCP/M Hyde Park IL,312-955-4493;  
K, RCP/M Mission KS,913-362-9583;  
L, RCP/M Logan Sq. IL,312-252-2136;  
M, RCP/M McLean VA,703-524-2549;  
P, RCP/M Pasadena CA,213-799-1632;  
R, RCP/M Rochester NY,716-223-1100;  
S, RCP/M San Diego CA,714-273-4354;  
T, THE SOURCE ,local number;  
J, DON JONES ,local number;  
R>_
```

Fig. 8. PHONE.NUM File

Note the instructions for displaying the bulletin board's directory. In many systems, you can do this by entering

```
DIR *.* $UØAD <cr>
```

- 17) Choose a TXT; HLP; or DOC file from the bulletin board directory. This is the file you'll transfer to your system.
- 18) Enter ESC F, then specify the name you wish to use for the file you'll transfer:

```
B:<file name>.<typ> <cr>
```

- 19) Enter ESC P to display the Protocol Selection menu. Then press the M key to select MODEM protocol.
- 20) Press RETURN.
- 21) After the A> prompt appears on your screen, enter the instruction

```
XMODEM S <file name>.<typ> <cr>
```

- 22) AMCALL responds with the "file open" message and indicates the diskette sectors available to receive the file:

```
File Open - Size: xxx Sectors
```

- 23) Enter ESC R to begin file transfer from the bulletin board. AMCALL responds with the message:

```
Receiving File: B:<file name>.<typ>  
Receiving Sector: xxxx
```

- 24) When your system has received the file, AMCALL displays this message

```
***Successful File Transfer***  
Total Error Count = xxx
```

Remember that the errors indicated here are those detected in the transmission process. The "Successful File Transfer" message means that no transmission errors are in your file.

- 25) When file transfer from the bulletin board is completed, type the sign-off command, "bye", and press RETURN.
- 26) The bulletin board signs off, and AMCALL's Default Configuration Menu appears after several seconds.

- 9) Press a key corresponding to an RCP/M Bulletin Board. Then press RETURN. You'll hear the modem click as it dials the number you selected. After dialing, AMCALL displays the message

Waiting for Carrier Detect

Note: You could have dialed manually at this point. Instead of pressing one of the letters in the Auto Dialing menu, you'd press the @ key and then dial manually after the prompt:

Perform conventional dialing --  
Enter CR before restoring handset

- 10) If your system makes connection with the bulletin board, the screen will display

Connection Established, Begin Communication

Remember that some bulletin boards automatically break connection if they receive no input from you for several minutes.

- 11) Enter an ESC R to establish buffer logging of the session. AMCALL responds with the message

Ready to Receive File

- 12) Press RETURN twice to prompt a "welcome" message from the bulletin board.

- 13) After the bulletin board's messages have been displayed, you'll be at the board's command line. Press the question mark key ?, then wait for the command list to be displayed.

- 14) Enter ESC E to terminate diskette logging and write the buffer to the file specified in step (5). AMCALL displays the message

File Transfer Completed

- 15) Enter an ESC L to scroll the contents of BBSTEST.FIL on your screen. Use ^S (control S) as a toggle switch to start and stop this high-speed display.

- 16) With your cursor at the bulletin board's command line, press the J key to enter the remote CP/M system.

The entries in Figure 8 include representative electronic "bulletin boards" throughout the country. The RCP/M entries are Remote CP/M bulletin boards. THE SOURCE and DOW JONES are fee-charging, subscription information services.

You can change the entries in the PHONE.NUM file to suit your needs. We suggest you use the format shown for a consistent appearance.

Each entry includes three "fields": (1) a single letter followed by a comma; (2) a name followed by a comma; (3) a phone number followed by a semicolon.

The PHONE.NUM file has a capacity of 26 entries, which may be listed in any order. Each entry can be up to 40 characters long, including letters, numbers, and the commas which separate fields.

Use non-document mode (N) WordStar commands for PHONE.NUM entries subject to these restrictions:

- 1) Don't use commas within any field.
- 2) Use the space bar to position the commas which separate fields.
- 3) Assign each letter of the alphabet to only one entry at a time.

If the PHONE.NUM file is not on the AMCALL.COM diskette, these auto-dialing commands are inoperative: ESC (return to CP/M); the quotation mark command " for auto-redialing; the "at" sign command @ for manual dialing. In this case, AMCALL tries to dial these commands as if they were digits. If this happens, press RETURN to return to Initialization mode.

## TOUCH-TONE DIALING

Both Touch-Tone telephones and the modem use pulse dialing. However, some PBX systems (electronic switchboards) won't complete a call dialed at the modem's pulse rate (10 pulses per second).

If your Touch-Tone phone is connected to one of these switchboards, you'll need a dual modular jack to connect the modem and phone to your Osborne. See Appendix III for details about dialing through an electronic switchboard.



8) AMCALL signs on with the message:

AMCALL (Auto MicroCALL Communications Program)  
COPYRIGHT (C) 1982 by MicroCALL SERVICES  
VERSION: 2.06 OSBORNE1 <TP>

9) Anything Operator O types from this point will appear on Operator A's screen, and vice versa.

10) If the operators wish to log the conversation, they each must enter an ESC F command. AMCALL responds with the message

Enter <filename>.<typ>

The operators then specify the drive and file name for recording their conversation.

11) After specifying the file name, each operator enters an ESC R to separately record the transmission. The systems reply

Ready to Receive File

12) The conversation is stored in each system's buffer until the operators enter an ESC W or ESC E to write their buffer contents to diskette.

13) Since we're using the default configuration, both systems are in X-ON/X-OFF protocol for file transfer. To transfer a text file between systems, each operator enters an ESC F and specifies the file name for the data being transferred.

14) Either operator can send or receive files. The receiving operator enters an ESC R. The system responds with the message

Ready to Receive File

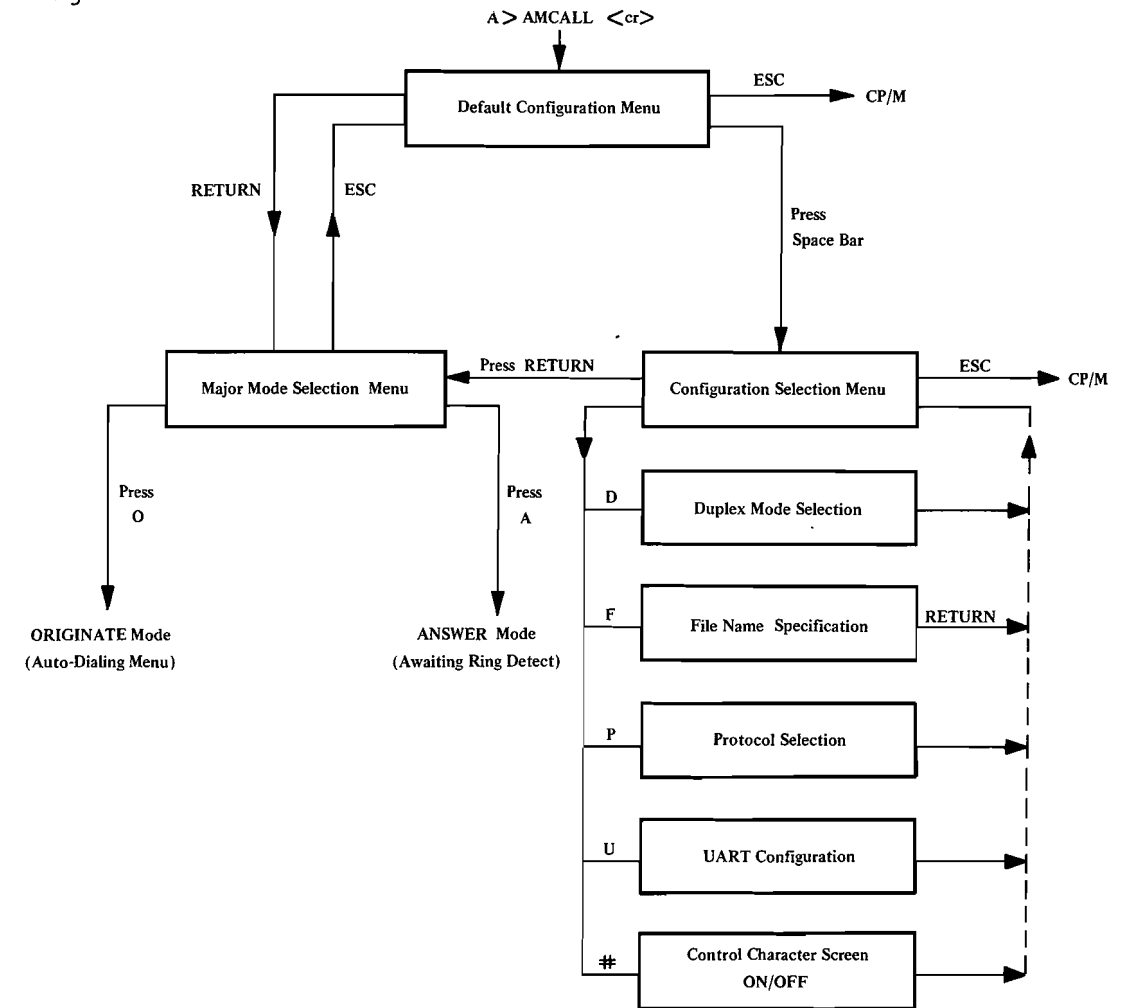
15) The sending operator enters an ESC T to transmit the file named in step (13). At the end of transmission AMCALL displays the message

Transmission Completed

16) After the file is transferred, the receiving operator enters an ESC E to close the file.

17) To break connection with the other system, each operator enters ESC E, then presses the ESC key to exit to CP/M.

The following diagram illustrates how to configure your system using Initialization menus.



AMCALL INITIALIZATION CYCLE

AMCALL Initialization Cycle

Having your options displayed by the Initialization menus is convenient, especially when you're new to AMCALL. However, cycling through these menus is time consuming. In Chapter Three, we describe a faster technique for configuring your system.

## AMCALL COMMAND LINE SYNTAX:

```
AMCALL [-<switches>] [<filename>]
```

where

```
[...] -- contain switches and file name  
<switches> = {A,O;E,F,H;B,C,M,N,X;#;@}
```

where

```
(A) nswer mode, (O) riginate mode;  
(E) choplex, (F) ull duplex, (H) alf duplex;  
(B) reak/return, mcall-(C), (M) odem,  
(N) ull, (X) -on/x-off;  
(#) control character screen on;  
(@) bypass auto-answer/auto-dial
```

### SWITCH SPECIFICATION EXAMPLES:

```
AMCALL FILENAME.TYP ; CONVENTIONAL SPECIFICATION
```

```
AMCALL -O ; DIRECT TO (O) RIGINATE  
; DUPLEX = FULL  
; PROTOCOL = X-ON/X-OFF  
; FILENAME = DEFAULT.FIL
```

```
AMCALL -A B:FOO.FIL ; DIRECT TO (A) NSWER MODE  
; DUPLEX = ECHOPLEX  
; PROTOCOL = X-ON/X-OFF  
; FILENAME = B:FOO.FIL
```

```
AMCALL -OC ; DIRECT TO (O) RIGINATE  
; PROTOCOL = MCALL-(C)
```

```
AMCALL -OEN ; DIRECT TO (O) RIGINATE  
; DUPLEX = (E) CHOPLEX  
; PROTOCOL = (N) ULL
```

```
AMCALL -OHB JUNK.FIL ; DIRECT TO (O) RIGINATE,  
; DUPLEX = (H) ALF  
; PROTOCOL = (B) REAK  
; FILENAME = JUNK.FIL
```

```
AMCALL -@O ; BYPASS AUTO DIAL,  
; DIRECT TO (O) RIGINATE,  
; i.e. TO DIAL CALL  
; MANUALLY.
```

## COMMUNICATION SESSION I: Personal Computer to Personal Computer

We'll set up a typical "dialogue" between two personal computers to illustrate AMCALL's operation. In this example, both systems are operating with the AMCALL program in default configuration.

We use switches in AMCALL's command line to place one system in Answer mode and the other in Originate, but we could have used the Initialization menus instead.

- 1) The answering operator (Operator A) inserts a copy of the AMCALL diskette into drive A and presses RETURN to start the system.
- 2) After the A> appears on the screen, operator A places the system in answer mode by entering

```
A> AMCALL -A <cr>
```

After several seconds, AMCALL displays the message

```
Awaiting Ring Detect
```

- 3) The originating operator (Operator O) inserts a copy of the AMCALL diskette into drive A and presses RETURN.
- 4) After the A> appears on the screen, operator O places the system in originate mode by entering

```
A> AMCALL -O <cr>
```

AMCALL responds with the Auto Dialing Menu.

- 5) If Operator A's number is listed in the menu, Operator O presses the letter key corresponding to it. If the number isn't listed, Operator O types it in at the keyboard and presses RETURN.
- 6) AMCALL dials the number and displays this message when the other system answers:

```
Connection Established - Begin Communications
```

- 7) Operator O presses RETURN twice to prompt the other system.

Fig. 9. AMCALL.HLP File

Enter ESC F and specify name of file to be received.

Select MODEM protocol.

After the remote CPM prompt appears on your screen, enter

```
A> XMODEM S <file name>.<typ> <cr>
```

Your system displays the message:

```
***FILE OPEN***
```

Enter ESC R to transfer the file.

The sending sector is displayed on your screen during file transfer.

At the end of file transfer, the file is automatically written to diskette under the name you specified and this message appears:

```
***SUCCESSFUL FILE TRANSFER***
Total Error Count = xxx
```

### SWITCH SPECIFICATION OF PARAMETERS

In Chapter Two we used Initialization menus to configure the Osborne for telecommunication. After you're familiar with the AMCALL program, you may prefer to bypass the Initialization menus and configure the system using switches.

Switches are command line entries which specify your system's mode and communication protocol. The switches are listed in the AMCALL.HLP file shown in Figure 9. They include letters of the alphabet (A;O;E;F;H, etc.) and symbols (#;@).

Enter the switches you select on the CP/M command line in one of the following formats:

```
A> AMCALL [-switches] <cr>
```

or

```
A> AMCALL [-switches] [filename] <cr>
```

The entries in the square brackets are the command switch(es) you choose and the file name you specify. You must type a hyphen (-) before the first switch, but don't include the bracket signs.

For example, to go directly to answer mode and default configuration, enter the following command after the A>

```
A> AMCALL -A <cr>
```

The hyphen in this command is the switch prefix, and the letter A specifies Answer mode.

To go directly to Originate mode, auto-dial, and default configuration, enter

```
A> AMCALL -O <cr>
```

The hyphen is again the switch prefix, while the letter O specifies Originate mode.

You can use these command lines to establish other configuration parameters. For example, to specify duplex mode you'd include an H (half duplex), F (full duplex), or E (echoplex) on the command line as follows



A> AMCALL -OH <cr>

This command places the Osborne in Originate mode, auto-dial, half-duplex configuration.

A command line may also contain a file name in addition to switches. This is shown in the following example which identifies a text file on B drive:

A> AMCALL -OH B:TEXT.FIL <cr>

A file specified in the command line this way is normally the next one to be accessed during communication. You can type the command line switches in any order. However, you can only enter a file name after the switches. A command line such as the following is invalid:

A> AMCALL B:TEXT.FIL -OH

AMCALL responds to this invalid command by displaying the Default Configuration Menu.

If you often call a particular remote system, it may be convenient to set up your function keys to automatically type the appropriate AMCALL command line. For example, to manually dial a Bulletin Board which supports MODEM protocol and half duplex mode, you could set up a function key to type AMCALL -OM@H. See the Osborne User's Reference Guide for instructions on setting up function keys.

## OPERATING MODES

There are four operating modes or overall conditions in which you can place your system for data communication. These modes are (1) Initialization; (2) Character TX/RX; (3) File RX; (4) File TX. We'll briefly describe these modes or operating states here.

Various commands are available in each of these modes. Most of them are called "Escape commands" because you activate them by pressing the Escape key and then a specific letter key. Chapter Four has detailed explanations of these commands.

### (1) Initialization

This is the mode you enter by typing the word "AMCALL" after the CP/M prompt. The system responds with the Default Configuration menu we've seen in Chapter Two. This is the first of the Initialization menus you can use to configure your system. AMCALL

Sending operator enters ESC T to transfer file.  
At end of transmission, sending system displays message:

\*\*\*FILE TRANSFER COMPLETED\*\*\*  
RESUME NORMAL COMMUNICATION

Receiving operator enters ESC E to close file and write it to diskette.

### 8. Is receiving system using MCALL-C protocol?

If yes, sending operator enters ESC T to transfer file.  
Receiving operator takes no action.  
MCALL-C writes file to logged diskette under the transmitted file name.  
At end of transmission, sending system closes all files and displays message:

\*\*\*FILE TRANSFER COMPLETED\*\*\*  
RESUME NORMAL COMMUNICATION

The file is automatically written to diskette under the name specified by the sending operator.

### 9. Is receiving system using MODEM protocol?

If yes, sending operator enters ESC T.  
Both systems display the message:

AWAITING INITIAL NAK

Receiving operator enters ESC R to transfer file.  
MODEM protocol displays the sending sector during file transfer, not the file itself.  
At end of transfer, both systems display the message:

\*\*\*SUCCESSFUL FILE TRANSFER\*\*\*

### 10. Is the remote system using MODEM protocol with XMODEM? (All RCP/M systems and many Bulletin Boards support XMODEM).

If yes, transfer files from the remote system as follows:  
Enter DIR <cr> to display the remote system's directory.

1. Do you need error checking during the transmission?

If yes, use MODEM or MCALL-C protocol.

Note: Before transferring a WordStar Document file in MCALL-C protocol, see the Section, "Transferring non-ASCII Files," in Appendix II.

2. What is the receiving system protocol?

If BREAK/RETURN (IBM or UNIVAC), use BREAK/RETURN protocol. (ESC B interrupts transmission, RETURN resumes it).

If AMCALL, use MCALL-C or MCALL.

If MODEM (Remote CP/M), use MODEM.

If X-ON/X-OFF (most frequent case), use X-ON/X-OFF. (^S interrupts transmission, ^Q resumes it).

If none of the above, use NULL protocol as your last choice. The receiving system buffer will not be automatically monitored.

3. Are you transferring an ASCII file?

If yes, use any protocol.

If no, use MODEM protocol.

If the remote system doesn't support MODEM, use the UNLOAD.COM utility to convert the file to ASCII before transmitting it.

4. Sending operator enters ESC F and specifies the file name for the data being transferred.

5. Sending system is ready to transmit the file. Receiving system prepares as follows.

6. Receiving operator enters ESC F.

7. Is receiving system using X-ON/X-OFF, BREAK/RETURN, or NULL protocol?

If yes, receiving operator enters ESC R.

presents these menus until you complete initial configuration and are ready to establish contact with a remote system.

(2) Character TX/RX (Character transmit/receive)

Once you've established contact with a remote system, your system goes to Character TX/RX mode. Character TX/RX is also known as "character-at-a-time transmission". You send and receive characters in this mode by entering appropriate commands at your keyboard. Entering an ESC H ("Escape H") in this mode displays a list of these commands as described in Chapter Four.

After you make contact with a remote system you can still return to Initialization mode by using an ESC E ("Escape E") command.

(3) File RX (Receive file)

Entering an ESC R ("Escape R") when your system is in Character TX/RX mode places it in File RX mode. This means you're prepared to receive file(s) transferred from the remote system. File RX mode has its own list of commands which you can display by entering an ESC H.

In File RX mode, you're still capable of character-at-a-time transmission until the other operator enters File TX mode. Your system's memory buffer is also turned on in File RX mode. This means that all transmissions to your system, whether single characters or an entire file, are stored in your Osborne's memory. You won't receive a file in this mode until the other system enters File TX mode.

(4) File TX (Transmit file)

When your system is in Character TX/RX mode, entering an ESC T ("Escape T") places it in File TX mode. This is the mode you use to transfer files from your system to the remote one. Once initiated, file transfer continues automatically unless you press the ESC key to terminate it. At the end of file transfer, or after you terminate with the ESC key, you return automatically to Character TX/RX mode.

#### CHECKING THE SYSTEM

It's possible to review or test program functions without contacting a remote system. To do this, place your system in originate mode. Dial one of the numbers on the Auto-Dial menu and unplug the modem from the computer when dialing is completed. AMCALL will display the message

CONNECTION ESTABLISHED - BEGIN COMMUNICATIONS

AMCALL "thinks" you've established contact with another system, and you'll be able to test the ESC ("Escape") commands.

## PROTOCOLS

COMM-PAC gives your Osborne the capability for data transfer with a remote system. You can transmit and receive short messages or entire groups of files. Data transferred this way travels as signals over the phone line between your computer and the remote one. These signals need to be organized somehow so the communicating systems can recognize and process them correctly.

Organizing the data signals this way is one function of communication protocols. These protocols may also instruct the systems to check the signals for transmission errors, acknowledge correct transmission, and send stored data as requested.

AMCALL provides five of these protocols. The one you select for communication with a remote system depends on the capabilities of that system and the features you need.

You've already seen AMCALL's protocols in the Section on "Protocol Selection" in Chapter Two. AMCALL's default configuration includes X-ON/X-OFF protocol. The Protocol Selection menu offers you the option of changing this protocol as you configure your system in Initialization mode. In the other modes, enter an ESC P ("Escape P") command to display this menu.

We'll review AMCALL's communication protocols here as they affect file transfer. For additional information about protocols, see Appendix I.

1. Use MODEM protocol to transfer binary (non-ASCII) files and for transfers with remote CPM systems (RCP/M) which use MODEM or XMODEM protocol. If the remote system is using XMODEM, you must receive a "File Open" message from it before entering an ESC T or ESC R to start file transfer.
2. Use MCALL-C protocol when the remote system is also operating with AMCALL or MCALL. In this case, the sending operator specifies the file name and issues the ESC T command. AMCALL automatically opens the file at the sending end and creates it at the receiving one. Text files transferred this way are displayed during transmission so you can monitor them.
3. Use X-ON/X-OFF protocol to transfer files with most timesharing computers other than IBM or UNIVAC. Use ^S (ASCII DC3) to interrupt transmission and ^Q (ASCII DC1) to resume.
4. Use BREAK/RETURN protocol when transferring files with an IBM or UNIVAC computer. Entering an ESC B has the same effect as the

BREAK key used by these systems to interrupt transmission. Pressing RETURN resumes it.

5. Use NULL protocol when none of the others is applicable. This protocol doesn't automatically check for transmission errors.

## ERROR CHECKING

The MODEM and MCALL-C protocols check for transmission errors during data transfer. If they detect faulty signals, the data involved is automatically retransmitted. This minimizes the probability of errors in the transferred file. AMCALL displays the error total at the end of file transfer to help you assess transmission quality.

## FILE TRANSFER

AMCALL allows you to transfer files with other personal computers and with timesharing ones. Files can be written to diskette and made available for use after transfer.

The commands for file transfer are ESC T ("Escape T") to transmit and ESC R to receive. These and other Escape commands are available in Character TX/RX, File TX, and File RX modes under any communication protocol.

The procedure for sending and receiving files varies with the kind of system you're communicating with and the communication protocol. For this reason we've provided a checklist and two "Communication Sessions" as typical examples of file transfer. Use these as guidelines for file transfer and to familiarize yourself with the process.

We suggest you refer to Chapter Four when first going through the Checklist and Communication Sessions. Then, when you're comfortable with the ESC commands, you can use the Checklist during actual file transfer.

## FILE TRANSFER CHECKLIST

The following checklist is a quick reference for transferring files. You can read it from either the sending or receiving point of view. It summarizes points that both system operators should be aware of when transmitting files.