

LYNX TELEPHONE LINKAGE SYSTEM

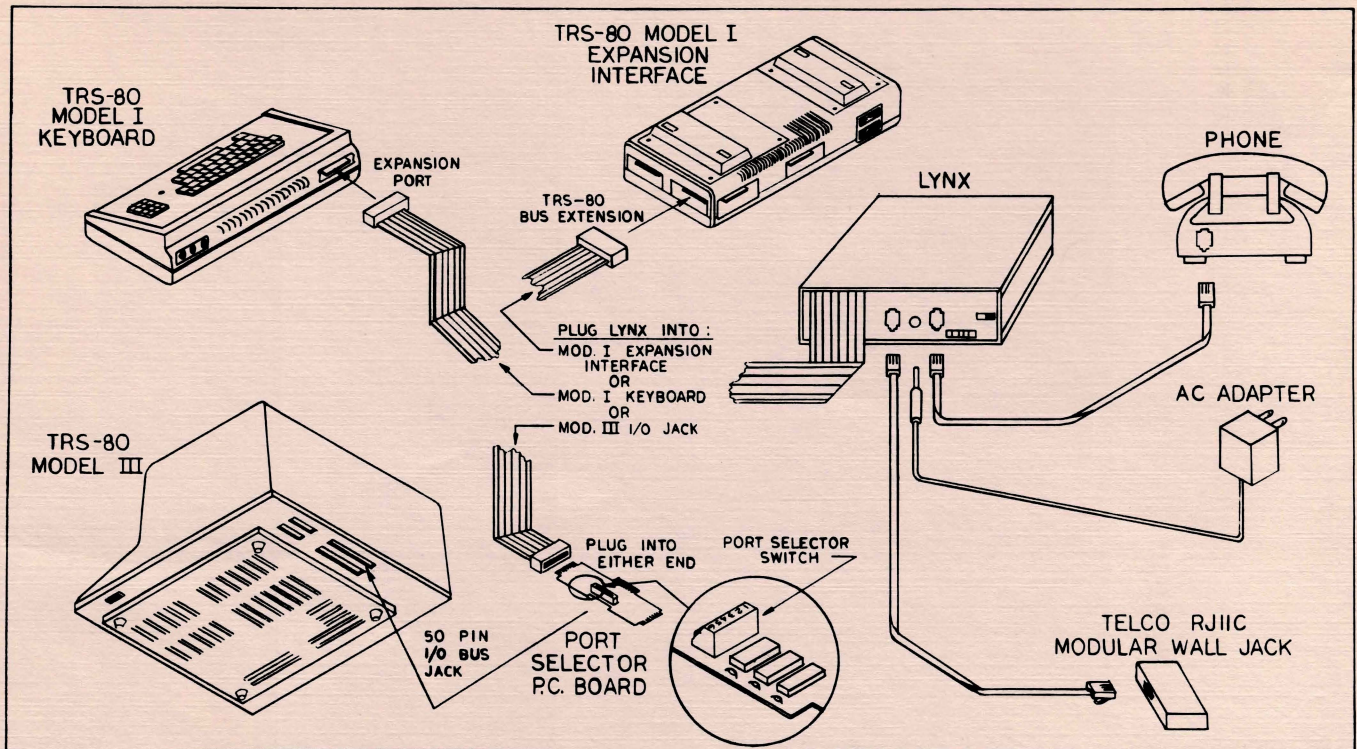
LYNX 



ESI **ENTROL**
SYSTEMS, INC.

123 Locust Street
Lancaster, Pennsylvania 17602
Phone 717/291-1116

LYNX TELEPHONE LINKAGE SYSTEM



Technical Specifications:

Power Source — 115V AC, 60 Hz; plug-in adapter supplies 230 ma at 12 VDC.

Power Consumption — 2.7 watts.

Environmental Limits — Operating temperature: 32° F min., 122° F max. (0-50° C).

Mode of Operation — Manual originate/answer or auto answer/dial; half or full duplex (switch selectable on rear panel).

Data Rate — 300 baud (Bell 103 standard).

Format — Word length, parity and number of stop bits are switch and keyboard selectable.

Software — EMTERM "smart terminal" program supplied on cassette in "system" format. LYNX is also compatible with software by others.

Documentation — Instruction manual describes use of LYNX with popular time-sharing systems, free dial-up message and information systems and TRS-80 - to - TRS-80 personal communications. "Short Form" instructions enable quick start-up. Additional material provides for continued satisfactory application of the LYNX in various forms of data communication.

Warranty — LYNX is covered by a one-year repair or replace warranty furnished with each unit.

Interface

Line — FCC registered for direct connection to modular (RJ11C) jack. Simple plug-in installation by user permitted. 7' full modular cable supplied. (Non-modular existing telephone wall jacks or terminal boxes may be converted to modular jacks by user with inexpensive replacements available from local Radio Shack stores; no telephone company service call required.)

Terminal — For Model I, 40-pin card edge connector and cable attaches to either keyboard or expansion interface; for Model III, port selector P.C. board (furnished with LYNX) attaches to 50-pin I/O bus jack.

Transmit — -9dbm max.; -11dbm typical.

Receive Sensitivity — -50dbm typical.

Physical Features

Dimensions — Height: 2.69" (6.83cm). Width: 8.50" (21.59 cm). Length: 9.25" (23.50cm). (LYNX fits under desk-style telephones.)

Weight — 2 lbs. (.91 kg.)

Color — LYNX is color coordinated with the TRS-80, and features a black case and silver/gray front panel trim.

Hardware Requirements — LYNX functions with any TRS-80 Model I or Model III with 16K or greater RAM.

"TRS-80 is a trademark of the Radio Shack Division of Tandy Corporation"

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How to Use the LYNX

Model I — Follow the connection diagram on the opposite page to connect the LYNX. If you have an expansion interface, plug the LYNX into the "bus extension" (located on the left side toward the front). IF YOUR EXPANSION INTERFACE HAS AN RS232 CARD IN IT, REMOVE THE CARD BEFORE USING THE LYNX.

NOTE: Power must be "ON" to LYNX when using Model I computer. Otherwise, computer will "lock-up".

Model III — Follow the connection diagram on the opposite page to connect the LYNX. Plug the LYNX into either side of the port selector P.C. board, observing the "This Side Up" label on the connector. IF YOUR MODEL III HAS THE OPTIONAL RS232 CARD INSTALLED, SEE "SELECTING A NEW BASE PORT ADDRESS" BEFORE PROCEEDING.

Make sure the LYNX Talk/Data switch is in the "Talk" position. Switch on the TRS-80 and follow cassette load procedures. Depress the space bar in response to the base port address question unless a new address was selected as described under "Selecting a New Base Port Address" (Model III systems only). Select "D" from the menu display and enter the number to be dialed. Depress the enter key to initiate dialing. To terminate before the number is completely dialed or while waiting for an answer, depress  and . The phone will be hung up and the menu will

reappear on the screen. When carrier is received (LYNX carrier light on) from the system called, LYNX automatically enters terminal mode. Proceed according to system requirements.

NOTE: Power light indicates telephone status. Red signifies on-hook condition and green signifies off-hook condition.

If this procedure is not successful, please consult the remainder of this manual before giving up. It may be necessary to change word length or parity. Be aware that different "standards" are presently in use which will require reconfiguration of the LYNX. This is easy to do from the keyboard. See terminal program description in this manual. Try calling published telephone numbers of various types of systems. A problem may exist with your sign-on sequences, password, identification number, host computer, telephone connection, or telephone service. A little experience "on the air" will enable you to recognize the nature of a problem very quickly. It is much more likely that some simple and correctable incompatibility exists than to find a LYNX which is actually defective. Help may be available from other local LYNX users or the host computer operator, and is of course always available from Emtrol Systems, Inc. Allow yourself to learn LYNX capabilities (easy) and also the operation of the host program (not always so easy). Take it one step at a time and you will soon have your LYNX purring along. Remember that you are entering a strange new world as you did when you first typed CLOAD or ADVENT.

Selecting a New Base Port Address

Locate the port selector switch on the port selector P.C. board (see Model III connection diagram). Select a new base port address from the following list:

Decimal	Hexadecimal	Switch						Decimal	Hexadecimal	Switch					
		1	2	3	4	5	6			1	2	3	4	5	6
0	0	D	D	D	D	D	D	40	28	D	D	U	D	U	D
4	4	D	D	D	D	D	U	44	2C	D	D	U	D	U	U
8	8	D	D	D	D	U	D	48	30	D	D	U	U	D	D
12	0C	D	D	D	D	U	U	52	34	D	D	U	U	D	U
16	10	D	D	D	U	D	D	56	38	D	D	U	U	U	D
20	14	D	D	D	U	D	U	60	3C	D	D	U	U	U	U
24	18	D	D	D	U	U	D	64	40	D	U	D	D	D	D
28	1C	D	D	D	U	U	U	68	44	D	U	D	D	D	U
32	20	D	D	U	D	D	D	72	48	D	U	D	D	U	D
36	24	D	D	U	D	D	U	76	4C	D	U	D	D	U	U



U = UP

D = DOWN

NOTE: Port selector switch is shipped from the factory set at UUUDUD, Hexadecimal Port 0E8.

Set the port selector switch using the above switch diagram as a guide. Remember the hexadecimal base port address as it will be used during initialization of the EMTERM terminal program. Connect the port selector P.C. board and the LYNX to the Model III as outlined above under "How to Use the LYNX".

Loading EMTERM

On Model III computers, be sure you have selected the LOW cassette speed by answering "L" to CASS? Type SYSTEM, depress ENTER, then type EMTERM and depress ENTER. Two asterisks should appear in the upper right hand corner of the display, one steady and one blinking. If the "steady" asterisk changes to a "C" during the load, rewind the tape, try resetting the volume control on the tape recorder, and reload the tape. After the tape has loaded, respond to the question mark prompt with "  /  ".

Transferring EMTERM to Disk

From DOS, type the command TAPEDISK and depress ENTER. Place the EMTERM cassette into the recorder, type C and depress ENTER. EMTERM will now load into memory. If any problem is encountered during loading, refer to "Loading EMTERM" above. After EMTERM has loaded completely, enter the following command:

F EMTERM/CMD 7537 7FFF 7537

EMTERM will now transfer to disk. To load EMTERM from disk, just enter EMTERM and depress ENTER after loading DOS.

EMTERM Operation

In response to the message ENTER BASE PORT ADDRESS OR HIT SPACE BAR FOR RS232 BASE PORT ADDRESS, always enter space bar on Model I machines. On Model III machines, enter space bar unless the BASE PORT ADDRESS switches were changed as outlined under "Selecting a New Base Port Address". If the switches were changed, enter the new hexadecimal address. Entering BREAK at any time during this operation will cancel the entered address digits and prompt for new ones.

A menu will appear after the base port address question has been answered. The menu lists the options of the EMTERM program. A one-letter input immediately branches to the chosen program function. RETURN TO MENU is possible at any time by entering . The following is a description of menu selections.

STORE MESSAGE (S)

Selecting "S" causes a mini menu with two selections to be displayed:

STORE MESSAGE (S)
ERASE MESSAGE (E)

Selecting "S" under the mini menu establishes a 16 line by 64 character text buffer in RAM which may be used to store information off line. After establishing the data link in terminal mode, will cause the entire contents of the buffer to be transmitted as a block. This is an on-line time-saving feature which may be repeated until the buffer area is erased with the "E" selection. escapes to the mini menu from the STORE mode. Return to store mode will allow extension of the text already stored. Progress of the block transmission is displayed followed by automatic return to a clear screen.

TERMINAL MODE (T)

Terminal mode is always used to initialize the data link with another computer, whether time-share, host or TRS-80. After communication is established, one may continue in the Terminal mode or select another mode according to the particular nature of the data to be exchanged.

In this mode each character is sent as it is typed. Most time-share hosts will reflect each received character toward the terminal, causing the character to be displayed on the terminal CRT after a slight but noticeable delay. If the host does not reflect, as in the case of a personal TRS-80 to TRS-80 link, it will be necessary to switch to half duplex to see what you are typing. Doubling of each character on your screen indicates half duplex operation plus reflection by the host. Solve this by switching to full duplex. Six handy features of EMTERM are available in Terminal mode:

- a) will enable/disable a parallel printer for hard copy.
- b) will transmit a break command to the host.
- c) will clear the local screen without transmitting anything toward the host.
- d) Stored messages are transmitted by entering .
- e) Control characters are generated by holding in the and depressing the desired control character. The standard control characters A - Z and two special control characters, RUBOUT = 7F Hexadecimal () and UNDERSCORE = 5F Hexadecimal () are available.
- f) Key entry can be repeated at any time by entering with keys desired.

NOTE: Additional control characters can be generated if access to a monitor program is available. See section titled "Additional Control Characters".

EMTERM Operation *Continued*

VIEW/CHANGE UART CONFIGURATION (V)

The "V" command provides for a quick check or change of UART status. UART is the acronym for universal asynchronous receiver/transmitter, a single IC within the LYNX which handles parallel to serial and serial to parallel data conversion and timing and checking functions necessary for serial data communication. The keyboard-controllable variables of the UART are parity, word length, and the number of stop bits. Each is displayed in turn, and may be changed following the screen-prompted instructions. is accepted as a "no" answer, allowing a quick scan of UART status. Unless changed, displayed values are those from LYNX rear panel switches on start up of EMTERM. Re-starting EMTERM will cancel previous **keyboard** changes of UART status. Permanent changes require use of the rear panel switches. Return to main menu from this routine is automatic after all questions are answered.

will also return to main menu directly from any individual question.

DIAL (D)

The "D" command provides convenient access to telephone dialing from the keyboard. Enter telephone number (use no punctuation) and depress when ready to dial. To hang up while waiting for carrier, enter .

The menu will reappear. To hang up after you are in Terminal mode, return to menu display () and select the Dial (D) function.

LYNX Auto Answer Operation

LYNX can answer the telephone automatically. To enable this feature, place Originate/Answer switch in Answer position, Talk/Data switch in Talk position and load the host program furnished on cassette. It is a system program and is loaded in the same manner as EMTERM (see "Loading EMTERM"). In response to the message ENTER BASE PORT ADDRESS OR HIT ENTER FOR RS232 BASE PORT ADDRESS, always enter space bar on Model I machines. On Model III machines, enter space bar unless the BASE PORT ADDRESS switches were changed as outlined under "SELECTING a NEW BASE PORT ADDRESS". If the switches were changed, enter the new address in hexadecimal.

Three host versions have been put on cassette for different memory sizes, and each is recorded twice. Remove the black plug from the recorder so you can listen and play the tape, noting the counter position at the start of each program (indicated by quiet suddenly changing to loud burst). The first recording is HOST16, the second is HOST32, and the third is HOST48. The sequence is then repeated. If you record the counter position, it will be easy to locate the various host versions after the first load. It is important to set a memory size when using the host program. The following chart lists the program name and memory size to set.

Program Name	Memory Size
HOST16	32281
HOST32	48665
HOST48	65049

To use the host, dial the host computer from a remote terminal. LYNX will answer the phone and give the remote terminal control of the host computer. However, the keyboard and video of the host computer are still active.

To cause LYNX to hang up, enter the escape code (1BH) from the remote terminal. (if remote terminal is another LYNX). If you are at the host computer, enter:

OUT234,239
OUT234,237

to hang up LYNX. LYNX is now ready to answer again.

NOTE: Power light displays mode of operation. Red signifies on-hook condition and green signifies off-hook condition. After answering phone, LYNX will "hang up" automatically if after approximately twenty seconds no carrier is received.

Manual Operation of the LYNX

- 1) Dial known computer.
- 2) On hearing answer tone, switch from "talk" to "data".
- 3) Wait for "carrier" light, hang up telephone, and proceed according to requirements for terminal operation of the host computer.

Additional Control Characters

If you have access to a monitor program you can program up to 10 control characters in memory. The control characters are located in memory from 7CDC Hexadecimal to 7CE5 Hexadecimal. The control characters are accessed by entering 0 to 9 from Terminal mode. The following is a list of locations and their corresponding calls:

Memory Location	Present Character	To Call, Enter (in Terminal Mode)	
7CDCH	01H	<input type="text" value="↓"/>	<input type="text" value="0"/>
7CDDH	02H	<input type="text" value="↓"/>	<input type="text" value="1"/>
7CDEH	03H	<input type="text" value="↓"/>	<input type="text" value="2"/>
7CDFH	04H	<input type="text" value="↓"/>	<input type="text" value="3"/>
7CE0H	05H	<input type="text" value="↓"/>	<input type="text" value="4"/>
7CE1H	06H	<input type="text" value="↓"/>	<input type="text" value="5"/>
7CE2H	07H	<input type="text" value="↓"/>	<input type="text" value="6"/>
7CE3H	08H	<input type="text" value="↓"/>	<input type="text" value="7"/>
7CE4H	09H	<input type="text" value="↓"/>	<input type="text" value="8"/>
7CE5H	0AH	<input type="text" value="↓"/>	<input type="text" value="9"/>

To permanently change the control characters at these locations, load EMTERM using a monitor program, change 7CDCH to 7CE5H to desired characters and punch a new tape from 7537H to 7E0BH.

An Example of Auto Dialing in BASIC

```

10 'THE FOLLOWING PROGRAM ENABLES AUTO DIALING USING THE EMTROL
20 'SYSTEMS, INC. LYNX. THE NUMBER TO BE DIALED SHOULD BE EN-
30 'TERED IN THE DATA STATEMENT AT THE END OF THE PROGRAM.
40 'AFTER THE NUMBER IS DIALED AND CARRIER IS PRESENT, THE
50 'PROGRAM JUMPS TO EMTERM. REMEMBER TO SET MEMORY SIZE TO
60 '30006 UPON SYSTEM STARTUP. LOAD AND RUN EMTERM, RESET SYSTEM TO
70 'RETURN TO BASIC, ENTER THIS PROGRAM, AND RUN IT. IN
80 'RESPONSE TO "ENTER BASE PORT ADDRESS", ENTER 232 UNLESS
90 'THE ADDRESS WAS CHANGED AS DESCRIBED UNDER "SELECTING
100 'A NEW BASE PORT ADDRESS" (MODEL III SYSTEMS ONLY).
105 'IF CHANGED, ENTER THE NEW ADDRESS IN DECIMAL.
110 CLS                                'CLEAR SCREEN
120 CLEAR 1000                          'STRING SPACE
130 PRINT "ENTER BASE PORT ADDRESS"
140 INPUT P
150 POKE 31520,P                        'EMTERM PORNUM
160 OUT P+1,2                          'PHONE OFF HOOK
170 FOR A=1 TO 1000: NEXT A            'WAIT FOR DIAL TONE
175 CLS                                'CLEAR SCREEN
180 PRINT "LYNX AUTO DIAL ON LINE"
190 PRINT : PRINT
200 READ C$                            'C$ = TELEPHONE NUMBER
210 Z=LEN(C$)                          'Z = # OF DIGITS TO DIAL
220 FOR X=1 TO Z
230 N=VAL(MID$(C$,X,1))                'N = DIGIT TO DIAL
240 PRINT N;
250 GOSUB 370
260 FOR Y=1 TO 200: NEXT Y              'INTER DIGIT DELAY
270 NEXT X                             'CONTINUE DIALING
280 PRINT : PRINT
290 PRINT "ENTER H TO HANG UP"
300 IF INP(P) >= 128 THEN 340           'WAIT FOR CARRIER
310 POKE 16526,108                     'EMTERM ENTRY
320 POKE 16527,118
330 X=USR(0)                           'JUMP TO EMTERM
340 A$=INKEY$                          'LOOK AT KEYBOARD
350 IF A$="H" THEN 360 ELSE 300         'WAIT FOR "H" ENTRY
360 OUT P+1,0                          'HANG UP IF "H"
365 END
370 IF N=0 THEN N=10                   '0 = 10 PULSES
380 FOR Q=1 TO N                       'CREATE DIGIT PULSES
390 OUT P+1,0                          'PHONE ON HOOK
400 FOR W=1 TO 7: NEXT W               'DELAY
410 OUT P+1,2                          'PHONE OFF HOOK
420 FOR W=1 TO 15: NEXT W              'DELAY
430 NEXT Q                             'CONTINUE DIALING
440 RETURN
450 DATA "12016887117"

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UART Status Switches

LYNX is shipped from the factory with these switches set to provide no parity, 8-bit word length, 1 stop bit, full duplex. This is the correct configuration for the SOURCE, CompuServe (Micronet), Forum-80 and most other time-share systems. For an occasional deviation from this configuration, use keyboard modification procedures. If a permanent change is desired, refer to the switch/function chart. Note: EMTERM reads the switch configuration on start-up only, except for switch 6 which immediately changes from half to full or full to half duplex operation.

UART Status Switches *Continued*

Switches

	Function	1	2	3	4	5	6
Parity	None	UP				X	
	Even	DN				UP	
	Odd	DN				DN	
Word Length	5 Bit			DN	DN		
	6 Bit			DN	UP		
	7 Bit			UP	DN		
	8 Bit			UP	UP		
Stop Bits	1		DN				
	2		UP				
Half/Full Duplex	Half						DN
	Full						UP

X = Don't Care

LYNX Port Usage

	In (B)*	Out (B)*	In (B+1)*	Out (B+1)*	In (B+2)*	Out (B+2)*	In (B+3)*	Out (B+3)*
D0	Serial Data to UART	Any Data UART Reset	Always "1"	Not Used	Not Used	Not Used	Receive Data	Transmit Data
D1	Not Used	Any Data UART Reset	Always "0"	Phone Line 1=Off HOOK 0=On HOOK	Not Used	Auto Answer Enable 1=Disable AA 0=Enable AA	Receive Data	Transmit Data
D2	Not Used	Any Data UART Reset	Always "0"	Not Used	Not Used	Break Flip Flop 1=Enable Transmit 0=Disable Transmit	Receive Data	Transmit Data
D3	Not Used	Any Data UART Reset	Parity Select 1=Parity Off 0=Parity On	Not Used	Parity Error 1=Error On 0=Error Off	Parity Control 1=Parity Off 0=Parity On	Receive Data	Transmit Data
D4	Always "0"	Any Data UART Reset	Stop Bit Select 1=2 Stop Bits 0=1 Stop Bit	Not Used	Framing Error 1=Error On 0=Error Off	Stop Bit Control 1=2 Stop Bits 0=1 Stop Bit	Receive Data	Transmit Data
D5	Carrier Detect 1=Carrier Off 0=Carrier On	Any Data UART Reset	Word Length Select 2 (See Below)	Not Used	Overrun Error 1=Error On 0=Error Off	Word Length Control 2 (See Below)	Receive Data	Transmit Data
D6	Carrier Detect 1=Carrier Off 0=Carrier On	Any Data UART Reset	Word Length Select 1 (See Below)	Not Used	Transmit Buffer Empty 1=Empty 0=Not Empty	Word Length Control 1 (See Below)	Receive Data	Transmit Data
D7	Carrier Detect 1=Carrier Off 0=Carrier On	Any Data UART Reset	Even Parity Select 1=Even Parity 0=Odd Parity	Not Used	Received Data Available 1=Ready 0=Not Ready	Even Parity Select 1=Even Parity 0=Odd Parity	Receive Data	Transmit Data

*B=E8 Hexadecimal unless changed as described under "Selecting a New Base Port Address" in the manual.

D6
WLS1

0 5 Bits
0 7 Bits
1 6 Bits
1 8 Bits

D5
WLS2

0
1
0
1

Summary of LYNX Commands

Start-up Procedure

1. Memory size?30006 ENTER
2. Load EMTERMSYSTEM ENTER
3. Start Program/ ENTER

Operating Commands

T — Terminal Mode

(back panel half duplex/full duplex switch 6 — Change switch if double letters or no echo)

- ↓ >Printer toggle
- BREAKTime-sharing break function
- CLEARLocal screen clear
- ↓ ?/Transmit stored message
- ↓ CControl C
- ↑Escape
- ↓ <Return to menu

S — Store message for block transfer (one screen 16 × 64)

- EErase block
- SAdd to block
- ↓ <Return to menu
- ↓ ↑Return to S mini-menu

V — View/change LYNX set-up,

- System ENTER /30007 ENTER resets to back-panel values
- ENTERNo change
- ↓ <Terminate, return to menu

In addition to numerous business, private and personal applications of LYNX, several nationwide time-share services have appeared for which LYNX is ideally suited.

The SOURCE

SOURCE is an information utility featuring UPI news, stock info, electronic mail, games and numerous other data-bases and functions. Operated by Telecomputing Corp. of America, the SOURCE charges major credit cards for connect time and storage. Further description of this service may be had by contacting Telecomputing Corp. of America, 1616 Anderson Road, McLean, VA 22102, 800-336-3330.

Micronet

Micronet is undergoing extensive change at time of this writing. What began as a hobbyist-style programming and game service (and a very fast and efficient one at that) is expanding to include stock quotations (Microquote) and other data-bases and features as well. Changing its name to Compuserve Information Utility, the new format will include but far surpass the original Micronet in variety. Again, this is a pay-for-by-credit-card service. More information available from Compuserve, Inc., 5000 Arlington Centre Boulevard, Columbus, OH 43220, 614-457-8600.

Forum-80

Forum-80 is a free dial-up message and bulletin board program which is in use throughout the US supported by enthusiast groups of various interests and backgrounds. All that is necessary here is to call up and follow the instructions given. Phone numbers may be found in recent issues of **Kilobaud Microcomputing** under "Dial-Up Directory". Other system phone numbers may also be obtained from each Forum-80 system.

Union, NJ	201-688-7117
Kansas City, MO	816-861-7040
Memphis, TN	901-276-8196
San Francisco, CA	415-348-2139

Limited Warranty

The manufacturer guarantees to the original purchaser of its products, that if any part proves to be defective in workmanship or in material within a period of one year, the defect will be repaired or replaced without charge at the option of the manufacturer.

This limited warranty extends only to the original purchaser, and is not saleable or transferable.

This limited warranty shall not apply to any unit which has been subject to alteration or modification, abuse, negligence or accident, or used in any manner contrary to instructions given by the manufacturer. This limited warranty is void if service is performed by other than the manufacturer or his authorized agent. The manufacturer offers a service contract for service and/or repairs after expiration of this limited warranty.

TRS-80 is a trademark of the Radio Shack Division of Tandy Corporation.

LYNX Model 103 O/A

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 plus-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(s) of the line(s) 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, it should be unplugged until it can be determined if your device or the telephone line is the source. It should not be reconnected until the 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 may 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.

Jack (USOC) RJ11C Ringer Equivalence = 0.6B

FCC Registration Number A909KE-68171-DM-N

FORUM-80 NETWORK SYSTEMS

FORUM	AUGUSTA, GA	(3.1)	803-279-5392
FORUM	BOSTON, MA	(3.1)	617-431-1699
FORUM	CHICAGO, IL	(3.1)	312-782-8180
FORUM	CLEVELAND, OH	(3.1)	216-486-4176
FORUM	DENVER, CO	(3.1)	303-771-3826
FORUM	FAIRFAX, VA	(3.1)	703-978-7561 (GENEALOGY)
FORUM	HULL, ENGLAND	(3.1)	011-44-482-859169
FORUM	FT. LAUDERDALE, FL	(3.0)	305-772-4444
FORUM	KANSAS CITY, MO	(3.1)	816-861-7040 (H.Q. SYS)
FORUM	KANSAS CITY, MO	(3.1)	816-931-9316 (COMMODITIES)
FORUM	LAS VEGAS, NV	(3.1)	702-362-3609
FORUM	LEAVENWORTH, KS	(3.1)	913-651-3744 (EDUCATION)
FORUM	MEMPHIS, TN	(3.1)	901-276-8196
FORUM	MEMPHIS, TN	(3.1)	901-362-2222 (HOBBYIST)
FORUM	MONMOUTH COUNTY, NJ	(3.1)	201-528-6623
FORUM	MONTGOMERY, AL	(3.1)	205-272-5069
FORUM	MT. CLEMENS, MI	(3.1)	313-465-9531 (MEDICAL)
FORUM	NASHUA, NH	(3.1)	603-882-5041
FORUM	ORLANDO, FL	(3.1)	305-862-6917 EVENINGS-W/E
FORUM	ORANGE COUNTY, CA	(3.1)	714-952-2110 (SELF HELP)
FORUM	PONTIAC, MI	(3.1)	313-335-8456
FORUM	SAN FRANCISCO, CA	(3.1)	415-348-2139
FORUM	SEATTLE, WA	(3.1)	206-723-3282
FORUM	SHREVEPORT, LA	(3.1)	318-631-7107
FORUM	TAMPA, FL	(3.1)	813-223-7688 EVENINGS-W/E
FORUM	TULSA, OK	(3.0)	918-224-5347 EVENINGS-W/E
FORUM	UNION, NJ	(3.1)	201-688-7117
FORUM	WESTFORD, MA	(3.1)	617-692-3973
FORUM	WICHITA, KS	(3.1)	316-682-2113
FORUM	WICHITA FALLS, TX	(2.1)	817-855-3916

OTHER SYSTEMS

ABBS	AKRON, OH	216-745-7855
ABBS	ATLANTA, GA	404-953-0723
ABBS	BUENA PARK, CA	714-739-0711
ABBS	CAMBRIDGE, MA	617-354-4682
ABBS	CHICAGO, IL	312-622-9609
ABBS	CHICAGO, IL	312-337-6631
ABBS	DALLAS, TX	214-634-2668
ABBS	DENVER, CO	303-759-2625
ABBS	DOWNERS GROVE, IL	312-964-7768
ABBS	FT. LAUDERDALE, FL	305-566-0805
ABBS	FT. WALTON BEACH, FL	904-243-1257
ABBS	HAWTHORNE, CA	213-675-8803
ABBS	HOUSTON, TX	713-977-7019
ABBS	HUNTINGTON, CA	714-962-7979
ABBS	IRVINE, CA	714-751-1422
ABBS	LOS ANGELES, CA	213-349-5728
ABBS	MARINA DEL REY, CA	213-821-7369
ABBS	MEMPHIS, TN	901-761-4743
ABBS	MIAMI, FL	305-821-7401
ABBS	MINNEAPOLIS, MN	612-929-8966
ABBS	NAPERVILLE, IL	312-420-7995
ABBS	PHOENIX, AZ	602-957-4428
ABBS	PISCATAWAY, NJ	201-968-1074
ABBS	POMPTON PLAINS, NJ	201-835-7228
ABBS	SAN DIEGO, CA	714-582-9557
ABBS	SAN FERNANDO, CA	213-340-0125
ABBS	SAN FRANCISCO, CA	415-948-1474
ABBS	SANTA MONICA, CA	213-394-1505
ABBS	SCOTCH PLAINS, NJ	201-753-1225
ABBS	SEATTLE, WA	206-524-0203
ABBS	SPRINGFIELD, MO	417-862-7852
ABBS	WEST PALM BEACH, FL	305-689-3234
ABBS	WESTMINSTER, CA	714-898-1984
CBBS	ATLANTA, GA	404-394-4220
CBBS	CHICAGO, IL	312-545-8086 (H.Q. SYS)
CBBS	DETROIT, MI	313-288-0335
CBBS	LOS ANGELES, CA	213-843-5390
CBBS	PORTLAND, OR	503-646-5510
CBBS	WASHINGTON, DC	703-281-2125
MSG-80	GREAT NECK, NY	516-482-8491
MSG-80	HALEDON, NJ	201-790-6795 (PHOTOGRAPHY)
MSG-80	JERICO, NY	516-334-3134
MSG-80	LIVINGSTON, NJ	201-992-4847
MSG-80	LONG ISLAND, NY	516-588-5836
MSG-80	MANHATTAN, NY	212-245-4363
PMS	ANAHEIM, CA	714-772-8868
PMS	FREEPORT, TX	713-233-7943
PMS	LOS ANGELES, CA	213-291-9314
PMS	PALO ALTO, CA	415-493-7961
PMS	SAN DIEGO, CA	714-582-9557
PMS	SANTEE, CA	714-449-5689 (H.Q. SYS)
NORTH*	ATLANTA, GA	404-939-1520
NORTH*	COLUMBIA, SC	803-771-0922
BUL-80	DANBURY, CT	203-744-4644

LYNX MODEL I/III

Manual Addendum

How to Tell if You Have an RS232 Card

Model I System

If you do not have an expansion interface, you do not have an RS232 card. Otherwise, remove compartment cover from top left side of expansion interface. If you have an RS232 card, it will be installed here.

Model III System

Locate the 50 pin I/O Bus Jack on the bottom of your computer. In front of it is an opening for the RS232 card edge connector. If the opening is empty, you do not have an RS232 card.

How to Use LYNX with an RS232 Card (Model III Only)

Your computer is capable of addressing 256 different "ports" or input/output locations. LYNX uses a group of four of these. Using the Port Selector P.C. Board, you can specify which group of four LYNX is to use. This is done by selecting a base port address (the first port in the group of four) from the chart on page 3 of the manual. Switches on the Port Selector P.C. Board are set according to the chart and the new hexadecimal address is entered at the start of the EMTERM program.

You are probably wondering why you should select a new base port address. The reason is that no two peripheral devices can be located at the same port address. If your computer came with an RS232 card, it uses four ports starting at hexadecimal E8. The LYNX, as shipped from the factory uses the same four ports. If you try to use LYNX without changing the base port address first, you may damage your RS232 card and LYNX. You must either remove the RS232 card or select a new base port address for the LYNX (much easier). It does not matter which new address you select, as long as it does not interfere with any other peripheral device you have on the Model III bus.

How to Use LYNX with Other Software

Model I

LYNX is compatible with standard terminal software written for the Model I. Just be sure your system does not contain an RS232 card.

Model III

If your computer does not contain an RS232 card LYNX will work with standard Model III terminal software after entering in BASIC command mode:

```
A=PEEK (16912)
POKE 16912, A OR 16
```

This operation enables the 50 pin I/O bus on the Model III computer. It is disabled each time the computer is reset.

If your computer does contain an RS232 card, it will be necessary to either remove the card or select a new base port address and modify the software to work with LYNX at the new address. Some terminal software has this capability "built in". Check with specific software authors for more information. Once LYNX and your software are set up, enter in BASIC command mode:

```
A=PEEK (16912)
POKE 16912, A OR 16
```


HOST Program

The HOST Program furnished with LYNX is designed to be used as an "extension" of your computer's keyboard and video. It is not DOS compatible and we do not recommend putting it on disk.

There are host programs available which allow disk system interaction. One such program is ST80-X10 by Lance Micklus, Inc.

Manual Corrections

Page 3 - under Selecting a New Base Port Address, left Hexadecimal column heading, 0, 4, 8 should be 00, 04, 08.

Page 4 - under Transferring EMTERM to Disk, change F EMTERM/CMD 7537 7FFF 7537 to F EMTERM/CMD: 0 } 7537 7FFF 7537
or } depending on disk drive being used
1 }

Page 7 - under An Example of Auto Dialing in BASIC, add the following lines:
106 A = PEEK (16912) 'ENABLE MODEL III I/O BUS
107 POKE 16912, A OR 16

Page 8 - under LYNX Port Usage, under Out (B+1)* column, Phone Line 1 = Off line, 0 = On Line should be 1 = Off Hook, 0 = On Hook.

