ATARI® 400/800™

COMPUTER PROGRAM

TELELINK™ I

ATARI®

A Warner Communications Company

Model CXL4015
Use with
ATARI® 400™ or ATARI 800™
PERSONAL COMPUTER SYSTEMS

TABLE OF CONTENTS

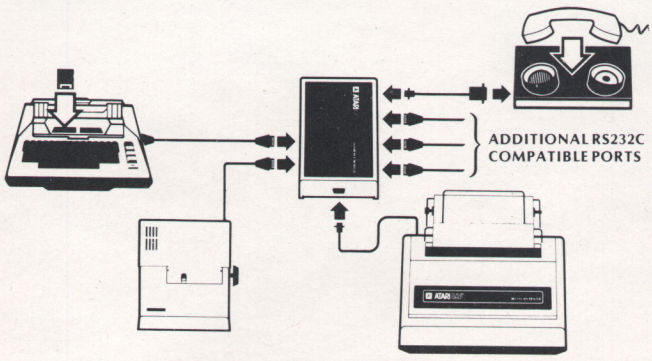
I. GENERAL DESCRIPTION

TeleLink™ I is a cartridge which provides the software necessary to send and receive data over standard telephone lines. It is used with the ATARI® 830™ Acoustic Modem. TeleLink I may be used to communicate with another ATARI Personal Computer System, or any other computer system using a compatible modem. The ATARI 830 Modem is fully compatible with the Bell 103A Modem and other similarly operating modems. To use the TeleLink I cartridge, you must connect the ATARI 850™ Interface Module and the ATARI 830 Modem to either the ATARI 400™ or ATARI 800™ Personal Computer System. This cartridge may be used in conjunction with any of the ATARI Printers (ATARI 820™, ATARI 822™, ATARI 825™), to provide a hardcopy printout of your telephone conversation.

The word modem stands for modulator-demodulator. Its function is to convert data typed on your computer terminal into signals that can be sent over standard telephone lines. As data is received at the other end of the telephone line, the modem at the receiving end demodulates (converts) the signal back into data which can be understood by the receiving computer.

TeleLink I provides a direct link to time-sharing systems, computer data bases, and information utilities such as CompuServe and The Source (see HELPFUL DEFINITIONS). Once you have established communication with another computer, your conversation may begin. To terminate communication you may be required to type an ending message such as "QUIT" or "BYE", depending on the computer system you are talking to. After ending a conversation, switch the ATARI 830 Modem to OFF and hang up the telephone.

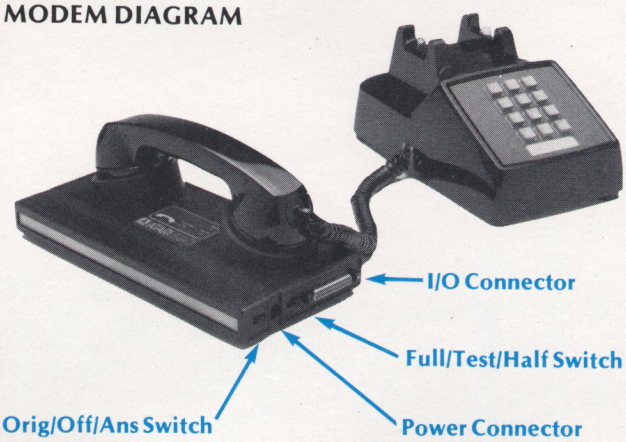
SYSTEM DIAGRAM



Note: To successfully use TeleLink I it is important to familiarize yourself with the system you are communicating with. Carefully read all documentation supplied with your time-sharing system.

Note: TeleLink I operates only with one Printer ON at any given time.

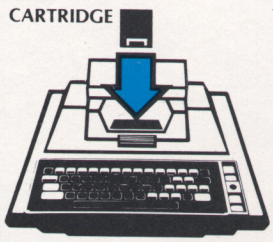
MODEM DIAGRAM



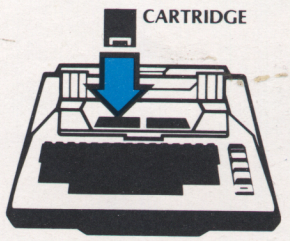
II. OPERATION

This cartridge runs on the ATARI® 400™ or the ATARI 800™ Personal Computer System. Insert the cartridge in the **LEFT CARTRIDGE** slot on the ATARI 800. Be sure the **POWER ON/OFF** switch on the right side of the console is **ON**. The ATARI 400 and ATARI 800 systems automatically shut off whenever the cartridge door is lifted. This prevents damage to the computer and to the cartridge.

The power indicator light on the console should be on when the power is **ON** and the cartridge door is closed, and off when the door is open.



ATARI 400™



ATARI 800™

The TeleLink I cartridge may be used with any of the ATARI Printers. Using your ATARI Personal Computer System with the TeleLink I cartridge requires the ATARI 830 Modem and the ATARI 850 Interface Module. Refer to the appropriate Owner's Manual for further information. Connect the ATARI 820 Printer or the ATARI 822 Printer at the connector labeled **I/O** on either the computer console or the ATARI 850 Interface Module. Use the standard Printer I/O Data Cord (ATARI Part No. CA014122). The ATARI 825 80-Column Printer connects to the ATARI 850 Interface Module at the port labeled **8-BIT PARALLEL**. The ATARI 825 Printer is packaged with the Printer Cable (ATARI Part No. CA015544).

PRINTED IN U.S.A.

CAUTION

When setting up your ATARI Personal Computer System, it is very important that the ATARI 830 Modem is used only with the AC power adaptor supplied with the Modem. This power adaptor is NOT interchangeable with other ATARI AC power adaptors.

To begin transmitting data use the following procedure:

1. If an ATARI 810™ Disk Drive is connected to the system, turn the Disk Drive power OFF. **TeleLink I will not operate with a Disk Drive connected.**
2. Switch the ATARI 850 Interface Module power to ON.
3. Set the ANS/OFF/ORIG switch on the Modem to ORIG and FULL/TEST/HALF to FULL or HALF as required by the computer system at the other end of the communication link.
4. Switch the computer console power to ON. Upon power-up the Interface Module will cause clicking and beeping sounds to be heard through the television speaker.
5. Dial the remote telephone number.
6. After hearing the high-pitched tone, place the telephone receiver into the Modem cradle.
7. When the READY indicator on the Modem lights, you are ready to begin data transmission.
8. Enter appropriate control or "logon" code. This code varies with each particular time-share system.

III. ERROR MESSAGES

RS232 ERROR: 138
This means the 850 Interface Module did not start up properly. Make certain your disk drives are OFF and the Interface Module is ON before you turn on your ATARI 400 or ATARI 800 Personal Computer System.

PRINTER ERROR: 138
There is no printer connected to the system, or its power is OFF.

PRINTER ERROR: 139
The printer is switched OFFLINE (ATARI 825 printer only.)

IV. USER CONTROLS

TeleLink I has a built-in character buffer, meaning that it stores 1.5K bytes of data before it is necessary to empty the buffer to the Printer. You have the option to select an automatic or manual print operating mode. The user operating controls are as follows:

KEYS	FUNCTION
CTRL 9	Selects non-automatic print mode; pressing CTRL 9 again will provide automatic print mode. The default print mode is the automatic mode. Automatic print mode causes the Printer to start printing as the buffer reaches 1K bytes of data. The non-automatic print mode sounds a clicking noise when the buffer reaches 1K bytes of data. In the non-automatic print mode you must start the Printer when you hear the clicking noise.
CTRL 8	CTRL 8 selects a wide screen mode which provides a 40 character screen width instead of the 38 character default width.
CTRL 0	CTRL 0 is used to select word mode or character mode. Character mode displays exact text across the screen and divides words at the end of a line. The default is the word mode which does not break words, but instead moves the entire word to the next line, making the text easier to read.
START	START signals the buffer to begin data storage. In the automatic mode, when the buffer is nearly full a signal (X0FF) is sent to the remote computer to stop sending data while the Printer is printing the contents of the buffer. When the buffer is empty the TeleLink I cartridge sends a signal (XON) to allow the remote computer to continue sending data (see HELPFUL DEFINITIONS). In the non-automatic (manual) mode the START key signals the buffer to begin storing data, and as it reaches 1K bytes of data it sounds a clicking noise. This sound should alert you to print the contents of the buffer by pressing SELECT or OPTION.
SELECT	SELECT signals the Printer to begin printing in the non-automatic mode. SELECT may be used at any time to start the Printer in either automatic or non-automatic mode as a "print early" function. If SELECT is chosen during the automatic mode the computer sends the X0FF and XON signals to the remote computer. These signals are not sent during the non-automatic mode. Any data sent from the remote computer while the buffer is printing its contents, will be lost. To prevent loss of data you must familiarize yourself with signals recognized by the remote computer and send the appropriate code to stop and start its data transmission. Each computer may recognize different stop and start signals.
OPTION	OPTION is similar to SELECT in that it signals the Printer to print what is in the buffer. When the buffer is empty, OPTION signals the buffer to turn off. To start the buffer collecting data again, you must press the START key.

Note: Pressing SYSTEM RESET re-establishes all default control modes.

Each computer system you communicate with may differ slightly in format or message prompts. It is important to understand the format of the receiving computer. Both systems must be set to the same Baud rate (300), and the same duplex (FULL or HALF).

To establish communication between two ATARI Personal Computer Systems, one Modem must use ORIGINATE mode and the other must be in the ANSWER mode. Both systems should use the HALF-DUPLEX mode.

V. CHARACTER CODES

The software contained in the TeleLink I cartridge converts some of the ATARI ATASCII characters into ASCII characters. The following table defines the transmission of these special key functions.

KEYBOARD CHARACTER TYPED	SENDS (ASCII)	MEANS (ASCII)
TAB	Control I	Tab
ESC	ESC	Escape
CLEAR	Nothing	Local Clear Screen
INSERT	Nothing	Nothing
↑	Nothing	Nothing
TAB CLEAR	Nothing	Nothing
TAB SET	Nothing	Nothing
CTRL A through CTRL Z	ASCII Control A through Control Z	As defined by ASCII except as indicated differently by remote computer
RETURN	Control M	Return (CR)
BACK S	Control H	Backspace
DELETE	Delete	Rubout
BREAK	Nothing (this is a safety feature)	Nothing
SHIFT BREAK		Transmits ½ second break
CTRL [	{	{
CTRL]	}	}
CTRL ?/	~	~
CTRL :;	`	Accent Grave
CTRL L	CTRL L	Formfeed (FF) unless otherwise indicated by remote computer
CTRL J	CTRL J	Linefeed
CTRL H	CTRL H	Backspace
CAPS LOWR	CAPS LOWR is the same as the normal function except you cannot use the CTRL lock. Telelink I does not recognize graphic characters caused by CTRL lock.	
CTRL G	CTRL G	Bell
CTRL S	CTRL S	XOFF
CTRL Q	CTRL Q	XON

Printable characters received by your ATARI Personal Computer System are displayed on your screen as the characters defined by ASCII. Most **CONTROL** characters are ignored by your ATARI Personal Computer System except for the following:

CR	Produces new line (END OF LINE), the same as ASCII CR and LF together
FF	Clears the screen
BS	Backspaces
BELL	Bell

Most **CONTROL** characters received by the ATARI Printers will also be ignored with the following exceptions:

CR	Produces new line
BS	Depends on Printer

VI. HELPFUL DEFINITIONS

ANSWER MODE: Answer mode on the Modem indicates the terminal receiving the communication call. In the Answer Mode you must manually answer the telephone and switch the ANS/OFF/ORIG control to ANS.

BAUD: The unit measurement of communication speed, usually measured in bits-per-second.

CompuServe: A personal computing service that provides computer programs, data bases, and services to its customers.

DUPLEX: A method of operation of a communication circuit in which each end transmits and receives.

FULL-DUPLEX: A communication system in which each end can simultaneously transmit and receive.

HALF-DUPLEX: A communication system capable of sending and receiving data in either direction, but not simultaneously.

MARK: Signal equivalent to binary 1.

ORIGINATE MODE: Originate Mode on the Modem indicates the terminal initiating the communication link.

PARITY: Parity is a method of checking binary numbers. An extra bit called a parity bit is added to the number. TeleLink I transmits even parity, and ignores parity received. This allows TeleLink I to receive data from systems transmitting even or no parity.

RS232: For communication between computers and computer related equipment the industry standard is the EIA RS232C standard. This standardized method was adopted by the Electronic Industries Associaton to insure uniformity of interface between data communication equipment and data processing terminal equipment. The ATARI® 850™ Interface Module is equipped with four RS232 interface ports.

SPACE: Signal equivalent to binary 0.

THE SOURCE: The Source is a time-shared service offering personal computing programs and data bases.

XOFF: Signals remote computer to stop sending data. XOFF is **CONTROL S.**

XON: Signals remote computer to begin sending data. XON is **CONTROL Q.**

TIME SHARED PERSONAL COMPUTING SERVICES

CompuServe Information Service
5000 Arlington Centre Blvd.
Columbus, Ohio 43220
(614) 457-8600

Source Telecomputing Corporation
1616 Anderson Rd.
McLean, Virginia 22102
(703) 821-6660

CABLE REORDER NUMBERS

CABLE	ATARI MODEL NO.
I/O Data Cord (5 feet)	CX81
ATARI 825™ Printer Cable	CX86
Modem Cable	CX87
Interface Module Cable	CX88

VII. ASCII CHARACTER SET

CHARACTER	DECIMAL	MEANING	HEXADECIMAL
NUL	0	Null (Type CTRL SPACE)	00
SOH	1	Start of heading (CTRL 1)	01
STX	2	Start of text (CTRL 2)	02
ETX	3	End of text (CTRL 3)	03
EOT	4	End of transmission (CTRL 4)	04
ENQ	5	Enquiry (CTRL 5)	05
ACK	6	Acknowledge (CTRL 6)	06
BEL	7	Bell (CTRL 7)	07
BS	8	Backspace (CTRL 8)	08
HT	9	Horizontal tabulation (CTRL 9)	09
LF	10	Line feed (CTRL 10)	A
VT	11	Vertical tabulation (CTRL 11)	B
FF	12	Form feed (CTRL 12)	C
CR	13	Carriage return (CTRL 13)	D
SO	14	Shift out (CTRL 14)	E
SI	15	Shift in (CTRL 15)	F
DLE	16	Data link escape (CTRL 16)	10
DC1	17	Device control 1 (CTRL 17) XON	11
DC2	18	Device control 2 (CTRL 18)	12
DC3	19	Device control 3 (CTRL 19) XOFF	13
DC4	20	Device control 4 (CTRL 20)	14
NAK	21	Negative acknowledge (CTRL 21)	15
SYN	22	Synchronous idle (CTRL 22)	16
ETB	23	End of transmission block (CTRL 23)	17
CAN	24	Cancel (CTRL 24)	18
EM	25	End of medium (CTRL 25)	19
SUB	26	Substitute (CTRL 26)	1A
ESC	27	Escape	1B
FS	28	File separator	1C
GS	29	Group separator	1D
RS	30	Record separator	1E
US	31	Unit separator	1F
SP	32	Space	20
!	33	Exclamation point	21
"	34	Quotation mark	22
#	35	Number sign	23
$	36	Dollar sign	24
%	37	Percent sign	25
&	38	Ampersand	26
'	39	Apostrophe	27
(	40	Opening parenthesis	28
)	41	Closing parenthesis	29
*	42	Asterisk	2A
+	43	Plus	2B
,	44	Comma	2C
−	45	Hyphen (minus)	2D
.	46	Period (decimal point)	2E
/	47	Right slant	2F
0	48	Zero	30
1	49	One	31
2	50	Two	32
3	51	Three	33
4	52	Four	34
5	53	Five	35
6	54	Six	36
7	55	Seven	37
8	56	Eight	38
9	57	Nine	39
:	58	Colon	3A
;	59	Semi-colon	3B
<	60	Less than	3C
=	61	Equals	3D
>	62	Greater than	3E
?	63	Question mark	3F
@	64	Comercial at	40

CHARACTER	DECIMAL	MEANING	HEXADECIMAL
A	65	Uppercase A	41
B	66	Uppercase B	42
C	67	Uppercase C	43
D	68	Uppercase D	44
E	69	Uppercase E	45
F	70	Uppercase F	46
G	71	Uppercase G	47
H	72	Uppercase H	48
I	73	Uppercase I	49
J	74	Uppercase J	4A
K	75	Uppercase K	4B
L	76	Uppercase L	4C
M	77	Uppercase M	4D
N	78	Uppercase N	4E
O	79	Uppercase O	4F
P	80	Uppercase P	50
Q	81	Uppercase Q	51
R	82	Uppercase R	52
S	83	Uppercase S	53
T	84	Uppercase T	54
U	85	Uppercase U	55
V	86	Uppercase V	56
W	87	Uppercase W	57
X	88	Uppercase X	58
Y	89	Uppercase Y	59
Z	90	Uppercase Z	5A
[	91	Opening bracket	5B
/	92	Left slant	5C
]	93	Closing bracket	5D
^	94	Circumflex	5E
—	95	Underscore	5F
`	96	Grave accent	60
a	97	Lowercase a	61
b	98	Lowercase b	62
c	99	Lowercase c	63
d	100	Lowercase d	64
e	101	Lowercase e	65
f	102	Lowercase f	66
g	103	Lowercase g	67
h	104	Lowercase h	68
i	105	Lowercase i	69
j	106	Lowercase j	6A
k	107	Lowercase k	6B
l	108	Lowercase l	6C
m	109	Lowercase m	6D
n	110	Lowercase n	6E
o	111	Lowercase o	6F
p	112	Lowercase p	70
q	113	Lowercase q	71
r	114	Lowercase r	72
s	115	Lowercase s	73
t	116	Lowercase t	74
u	117	Lowercase u	75
v	118	Lowercase v	76
w	119	Lowercase w	77
x	120	Lowercase x	78
y	121	Lowercase y	79
z	122	Lowercase z	7A
{	123	Opening brace	7B
|	124	Vertical line	7C
}	125	Closing brace	7D
~	126	Tilde	7E
DEL	127	Delete	7F