

**COMMODORE®**

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**MODEM  
1200**

**USER'S MANUAL**



Model 1670





# **MODEM/1200**

## **USER'S MANUAL**

**For Your Commodore 128™**

**Commodore 128D™**

**Commodore 64®**

**Commodore SX 64™**

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# Section Introduction

The Commodore Modem/1200 is a compact, powerful computer device that lets you communicate instantly with other computers over ordinary telephone lines.

Your Commodore Modem/1200 gives you direct access to the wide range of information available on many information services, both national and local. You can play games against distant opponents, obtain the latest stock quotes and news, check airline schedules, send and receive mail electronically—and much, much more. With appropriate software, you can also take advantage of the auto-answer feature of the Modem/1200 and turn your Commodore computer into an electronic “bulletin board” system.

## WHAT A MODEM DOES

Telecommunication consists of electrical signals sent from your computer to another computer via the phone lines. The type of electrical signal your computer generates cannot be sent directly over phone lines. Your Modem/1200 acts as a translating device. It translates (modulates) outgoing computer signals into signals the phone lines can transmit. The receiving modem retranslates (demodulates) the incoming signal into a signal your computer can use.

The term modem was created by combining the first parts of the words MOdulator/DEModulator.

Your Modem/1200 is an “intelligent modem”. This means it contains its own microprocessor to oversee the telecommunications process. The Modem/1200 can be instructed to dial a specified phone number, detect a remote computer’s signals and establish a connection to your computer with a single command, or to answer incoming calls from other computers. It can adjust itself to match

the speed of incoming or outgoing transmissions (auto-baud), and will automatically hang up the phone when the connection is broken. In addition, it uses its built-in sound system to let you listen in on a connection in process, so you will know if you reach a busy or incorrect number.

The software disk included with your Modem/1200 includes several terminal programs which may be used with your Modem/1200. Your Commodore computer requires a terminal program in order to control your Modem/1200 and to communicate with other computers.

## **WHAT COMES WITH YOUR MODEM**

Carefully unpack your modem if you have not already done so. Examine the package contents. Your Commodore Modem/1200 comes with a modular telephone cord, a disk containing several communications programs, and a special trial offer from the QuantumLink™ personal computer network. If you do not have all of the items listed, you should immediately contact the dealer from whom you bought your Modem/1200.

QuantumLink, which is accessed using special communications software included on your disk, is a personal computer database offering features designed to appeal to Commodore users. For a flat monthly subscription rate, you can access a number of services which allow you to download and save hundreds of unpublished programs, post messages on electronic bulletin boards, play entertaining games, order products, carry on conversations with other computer owners, look up references in an electronic encyclopedia, and more. Detailed instructions for using QuantumLink are contained in a separate manual.

Also included on the program disk is a general purpose terminal program for the Commodore 64 and 128 called Common Sense, which enables you to communicate with many other information services and other personal computers. Section 4 of this manual describes the functions of the Common Sense program. A VT52 Emulator for the Commodore 64 and 128, and a VT100 Emulator for use in the 80-column mode of the Commodore 128 are also provided; instructions for using these programs are found in Section 5.

# HOW TO USE THIS MANUAL

If you have little or no previous experience with modems and computers, you should read Chapters 1-5 completely. If you have had previous experience with modems, the following section-by-section summary of the contents should allow you to locate any specific information you may need.

Note: All users, regardless of previous experience, should read sections 2 and 3.

**Section 2, Connecting the Commodore Modem/1200,** provides illustrated, step-by-step instructions for connecting your modem to a Commodore computer.

**Section 3, Hayes® Commands,** gives detailed descriptions of the commands used to control the Modem 1200. You need to be familiar with the dialing commands described in this chapter in order to use any terminal software programs whether they are provided with your modem or purchased separately.

**Section 4, Using the Common Sense Terminal Program,** contains descriptions of the variety of functions that can be performed using the Common Sense terminal software.

**Section 5, Using the VT-52 and VT-100 Terminal Emulator Programs,** describes how to use these programs to convert your computer to an intelligent terminal.

**Section 6, Technical Information,** gives technical specifications and details about the Modem/1200 for the advanced user.

**Section 7, Troubleshooting,** provides help if you have problems using your Modem/1200 or connecting to an information service.

**Appendix A, DIP Switches,** explains how you can use the DIP Switches to customize how your modem operates.

**Appendix B, Customizing Common Sense,** explains how you can customize the BOOT program within Common Sense.

**Appendix C, Federal Communication Commission (FCC) Statement,** describes the Federal Communication Commission regulations regarding use of modems with personal computers.

**A glossary** provides definitions for terms used in this manual.

## **Index**

There are many terminal software programs available that will function with your Modem/1200. You need to be familiar with the dialing commands described in Section 3 in order to use any software, whether provided with your modem or purchased separately.

# Section Connecting Your Modem/1200

This chapter explains how to connect the Commodore Modem/1200 to your computer and to the telephone line. Read all of this section and be sure you understand it before you try to install your Modem/1200.

You can connect the Modem/1200 to a Commodore computer system with a monitor or a television set. The instructions are the same, because the only equipment directly involved in the installation are the modem, the computer, and your telephone.

## INSTALLATION INSTRUCTIONS

These instructions assume you have already set up your computer, disk drive, and monitor or TV set.

1. Turn off the computer, the disk drive, and the monitor or TV.
2. Locate the recessed switches near the jacks (called DIP switches) and check that they are all down. If they are not all down, or you will be using this modem with a Plus/4, see Appendix A for complete instructions on how the DIP switches operate.
3. Locate the two jacks labeled LINE and PHONE on the back of the Modem/1200.
4. Locate the telephone cord included with your Modem/1200. Compare the modular connectors provided on this cord to your telephone connector. If they are not the same, an adapter must be used to connect your Modem/1200 to the telephone line; these adapters may be obtained at most electronics or specialty stores.
5. Unplug the cord on the back of your telephone that connects the phone to the wall jack, or locate a telephone wall jack not in use.

Squeezing the edges of the connector will allow it to slip out of the wall jack.

6. Insert either end of the telephone cord provided with your Modem/1200 into your telephone wall jack. Insert the other end into the modem jack labeled LINE at the back of the modem.
7. If you intend to leave your Modem/1200 permanently connected to the telephone line, but would like to continue to use your telephone when the modem is not in use, plug your telephone's connector into the modem jack labelled PHONE. This step is not required in order to use your Modem/1200.
8. Locate the USER PORT on the back of the computer.

**NOTE:** Although the USER and EXPANSION ports are similar in appearance, your Modem/1200 will not fit into the expansion port of your computer.

9. Insert the connector end of the Modem/1200 into the user port (see Figure 2-1). Insert the modem firmly, but do not force it in, as this can damage the connectors.

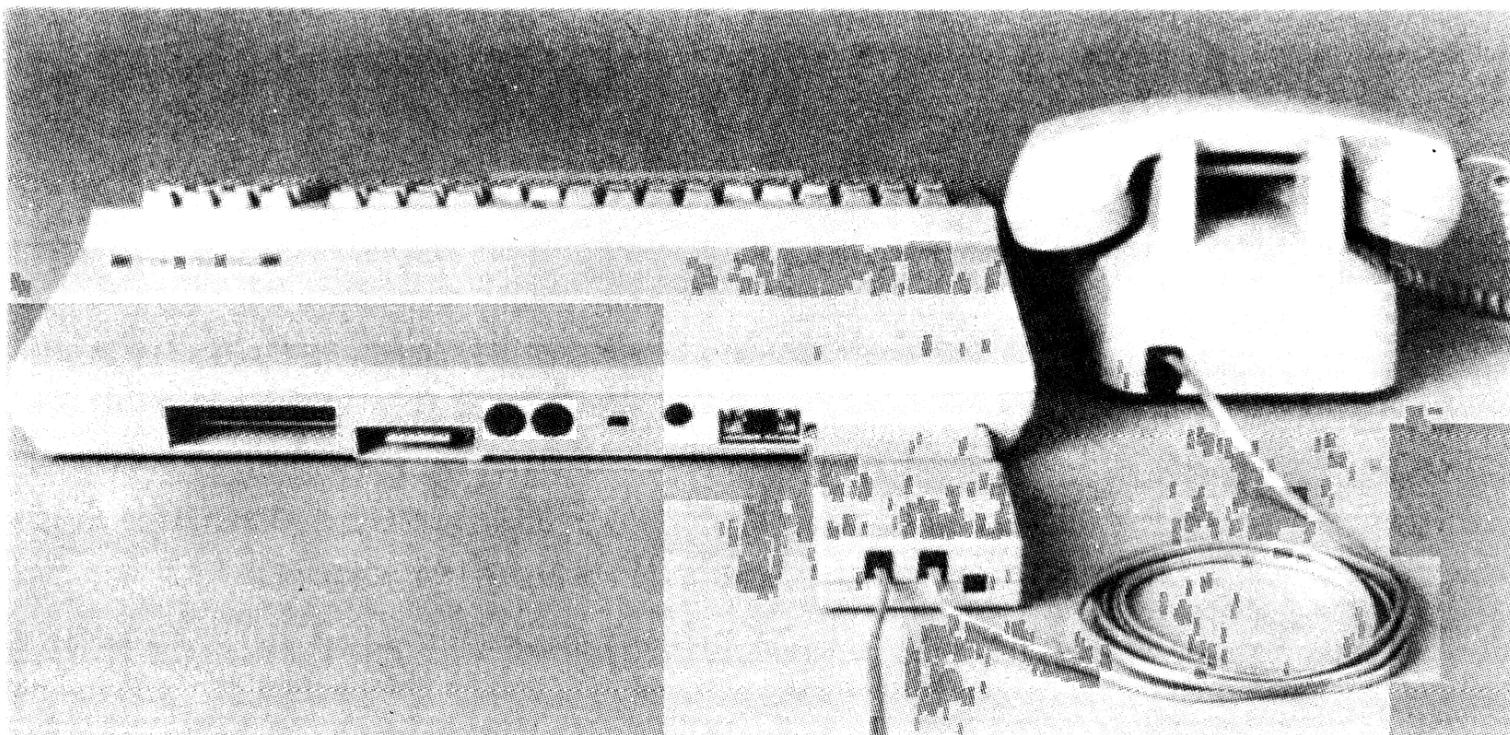


Figure 2-1: Modem connected to Commodore 128 computer and a telephone.

See Section 7, **Troubleshooting** if you have trouble connecting or using the Modem/1200.

# Section Terminal Mode

Terminal mode is the mode of operation in which telecommunication takes place. Terminal software programs, such as Common Sense, perform various functions in terminal mode—such as downloading a file from an information service or controlling the memory buffer. The specific commands that execute those functions vary from program to program. For example, some programs use a system of menus, while others use predefined function keys or command codes.

## Hayes® Commands

Some commands remain constant regardless of the terminal program in use. These are often called Hayes commands. Most are used in command mode (before actual communication is established with a remote computer). Those include commands that instruct the modem to dial or answer the phone. In addition, many terminal programs have built-in Hayes commands.

In general, the Hayes commands used with the Modem/1200 consist of a single letter, usually followed by a number (called a value). The letter represents a function, and the value represents a particular option of the function. If you don't specify a value, a pre-set (default) value is used.

All commands **must** be given in format described below:

- Type the letters **AT**.  
The **AT**tention code alerts the modem that what follows is a command, not just random characters.
- Type in the command.  
Commands are listed and described in Table 3-1.
- Press the RETURN key.  
That signals the end of the command line.

There are two exceptions to the above procedure.

- The **A/** command requires neither the **AT** nor the carriage return (RETURN key).
- The + + + command doesn't need the **AT**.

Those exceptions are also noted in the descriptions of the commands in Table 3-1.

### Table 3-1 Command Summary

**NOTE:** All commands are sent to the modem as ASCII characters (see Glossary). Also remember that, except where noted, all commands are preceded by an **AT** and followed by an ASCII carriage return (RETURN key).

Command	Function
<b>AT</b>	<i>Attention</i> ; indicates to the modem that the following characters are a command. AT must precede all commands except A/ and + + +. Up to 58 characters may be entered as a command or series of commands. Characters can be upper- or lowercase, and spaces may be inserted without affecting the command. You must use a carriage return to complete a command (except A/).
+ + +	<i>Escape</i> ; interrupts a telecommunication session by taking the modem out of terminal mode and putting it into command mode, where you can issue more commands or hang up.  It does not require the AT prefix, but it must be preceded and followed by at least one second of no data transmission.  The + + + can be changed to another symbol (see Register S2 in Table 4-2).
<b>A</b>	<i>Answer</i> ; tells the modem to answer a call without waiting for a ring, allows you to switch from voice to computer communication.
<b>A/</b>	<i>Again</i> ; repeats the previous command, generally used to redial after getting a busy signal. Requires neither AT before, nor carriage return after.

**Table 3-1, con't**

<b>Command</b>	<b>Function</b>
<b>Cn</b>	<i>Transmitter Carrier</i> ; used when more than one modem is connected to the same phone line. C1 (default) turns it ON for normal operation with one modem. CO turns it OFF for setting a RECEIVE ONLY condition of an additional device sharing the phone line.
<b>D</b>	<i>Dial</i> ; indicates to the modem that the following characters are part of a phone number. Spaces and hyphens can be used, without affecting the transmission. Commands commonly used with D include: P, T, R, comma (,) and semicolon (;).
<b>P</b>	<i>Pulse</i> ; selects pulse method for dialing phone numbers. It's the default setting for the modem.
<b>T</b>	<i>Touchtone</i> ; selects touchtone method for dialing phone numbers. After you issue the AT T command, all subsequent dialing commands will be executed in touchtone.  The modem recognizes the touchtone characters # and *.  The touchtone dialing speed can be changed (see Register S11 in Table 4-2).  You can use both pulse and touchtone dialing in the same phone number by combining the two commands. You can also mix the two within a dialing sequence.
<b>R</b>	<i>Reverse</i> ; allows you to contact "originate only" modems. Placing this command at the end of a dialing sequence puts your modem in answer mode and enables you to contact those modems programmed to transmit, but not receive calls.
<b>, (comma)</b>	<i>Pause</i> ; creates a two second pause in transmission, most often used in dialing sequences. The length of the pause can be changed (see Register S8 in Table 3-2).
<b>;</b>	<i>Return to command mode</i> ; returns you to command mode after dialing. It must be the last character in the dialing sequence.

**Table 3-1, con't**

<b>Command</b>	<b>Function</b>
<b>En</b>	<p><i>Echo</i>; used only in command mode. When ON (E1, the default), the characters you type appear on (echo to) the screen. When OFF (EO), characters don't appear on the screen, but commands are executed anyway.</p>
<b>Fn</b>	<p><i>Duplex</i>; controls the echo in terminal mode. F1 (default) indicates full duplex communication, where the local echo is turned OFF and your characters are echoed back to you from the on-line system. Use FO to turn the local echo ON if the system does not echo back characters.</p> <p>If the local echo is ON and you are transmitting to a system that echoes back, everything you type appears twice (aass iiff yyoouu"rree sseeeeeiinngg ddoouu bbllee).</p>
<b>Hn</b>	<p><i>Hook</i>; used to hang up (put ON the hook) or pick up (take OFF the hook) the phone.</p> <p>When you terminate a call with + + +, the phone lines are still open, although the link to the host computer has been broken.</p> <p>H0, or just H, hangs up the modem's connection to the phone (puts it ON the hook). H1 takes the phone OFF the hook. The default setting is 0.</p> <p>Note that you must first issue the Escape command (+ + +) before you issue the Hook command.</p>
<b>In</b>	<p><i>Inquiry</i>: requests the product code (IO) or the ROM checksum (I1). There is no default setting.</p>
<b>Mn</b>	<p><i>Monitor speaker</i>; enables you to listen in on an attempted connection or a connection in progress. M1, the default, turns the speaker on during command mode and off in terminal mode. M2 turns the speaker on all the time. MO turns the speaker off completely.</p>
<b>O</b>	<p><i>On-line</i>; returns you to terminal mode (on-line) from command mode if you have been issuing commands in the middle of a telecommunication session. You can use the Escape code (+ + +) to get out of terminal mode without terminating the session, issue commands, then type AT O to resume telecommunicating.</p>

**Table 3-1, con't**

<b>Command</b>	<b>Function</b>
<b>S</b>	<i>Set registers</i> ; sets the 14 registers that control various elements of telecommunication. Table 3-2 lists the registers and their functions.
<b>Sr?</b>	<i>Query register</i> ; Tells you the current value of register r.
<b>Xn</b>	<p><i>Result codes</i>; status reports that are displayed on the screen in numeric or verbal (words) form (see the V command). You can prevent the codes from being displayed (see the Q command).</p> <p>There are 10 codes, divided into three overlapping groups. X0 selects codes 0 through 4, X1 selects 0 through 5, and X2 selects the full set of codes. The following table lists and describes the codes.</p>

<b>Result Code Number</b>	<b>Result Code</b>	<b>Meaning</b>
0	OK	Command being executed.
1	CONNECT	Going on-line.
2	RING	Incoming call (enters answer mode).
3	NO CARRIER	You're disconnected.
4	ERROR	Invalid command.
5	CONNECT 1200	On-line at 1200 baud.
6	NO DIAL TONE	Returns to command mode.
7	BUSY	The host is busy.
11	RINGING	The host is not busy.
12	VOICE	A person, not a modem, answered.

<b>Qn</b>	<p><i>Quiet</i>; decides whether or not result codes are displayed on the screen. Result codes (see the X command described later in this table) are status reports that are ordinarily displayed during telecommunication.</p> <p>Q0, the default, displays the codes. Q1 suppresses them.</p>
-----------	---

**Table 3-1, con't**

<b>Command</b>	<b>Function</b>
<b>Vn</b>	<i>Verbal</i> ; determines whether result codes are displayed as words (V1, the default) or code numbers (VO).
<b>Z</b>	<i>Zap</i> ; resets modem to all default settings. Has the same effect as unplugging, then plugging it in again.  Can be used to initiate new dip switch settings.

## Sample Session

Since many terminal programs handle some modem commands internally, you may only have to use a handful of commands to successfully telecommunicate. Here is a sample of a telecommunications session:

Let's say you are going to the shore for the weekend, and want to get the weather report from the information service you subscribe to.

Type: **AT X1** Turns on the result code set that allows you to see if the connection has been made at 300 or 1200 baud.

Type: **ATDT xxx-xxxx** AT D puts the modem in Dial mode. T indicates touchtone dialing, and xxx-xxxx represents the local access number for your information service.

Place a comma in the number to transmit a 2-second pause. This is often necessary when dialing from a PBX line (a private phone system, often within a large company.)

You will hear a clicking sound, the monitor speaker function. Then the remote phone will ring.

If the call is successful, CONNECT 1200 appears when a connection is made at 1200 baud. NO CARRIER appears if a connection is not made.

If connection is not successful,

Type: **A/** Re-executes the previous command. It does not require the AT prefix.

Once you receive a CONNECT response, you can begin to navigate the information service. These are all different, but when you subscribe to a service you are provided with enough information to get you started.

When you are ready to complete your telecommunications session,

Type: **+ + +** Terminates the telecommunications session.

Type: **AT H** Hangs up the phone.

If you want to issue a command while you are still on-line,

Type: **AT ;** Returns you to command mode but does not terminate the session.

Type: **AT O** Returns to terminal mode and resumes the telecommunications session.

## Setting Registers

There are 14 registers, most of which deal with timing, that alter aspects of the modem's memory to tailor the modem's performance to your needs. All the commands use the same structure:

**AT Sr = n** Where r is the number of the register and n is the new value.

Table 3-2 lists the 14 register settings and describes their functions.

**Table 3-2**  
**Register Settings**

<b>Register</b>	<b>Default</b>	<b>Function</b>
S0	DIP Switch 1	Sets the number of rings before automatic answering.
S1	0	Counts and stores the number of rings from an incoming call.

**Table 3-2**  
**Register Settings (cont.)**

Register	Default	Function
S2	43	Redefines the ASCII code for the escape code character.
S3	13	Redefines the ASCII code for Carriage Return.
S4	10	Redefines the ASCII code for Line Feed.
S5	8	Redefines the ASCII code for Backspace.  <b>NOTE:</b> When you use a backspace to delete a character from a command, the character remains on the screen but will not be transmitted.
S6	2	Sets the number of seconds the modem waits for a dial tone before dialing.  2 is the lowest value possible. S6 defaults to 2 if a value less than 2 is input.
S7	30	Sets the number of seconds the modem waits for a carrier. May be set for much longer duration if, for example, the modem is originating an international connection.
S8	2	Sets the duration, in seconds, for the pause (,) option in the Dial command and the pause between command reexecutions for the Repeat command.
S10	7	Sets the duration, in tenths of a second, that the modem waits after loss of carrier before hanging up.
S11	70	Defines duration and spacing, in milliseconds, of Touch-Tones. 50 is the minimum value for this register. S11 resets to 50 if a value less than 50 is input.
S12	50	Defines guard time, in 50ths of a second, for escape code sequence.
S16	0	Modem self-test: 0 Data mode (no testing) 1 Analog loopback

# Section 4 Using the Common Sense Terminal Program

Common Sense is a general purpose terminal program for your Modem/1200. The program operates with a Commodore 64 computer, or a Commodore 128 computer in 64 mode. The program can be used with serial printers and one or two disk drives (or a dual drive) in addition to the necessary modem and monitor or TV.

You can use Common Sense to communicate with an information service, a mainframe in your school or office, or another personal computer. You **must** use the Hayes commands described in Section 3 to dial phone numbers, as Common Sense cannot dial the Modem/1200.

Common Sense has many sophisticated features. Descriptions and instructions for using these features are contained in the Guided Tour in this chapter, and summarized in a reference chart at the end of the section. Here is a preview of the various options available to you:

- Alpha shift lock
- Automodem commands
- Buffer control
- Control codes
- Conversions
- Extract/review
- Disk commands
- File transfers
- Upload control
- Printer control
- Screen search
- Split screen
- Scrolling
- Bell
- Modem control
- Function keys
- Screen print
- Translation control
- Colors
- Linefeeds
- XMODEM
- "B" protocol
- Clock
- Screen search
- Screen Editor

\* If you have never used a terminal program before, work through the Guided Tour step by step. It covers all the major features of the Common Sense program.

\* If you are familiar with telecommunications programs, you may choose to go directly to the reference pages at the end of this section.

## Keyboard Entry

The following conventions are followed in representing keystrokes within this section:

**PRESS:** Press and release the keys following the colon.

Keys such as **CTRL** and **RETURN** are enclosed in parentheses to distinguish them from single characters.

Do not use the **(SHIFT)** unless it is specified.

The Commodore key **⌘** and the Control keys **(CTRL)** are used like **(SHIFT)**.

**TYPE:** Type the desired multiple characters after the colon. Use **(DEL)** to correct errors before you press **(RETURN)**.

In some cases, **TYPE:** may be followed by a specific format for your input.

**<f1> to <f8>:** Means to press one of the function keys. To access the even-numbered function keys, press **(SHIFT)** and the desired function key.

**SCROLL:** Means use a combination of **⌘** and the functions keys to scroll the screen. Press and hold **⌘** then press the desired function key.

## Special Characters Available

Left brace {	<b>PRESS: (SHIFT) +</b>
Right brace }	<b>PRESS: (SHIFT) -</b>
ESCape	<b>PRESS: (CTRL):</b>
Control characters	<b>PRESS: (CTRL) &lt;Character&gt;</b>
Alternative Control-S	<b>PRESS: (CLR HOME)</b>
Alternative Control-Q	<b>PRESS: (Cursor down)</b>
Alternative Control-C	<b>PRESS: (/RUNSTOP)</b>
Remote bell (transmitted)	<b>PRESS: (CTRL) G</b>
Underline	<b>PRESS: ←</b>
Backslash	<b>PRESS: £</b>

## LOADING THE PROGRAM

**NOTE:** Before you use Common Sense, we suggest you copy the Common Sense program onto a separate disk. This will provide you with additional disk space for your own text and program files, and prevent damage to the special QuantumLink software included on your program disk.

1. To load Common Sense insert the program disk into the drive (device 8, Drive 0 if dual drive\*)
2. TYPE: **LOAD "BOOT",8**
3. When the computer responds with **READY**  
TYPE: **RUN**
4. Common Sense is ready for use when the 24 hour clock is running in the lower right hand corner of the screen.

## Customizing Common Sense

Certain features of Common Sense can be customized. The parameters that can be adjusted are:

<b>Feature</b>	<b>Default</b>
Screen colors	Load program as given to view default.
Printer settings	PET, device 4, secondary address 7
Disk device number	8
Clear screen (buffer)	Clear
Modem type	1670
Delete character	ASCII 8 (backspace)

If any of these default values are not appropriate for your system, see Appendix B. It explains how to alter the BOOT program to your taste, and save it on a program disk as MODBOOT for future use.

We suggest that you do not alter the original program disk. Use a back-up copy of the program disk instead (see the **NOTE** at the beginning of the load instructions.)

\*If you have a dual drive and/or multiple single drives please refer to "Setting Up Multiple Drives" on page 45 of this manual.

## GUIDED TOUR

This guided tour is provided to demonstrate the major functions of Common Sense. Follow the instructions carefully and compare your display to the description in the manual. Once you are familiar with Common Sense, you should be able to use the program successfully by referring to the summary of commands in the reference pages at the end of the section.

Begin by loading the program, if you have not already done so.

TYPE: **LOAD"BOOT",8**

When the computer responds with **READY**

TYPE: **RUN**

The title screen displays while the program is loading. Then the title screen is replaced by the main program screen. This screen contains a 23-line viewing area and a 2-line status area.

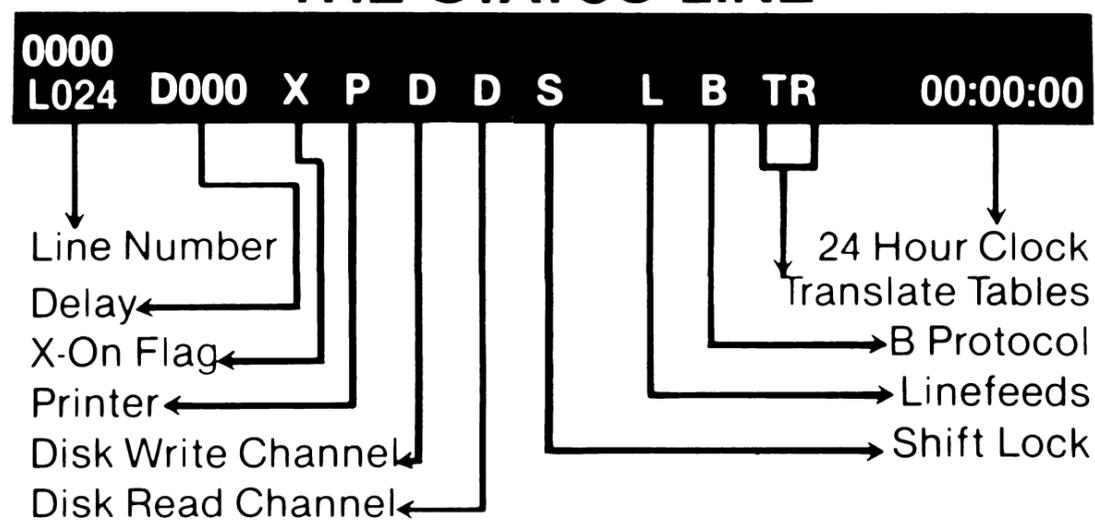
PRESS: **(F1)** to view the help screen.

### The Status Lines

The status lines provide information about the telecommunications process currently in effect. Some of the information is permanently displayed on the lower status line, and some information is represented by toggle indicators. A toggle is a condition that alternates between "ON" and "OFF". Various prompts may also appear in the status line area when the program requires more information. Further input is needed to define an operation on the lower status line.

Figure 4-1 shows what the lower status line looks like, and what each indicator stands for. At start-up the status line does not contain all the indicators shown in Figure 4-1.

FIGURE 4-1  
THE STATUS LINE

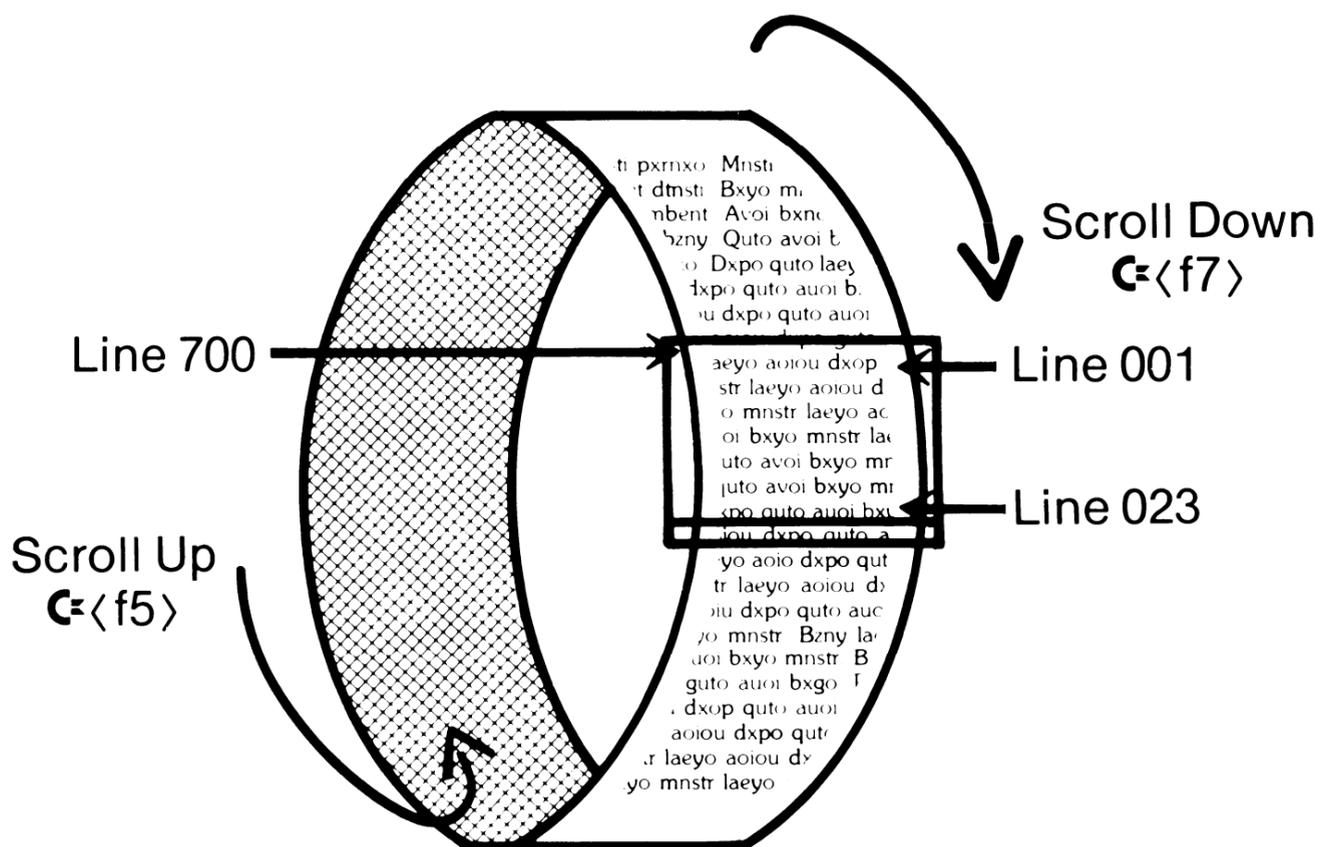


**Line Number**

Records the current location of the cursor (the little box that shows where the next character you type will appear)

There are 700 lines in the main program screen, in a formation called a virtual screen. See Figure 4-2. You can view any part of the screen by scrolling, or moving sections of the screen around, until the area you want comes into view.

**FIGURE 4-2  
VIRTUAL SCREEN SCROLLING**



To see how screen scrolling works, first PRESS: **(F1)** to bring the help screen into view.

PRESS: **C<f1>** to scroll the screen UP one line

PRESS: **C<f3>** to scroll the screen DOWN one line

PRESS: **C<f5>** to scroll the screen UP one page

PRESS: **C<f7>** to scroll the screen DOWN one page

**Delay Factors**

tell you:

1) The delay time between transmitted characters in thousandths of a second (milliseconds).

2) The delay time after carriage return in seconds.

You can change these delay factors for computers that can't process information as fast as Common Sense can send it.

To change (1) above:

PRESS: **C-D**                    **ENTER DELAY** appears on the upper status line.

TYPE: **5 (RETURN)**    Notice that the D002 on the status line has been replaced by D005.

To change (2) above:

PRESS: **C-U**                    to toggle between character delay and carriage return delay. Notice The D in the status line is replaced by a checkmark (✓).

PRESS: **C-D**                    **ENTER DELAY** appears on the upper status line.

TYPE: **2 (RETURN)**    Notice the ✓005 has been changed to ✓002.

In summary, **C-U** toggles between character delay (**D** on status line) and carriage return delay (✓ on status line). **C-D** is used to change the delay factor.

Before continuing the Guided Tour, reset the delay factor to D002.

### **B Protocol Inhibit**

Indicates whether B Protocol Inhibit is enabled or inhibited. A **B** on the status line indicates B Protocol Inhibit is in effect, and a B Protocol transfer is impossible.

PRESS: **C-I**                    to toggle the B Protocol Inhibit; in this case to enable a B protocol transfer. PRESS: **C-I** again to inhibit B protocol.

### **Translation Indicators**

These toggles control how the programs treats information going to and from the modem.

When the transmit toggle is on (**T** on the status line), all data being sent to the modem is translated from PET ASCII to industry-standard ASCII.

PRESS: **C-E**                    to toggle the transmit translator

When the receive toggle is on (**R** on the status line), all data received by the modem is translated from from industry-standard ASCII to PET ASCII.

PRESS: **(SHIFT)£** to toggle the receive translator.

Before continuing with the Guided Tour, toggle both translators ON.

### **Real-Time Clock**

The digits on the right hand side of the status line represent the clock. It uses 24 hour time to avoid confusion between AM and PM.

PRESS: **¢T** to set the clock. Notice the cursor is now highlighting the first digit in the time.

TYPE: **<hh><mm>** where hh represents two digits for the hours and mm represents minutes. You cannot set the seconds.

Once you type the minutes the cursor returns to its normal location.

### **X-On/X-Off**

X-On temporarily inhibits transmission, X-Off resumes it.

PRESS: **(HOME)** to inhibit transmission. An **@** appears on the status line.

PRESS: **(Cursor down)** to resume transmission.

Note that **(CTRL)S** can be used in place of **(HOME)** and **(CTRL)Q** can be used in place of **(Cursor Down)**.

Note that X-On will activate automatically for various functions between your computer and the remote computer. Check for an **@** on the status line whenever your keyboard does not seem to work. See page 44 on using CHANGE.MTS for disabling these signals in the translate tables.

### **Disk/Printer Status**

Disk and printer functions are accomplished by toggling the device on and choosing the appropriate function.

To view the Disk functions:

PRESS: **C-O** To open the drive I/O channel. A list of options appears on the upper status line:

1 = WO	OPEN Disk Write Channel	(Write Open)
2 = WS	SUSPEND Disk Write	(Write Suspend)
3 = WC	CLOSE Disk Write	(Write Close)
4 = RO	OPEN Disk Read Channel	(Read Open)
5 = RS	SUSPEND Disk Read	(Read Suspend)
6 = RC	CLOSE Disk Read Channel	(Read Close)

To Select any function, type the number.

PRESS: **(RUN/STOP)** to abort

Note the Open commands activate the I/O channel for the device specified as well as actually opening the device. The Suspend commands for the disk files leave the channel open, but toggle actual data transfer on and off. This toggle action means that you can control data reading and writing without having to constantly open and close the device.

To use the printer:

PRESS: **C-P** to toggle the printer on.  
A **P** will appear on the status line when the printer is active.

PRESS: **C-P** again to toggle the printer off.

**C-P** is used to log a terminal session to the printer. Everything that is typed on the screen will be printed by the printer when **C-P** is toggled on.

Note that the printer function makes use of a 255 character buffer. The printer does not print each character as it is received, but rather stores or “buffers” them until 255 characters have been received. When the buffer is full, the entire 255 characters is printed.

At the end of a session the buffer may be partially full. Toggle the printer off to complete the printing.

Since your printer may be quite slow, and on-line time quite expensive, Common Sense contains an alternative to **C-P**. See the Printer Functions section on using **C-B** to mark a section of the 700-line virtual screen for printing.

**Alpha Shift/Lock** Makes all letters appear in upper case without using **(SHIFT)** or **(SHIFT LOCK)**. An **S** appears in the status line when this feature is toggled on.

PRESS: **C<Up arrow>** to toggle Alpha shift lock.

Try typing a few words to check that they appear in uppercase before continuing with the Guided Tour.

**Linefeed Mode** Sends a separate linefeed character to the remote computer every time you press **(RETURN)**. An **L** appears on the status line when linefeed mode is toggled on.

This feature is only necessary for telecommunications devices that require a separate linefeed command, such as teletypes.

PRESS: **C<L** to toggle linefeed mode on.

Toggle linefeed mode **off** before continuing with the Guided Tour.

## Modem Setting

Each telecommunications systems requires certain parameters for successful operation. These parameters determine how and at what speed communication takes place. Before you attempt to contact another computer you should determine what protocol (set of parameters) is necessary. The parameters programmed into Common Sense are:

Baud Rate	1200
Number of Stop Bits	1
Word Length	8
Parity	None
Duplex	Full

All these parameters can be set to other values with **C<M**

PRESS: **C<M** A line of digits and words appears on the upper status line:

<b>1200:F:1S:8W:N:3</b>	<b>baud rate</b>	<b>BRF = 0000</b>
Current Settings	Setting to Change	Baud Rate Factor

The parameter available for change appears in in the middle of the line. It should say **baud rate**.

**PRESS: (Cursor Down)** to cycle through the available choices.

Stop at the 1200 baud setting.

The baud rate factor on the right of the upper status line can be adjusted with the + and – keys if your system needs a slightly higher or lower baud rate factor than 325.

**PRESS: (Cursor Right)** to cycle through the available parameters. Each parameter corresponds to one of the codes at the left.

Stop when the word in the center is **duplex**.

**PRESS: (Cursor Down)** to toggle between **F** for Full and **H** for Half.

Stop at **F**.

## Dialing

With baud rate and duplex set, you are ready to begin dialing. Complete dialing instructions are contained in Chapter 3, but here is a brief description.

- 1) **PRESS: ATDT 5551212<RETURN>** Substitute the phone number you wish to dial.  
You should hear the modem dialing with touch tones.  
**PRESS: <RETURN>** if you wish to abort dialing.

- 2) When carrier is detected, the modem will respond with **CONNECT**.

**PRESS: <RETURN>** and proceed to log in.

To hang up, **PRESS: <wait> + + + <wait> AT H <RETURN>** where <wait> is a one-second pause.

## Function Keys

Common Sense has the ability to store 16 function key definitions. These keys are **C=1** through **C=8** and **(F1)** through **(F8)**. Each key can be programmed to represent a dialing command, your user I.D., a password, or any sequence up to 80 keystrokes.

You have already used the default definition of **(F1)** to view a help screen. **(F1)** is defined to load a file from disk.

**PRESS: C=K then PRESS: D** to toggle the function key feature and display the current definitions.

**PRESS: C=K then PRESS: (F3)** A cursor appears to indicate Common Sense is ready to accept a new definition.

**TYPE: ATDT555-1212 (RETURN)(SHIFT)@**

The return is signified by a checkmark, and **(SHIFT)@** ends the function key definition.

Use this same method—toggle the feature, press the appropriate function key, type the new definition ended with **(SHIFT)@**—to define **(F5)** and **(F7)**:

**(F5) 76703,2047 (RETURN) (SHIFT)@**

insert your user I.D.

**(F7) (CTRL)0 Commodore (RETURN) (SHIFT)@**

insert your password. **(CTRL)0** ensures function key security; it prevents you or anyone else from looking at your password when the definitions are displayed.

**PRESS: C=K then PRESS: D** to display your new function key definitions.

PRESS: **⌘K** then PRESS: **S** to save the new function key definitions. Enter the new filename at the prompt.

There are several other function key features:

**Auto-boot definitions.** Common Sense contains a file that automatically loads function key definitions at start-up. The filename is “**mac.boot**”. To save your function key definitions to **mac.boot**, use the **⌘W** command to enter the disk wedge, then scratch the existing **mac.boot** file. Then use **⌘K** and **S** to save your definitions into **mac.boot**.

Another feature of the **mac.boot** file is that **⌘1** key definition is automatically executed when booted. This can be handy for customizing Common Sense to your needs.

PRESS: **⌘K** then PRESS: **D** Notice key **⌘1**. This preprogrammed function key sets the baud rate to 1200 and displays the title screen file from disk. Let's examine the definition:

MqqcFintro.scr

The M character stands for **⌘M**. qq represents cursor down twice and c means RUN/STOP. This is the keystroke combination necessary to change the baud rate from 300 (the default) to 1200. The F character stands for **⌘F**, which is the “Show disk file” command. “intro.scr” is the name of the file to load, and stands for (RETURN).

When defining any function key, press the desired keys and the appropriate character will display in the definition.

Almost any of the **⌘** control functions can be put into a function key definition, including the screen scrolling functions.

## Screen Control Functions

You can set any of five different screen areas to the colors most attractive to you.

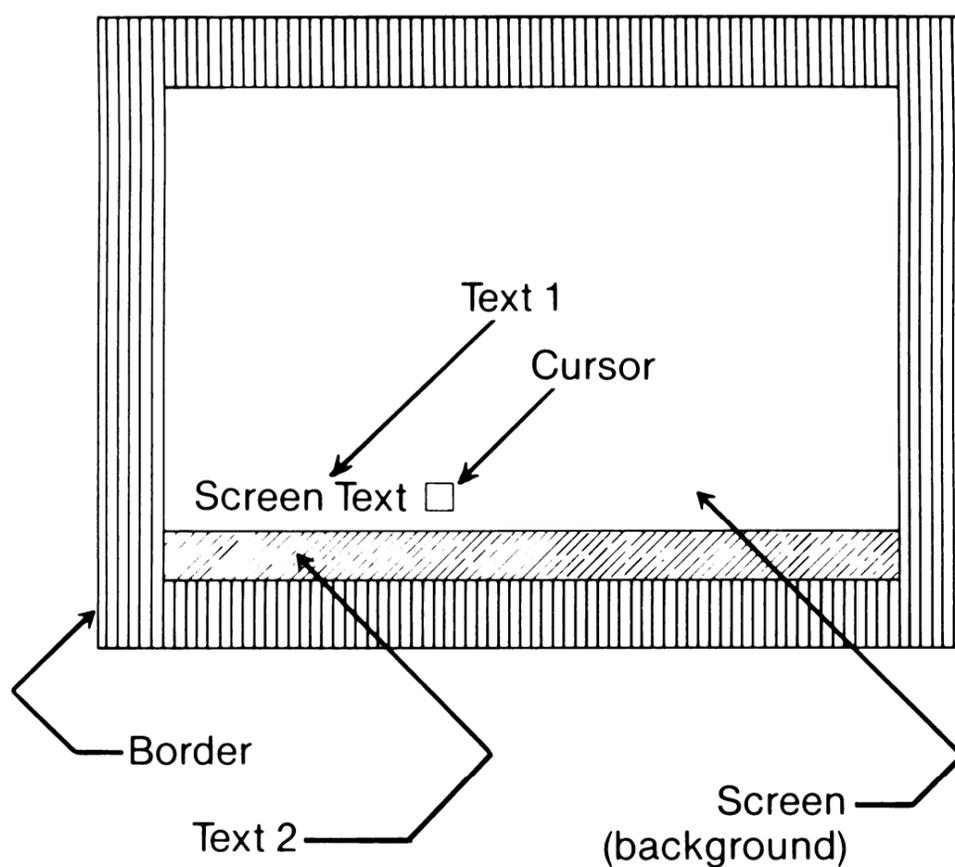
PRESS: **C=C** to toggle screen control. The following appears on the prompt line:  
text1,text2,border,screen,cursor.

PRESS: **<1,2,B,S,or C>** to cycle through the available colors for that screen area. When one area is the color you want, press another underlined character.

When all the colors are set to your liking, PRESS: **(RETURN)**. Notice that the program will prevent you from setting the screen and text colors to the same color.

FIGURE 4-3

### SCREEN COLORS



#### Colors:

Black	Orange
White	Brown
Red	Light Red
Cyan	Dark Gray
Magenta	Medium Gray
Green	Light Green
Blue	Light Blue
Yellow	Light Gray

NOTE: The program will prevent you from setting any combination of colors that would hide data. (Like white text on a white background.)

If you are not online and you wish to continue with this Guided Tour, set the duplex for Half with the **C-M** function.

## Keyboard Functions

Common Sense uses the standard ASCII symbols rather than the Commodore symbols when displaying information. Other keys are also redefined.

PRESS: **(Back Arrow)**      An underscore appears on the screen.

PRESS: **(Up Arrow)**      A caret (^) appears on the screen.

Another useful feature is the buffer search. Common Sense can search through the material in the buffer to find data that you specify.

PRESS: **C-R**      to reposition the screen to the beginning of the buffer.

PRESS: **C-G**      The **SEARCH:** prompt appears.

TYPE: **SEARCH)**      The screen scrolls until the word SEARCH is found. A bell sounds to alert you.

PRESS: **(SPACEBAR)**      The search continues. Since no further occurrences are found, the search will scan to, and stop at, line 1 of the buffer.

PRESS: **(RUN/STOP)** or PRESS: **(RETURN)**  
to quit the search process.

## Split Screen Typing

Split screen typing is using during conferencing or other conversational situations. You can send an entire line of information at a time, so your typing is not interspersed with received characters.

PRESS: **C-J**      to enter split screen mode. Notice the status lines have disappeared, and an underline cursor appears beneath the normal box cursor.

TYPE: **The quick brown fox jumps over the lazy dog**

Your typing appears on the bottom two lines in the same color as the underline cursor. None of the characters have been sent to the modem yet.

**PRESS: (RETURN)** The entire line of text is sent to the modem, and because we are in half duplex, is displayed in the upper area.

**PRESS: (RUN/STOP)** to exit split-screen mode.

## Screen Editor

Up til now, all our work has been accomplished from screen 1. Screen editing commands are available on program screen 2. Before beginning this section, move to a portion of the screen where text is visible.

**PRESS: C-V** to switch to screen 2. Note the different appearance.

**PRESS: C-5 and C-7** to scroll information from screen 1 to screen 2.

**PRESS: C-E** to enter editor mode. Note that checkmarks appear wherever there are carriage returns.

Now try the editing functions:

Scroll to any line you want to delete.

**PRESS: (CTRL)D** to delete that line.

**PRESS: (CTRL)I** to insert a blank line. Notice there is no checkmark on the line.

**PRESS: RETURN** to insert the carriage return indicator.

**PRESS: C-X** save the changes from screen 2 to screen 1. If you scroll up and down in screen 1 you will see that both the original and the edited version are there.

If you make editing changes you decide not to keep you can abort the process by pressing **(RUN/STOP)** in screen 2. Using the editing functions you can build up larger texts than screen 2 can hold, and also edit large texts residing on screen 1.

## Printer Functions

Make sure your printer is turned on before proceeding. There are a number of printer functions:

1) Send a disk file to the printer: **PRESS: C-Y**

The prompt line shows: **ENTER FILE NAME:0:comsen.hlp**

You can print the file listed by pressing (RETURN), or type a different filename. For now, press (RETURN) and **comsen.hlp** is directed to the printer.

2) Print information visible on screen: PRESS: **C-S**

The contents of the screen visible at that moment are directed to the printer.

3) Print a larger area of the screen buffer: PRESS: **C-B**

The prompt line says:

PRESS: **P** selects the printer. The prompt line says  
**SCROLL TO FIRST LINE**

Now you must define the range of lines you want to print. Use the scroll keys to move to the first line you want to print.

PRESS: **(RETURN)** to set the first line. The prompt line says  
**SCROLL TO LAST LINE**

Use the scroll keys to move to the last line you want to print.

PRESS: **(RETURN)** to set the last line. Printing of the marked area begins immediately. When printing is complete, the prompt line asks **CONTINUE?**.

PRESS: **N** to quit the buffer print.

4) Use the bookmark **C-B** to define a range.

You can set a “bookmark” to define the beginning of a section you want to print, then later print **from** the bookmark **to** the current cursor location.

Move the cursor to the beginning of the range you want to print.

PRESS: **C-H** **SET OR FIND** appears on the prompt line.

PRESS: **S** to set a bookmark at that point. Scroll down to where you want printing to end.

PRESS: **C-B** to toggle the output function.

PRESS: **P** to choose the printer as the output device.

PRESS: **B** to print from bookmark to current cursor location.

PRESS: **N** to quit the buffer dump when printing is complete.

The **C=O** functions, though primarily designed for modem communications, can be used to move information around in your system. This capability is useful for translating files to/from PET ASCII and standard ASCII, since the data will pass through the translation tables associate with the modem.

For example, let's read a disk file, send it to the modem, then print the data which is returned to the screen. Be sure you are in half duplex.

PRESS: **C=P**                   to open the printer  
PRESS: **C=O**                   to open the drive I/O  
PRESS: **4**                     to open the disk read channel  
TYPE: **intro.scr**

The disk file is read and sent to the modem. The information sent to the modem is redirected back to the screen and printer. Note that the disk file channel is automatically closed when end-of-file is reached, but the printer channel is still open, and will remain open until you close it with **C=P**.

This time we'll convert the information to standard ASCII at the same time.

PRESS: **C=**                   to turn off the Transmit Translate  
PRESS: **C=O**                   to open the drive I/O  
PRESS: **4**                     to open the disk read channel  
TYPE: **intro.scr**

Look at the data being received and printed; it is in standard ASCII. •  
Wait until the disk channel is closed, then PRESS: **C=O** and then **8** to close the printer channel.

## Disk Functions

Common Sense contains a File Copy (Disk) Utility, and also supports most of the Disk Wedge commands listed in the 1541 and 1571 Disk Drive User's manuals.

**File Copy Utility**   copies sequential disk files, with or without translation. Useful for converting ASCII files to PET ASCII files.

The read and write channels are governed by the Set Channel command in the disk wedge.

Set the Transmit and Receive translation toggles as indicated in the table of translation control in the Reference Section for the appropriate control.

**PRESS: (CTRL)5** You will be prompted for the **write** file name first.

**TYPE: <filename>** This is the name of the file you want to create.  
Next you will be asked for the **read** file name.

**TYPE: <filename>** This is the name of the file you are copying.

When using this facility for copying program files, be certain to:

- 1) Turn OFF both translate toggles before starting
- 2) Append **,p,w** to the write file name and **,p,r** to the read file name.

### **Disk Wedge Commands**

The Disk Wedge provides you with direct control of your disk drives. All valid disk commands can be performed, except Load and Save. The format of the commands is the same as that used with Commodore's DOS 5.1 Wedge, and are equivalent to the text following print# commands listed in the 1541 and 1571 Disk Drive User Manual (without the quotation marks).

**PRESS: C-W** to enter the Disk Wedge.

Any of the following commands can be used.

**PRESS: (RUN/STOP)** to exit the Disk Wedge.

**COPY:** create a duplicate copy of a disk file.

**format: c <drive #>:<new filename> = <drive#>:<old filename>**

Example: make a copy of a file called "tic-tac-toe" on drive 0, naming the new file "t-t-t."

**c0:t-t-t = :tic-tac-toe**

**DIRECTORY:** list the contents of the disk directory.

**format: \$<drive#>[:<optional filename>]**

Example: list the contents of drive 0.

**\$0**

**DUPLICATE:** create a duplicate (backup) of an entire disk.  
Requires a dual drive unit.

**format: d<destination drive#> = <source drive#>**

Example: backup the disk in drive 1—new disk in drive 0.

**d0 = 1**

**Note:** put a write-protect tab on the source disk to prevent accidental erasure. The destination disk is first reformatted so that any data on it is lost.

**INITIALIZE:** force the disk unit to read the directory header on the disk.

**format:** **i**<drive#>

Example: initialize drive 0.

**i0**

**NEW:** format a new disk, or reformat an old disk. This destroys the contents of the disk, effectively wiping it clean.

**format:** **n**<drive#>:<disk name>,<id>

Example: format a disk with the name “my disk” and an id of “01”

**n0:my disk,01**

**RENAME:** change the name of a file

**format:** **r**<drive#>:<new name> = <old name>

Example: change file “abc” on drive 1 to “def”

**r1:def = abc**

**RESET:** return disk unit to power-up status.

**format:** **uj** (4040s, MSDs, new 1541s, 1571s)  
**U;** (old 1541s)

**SCRATCH:** erase (delete) a file from the disk directory.

**format:** **s**<drive#>:<filename>[,<drive#>:<filename>...]

Example: delete 3 files from drive 1 called “abc,” “def,” and “ghi.”

**s1:abc,1:def,1:ghi**

**VALIDATE:** check the allocated blocks on a disk. Use this command to recover space from an improperly closed file (indicated by an asterisk (\*) next to the file type when you list a directory).

**format:** **v**<drive#>

Example: validate the disk in drive 0.

**v0**

**SET READ OR WRITE CHANNEL:** set the device and drive number used by the program.

**format:** /<direction><device# minus 8><drive#>

Example: set read channel to device 8, drive 0

**/r00**

Example: set write channel to device 10, drive 1

**/w21**

**Note:** (RETURN) is not required with the SET command. Do the command over again if you make a typing error.

## File Transfer Protocols

File transfer protocols are used to transfer file of information from one computer to another under control of a predetermined, formal communications sequence (protocol). Protocols are designed to ensure that the information is transferred without error. Common Sense includes two such protocols, CompuServe “B” and XMODEM.

**CompuServe “B” Protocol** is a proprietary file transfer protocol of CompuServe, Inc., used to send and receive files between your Commodore computer and CompuServe.

Once you enable “B” protocol (toggled using **C-I**) the process is automatic; the two computers will handle all communications without your intervention.

Note that the B protocol inhibit on the bottom status line must be off—the B must be showing for the process to work.

If the transfer is aborted for any reason, Common Sense will automatically turn on the Inhibit; you must turn it off again yourself.

## **XMODEM**

is a file transfer protocol used between many different kinds of computers, and is a semi-automatic process. When communicating with host computers, such as bulletin board services or mainframe services, the host will normally tell you when you should begin XMODEM protocol.

When talking with other personal computer users, you should first agree to begin the process before doing so.

**PRESS: C-X** to begin XMODEM, and answer the prompt line **SEND OR RECEIVE** by typing **S** or **R**.

**PRESS: (RUN/STOP)** to abort the process.

Translation control is active during XMODEM sequential file transfers. The normal situation is that the Transmit and Receive toggles are on. Use these settings when transferring sequential (text) files to non-Commodore computers. Turn off Transmit Translate when uploading (sending) to a Commodore system; turn off Receive Translate when downloading (receiving) from a Commodore system.

## **Other Functions**

Common Sense has several commands listed in the command reference that are not discussed in the Guided Tour. These functions are self-explanatory, and are mostly aids to streamline your telecommunications rather than functions necessary to the operation of Common Sense.

# REFERENCE

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⌘<f5>	Scroll up one page	42	(SHIFT)£	Receive	
⌘<f7>	Scroll down one page	42		Translate	43

## Command Reference

Keys	Name	Purpose
<b>C-B</b>	<b>Screen 1 Data Dump</b>	Transfer text from the virtual screen to Disk, Printer or Modem. (Buffer Dump)
	<b>Functions:</b>	<p>D—Dump range of data to Disk File  ENTER: &lt;filename&gt;  [See: SET RANGE below]</p> <p>P—Dump range of data to Printer  [See: SET RANGE below]</p> <p>M—Dump range of data to Modem (Upload text)  [See: SET RANGE below]</p> <p><b>SET RANGE:</b> (B selects bookmark position)</p> <p>&lt;SCROLL&gt; (RETURN) or PRESS: B Set top of range  &lt;SCROLL&gt; (RETURN) or PRESS: B Set bottom of range and begin dump.</p> <p>(RUNSTOP) Abort dump  &lt;Y&gt;&lt;N&gt; Continue with new range?</p>
<b>C-C</b>	<b>Color Control</b>	Set Text, Screen, Border and Cursor Colors
	<b>Functions:</b>	<p>1—Set Screen 1 text color  2—Set Screen 2 text color  S—Set background color screens 1 &amp; 2  B—Set border color  C—Set cursor color  (RUNSTOP)—Leave function  (RETURN)—Leave function</p>
<b>C-D</b>	<b>Set Delay Factor</b>	Set inter-character delay from zero to 255 milliseconds and/or delay after carriage return from zero to 255 seconds. Should only be used to slow down uploads from disk or screen 1 (buffer) when remote host is unable to handle full speed transfer.
	<b>Functions:</b>	<p>ENTER: # # #</p> <p>Will set delay factor for currently active (displayed) delay function. If 'D' then inter-character delay set. If '↵' then delay after carriage return is set.</p> <p>SEE ALSO: <b>C-U</b></p>

<b>Keys</b>	<b>Name</b>	<b>Purpose</b>
<b>C-E</b>	<b>Edit Mode</b>	Provides a screen editor for editing screen 1 text as well as composing textual data for uploading from screen 1 or disk file.
	<b>Functions:</b>	(RUNSTOP)—Abort editor (CTRL) D—Delete line (CTRL) I—Insert line (CTRL) X—Transfer edit to screen 1 (CRSR) (up)—Move cursor up 1 line (CRSR) (down)—Move cursor down 1 line (CRSR) (right)—Move cursor right 1 space (CRSR) (left)—Move cursor left 1 space (CLR/HOME)—Move cursor to HOME position (SHIFT) (CLR/HOME)—Clear screen (INST/DEL)—Delete 1 character (SHIFT) (INST/DEL)—Insert 1 space (RETURN)—Place checkmark and go to next line [macro keys]—Active during edit. Only the above-listed functions are valid. After a (CTRL)X other commands may be included in the macro key
<b>C-F</b>	<b>Show Disk File</b>	Transfer text file on disk to Screen
	<b>Functions:</b>	ENTER: <filename>—Name of file to show on screen. (RUNSTOP)—Abort function.
<b>C-G</b>	<b>Search Screen 1</b>	Search for occurrences of user specified string on virtual screen (Buffer search).
	<b>Functions:</b>	ENTER: <string>—Text to search for (RUNSTOP)—Abort data entry or search. (SPACEBAR)—Find next occurrence of string or continue search if stop at Line 001.
<b>C-H</b>	<b>Hold Place Screen 1</b>	Save current virtual screen line position to memory or reset to last position saved. This is the 'bookmark' command that will allow you to instantly recall a memorized position within the 700 line virtual screen (buffer)
	<b>Functions:</b>	S—Set the current line as the memory point. F—Find the memorized line. (RUNSTOP)—Abort the function.

<b>Keys</b>	<b>Name</b>	<b>Purpose</b>
<b>C=I</b>	<b>Inhibit B Protocol</b>	Inhibit or allow B Protocol processing.
	<b>Functions:</b>	NONE
	<b>Display:</b>	Letter 'B' Line 2 position 26 of System Status when B protocol allowed.
<b>C=J</b>	<b>Split Screen Mode</b>	Allow simultaneous split screen operation with real time received data displayed on lines 1 thru 23 and user key input to lines 24 and 25. The data keyed by the user will be transmitted when the user types a RETURN.
	<b>Functions:</b>	ENTER: <string>—Data to be transmitted. (RUNSTOP)—Abort Split screen mode
<b>C=K</b>	<b>Function Keys</b>	Load, Save, Display and Define the Function Keys
	<b>Functions:</b>	(RUNSTOP)—Abort function L—Load a block of 16 Function Key definitions from disk. ENTER: <filename>—Name of function definition disk file. (RUNSTOP)—Abort filename entry.  S—Save the current definitions to a disk file. ENTER: <filename>—Name of function definition disk file. (RUNSTOP)—Abort filename entry.  D—Display current Function Key definitions.  <key>—Define selected Function Key. (80 keystrokes max.) <string>—Function Key data. (CTRL) 0—Function Key Security (SHIFT)@—End Function Key Define
<b>C=L</b>	<b>Linefeeds</b>	Toggle linefeed after carriage return sent to remote computer.
	<b>Functions:</b>	NONE

<b>Keys</b>	<b>Name</b>	<b>Purpose</b>
<b>C-M</b>	<b>Modem Functions</b>	Permit user adjustment of modem transmission characteristics.  <b>Functions:</b> (CRSR) (right)—Select modem parameter. (CRSR) (down)—Adjust selected parameter. (RETURN)—End function. (RUNSTOP)—End function.
<b>C-O</b>	<b>Disk I/O</b>	Toggle open status of disk channel  <b>Functions:</b> 1—Open disk write channel if closed. ENTER: <filename> 2—Suspend disk write channel if open. 3—Close disk write channel. 4—Open disk read channel if closed. ENTER: <filename> 5—Suspend disk read channel if open. 6—Close disk read channel.
<b>C-P</b>	<b>Printer I/O</b>	Toggle printer on and off.
<b>C-Q</b>	<b>Quit Program</b>	Exit program to Basic.  <b>Functions:</b> Y—Exit N—Return to program.
<b>C-R</b>	<b>Reset To Line 001</b>	Quick access to start of virtual screen.  <b>Functions:</b> NONE
<b>C-S</b>	<b>Screen Print</b>	Dump the current screen to the printer.  <b>Functions:</b> NONE
<b>C-T</b>	<b>Clock Functions</b>	Clock functions.  <b>Functions:</b> Set the 24 hour system clock. TYPE: <hh><mm> Hours & minutes (RUNSTOP)—Abort clock function

Keys	Name	Purpose															
<b>C=U</b>	<b>Delay After Return</b>	Toggle delay after (RETURN)  Functions: NONE															
<b>C=V</b>	<b>Switch Screens</b>	Toggle between Screen 1 (700 line virtual screen and Screen 2 the normal 25 line screen).  Functions: NONE															
<b>C=W</b>	<b>Disk Wedge</b>	Provide access to disk for user maintenance while 'on-line'.  Functions: \$—Disk Directory I—Initialize drive N—New diskette R—Rename Disk file S—Scratch disk file V—Validate disk C—Copy disk file D—Duplicate disk /—Set active disk devices /(d)(dev)(drv)  <table style="margin-left: 40px;"> <thead> <tr> <th><u>d</u></th> <th><u>dev</u></th> <th><u>drv</u></th> </tr> </thead> <tbody> <tr> <td>r = read</td> <td>0 = 8</td> <td>0 = 0</td> </tr> <tr> <td>w = write</td> <td>1 = 9</td> <td>1 = 1</td> </tr> <tr> <td></td> <td>2 = 10</td> <td></td> </tr> <tr> <td></td> <td>3 = 11</td> <td></td> </tr> </tbody> </table>	<u>d</u>	<u>dev</u>	<u>drv</u>	r = read	0 = 8	0 = 0	w = write	1 = 9	1 = 1		2 = 10			3 = 11	
<u>d</u>	<u>dev</u>	<u>drv</u>															
r = read	0 = 8	0 = 0															
w = write	1 = 9	1 = 1															
	2 = 10																
	3 = 11																
<b>C=X</b>	<b>XMODEM Transfer</b>	Transfer disk files via XMODEM protocol  Functions: S—Send file to remote system from disk R—Receive file to disk from remote system S—Sequential file type P—Program file type (RUNSTOP)—Abort XMODEM ENTER: <filename>—File to send or receive  Turn OFF Translate toggles <i>first</i> to send or receive sequential files without translation.  XMODEM transfer of sequential files will use the current state of the translation functions ( <b>C=£</b> and (SHIFT) £).															

<b>Keys</b>	<b>Name</b>	<b>Purpose</b>
<b>C-Y</b>	<b>Disk File To Printer</b>	Print desired disk file.
	<b>Functions:</b>	ENTER: <filename>—File to print (RUNSTOP)—Abort function
<b>C-Z</b>	<b>Zero Screen 1</b>	Erase ALL 700 lines of virtual screen
	<b>Functions:</b>	Y—Erase the screen. N—DO NOT erase the screen (RUNSTOP)—Abort the function.
<b>C-@</b>	<b>Clear Screen</b>	Erase just the current screen. 23 lines and the matching buffer or 25 lines on screen 2.
	<b>Functions:</b>	NONE
<b>C-E</b>	<b>Transmit Table</b>	Allow transmission of either PET ASCII or standard ASCII codes by toggling transmit table look-up on and off.
	<b>Functions:</b>	NONE
<b>C-f1</b>	<b>Scroll Up 1 Line</b>	
<b>C-f3</b>	<b>Scroll Down 1 Line</b>	
<b>C-f5</b>	<b>Scroll Up 1 Page</b>	
<b>C-f7</b>	<b>Scroll Down 1 Page</b>	Provide access to 700 line virtual screen
	<b>Functions:</b>	NONE

<b>Keys</b>	<b>Name</b>	<b>Purpose</b>		
<b>(CTRL)5</b>	<b>File Copy Utility</b>	Provide direct file copy between any disk units. File may be translated to/from PET ASCII and Standard ASCII.		
	<b>Functions:</b>	ENTER: WRITE FILE NAME ENTER: READ FILE NAME  Drive numbers set in filename entry. Device number controlled by <b>C=W/</b> .		
	<b>Translation Control: Status Settings</b>		<b>(R)</b>	<b>(T)</b>
		PET to PET	OFF	OFF
		PET to ASCII	OFF	ON
		ASCII to PET	ON	OFF
		ASCII to ASCII (transparent)	OFF	OFF
		ASCII to ASCII (filtered)	ON	ON
		PROGRAM to PROGRAM	OFF	OFF
		(,p,r)           (,p,w)		
	<b>Warning:</b>	Translate tables ON during Program to Program transfers will cause undesirable results.		
	<b>Note:</b>	You can convert file types (e.g., program to sequential) by appropriate filename specification.		
<b>(SHIFT)(↑)</b>	<b>Caps Lock</b>	Provide caps lock for alpha keys only.		
	<b>Functions:</b>	NONE		
<b>(SHIFT)£</b>	<b>Receive Translate</b>	Permits turning receive translation (ASCII to PET ASCII) on and off. This allows direct reception of PET ASCII codes from the remote system.		
	<b>Functions:</b>	NONE		

# Using the CHANGE.MTS Program

## Purpose:

Alter the ASCII translation tables used by the Transmit and Receive toggles.

You can adjust the translation tables to generate any single-character value desired. The most common use of CHANGE.MTS is to alter the action of the DELETE key: the table as supplied converts the PET ASCII Delete to a true ASCII Delete (decimal 127, hex \$7F) which is the value used by Digital VAX systems and many mainframes. Many systems, however, use the ASCII Backspace (decimal 8, hex \$08) as the delete character: this is particularly true of BBS systems and CompuServe. The example used in this section shows how to change the Delete character to a backspace.

- (1) ENTER: **LOAD"CHANGE.MTS",8** (in 64 mode)
- (2) ENTER: **RUN**
- (3) Insert the disk containing the translate table you wish to change.
- (4) PRESS: **(RETURN)**  
The program will take a few seconds to read the translate table.
- (5) Select Transmit. TYPE: **t**
- (6) Select code to view/change.

The program expects the **decimal** value equivalent of the keystroke you are viewing/changing. Use the ASCII chart in your computer's User Guide.

ENTER: **20**

The program will display **127** (true ASCII Delete).

- (7) Indicate whether you wish to save or change.

TYPE: **c**

(8) Enter the new decimal code.

ENTER: **8**

(9) Select Receive. TYPE: **r**

(10) Select code to view/change.

The program expects the decimal value equivalent of the received character you are viewing/changing. Use a standard ASCII chart.

ENTER: **8**

The program will display **0** (null character).

(11) Indicate whether you wish to save or change.

TYPE: **c**

(12) Enter the new decimal code.

ENTER: **20**

(13) Save your new table values.

PRESS: **<f1>**

(14) Remove the disk from the drive.

## Setting Up Multiple Drives

(1) Review format for Set Channel (active disk devices) under the **C=W** command in the Reference Section.

(2) PRESS: **C=W**

(3) TYPE the Set Read Channel as **/r<device><drive>**

Example: Device 8, Drive 0      **/r00**

(4) TYPE the Set Write Channel as **/w<device><drive>**

Example: Device 9, Drive 1      **/w11**

(5) PRESS: **<RETURN>**



# **Section 5 Using the VT52-64 and VT100-128 Terminal Emulators**

## **WHAT IS A TERMINAL EMULATOR?**

Many large computers, as well as some information services, recognize special escape sequences to cursor-up, cursor-down, clear the screen and perform other screen editing functions. These escape sequences allow the computer to display the screen much faster than if every space and character had to be printed, and scrolling occurred line by line. Ordinarily during telecommunication your computer acts as a “dumb terminal”, an input/output device for data. With a special program called a terminal emulator, your computer can become an “intelligent” terminal, and perform escape functions such as those listed above.

## **How Terminal Emulators Are Used**

Terminal emulator programs replace other terminal programs such as Common Sense for use with your modem. You still need to use the Modem/1200 commands described in Section 3 for dialing, indicating the response set you want to use, etc.

There are two terminal emulator programs on your program disk:

- 1) The VT52™ Terminal Emulator program works with both the Commodore 64 and the Commodore 128 in 64 mode. It features 40 or 80-column screen output. No additional hardware is required to generate 80 columns, however, a high resolution monitor such as the Commodore 1702 or 1902 is recommended.
- 2) The VT100™ Terminal Emulator program works only in the 80-column mode of the C128. A 1902 monitor is required.

You must inform the host computer that you will be using a terminal emulator. Each mainframe or information service that recognizes terminal emulators has a set of preliminary instructions that declares the use of a VT52 or VT100 terminal emulator. Refer to the paragraphs entitled "Declaring the Terminal Emulator" for specific instructions for each of the two terminal emulators on your disk.

## **VT52-64:**

Insert your program disk into the drive. To load the program, type:

**LOAD"VT52-64",8**

Once the program loads, type RUN and the prompt "BAUD?" appears on the screen. Enter 12 for 1200 baud, or 3 for 300 baud.

The communication protocol is set for:

Full duplex

8 bits

no parity

one stop bit

with XON/XOFF flow control (CTRL S, CTRL Q)

The protocol cannot be altered.

Once the program is loaded you can use the Modem/1200 command protocol discussed in Section 3 to dial the mainframe or service and begin your telecommunications session.

## **Keyboard Substitutions**

Because the C64 keyboard does not support all of the ASCII characters, the following key substitutions apply. (Note: the symbol ^ stands for the CTRL key on your computer. Press and hold the CTRL key then press another key.)

<b>To send:</b>		<b>Type:</b>
\	(back slash)	British-Pound
^ \	(CTRL backslash)	^ British-Pound
^ _	(CTRL underscore)	^ =
^	(carat)	Up-Arrow
^^	(CTRL carat)	^ Up-Arrow
^[	(escape)	^[ or Back-Arrow

To send:		Type:
—	(underscore)	F1
	(vertical bar)	F2
`	(grave accent)	F3
~	(tilde)	F4
{	(left curly brace)	F5
}	(right curly brace)	F6
DEL	(or RUB)	F7
^ T	(CTRL T)	F8
^ H	(backspace)	DEL, ^ H, or ^ T
^ J	(newline)	Shift-Return or ^ J
^ S	(DC3 or XOFF)	^ S or HOME
^ Q	(DC1 or XON)	^ Q or CURSOR-DOWN
^ I	(tab)	^ I (no separate tab key)

CTRL-8 is used to switch to 80-column mode.

CTRL-4 is used to switch to 40-column mode.

Depressing one of these keys when already in the corresponding mode will simply clear the screen (as it does when switching modes).

The COMMODORE key (**☞**) acts as a SCROLL/NO-SCROLL key. This key will send a CTRL S to the host to temporarily suspend the output. Pressing it again will send a CTRL Q to the host, to restart the output from where it left off. The cursor will blink much faster when the output is temporarily suspended. The program may also automatically send a CTRL S signal to the host if the RS232 buffer is full. The program will also automatically send a CTRL Q signal to the host to resume output, when the buffer is no longer full. The terminal program does NOT support flow control in the other direction (ie: it will not lock up the keyboard if the program receives a CTRL S).

Typing SHIFT-RUN/STOP will exit the program back to BASIC.

The VT52 terminal program recognizes the following control characters and escape sequences:

<b>Character</b>	<b>Effect</b>
<b>^G</b> (BEL)	The TV/Monitor emits a beep
<b>^H</b> (BS)	cursor backspaces
<b>^I</b> (TAB)	cursor moves right to next tab stop
<b>^J</b> (NL)	cursor moves down one line with scrolling
<b>^M</b> (CR)	cursor moves to start of line
<b>^[A</b>	cursor moves up one line
<b>^[B</b>	cursor moves down one line
<b>^[C</b>	cursor moves right one character
<b>^[D</b>	cursor moves left one character
<b>^[H</b>	cursor homes
<b>^[I</b>	cursor moves up one line with scrolling
<b>^[J</b>	clears from cursor to end of screen
<b>^[K</b>	clears from cursor to end of line
<b>^[Ylc</b>	cursor moves to line l-\$20, column c-\$20
<b>^[Z</b>	sends VT52 terminal ID string
<b>^[n</b>	turns off reverse video
<b>^[o</b>	turns on reverse video

NOTE: **^[** is the same as ESC which is the back-arrow key on the C64.

Tab stops are pre-defined and fixed at every 8 columns. A warning to programmers: this program is not relocatable. Do not change the length of the BASIC program by even one byte, or the program will not function.

## Declaring the VT52 Terminal Emulator

VAX™ UNIX™ users will find the following “termcap” entries effectively describe this terminal program for use with terminal dependent UNIX programs such as vi, emacs, more, rogue, etc.:

```
qc|c64|C64|Commodore 64:co#40:li#25:\  
:up = \ EA:do = \ EB:cl = \ EH \ EJ:bs:\  
:bw:ho = \ EH:nd = \ EC:so = \ Eo:\  
:se = \ En:cm = \ EY% + % + :\  
:ce = \ EK:sr = \ El:pt:
```

```
qd|c64w|C64W|Commodore 64 80 Col X 25 Lin:co#80:li#25: \  
:up = \ EA:do = \ EB:cl = \ EH \ EJ:bs: \  
:bw:ho = \ EH:nd = \ EC:so = \ Eo: \  
:se = \ En:cm = \ EY% + % + : \  
:ce = \ EK:sr = \ El:pt:
```

**VAX VMS™** users may have trouble with programs like “edt” that require the use of a numeric keypad which the C64 does not have. The C128 will support this program, however, in 80 columns. See the section on the VT100 emulator for use of “edt”.

To set the terminal type to VT52 on VMS, type:

```
SET TERM /DEV = VT52  
SET TERM /PAG = 25  
SET TERM /WID = 80 (or 40 as the case may be)
```

**TOPS-20™** users can run “emacs” and the like after entering the following:

```
term vt52  
term length 25  
term width 80 (or 40 as the case may be)  
term pause com
```

**CompuServe** users will want to type:

```
go default      (that's right—spell it incorrectly!)  
2              (select “Setting Your Terminal Type”)  
3              (select “VT52”)
```

then follow the menu selection on whether you would like to save this information for future sessions or not.

## **VT100-128:**

Insert your program disk into the drive. To load and run the program, type:

```
RUN“VT100-128”
```

Uploading and downloading are supported with either a simple buffer or with the XMODEM protocol. Printer support is also included to allow you to log your terminal session to a printer. The HELP key allows you to view disk-based help files.



Press <return> after entering the number.

A comma inserted in the phone number causes a one-second delay.

To hang up the phone (modem), type: **h** then <return>

To answer a call, type: **a** then <return>

To exit, press <RUN-STOP>.

### **[ALT] B TOGGLE THE BUFFER**

This key will toggle the buffer ON or OFF. The buffer is an area in the computer's memory for storing information which you can later dump to the disk or the printer ([ALT] D). When the buffer is ON, a "B" will be visible on the status line. When the buffer is OFF, you will not see a "B" on the status line. The number in the top left hand side of the status line is the number of bytes free in the buffer. When the buffer fills completely, a "BUFFER FULL" message will be displayed on the status line, and the transmission will be paused. Use the [ALT] D option to save the buffer to disk, and/or clear the buffer for more information. When this is complete, you may continue by pressing <CRSR-DOWN>.

### **[ALT] C CAPTURE THE SCREEN IN BUFFER**

This key will take a "snapshot" of the current screen and put it in the buffer. This can be later saved to disk, or printed out, or displayed on the screen by using the [ALT] D command. The only indication of this happening is that the number of free bytes in the buffer decreases in the upper left.

### **[ALT] D DUMP BUFFER TO DEVICE**

This key allows you to dump the contents of the buffer to the disk, to the printer, to the screen, or to the trash can. When prompted on the status line, press the first letter of the device you wish to dump to.

- D Dump to Disk—then press S or P for Sequential or Program file. Then enter the filename, press return and the buffer will be stored to disk. Now press Y or N to clear the buffer or not.
- P Dump to Printer—press Y or N to remove Line feeds or not. (Most printers already have this done, so Y is a good choice if you are not sure.) Now press Y or N to clear the buffer or not.

- S Dump to Screen—press NO SCROLL to pause or resume printing. Now press Y or N to clear the buffer or not.
- M Dump to Modem—will send the buffer contents back to the host computer. Hit <RUN-STOP> to abort.
- C Clear the Buffer—will discard the entire buffer contents.

**[ALT] DEL                      Toggle the Delete Key**

This key will change the value of the delete key between 8 (backspace) and 127 (DEL), and backspace with erase.

**[ALT] E                              Erase (clear) the screen**

**[ALT] F                              Load a disk file into the buffer**

This command will let you fill your buffer with a file from the disk. Press S or P for a sequential or program file load. Then enter the file name. In order to see the file, type [ALT] D and then S for a Dump to Screen. The [ALT] D key can also dump to the printer or to the modem.

**[ALT] H                              Enter Split Screen (Line Entry) Mode**

A “S” is displayed in the status line to indicate that you are in the split screen mode. In this mode, the text that you type in is not transmitted until you press <return>. This is most useful in an on-line conference, so that what you type is not mixed in with the other information on the screen. Your text is displayed in a different color at the bottom of the screen. To exit this mode, press <RUN-STOP>.

**[ALT] J                              Set the Clock**

Enter the new time in the form of HHMM. No return is necessary. The computer will automatically put in the colon between the hours and minutes.

**[ALT] K                              Function Keys**

This key will allow you to set up function key definitions for commonly used commands. You may define each of the eight function keys to be items such as your User ID, Password, or even an AT command for dialing the Modem/1200. Press number 1 through 8 to

choose which function key to define. Press <return> if you want the command to be executed. End the function key definition with the <RUN-STOP> key. [ALT] K will also let you load and save function key definitions by pressing L or S, and typing the filename as prompted. You may also view the function key definitions by pressing V in the [ALT] K menu.

### **[ALT] L Toggle Line Feeds**

This key will toggle Line feeds ON or OFF. For <return> only, leave this toggled OFF. If the host computer requires <return> and <line-feed> then toggle this ON. An "L" will be visible on the status line when line feeds are ON.

### **[ALT] M View/Change Modem Settings**

This command will allow you to change the baud rate between 1200 or 300, change between half or full duplex, change the number of stop bits between 1 and 2, change the word length to 7 or 8 bits, and change the parity to Even, Odd, Mark, Space, or None.

Every combination of baud, duplex, stop bits, word length, and parity are displayed on a rolling basis. Simply press <CRSR UP/DOWN> to go to the next possible combination. The possible combinations are:

1200:F:1S:8W:N**	1200:H:1S:8W:N
1200:F:1S:7W:E**	1200:H:1S:7W:E
1200:F:1S:7W:O	1200:H:1S:7W:O
1200:F:1S:7W:M	1200:H:1S:7W:M
1200:F:1S:7W:S	1200:H:1S:7W:S
1200:F:2S:7W:N	1200:H:2S:7W:N
0300:F:1S:8W:N**	0300:H:1S:8W:N
0300:F:1S:7W:E**	0300:H:1S:7W:E
0300:F:1S:7W:O	0300:H:1S:7W:O
0300:F:1S:7W:M	0300:H:1S:7W:M
0300:F:1S:7W:S	0300:H:1S:7W:S
0300:F:2S:7W:N	0300:H:1S:7W:N

\*\* MOST COMMON

Also displayed on this menu is the User Definable Baud Rate factor for fine tuning 1200 baud. This usually is set for 0325, but can be easily changed to whatever value seems to work best for you. If you

are experiencing many errors at 1200 baud, you might want to adjust this slightly by pressing the “ + ” and “ - ” keys. After everything is set, press <RUN-STOP> to exit.

**[ALT] N                      Load new Options File**

This key will load the file “OPTSET” from disk that contains information about the default screen colors, the drive device number, the type of modem being used, the printer secondary address, the printer hold off guard time for printing on the fly, uploading prompt, and CTRL E response. These settings can be changed with the **☞O** command.

**[ALT] O                      Save current Options File**

This is the opposite of [ALT] N. These settings can be changed with the **☞O** command.

**☞O                              View/Change Options**

With this function, you can customize the program to your particular needs/tastes. You can change the default colors of the characters, background, top status line, and bottom split screen line by entering the number of the color as prompted. DO NOT use the <return> key to enter numbers, instead, use the <enter> key on the numeric key pad to enter the value.

The numbers for each color are:

- |            |                |
|------------|----------------|
| 0 = black  | 8 = orange     |
| 1 = white  | 9 = brown      |
| 2 = red    | 10 = lt. red   |
| 3 = cyan   | 11 = dk. grey  |
| 4 = purple | 12 = med. grey |
| 5 = green  | 13 = lt. green |
| 6 = blue   | 14 = lt. blue  |
| 7 = yellow | 15 = lt. grey  |

In the same manner, you can change the default disk device number. Most people will want to leave this at 8. You can also use this with many different kinds of modems. Enter the number according to the modem that you are using:

- |                |                        |
|----------------|------------------------|
| 0 = VIC Modem  | (1600) and dumb modems |
| 1 = Auto Modem | (1650) and compatibles |





If you accidentally cleared the buffer, this key will let you recover it. Simply press Y or N to confirm your request.

### **[ALT] BACK-ARROW      Create a backup disk**

This will allow you to save the program, and create the ASCII translation and TELSET display character files. Save the OPTSET file separately with the [ALT] O command. The help files (VT100?.HLP) are not moved, but this can easily be done with the [ALT] F, to load the file into the buffer, and the [ALT] D, to dump to disk.

### **[ALT] \*                      Modify ASCII tables**

You can modify the ASCII translation tables with this command. Under normal circumstances, this is not necessary. You can change the receive or the transmit tables, or both. Press R or T for receive or transmit. Now press the key that you wish to change, next the key you wish to change it to. When you are all done, press <RUN-STOP>. The program will ask you if you want to save these new changes. Press Y or N.

### **LINEFEED                      Send a BREAK signal**

The LINEFEED key is located next to the HELP key.

### **CURSOR KEYS**

The CRSR UP/DOWN and CRSR RIGHT/LEFT keys on the main keyboard generate C128 local cursor values. Note that the four arrow cursor keys along the top of the keyboard generate the VT100 escape codes for the appropriate cursor movement.

### **KEYPAD**

The 18 keys of the keypad (including the Function Keys) will generate the VT100 escape sequences ONLY if the [ALT] key is pushed. Normally the keypad generates the same codes as the numeric counter parts above the keyboard.

Some hosts send an escape code to reverse this process. In these cases, you do not need to press the [ALT] key for VT100 escape sequences. Pressing the [ALT] key before pressing a keypad key will generate numbers. The VT100 PF1, PF2, PF3, and PF4 function keys are predefined and automatically loaded when you first run the program. If you redefine the function keys with the [ALT]K command, you must re-load the file "default.keys" in order to have the PF1, PF2, PF3, and PF4 function keys work as a VT100.

## SEVEN EXTRA KEYS

There are seven characters not implemented on a C128 that are necessary for a VT100. They have been assigned as follows:

{	(left curly brace)	shift +
}	(right curly brace)	shift -
	(vertical bar)	⌘ -
~	(tilde)	shift up-arrow
^	(carat)	up-arrow
\	(backslash)	British Pound
`	(grave accent)	shift @

## Declaring the VT100 Terminal Program

**VAX UNIX** users should be able to set their “termcap” to vt100 for programs such as vi, emacs, etc. For example:

```
setenv TERM tset vt100
```

**VAX VMS** users, in order to use editors like “edt” will want to type:

```
set term /dev = vt100
```

**TOPS-20** users can use:

```
term vt100
```

**CompuServe** users will want to type:

```
go default      (that's right—spell it incorrectly!)
2               (select “Setting Your Terminal Type”)
2               (select “ANSI/VT100”)
```

If you have difficulties with setting the terminal type, you may have to consult a person at the host computer you are trying to connect with.

# Section 6 Technical Information

The following information is provided for programmers and advanced users who require more specific information about the Modem/1200.

## TECHNICAL SPECIFICATIONS

**Data Format:** binary, serial, asynchronous, 10 bits

**Operational Modes:** auto answer, auto dial, auto baud, auto parity

**Data Rate (computer to modem):** 0 to 300 bps or 1182 to 1230 bps

**Data Rate (modem to computer):** 0 to 300 bps, or 1219 bps

**Compatibility:** Hayes command protocol, (300 and 1200)  
Bell 212A            1200 bps            4 level DPSK  
Bell 103             300 bps                FSK

**Line Interface:** Direct Connect, two RJ11C modular telephone jacks FCC part 68 approved (USA), DOC approved (Canada)

**Data Interface:** Commodore User Port (inverted TTL RS232C)

**Carrier Indicator:** Carrier tone from built-in piezo electric speaker

**Dialing Method:** Touch Tone (DTMF) or Rotary (pulse)

**Answer Tone Detector:** 2125 to 2350 Hz

**Answer Tone:** 2225 Hz for 17 seconds

**Failed Call Timer:** Programmable 2-255 seconds, 30 seconds default

**Carrier Detect Threshold:** Off to On: - 43 dBm  
On to Off: - 48 dBm

**Billing Delay:** 2.1 seconds

**Abort Timer:** 17 seconds after billing delay

**Loss of Carrier Disconnect:** 250 ms

**Transmit Level:** Carrier less than - 9 dBm  
Tone Pair less than 1 dBm

**Carrier Frequencies:**

	<b>Transmit/Originate Receive/Answer</b>	<b>Receive/Originate Transmit/Answer</b>
212A Mode:	1200 Hz + - .001%	2400 Hz + - .001%
103 Mode:	Mark: 1270 Hz + - .5% Space: 1070 Hz + - .5%	Mark: 2225 Hz + - .5% Space: 2025 Hz + - .5%

**User Port Pin Connections:**

<b>PIN</b>	<b>FUNCTION</b>	<b>SOURCE</b>
1,12,A,N	Ground	from computer
2	Vcc( + 5VDC)	from computer
3	Reset	from computer
B,C	RxD	from modem
M	TxD	from computer
J	SI	from modem
F	RI	from modem
H,K	DCD,CTS	from modem
L	DSR	grounded
E	DTR	from computer

**Notes:**

**SI** is the "speed indicate" line. This tells the computer the speed of the incoming call. High is 300 baud. Low is 1200 baud. Monitor this line to provide an autobaud function for BBS programs. This line is disabled with DIP Switch 3 up.

**DTR** is normally grounded with DIP switch 4. This signal can be controlled by the computer if switch 4 is UP. With switch 4 up, the modem will disconnect current call and ignore all commands if DTR is high, and operate normally if DTR is low. BBS programs can use this to force a disconnection after a given time limit.

**RI** is low when the phone is ringing.

**DCD** is low when a carrier has been detected. This line can be disabled (for use on a Plus/4 for instance) with Switch 2 up.

DIP switch 1 controls the Auto Answer Mode. On power up, the

modem checks DIP switch 1, and if it is down, it will ignore all incoming calls (as if you had issued an ATSO = 0 command). With the switch UP, the modem will answer on the second ring.

## HIGH SPEED/LOW SPEED PROTOCOL

In the Originate Mode (that is, dialing out), the modem will automatically sense the baud and parity of the letters "A" and "T" of the command that you send to the modem. No switches or special commands are necessary to change baud rate, as this is all done automatically. If the extended response codes are in effect (AT X1) the modem will respond with "CONNECT" for 300 baud, "CONNECT 1200" for 1200 baud, or "NO CARRIER" if the modem does not receive a carrier. It is necessary, however, to adjust your terminal software to the correct baud rate, because it does not auto baud. If you know that you are calling a 1200 baud modem, you must first set your terminal software to 1200 baud before dialing. Otherwise, you will get a screen full of garbled characters.

In the Auto Answer Mode (that is, during an incoming call) the modem will indicate what baud rate the incoming caller is using. It does this by responding with either "CONNECT" for a 300 baud call, or "CONNECT 1200" for a 1200 baud call. The modem sends the connect message at the last baud rate in use, not at the new baud rate.

For example:

<b>ACTION</b>	<b>MODEM RESPONDS</b>	<b>AT THIS BAUD</b>
<i>Power on.</i>		
Low speed call comes in.	RING	1200
	CONNECT	1200
<i>Data link is established Data transmission is at 300 baud.</i>		
End of session Call is ended.	NO CARRIER	300
High speed call comes in.	RING	300
	CONNECT 1200	300
<i>Data link is established. Data transmission is at 1200 baud.</i>		
End of session. Call is ended.	NO CARRIER	1200

There are two ways to detect the speed of an incoming call. You can either look for “CONNECT” or “CONNECT 1200” in a program or monitor the speed indicate signal.

When attempting to sense the speed of a call by looking for “CONNECT” or “CONNECT 1200” in a program, the signal may not be very clean at the beginning of a call. Depending on the situation, there may be a garbled character in the beginning, or the upper/lower case of the prompt may be switched randomly. It is best to have the program “filter” the input at this point, to convert all of the characters to lower case and cut out any prefix or suffix garbage characters.

Another method of sensing the speed of a call is to monitor the speed indicate signal at the user port (see description of pin  $\overline{SI}$  on page 62). high signal from the modem indicates a 300 baud call; a low signal indicates 1200 baud.

Either or both methods of detecting the speed of an incoming call may be used.

Programmers should also remember that the BASIC OPEN statement will overwrite any BASIC variables when it allocates an RS232 buffer area at the top of memory. Therefore, all variables must be reinitialized after changing baud rates in BASIC. In machine language, you can choose to put your variables out of the way of the the RS232 buffer.

In the Commodore 64 and 128, the RS232 routines are provided in software. This software UART is very sensitive to speed variations. The setting in the OPEN statement for 1200 is just that—1200 baud, not 1205 or 1195. This can cause problems with Bell 212A-compatible modems. All Bell 212A modems can handle a computer-to-modem baud rate of 1200 just fine, but the Bell 212A modem has a modem-to-computer baud rate of 1219. The net result is that you can transmit data successfully, but all that is received is garbled characters. Fortunately, since we are dealing with a software UART, it is easy to fine-tune the baud rate. This is done with the user definable baud rate as outlined in the Programmer’s Reference Guide. A setting that works for most computers is:

**OPEN2,2,2,CHR\$(0) + CHR\$(0) + CHR\$(61) + CHR\$(1).**

61 and 1 are the decimal value low byte and high byte of the user definable baud rate. You may need to vary the low byte above or below 61 to fine-tune the UART for your particular application.

Advanced users may wish to modify the kernal entirely—allowing you to adjust the transmit speed and the receive speed independently.

# Section Troubleshooting

This section describes some of the common problems you may encounter using the Modem/1200, and tells what to do to fix them.

## CONNECTION PROBLEMS

1. “I followed the connection instructions, but when I turned the computer on the modem started buzzing!”

When you turn the modem on, one beep is normal. If you don't hear a beep you may have installed the modem incorrectly, or with the computer turned on. Turn off the equipment, install the modem and telephone cables again, then turn on the computer, disk drive and monitor. Be sure not to unplug the modem once the computer is turned on.

2. “It still buzzes and I get no response.”

Make sure that all of your peripherals are turned on (including disk drives and printers). If any one of these is off, your modem may not work correctly.

## TERMINAL MODE PROBLEMS

1. “All I get on the screen is garbled characters!”

If you are **not on-line**, this is probably a connection problem. See question 2 under **Connection Problems**.

If you are on-line, you could be using incorrect telecommunications parameters for the particular host you are calling. Make sure your baud rate and parity are set to the same baud rate and parity as your host.

2. "I am getting extra random and/or garbled characters on the screen in addition to what I am transmitting and receiving."

This can be caused by a noisy or "hot" telephone line

Solution 1) Alter the parameters according to the directions provided by Common Sense or any other terminal program you are using, and try to retransmit.

Solution 2) A noisy telephone line can occur when telephone lines get overloaded. Stop transmitting and redial to try to get a better connection. If the trouble persists, contact your telephone company.

On PBX lines (private phone systems, often within a large company) a "hot" signal can occur because of the proximity of the modem to the switchboard.

3. "Voices are coming over my modem!"

You probably dialed the wrong number. The modem will automatically disconnect and indicate NO CARRIER. You may press RETURN to abort dialing immediately.

## **CUSTOMER SUPPORT**

If you have tried all the suggestions above, and your Modem/1200 still won't function, contact Commodore Customer Support:

1200 Wilson Drive  
West Chester, PA 19380  
(215) 436-4200

Commodore representatives are on hand to help you find and correct any problem. You can call between 9 a.m. and 6 p.m., Monday through Friday.



# Appendix A—DIP Switches

On the back of the Modem/1200 are four small levers known as DIP switches (Dual In-line Package). Each switch has only two settings (ON and OFF). These switches adapt the modem to your equipment and specific requirements.

Generally, the factory settings are appropriate for most use. You may need to change some DIP switch settings to obtain accurate telecommunication. Use a screwdriver, pen, or other small tool to push the switches up and down.

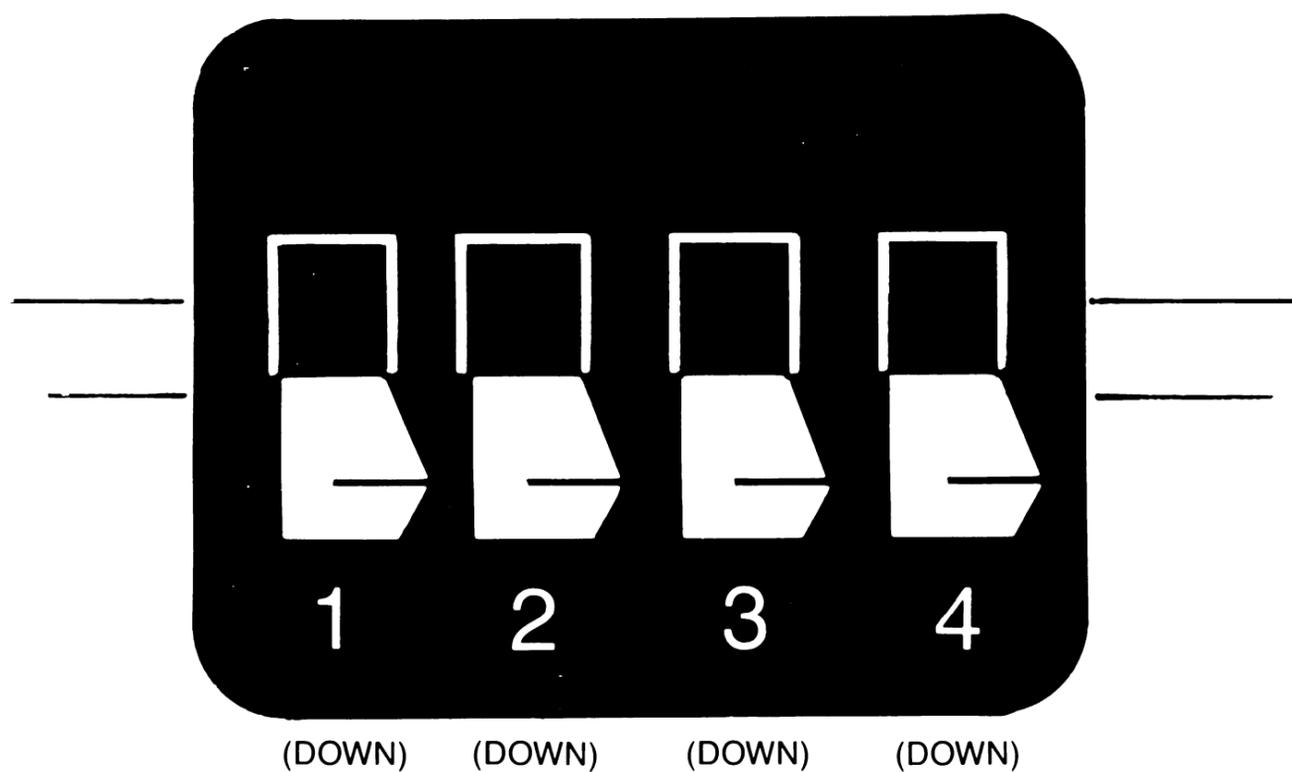


Figure A-1 The DIP Switches

Table A-1 lists the DIP switch settings and their functions.

## DIP Switch Settings

Switch	Function	Setting
1	Auto Answer Enable	
	Auto answer suppressed	DOWN
	Modem answers on second ring	UP
2	Carrier Detect Enable	
	Carrier detect on pin H-K of edge connector	DOWN
	No carrier detect signal	UP
	Only Plus/ 4 users need be concerned with this switch. It must be in the UP position for successful data transmission. Other computers can operate regardless of how this switch is set.	
3	Speed Indicate Enable	
	Enables the speed indicate signal to the computer to inform the program of the transmission speed of an incoming call. See page 62 for more information.	DOWN
	Disable the speed indicate signal.	UP
4	Data Terminal Ready	
	DTR always on	DOWN
	DTR normal; computer controls DTR	UP

**NOTE:** When you change a DIP switch setting, the new setting is initiated when you plug in the Modem/1200. If the modem is already plugged in, initiate the new setting by issuing the Zap (AT Z) command.

# Appendix B—Customizing Common Sense

The method for modifying the BOOT program to customize Common Sense to your preference or needs has three phases:

1) List the program lines storing the parameter data.

2) Modify the lines to suit your needs:

Type over the characters you want to change. Use the INST/DEL key if necessary to make the line correct.

**PRESS: (RETURN)** to enter each altered line

3) Save the modified program for future use.

**TYPE: SAVE“MODBOOT”,8**

Once the BOOT program has been altered, use MODBOOT to load COMMON SENSE during any future telecommunications sessions.

## To Alter Screen Colors

Screen area	Text 1,	Text 2,	Border,	Background,	Cursor
Default	1 (White)	7 (Yellow)	5 (Green)	0 (Black)	13 (Light Green)
REM line number	200	200	200	200	200
Line number for data	210	210	210	210	210

Remember that when setting colors, the color codes are one less than the key number. For example, Black is on the number 1 key, but the code for black is 0.

Screen colors can also be changed from within the program, each time it is used, with the **C=C** command.

## To Alter Printer Settings

	Printer Type	Device #	Sec.Channel	Print command bytes minus 1
<b>Default</b>	0 (PET)	4	7	0
<b>REM line number</b>	220	240	260	276-77
<b>Line number for data</b>	230	250	270	278

In addition, lines 280-320 define the printer command string. Lines 280-284 are REM statements showing how the data should be entered. Lines 290-320 contain the data.

## To Alter Disk Device Numbers

Device	Write device	Read Device
<b>Default</b>	8	8
<b>REM line number</b>	330	350
<b>Line number for data</b>	340	360

## **To Alter the Clear Screen Indicator**

**Default**            0 (Clear Screen)

**REM line**        370  
**number**

**Line number**    380  
**for data**

## **To Select Modem Type**

**Default**            3 (1670, 1600)

**REM line**        390-393\*  
**number**

**Line number**    400  
**for data**

\*The “old” 1660 mentioned in line 391 has serial number 0 to 30000 and was made in the USA.

The “new” 1660 mentioned in line 392 has serial number 100000 and above, and was made in Hong Kong.

## **To Select Delete Character**

**Default**            8 (Backspace)

**REM line**        460  
**number**

**Line number**    460  
**for data**

Use 127 for the DEL character.

# **Appendix C—Federal Communications Commission (FCC) Statement**

## **RADIO AND TELEVISION INTERFERENCE**

This equipment generates and uses radio frequency energy and if not installed and use properly, in strict accordance with the manufacturer's instructions, may cause interference to radio and television reception. The modem has been tested and found to comply with the limits for a Class B computing device in accordance with the specifications in Subpart J of Part 15 of FCC rules, which are designed to provide reasonable protection against such interference in a residential installation.

However, there is no guarantee that interference will not occur in a particular installation. If this device does cause interference to radio or television reception, which you can determine by monitoring reception when the modem is on and off, try to correct the problem with one or more of the following measures.

1. Reorient the receiving antenna.
2. Relocate the computer with respect to the receiver.
3. Relocate the computer and/or the receiver so that they are on separate branch circuits.

If necessary, consult your Commodore dealer or an experienced radio/television technician for additional suggestions. You may find the following booklet, prepared by the FCC, helpful:

How to Identify and Resolve Radio-TV Interference Problems  
Stock No. 004-000-0345-4  
U.S. Government Printing Office  
Washington, DC 20402

## **NOTIFYING THE TELEPHONE COMPANY**

Before you install your Modem/1200, you should notify the telephone company that you plan to use a modem on your phone line. You will need to give the company the following information:

1. The telephone number (or numbers) to which the modem is to be connected.
2. The FCC registration number on the label supplied with the modem:

FCC68 BR98YV 19442 MDE

### 3. The ringer equivalence, 0.4B

You should also inform the telephone company if you ever permanently remove the modem from your phone line.

The FCC has established rules which govern data modem direct connection to the telephone network. A jack is provided by the telephone company for the direct connection. Jacks of the modular type required for the connection are not provided on party lines or coin lines.

If the data modem is malfunctioning, it may be affecting the telephone lines outside the permissible operating specifications of FCC 68. In this case, the modem should be disconnected until the source of the difficulty is traced.

## **FOR CANADIAN MODEM USERS**

The Canadian Department of Communications (DOC) label identifies certified equipment. This certification means that the equipment meets certain telecommunications network protective, operational and safety requirements. The department does not guarantee the equipment will operate to a user's satisfaction.

Before installing this equipment, make sure you are permitted to connect it to the facilities of the local telecommunications company. You must also install the equipment using an acceptable method of connection. In some cases you may also extend the company's inside wiring for single-line individual service by means of a certified connector assembly (telephone extension cord). You should be aware, however, that compliance with the above conditions may not prevent degradation of service in some situations.

Repairs to certified equipment should be made by an authorized Canadian maintenance facility designated by the supplier. Any repairs or alterations made by a user to this equipment, or equipment malfunctions, may give the telecommunications company cause to request the user to disconnect the equipment.

For your own protection, make sure the electrical ground connections of the power utility, telephone lines and internal metallic water pipe system, if present, are connected together. This precaution may be particularly important in rural areas.

**CAUTION:** Do not attempt to make such connections yourself; contact the appropriate electric inspection authority or electrician.

## **Commodore Modem/1200 Load Number: 5B**

The load number (LN) assigned to each terminal device denotes the percentage of the total load to be connected to the telephone loop used by the device, to prevent overloading. The termination on a loop may consist of any combination of devices, subject only to the requirement that the total of load numbers of all the devices not exceed 100. An alphabetic suffix is also specified in the load number for the appropriate ringing type (A or B), if applicable. For example LN = 5B designates a load number of 5 and a B-type ringer.

# Glossary

**Answer/Originate Mode**—A mode of operation describing the sending or receiving of data from one computer to another. When your Modem/1200 is in the originate mode, you dial the telephone call to the receiving computer. If your Modem/1200 is in the answer mode, then you receive the call from the remote computer.

**ASCII**—The abbreviation for American Standard Code for Information Interchange. ASCII is the code that represents the characters on the keyboard. Standard ASCII uses 7 bits to represent a character, and Commodore ASCII uses all 8 bits (in a byte) to allow an extra 128 graphics characters. An ASCII conversion routine like Common Sense is necessary to communicate between a Commodore system and a standard ASCII device, such as many host computers or a non-Commodore printer.

**Baud**—a unit of measurement for the transmission of data; roughly translates into bits per second. The Modem/1200 operates at 1200 baud, that is it transmits 1200 signal elements (bits) per second.

**Bit**—the smallest unit of information in a computer system. A bit may be either “off” representing zero, or “on” representing one. Specific combinations of bits represent meaningful information.

**Block**—A unit of information sent and received between devices, usually predefined in terms of number of bytes. For example, Commodore disk blocks (sectors) are 256 bytes; XMODEM blocks are 131 bytes.

**Buffer**—A temporary storage area, usually in a computer’s memory. The data is stored in the buffer and later output to tape, disk, or printer or acted upon by the computer program currently in memory. Peripheral devices such as disk drives and printers can also have their own buffers to temporarily manage and store data.

**Bulletin Board**—An electronic public storage medium within an information network where messages can be transmitted and received.

**Byte**—a unit of information consisting of combinations of bits. A byte may represent a letter, number, special symbol, or control information.

**Conferencing**—A method of communication where several users within a large geographic area can “meet” in a public storage location within an information network and exchange messages, conduct computer dialogues or participate in a class.

**Cursor**—the indicator on your screen that shows where the next character will be displayed.

**Database**—An large collection of related information stored on a computer medium such as disk, tape or in a computer’s memory. Databases are often available to the public for a fee.

**Download**—The process of SAVEing information transmitted from another computer to your disk, tape or printer.

**Dump**—the bulk movement of information from one area (device) to another as a single activity.

**Duplex**—also called full-duplex—Indicates that transmission of data from remote to host and host to remote happens simultaneously. Opposite of half-duplex, where transmission is in only one direction at a time.

**Escape codes**—a special character used in telecommunications to indicate that the succeeding characters are different than the characters making up the actual message. The standard escape character is CHR\$(27), which usually signifies that the following characters will be control characters in an escape sequence that may include such directions as clear screen, position cursor, etc.

**Files**—collections of information on disk. Files may consist of programs, or text information for use by a program.

**Handshake**—the defined electrical line sequences for proper communication between digital devices.

**Host/Remote Computer**—In telecommunications the host is the computer that receives a call from the other computer. The host controls the processing while the computer that originated the call, the remote, acts according to the way the host dictates.

**Information Service**—An electronic information source, usually on a large computer, such as QuantumLink or CompuServe, that provides information to other computers through telecommunications. Information services may contain world and financial news, stock quotes, shop at home services, games and other public domain software.

**Intelligent terminal**—A remote computer with the capacity to upload (transmit) and download (SAVE) files to and from a host computer.

**Line feed**—In telecommunications, indicates that a carriage return will be added whenever the data being transmitted cannot fit on one line of the screen.

**Modem**—A communication device that acts as an interface (connector) between a computer and a telephone. It allows electronic signals from one computer to be sent across standard telephone lines to another computer. The word stands for MOdulator/DEModulator.

**On-line**—The state of being connected to a host computer as a terminal.

**Parity**—The agreed-upon definition of valid bit combinations in a character. The parity bit is used as a checking mechanism to determine if transmission has been complete. Parity may be even, odd, mark, or space.

**Program File**—A set of computer instructions stored on disk or tape, which can be executed in a computer's memory.

**Protocol**—The appropriate settings or parameters required for accurate and correct sending and receiving of information during a telecommunications dialogue. The telecommunication protocol includes parameters such as duplex, parity, word length and baud.

**Sequential File**—A collection of related data stored (one character after the other) as a complete unit on disk or tape.

**Stop Bit**—A bit that signals the end of a character being transmitted.

**Synchronous/Asynchronous Communication**—A synchronous computer system transmits data according to and in unison with the internal system clock of the computer. Asynchronous systems, like your Commodore computer, transmit data independently of the

internal system clock and use start and stop bits to regulate data transmission.

**Telecommunications**—the sending and receiving of information between computers across standard telephone wires. Also known as telecomputing.

**Terminal Mode**—The mode of operation in which sending and receiving information takes place.

**Upload**—The process of transmitting the contents of your computer's memory to the memory of another computer where it can be executed or SAVED.

**Word length**—The number of data bits in a telecommunications word, or unit of data transmission. Usually 7 or 8 (plus start bit, stop bit(s), and optional parity bit.). Most programs default to one start bit, eight data bits, one stop bit and no parity.



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