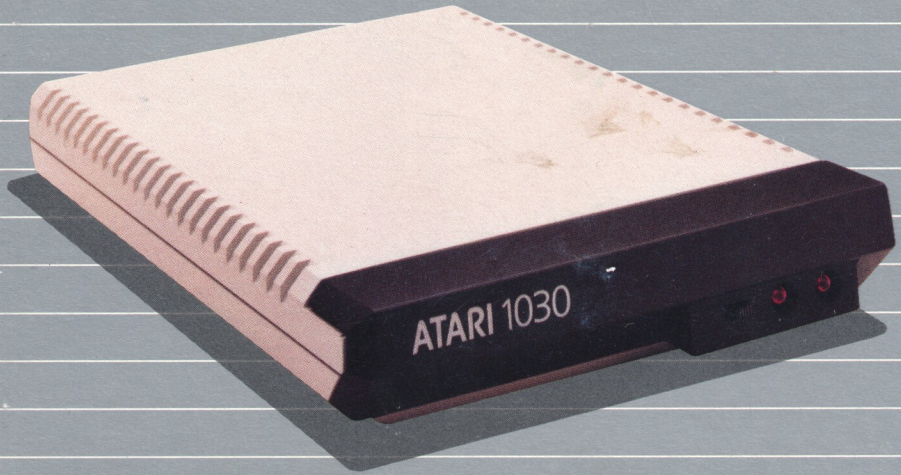
THE ATARI® 1030™ MODEM With MODEMLINK™ TELECOMMUNICATIONS PROGRAM

OWNER'S GUIDE



ATARI®

HOME COMPUTERS

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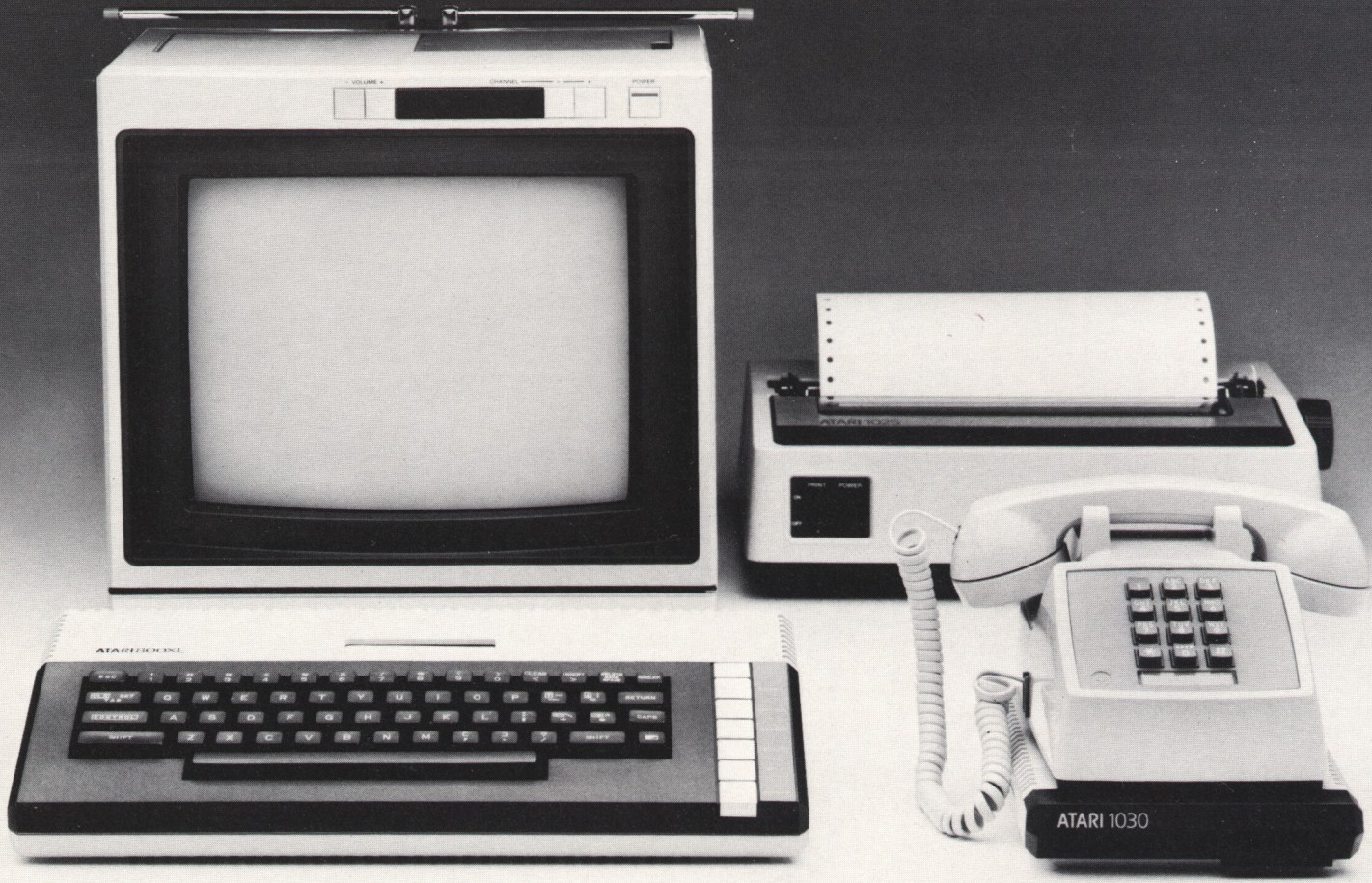
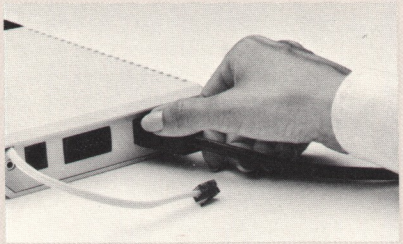

ATARI 1030

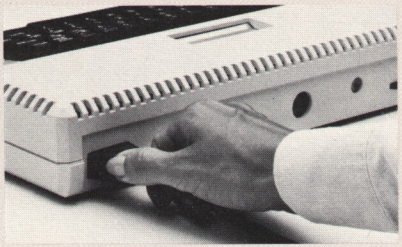
Welcome to the fascinating world of telecommunications. Your ATARI 1030 Direct-Connect Modem with its built-in ModemLink telecommunications program places an almost infinite variety of information resources—worldwide databases, educational networks, business and financial services—at your command.

A telephone call connects your ATARI Home Computer to information utilities where you can shop, play interactive computer games, make airline reservations. . . . Send and receive electronic mail. . . . Or make new friends on any of the hundreds of local bulletin board systems operated by home computer owners like yourself. . . .All from the comfort of your home.

This owner's guide provides easy-to-follow setup procedures for the ATARI 1030 Direct-Connect Modem, plus instructions for loading ModemLink into your computer and dialing a call from your computer keyboard. You'll also find descriptions of the HELP features that make ModemLink convenient to use, answers to many frequently asked questions, and helpful definitions that will start any beginner on the way to becoming an expert in data communications. Also included—for use once you've become an "expert"—are the American Standard Code for Information Interchange (ASCII) characters that allow you to redefine your computer's output.

1





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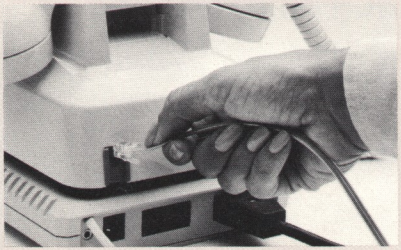
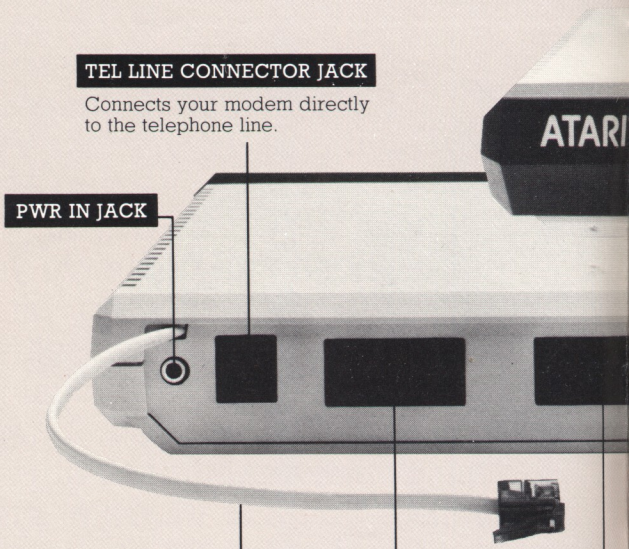


Plug the I/O data cord that came with your modem into either of the serial I/O ports on the back of the modem. Plug the other end into a serial I/O port on your computer or peripheral (an ATARI 410™ Program Recorder should not be connected to your system when you're using your ATARI 1030 Direct-Connect Modem with ModemLink).

NOTE: An ATARI 810™ or 1050™ Disk Drive may remain connected to your computer system; however, the disk drive must be turned *off* while you're operating the ATARI 1030 Direct-Connect Modem with ModemLink.

Unplug the modular connector cable from your telephone . . .



READY INDICATOR

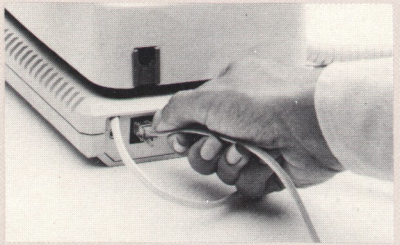
Lights up when your modem is receiving a carrier tone from another modem.

ON/OFF INDICATOR

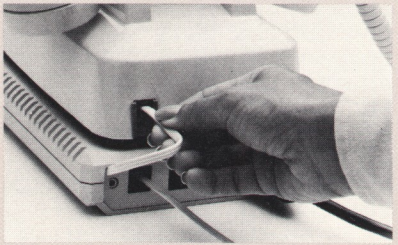
Shows you at a glance when your modem is on.

ON/OFF SWITCH

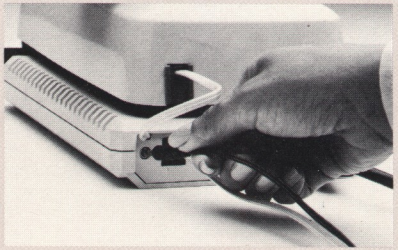
. . . and plug it into the jack labeled TEL LINE on the back of your modem.



Plug the telephone cable from your modem into the jack on the telephone.



Plug the round end of the modem's power cord into the PWR IN jack on the back of the modem. Plug the other end into an electrical outlet.



3

Your ATARI 1030 Direct-Connect Modem is now ready to use.

If you have an ATARI 400™, ATARI 800™, or ATARI 1200XL™ Computer, ModemLink loads automatically into your computer—all you need to do is turn on your modem, then turn on your computer. To load ModemLink when you have a language cartridge—such as ATARI BASIC or PILOT— plugged into your computer, first turn on your modem, then the computer; then type DOS and press RETURN .

If you have an ATARI 600XL™ or ATARI 800XL™ Computer with built-in BASIC, first turn on your modem, then—while holding down the OPTION key—turn on your computer to load ModemLink. If your computer is already on and you want to switch from BASIC to ModemLink—or if you have a PILOT cartridge plugged into your computer—type DOS and press RETURN to load ModemLink.

When the ModemLink start-up screen appears, make your selection by typing one of the numbers shown in inverse video (blue characters on a white background). The words displayed in inverse video indicate the current mode of operation.

NOTE: If you turn your computer off, you must wait three seconds before reloading ModemLink.

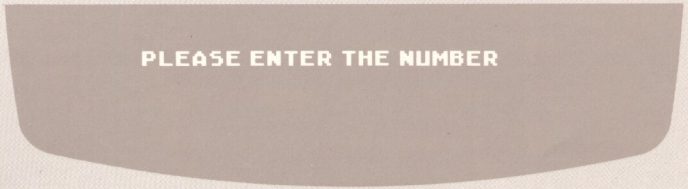
Choosing Between Pulse and Tone Dialing

Before you use your computer's keyboard to dial a call, make sure you've selected the correct dialing protocol—tone (push-button) or pulse (rotary)—for your phone. To select tone (push-button) dialing, type 4. Type 4 again to return to pulse (rotary) dialing.

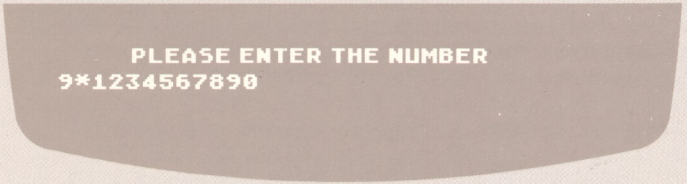
NOTE: If you have an ATARI 400™ Home Computer, you cannot use the tone (push-button) dialing feature to dial from your computer's keyboard.

Dialing from the Computer Keyboard

To dial from your computer keyboard, type 1, then follow the instructions on the screen.

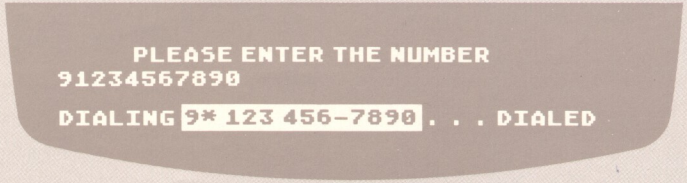


Type the telephone number you want to call, then press RETURN.



NOTE: If you're calling through a switchboard (PBX) and need to dial 9 to get an outside line, type an asterisk (*) after typing 9. This tells ModemLink to dial 9, then pause—that is, wait for the second dial tone—before dialing the rest of the number.

ModemLink displays the number—automatically placing a dash or space where necessary to separate prefixes, area codes, and other numbers commonly used when dialing calls—and highlights each number in inverse video as it is dialed . . .

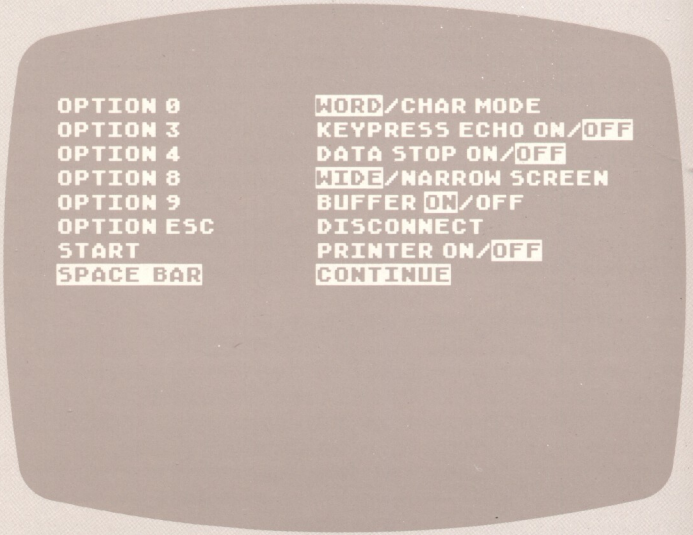


. . . then waits for an answer.

ModemLink's HELP features make it versatile and easy to use when you're on line with another computer system. They let you turn your printer on or off, change the screen display, or stop the other modem's output without disrupting the phone connection. You can also temporarily store the information you receive in a portion of your computer's random-access memory (RAM) called the *memory buffer,* scroll forward or backward through the contents of the memory buffer, or end the call.

To call up the HELP menu, press SELECT or (if your computer has one) the HELP key after you've connected with a service. The HELP menu appears on the top portion of your TV screen, while the lower portion of the screen continues to display incoming and outgoing information; your TV screen also changes color. The keys you need to type (hold down the first key while typing the second) are shown on the left of the menu. The features they control are on the right. The words in inverse video indicate the current mode of operation. After making your choices, press SELECT or HELP again to return to the full-length screen display.

NOTE: After you've become familiar with ModemLink, you can use the HELP features without calling up the HELP menu. Just press the two keys that control the feature you want while you're sending or receiving information.



The HELP Menu

OPTION 0 Word/Character Mode

In WORD mode, any word extending beyond the end of a line is automatically moved to the next line. In CHARACTER mode, any word extending beyond the end of a line is broken apart and continued at the beginning of the next line. Press OPTION and type 0 (zero) to switch between the two modes. The message WORD MODE or CHARACTER MODE appears in inverse video on your TV screen each time you switch modes.

OPTION 3 Keypress Echo On/Off

With KEYPRESS ECHO ON, your TV screen displays characters as you type them on your keyboard. With KEYPRESS ECHO OFF, the screen displays characters only after they've been sent to the service, then echoed back to you. When a service doesn't echo your transmission and the characters you type aren't displayed on your TV screen, switch to KEYPRESS ECHO ON by pressing OPTION and typing 3. The characters you type will then appear on your screen. If characters you type appear twice, switch to KEYPRESS ECHO OFF by pressing OPTION and typing 3.

OPTION 4 Data Stop ON/OFF

When you first turn on your ATARI 1030 Direct-Connect Modem, it places all incoming information in your computer's memory buffer. Eventually, the computer's memory buffer will fill up, and the oldest information received will be replaced by new data as it comes in; the message NEWEST DATA RECEIVED appears above the old information to separate it from new data.

But ModemLink lets you store a certain amount of incoming information in the memory buffer, so you can read it again. How much information your memory buffer can store depends on how much RAM (random-access memory) your computer has.

With	Your memory buffer can store up to:
16K RAM	55 lines
32K RAM	455 lines
48K RAM	865 lines

To store data in the buffer, you must first switch to DATA STOP ON by pressing OPTION and typing 4. The OPTION 4 combination always erases all contents of the memory buffer when the buffer is on, so you must select DATA STOP ON *before* receiving the data you want to store.

After selecting DATA STOP ON, you can store information in two ways:

1. You can be selective and store specific portions of incoming information in the buffer. After you've received the information you want to store, turn the memory buffer off by pressing OPTION and typing 9. Your modem will continue to accept new information and display it on your TV screen, but data won't be added to the buffer until you turn it back on again. You can add to the buffer as often as you wish—until the buffer is full, of course—by turning the memory buffer on and off as necessary.
2. You can store all incoming information until the memory buffer fills up completely. When the buffer is full, the message MEMORY BUFFER FULL—PRESS SPACE BAR TO CONTINUE appears on your screen, and your modem sends a "stop transmission" signal to the other modem (your modem won't accept new data even when the other modem ignores the "stop transmission" signal and continues to transmit).

Then you can either press the space bar (and erase the contents of the memory buffer) or turn the memory buffer off (and retain the entire contents of the buffer).

Pressing the space bar empties the buffer, sends a "start transmission" signal to the other modem, and lets ModemLink fill up the memory buffer.

Turning the memory buffer off sends a "start transmission" signal to the other modem and lets your modem accept information again (data received when the memory buffer is off is displayed on your TV screen but not placed in the buffer).

Press OPTION and type 4 to return to DATA STOP OFF. This empties the buffer, sends a "start transmission" signal to the other modem, and lets ModemLink accept new information continuously again.

NOTE: When the memory buffer is on, the OPTION 4 combination always erases the entire contents of the buffer; when the buffer is off, ModemLink ignores the OPTION 4 combination.

OPTION ESC Disconnect

To end a call from your computer keyboard, press OPTION and ESC simultaneously. ModemLink responds by highlighting the message LINE DISCONNECTED—PRESS SYSTEM RESET FOR MENU on your screen.

START Printer On/Off

Press START to print incoming information on your printer. ModemLink displays PRINTER ON on your TV screen. Press START again to stop printing, and ModemLink displays PRINTER OFF. If your printer is turned off or not connected when you press START, ModemLink displays PRINTER ERROR on your screen.

NOTE: You cannot print incoming information on your Printer when you have selected ANSWER—CALL RECEIVED. Placing your modem in ANSWER mode removes the START option from the HELP menu, and pressing START when your modem is in ANSWER mode sounds a buzzer.

OPTION 8 Wide/Narrow Screen

ModemLink normally displays information in 40-character (WIDE SCREEN) lines. If you're having trouble seeing the characters at the edges of your TV screen, switch to a 37-character (NARROW SCREEN) display by pressing OPTION and typing 8. To change back to a 40-character line, press OPTION and type 8. When you switch from one screen width to another, the corresponding message—WIDE SCREEN or NARROW SCREEN—appears on your screen.

OPTION 9 Memory Buffer On/Off

To turn the memory buffer off and retain information stored in the buffer, press OPTION and type 9. The message MEMORY BUFFER OFF appears on your screen. If your computer's memory buffer is full when you turn the buffer off, your modem sends a "start transmission" signal to the other modem and accepts information again. New data is displayed on your screen but not placed in the buffer. Press OPTION and type 9 to turn the buffer on again.

You can look, or *scroll,* forward or backward through the memory buffer's contents while ModemLink continues to receive additional information. To look backward through the contents of the memory buffer, press CONTROL and type the down arrow [↓] once. To look forward through the memory buffer, press CONTROL and the up arrow [↑] once. To change directions while scrolling, you must first stop scrolling by pressing CONTROL and typing the appropriate opposite arrow key, then press CONTROL and type the same arrow key again to start scrolling in the other direction. For example, when you're scrolling backward through the buffer and want to scroll forward, you must first press CONTROL and type the up arrow [↑] once to stop scrolling. Then press CONTROL and type the up arrow [↑] again. Scrolling stops automatically when you reach the beginning or end of the information in the memory buffer.

You can jump from the end of a full memory buffer to the beginning by pressing CONTROL and typing the up arrow [↑]. To jump from the beginning of a full memory buffer to the end, press CONTROL and type the down arrow [↓].

NOTE: If you have an ATARI 1200XL™ Computer, you can use the [F1] and [F2] keys to scroll through the contents of the memory buffer; press [F1] to scroll backward, [F2] to scroll forward through the buffer.

SPACE BAR Continue

When you've selected DATA STOP ON and your computer's memory buffer has filled up, pressing the space bar in response to the message MEMORY BUFFER FULL, PRESS SPACE BAR TO CONTINUE clears the buffer and lets your modem resume accepting information until the memory buffer is full again.

Here are the answers to a number of commonly asked questions about telecommunications, modems, bulletin board systems, and information services.

Question: When I follow the instructions for loading ModemLink into my computer—first turning on the ATARI 1030 Direct-Connect Modem, then the ATARI Home Computer—all I get is a READY prompt on my TV screen. What's wrong?
Answer: A language cartridge —such as ATARI BASIC or PILOT—is plugged into your computer, or your computer's built-in BASIC is overriding ModemLink. Type DOS, then RETURN to load ModemLink into your computer.

Question: After I've used ModemLink for a while, I get the message MODEM POWER LOST. What does that mean?
Answer: You have accidently turned your modem off or unplugged the modem's power cord from either the wall or the PWR IN jack. Check to make sure all connections are secure.

Question: ModemLink receives a carrier tone, but the modem's READY light doesn't light up. What should I do?
Answer: The modems may not be able to communicate with each other because they're in the same mode—that is, both in ORIGINATE or ANSWER—or you may have a bad connection, or the carrier signal may be too weak. Press the SYSTEM RESET key to return to the start-up menu and switch your modem back to ORIGINATE. If the READY light still doesn't light up, press OPTION and ESC together to end the call, then redial.

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Question: ModemLink is already connected to a service, but a LINE DISCONNECTED message appears on the screen. What should I do?
Answer: The telephone line has been disconnected. Press the SYSTEM RESET key to return to the start-up menu, then redial.

Question: What should I do if I establish a connection with a service and nothing happens? Or what if random characters appear on the screen.
Answer: You have a bad telephone connection. Press the SYSTEM RESET key to return to the start-up menu, then redial.

Question: As I type on the keyboard, nothing appears on the screen. What's wrong?
Answer: The service isn't echoing the characters you type. Switch to KEYPRESS ECHO ON by pressing the OPTION key and typing 3.

Question: As I type on the keyboard, each character appears twice on the screen. What's wrong?
Answer: Both your computer and the service are echoing the characters you transmit. Switch to KEYPRESS ECHO OFF by pressing the OPTION key and typing 3.

Question: Can I use my ATARI 1030 Direct-Connect Modem and ModemLink to communicate with non-ATARI computers?
Answer: Yes. Your ATARI 1030 Direct-Connect Modem operates at what are known as Bell 103 data-transmission standards—300-bit (30 characters) per second, full-duplex transmission (it sends and receives data simultaneously). This means your ATARI computer can now exchange information with literally millions of similarly equipped computer systems.

Question: We have two extension phones. What happens if someone picks up the other phone while I'm connected to a service?
Answer: The information you receive will be garbled. To avoid this, disconnect any extension phones while you're on line. Don't leave the extension off the hook or you'll receive garbled data when the extension phone picks up any noise.

Question: My phone has the "call-waiting" feature—it beeps if someone tries to reach me when I'm already talking on the phone. What happens if someone calls while I'm connected to a service?
Answer: Because ModemLink treats the beep as extraneous noise, you'll receive garbled information.

ASCII: Abbreviation for American Standard Code for Information Interchange (pronounced ask-ee). A set of standard 8-bit information codes, used by most microcomputers.

ATASCII: Atari's specialized version of the ASCII code. It is necessary to handle the ATARI Home Computer's enhanced graphics capability.

Asynchronous Data Transmission: Transfer of data in which each transmitted character is preceded by a start bit and followed by a stop bit.

Baud Rate: Unit of signaling speed expressed in number of discrete events per second.

Bit: Contraction of binary digit, the smallest unit of information in a numerical system based on the number two.

Bit Rate: The speed at which binary digits are transmitted. Expressed in bits per second (bps).

BBS: Abbreviation for bulletin board system.

Buffer: A storage device that holds data temporarily, often used to compensate for differences in data flow; for instance, data received over the phone line at 300 bps may be stored temporarily before it is printed by a slowly moving printer.

Carrier: A continuous frequency capable of being modulated—or varied—with an information-carrying signal.

Direct-Connect Modem: A MOdulator-DEModulator that is plugged directly into the telephone system for use in data transmission.

Download/Upload: The process of transferring and saving a program over telephone lines. Downloading transfers a program from a central computer—such as a BBS—to a remote computer. Uploading transfers a program from a remote computer to a central computer.

Frequency-Shift Keying (FSK): The modulation scheme used by the ATARI 1030 Direct-Connect Modem. FSK shifts a carrier signal from one frequency to another while transmitting data.

Full-Duplex: Data transmission in both directions simultaneously. Similar to a phone conversation in which both parties can talk at the same time.

Half-Duplex: Data transmission in both directions, but only one direction at a time. Similar to a CB conversation in which both parties can talk, but only alternately.

Handshaking: An exchange of predetermined signals that takes place between two modems (and their respective computers) when a telephone connection is established. Only modems similarly configured—for example, at 300 bps, full-duplex transmission—can "shake hands" and exchange data.

Parity Bit: A binary digit added to a group of bits to make the total of all bits odd or even. Parity bits provide a method of checking characters to verify accurate transmission.

RS-232-C: A set of rules established by the Electronics Industry of America (EIA) that standardizes the interface requirements between modems and data terminal equipment, including computers.

Serial Transmission: A mode of data exchange in which each bit is sent sequentially rather than simultaneously.

Start/Stop Bits: Binary digits that signal the beginning or end of asynchronous serial transmission.

Terminal Software: A computer program—such as the ModemLink program in your ATARI 1030 Direct-Connect Modem—that turns a microcomputer into a "smart" terminal capable of interacting over telephone lines with other computers.

X/ON-X/OFF: Mnemonic abbreviations for the "start/stop transmission" signals sent by a receiving modem; they tell a transmitting modem when to start or stop sending information.

ASCII Character Codes

The American National Standards Institute (ANSI) devised 128 character codes that allow worldwide communication between computers. These are known as the ASCII (American Standard Code for Information Interchange) codes. They define the signals generated by the keys on your computer keyboard, and should be changed only by experienced programmers.

Hexadecimal Code	Generated by Key Combination	ASCII Meaning	Character or Function by ModemLink
00	CONTROL @	NUL	
01	CONTROL A	SOH	
02	CONTROL B	STX	
03	CONTROL C	ETX	
04	CONTROL D	EOT	
05	CONTROL E	ENQ	
06	CONTROL F	ACK	
07	CONTROL G	BEL	Sound BEL
08	CONTROL H	BS	Destructive backspace
09	CONTROL I	HT	Cursor 5 spaces right
0A	CONTROL J	LF(NL)	Cursor to start next line
0B	CONTROL K	VT	
0C	CONTROL L	FF	Clear screen
0D	CONTROL M	CR	Cursor to start current line
0E	CONTROL N	SO	
0F	CONTROL O	SI	
10	CONTROL P	DLE	
11	CONTROL Q	DC1	Use to logically unlock keyboard of Answer modem
12	CONTROL R	DC2	
13	CONTROL S	DC3	Use to logically lock keyboard of Answer modem
14	CONTROL T	DC4	
15	CONTROL U	NAK	
16	CONTROL V	SYN	
17	CONTROL W	ETB	

Hexadecimal Code	Generated by Key Combination	ASCII Meaning	Character or Function by ModemLink
18	CONTROL X	CAN	
19	CONTROL Y	EM	
1A	CONTROL Z	SUB	
1B	ESC CONTROL ,	ESC	
1C	ESC CONTROL +	FS	
1D	ESC CONTROL .	GS	
1E	ESC CONTROL *	RS	
1F	ESC CONTROL -	US	
20	Space	Space	Space
21	!	!	!
22	"	"	"
23	#	#	#
24	$	$	$
25	%	%	%
26	&	&	&
27	'	apostrophe	'
28	(	(	(
29	)	)	)
2A	*	*	*
2B	+	+	+
2C	,	comma	,
2D	-	dash	-
2E	.	period	.
2F	/	/	/
30	0	0	0
31	1	1	1

Hexadecimal Code	Generated by Key Combination	ASCII Meaning	Character or Function by ModemLink
32	2	2	2
33	3	3	3
34	4	4	4
35	5	5	5
36	6	6	6
37	7	7	7
38	8	8	8
39	9	9	9
3A	:	:	:
3B	;	;	;
3C	<	<	<
3D	=	=	=
3E	>	>	>
3F	?	?	?
40	@	@	@
41	A	A	A
42	B	B	B
43	C	C	C
44	D	D	D
45	E	E	E
46	F	F	F
47	G	G	G
48	H	H	H
49	I	I	I
4A	J	J	J
4B	K	K	K

Hexadecimal Code	Generated by Key Combination	ASCII Meaning	Character or Function by ModemLink
4C	L	L	L
4D	M	M	M
4E	N	N	N
4F	O	O	O
50	P	P	P
51	Q	Q	Q
52	R	R	R
53	S	S	S
54	T	T	T
55	U	U	U
56	V	V	V
57	W	W	W
58	X	X	X
59	Y	Y	Y
5A	Z	Z	Z
5B	[	[	[
5C	\	\	\
5D	]	]	]
5E	^	^	^
5F	—	underscore	—
60	CONTROL `	grave accent	
61	a	a	a
62	b	b	b
63	c	c	c
64	d	d	d
65	e	e	e
66	f	f	f
67	g	g	g
68	h	h	h
69	i	i	i
6A	j	j	j
6B	k	k	k
6C	l	l	l
6D	m	m	m
6E	n	n	n
6F	o	o	o
70	p	p	p
71	q	q	q
72	r	r	r
73	s	s	s
74	t	t	t
75	u	u	u
76	v	v	v
77	w	w	w
78	x	x	x
79	y	y	y
7A	z	z	z
7B	CONTROL <	open brace	{
7C	|	|	|
7D	CONTROL >	close brace	{
7E	CONTROL /	tilde	~
7F	delete	DEL	

Hexadecimal Code	Generated by Key Combination	ASCII Meaning	Character or Function by ModemLink
4C	L	L	L
4D	M	M	M
4E	N	N	N
4F	O	O	O
50	P	P	P
51	Q	Q	Q
52	R	R	R
53	S	S	S
54	T	T	T
55	U	U	U
56	V	V	V
57	W	W	W
58	X	X	X
59	Y	Y	Y
5A	Z	Z	Z
5B	[	[	[
5C	\	\	\
5D	]	]	]
5E	^	^	^
5F	—	underscore	—
60	CONTROL	grave accent	
61	a	a	a
62	b	b	b
63	c	c	c
64	d	d	d
65	e	e	e
66	f	f	f
67	g	g	g
68	h	h	h
69	i	i	i
6A	j	j	j
6B	k	k	k
6C	l	l	l
6D	m	m	m
6E	n	n	n
6F	o	o	o
70	p	p	p
71	q	q	q
72	r	r	r
73	s	s	s
74	t	t	t
75	u	u	u
76	v	v	v
77	w	w	w
78	x	x	x
79	y	y	y
7A	z	z	z
7B	CONTROL <	open brace	{
7C	|	|	|
7D	CONTROL >	close brace	{
7E	CONTROL /	tilde	~
7F	delete	DEL	

This device has been granted a registration number by the Federal Communications Commission, under Part 68 rules and regulations for direct connection to the telephone lines. In order to comply with these FCC rules, the following instructions must be carefully read and applicable portions followed completely:

1. Direct connection to the telephone lines may be made only through the standard plug-ended cord furnished to the utility-installed jack. No connection may be made to party or coin phone lines. Prior to connecting the device to the telephone lines, you must:

2. Call your telephone company and inform them you have an FCC-registered device you desire to connect to their telephone lines. Give them the number of the lines to be used, the make and model of the device, the FCC registration number and ringer equivalence. This information will be found on the device or enclosed with instructions as well as the jack suitable for your device.

3. After the telephone company has been advised of the above, you may connect your device if the jack is available, or after the telephone company has made the installation.

4. Repairs to the device may be made only by the manufacturer or his authorized service agency. This applies at any time during and after warranty. If such unauthorized repair is performed, registration, connection to the telephone lines and remainder of warranty period all become null and void.

5. If, through abnormal circumstances, harm to the telephone lines is caused, this device should be unplugged until it can be determined if your device or the telephone line is the source. If your device is the source, it should not be reconnected until necessary repairs are effected.

6. Should the telephone company notify you that your device is causing harm, the device should be unplugged. The telephone company will, where practicable, notify you that temporary discontinuance of service may be required. However, where prior notice is not practicable, the telephone company may temporarily discontinue service, if such action is reasonably necessary. In such cases the telephone company must (A) promptly notify you of such temporary discontinuance, (B) afford you the opportunity to correct the condition and (C)inform you of your rights to bring a complaint to the FCC under their rules.

7. The telephone company make make changes in its communications facilities, equipment, operations or procedures, where such action is reasonably required in the operation of its business and is not inconsistent with FCC rules. If such changes can be reasonably expected to render any customer's devices incompatible with telephone company facilities, or require modification or alteration, or otherwise materially affect its performance, written notification must be given to the user to allow uninterrupted service.

Important Information: Like any electrical appliance, this ATARI Home Computer equipment uses and produces radio frequency energy. If it's not installed and used properly according to the instructions in this guide, the equipment may cause interference with your radio and television reception.

It has been type 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 the FCC rules. These rules are designed to provide reasonable protection against such interference when the equipment is used in a residential setting. However, there is no guarantee that interference will not occur in a particular home or residence.

If you believe this equipment is causing interference with your television reception, try turning the equipment off and on. If the interference problem stops when the equipment is turned off, then the equipment is probably causing the interference. With the equipment turned on, you may be able to correct the problem by trying one or more of the following measures:

- Reorient the radio or television antenna.
- Reposition the equipment in relation to the radio or television set.
- Move the equipment away from the radio or television.
- Plug the equipment into a different wall outlet so the equipment and the radio or television are on different branch circuits.

If necessary, consult your ATARI Computer retailer or an experience radio/television technician for additional suggestions.

Every effort has been made to ensure the accuracy of the product documentation in this manual. However, because we are constantly improving and updating our computer software and hardware, Atari, Inc. is unable to guarantee the accuracy of printed material after the date of publication and disclaims liability for changes, errors or omissions.

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