AW49M5-69193-DM-N
Model UM1
S/N 1801

HW Changes
SW avail.
Catal.

-TSMART
-ST80
-SMART80D
Other software
-TARITERM — 24.95
25.00 —

THE MICROCONNECTION™

USER MANUAL - EDITION 2.0©

1 MARCH, 1981

the microperipheral corporation

2643 151st PL. N.E.
Redmond, Wa. 98052
(206) 881-7544

IMPORTANT NOTICE TO USERS

Every effort has been made to supply a reliable product. THE MICROCONNECTION™ is FCC Approved and employs Underwriters Laboratories (UL) approved components. However, since THE MICROCONNECTION™ interfaces to other equipment and systems, The MicroPeripheral Corp. shall have no liability or responsibility to customer or any other person or entity with respect to any liability, loss or damage caused or alleged to be caused directly or indirectly by hardware or software sold by The MicroPeripheral Corp. including, but not limited to any interruption of service, loss of business or anticipatory profits or consequential damages resulting from the use or operation of such hardware or software. Further, The MicroPeripheral Corp. does not represent the hardware or software described in this document as suitable for any purpose and does not assume any liability arising out of the application or use of any hardware or software described herein.

THE MICROCONNECTION™ is warranted against failure to operate due to defects in workmanship and components for a period of 90 days. In addition to the previous exclusions, this limited warranty shall exclude failures caused by misuse, mishandling, physical damage or externally introduced faults. For two years following the limited warranty period, THE MICROCONNECTION™ may be returned to The MicroPeripheral Corp., without prior permission, and it will be repaired and aligned for a fixed fee of $50.00.

The MicroPeripheral Corp. reserves the right to make changes to any hardware or software or to change their specifications at any time without notice.

THE MICRO CONNECTION USERS GROUP

In an effort to encourage the exchange of information betwen MICROCONNECTION owners, The MicroPeripheral Corp. has established a user group bulletin board on CompuServe Information Service (Micronet). The data base includes information on programs for use with THE MICROCONNECTION, modifications, applications and user news. Users are encouraged to write software either for sale by The MicroPeripheral Corp. or for free distribution through the users group.

For information on accessing this data base, or to obtain a copy of the User Guide, contact the MicroPeripheral Corp.

MANDATORY USER INSTRUCTIONS

The MICROCONNECTION has been approved by The Federal Communications Commission (FCC) under Part 68 of their Rules and Regulations for a direct interconnection to the national switched telephone network. The registration number is:

#AWY9M5-69193-DM-N

ATBA

Ringer Equivalence 0.0B

In order to fully comply with FCC Rules and Regulations, the user must read and be aware of the following:

1. Direct connection to the telephone must be made from the cord supplied by The Microperipheral Corp. to standard modular jacks. Suitable jacks can be installed by your local telephone company or obtained from Radio Shack stores for customer installation.

2. No connection may be made to party lines or coin operated telephone systems.

3. Before you use your MICROCONNECTION, you must advise your local telephone company you have an FCC registered device and desire to connect to their telephone lines. Supply them your telephone number, the name of our product (MICROCONNECTION, Model UM1), along with the FCC registration number and ringer equivalence given above.

4. Repairs to the MICROCONNECTION must be made only by The Microperipheral Corp. or our authorized agent. This restriction applies even after the warranty expires. If any unauthorized repair is performed, both the registration and permission to connect to the telephone line, along with the remainder of the warranty (if any) is withdrawn.

5. In the unlikely event the MICROCONNECTION causes hum or interference to the installed telephone network, it must be disconnected immediately. If it is determined that our product is at fault, it should be returned to The Microperipheral Corp., or its authorized agent, for repair.

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SECTION I

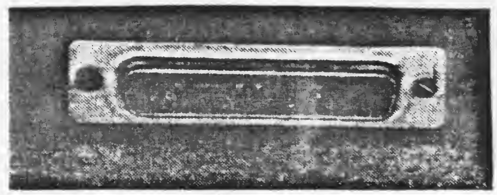
G E T T I N G C O N N E C T E D

Welcome to the fascinating world of telecommunications. You are about to participate in a modern electronic miracle.... the transfer of computer data over the national telephone circuits.

Obviously you want to "get connected" right away, before a complete reading of the manual, so this section tells you how. If you are using other than an RS-232 version of the MICROCONNECTION™ and run into any specific problems, refer to the sections which follow.

THE RS-232 COMPUTER CONNECTION

The first step in installing your MICROCONNECTION™ is to make the RS-232 connection. If you have a variation of the MICROCONNECTION™ which does not use the RS-232 I_O port, refer to the supplementary parts of this section.



On the rear panel of the MICROCONNECTION™ you will note a multi-pin connector called a DB-25 (see photo.) There are 25 pins starting with number 1 in the upper right hand corner, with pin 13 in the upper left corner. The lower right pin is 14. The remaining pins are numbered right to left up to 25 in the lower left corner.

The active pins are as follows:

	PIN	USAGE	
	1.	GROUND (connected to pin 7)	5 GRN
	2.	RX (characters from RS-232)	4 BLK
	3.	TX (characters to RS-232)	3 ORNG
	4.	Request to Send (RTS)	7 YLO
LO = Remot Disconn / Hi w/CD.	5.	Data Set Ready (DSR)	6
	6.	Clear to Send (CTS)	8. Red
	7.	GROUND (connected to pin 1)	5 GRN
	8.	Carrier Detector (DCD)	2
LO = HOST DISCONN.	20.	Data Terminal Ready (DTR)	1 BRN
Atari	22.	Ring Indicator (RI)	

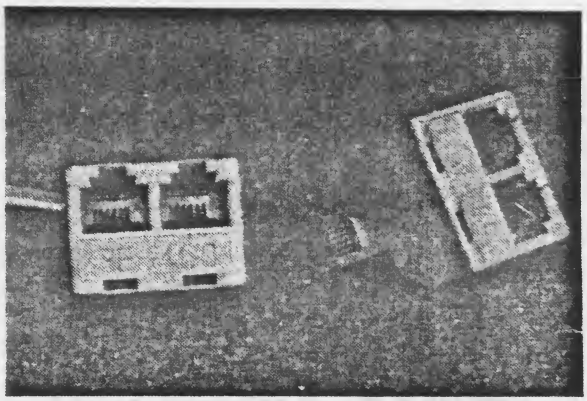
Note that pins 5, 6 and 8 are tied together and are held high upon receipt of a carrier signal. Note also that the RTS, DTR and RI lines are used only on the AutoAnswer-AutoDial version of the MICROCONNECTION™.

Connect the RS-232 cable from your computer or terminal to the DB-25 connector on the rear of the MICROCONNECTION™. If you do not have a suitable cable, it may be obtained at most computer stores, Radio Shack Computer Centers or from The MicroPeripheral Corp. You can also make a suitable cable by purchasing two Radio Shack connectors (# 276-1559) and a 5-foot length of ribbon cable (# 278-771). Remove all but 25 wires from the cable strip and crimp the ribbon into the connectors. The cable should be of suitable length and terminate on each end in a male 25 pin DB-25 connector. If plastic DB-25 plugs

(such as the Radio Shack type) are used, it may be necessary to file the edges slightly to clear the connector opening on the rear of the MICROCONNECTION™.

THE TELEPHONE CONNECTION

The cable extending from the rear of THE MICROCONNECTION™ terminates in a tiny plastic connector. This is called a modular plug which is now the standard connector within the telephone industry. The modular plug is shown in the accompanying photo.



In order to connect to the telephone line, you will need to obtain a "Y" or duplex modular jack such as the one shown in the accompanying photo. It allows two jacks (one from the telephone and one from THE MICROCONNECTION™) to be connected together. The duplex jack is MicroPeripheral Corp. part number 902 or it may be obtained from Radio Shack (#279-357). Before proceeding, make certain the VOICE-DATA switch on your MICROCONNECTION™ is in the voice position (button out).
The cord coming from your telephone terminates at the wall in a modular plug. Disconnect this modular plug from your wall mounted connector by pressing down on the plastic ear on the jack. Insert the duplex "Y" in the jack, then reinsert the plug from your telephone into one side of the duplex. Finally, insert the plug coming from THE MICROCONNECTION™ into the remaining jack opening in the duplex "Y". You are now connected to the telephone system! Note that you can also connect the duplex "Y" on the rear of the telephone instrument.

* * * * * * * * * * * * * * * * N O T E * * * * * * * * * * * * * * * *

These instructions assume that your telephone installation incorporates the modular plug and jack arrangement. If this is not the case, refer to the section titled PLANNING THE MICROCONNECTION™ CONNECTION for information on how to adapt your installation to accept the modular plug.

* *

THE POWER CONNECTION

Connect the two wire cord from THE MICROCONNECTION™ to the two screw terminals on the transformer. Plug the transformer into a 117 volt a.c. outlet. THE MICROCONNECTION™ draws less than 100 milliamperes of current. Because of the extra heavy duty power source supplied, no problems will be incurred if this transformer is left plugged in. You have now made the power connection!

THE SOFTWARE CONNECTION

A terminal usually does not require programming. However, a computer requires operating instructions to tell it what to do. This is called software. A dumb terminal program is provided with some versions of

THE MICROCONNECTION™. You may have purchased other software, or ordered it along with your unit. Loading and execution of a communications program is covered in the instructions supplied with the software. If your MICROCONNECTION™ has an AutoDial-AutoAnswer module installed, it is imperative that you review the section titled THE AUTO-MICROCONNECTION™. If the software does not properly match the modem requirements, it may not be possible to put the modem on line.

MAKING THE MICRO CONNECTION™ CONNECTION

Once you have loaded the software, you are ready to try THE MICROCONNECTION™ and the world of telecommunications. It is assumed you have not used a computer in this manner previously. As in all new endeavors, you will soon realize there are a number of things to learn to become proficient. A list of several community bulletin boards is provided later in this manual. These public access systems do not charge for their service and are a good place to become familiar with your new capabilities. We also suggest that you read the section titled "THE DATA BASE CONNECTION", to enjoy the highest success in your initial use.

Since this may be the first time that you have been on-line wth your computer, let's make a quick test to insure it is working correctly. Temporarily unplug the duplex "Y" from the wall outlet. This will leave your computer connected to the telephone, but NOT the telephone network, during this test. Press the line switch in to the DATA position. Pick up the phone and listen. You should hear a steady tone. If you have the AutoDial-AutoAnswer module installed and do not hear the tone, refer to the AUTOCONNECTION section. Each time you press a key, you should hear a clicking sound. As you continue to type, you will hear "clicks" along with the tone every time you press a key.

Now, plug the duplex "Y" back in for a quick test on the telephone line. You should hear the dial tone along with the modem tone. Blow into the microphone of the telephone handset. You should see "garbage" characters on the screen.

Now, at last, let's go on-line! Place the VOICE-DATA switch in the VOICE position. Make sure the mode switch is in the ORIGINATE position. Dial up one of the numbers provided on the community bulletin board list (or one you may otherwise know about) in your area code. As soon as you hear the carrier tone, press the VOICE-DATA switch in to the DATA position. You should immediately hear your answer tone and the carrier lamp on THE MICROCONNECTION™ should light up. When this occurs, hang up the phone. That right! Hang up the telephone. Don't worry, it won't disconnect you. It only disconnects the telephone but you maintained the connection when you pressed the line switch in. You are now connected to the other computer. Press the enter key once or twice to tell the bulletin board to proceed with its program. From here on the computer bulletin board will prompt you and tell you what to do. If you don't understand a command request, type "H" for help, press the question mark key, or pressENTER>.

SECTION I-A

OTHER MICROCONNECTIONS

There are a number of MICROCONNECTION™ versions. This section will describe some of the variations and special instructions relative to their installation and usage.

THE TRS-80 BUSS DECODING VERSION

This product plugs into the TRS-80 buss and can be used with any Model I, even the basic $495.00, Level I, 4K system. Data and address signals are taken from the keyboard buss connector or the screen printer port (also called the buss extension) on the side of the expansion interface.

For telecommunications applications, this version of the MICROCONNECTION™ eliminates the need for the Radio Shack expansion box, RS-232 adapter board and acoustic telephone interface. The MICROCONNECTION™ decodes the data and address lines on the buss and creates an RS-232 compatible signal. Port 208-209 is decoded so that if the RS-232 board is installed, the user can have two independent or interactive serial I-O ports.

The RS-232 signal then controls the circuitry that interfaces to the telephone line. It is also fed to a DB-25 on the rear of the MICROCONNECTION™. A serial printer can be connected to this point. Note the following pins are active in this version of the MICROCONNECTION™:

PIN	USAGE
1-	Ground (connected to pin 7)
3-	TX (characters to printer)
5-	Data Set Ready (DSR)
6-	Clear to Send (CTS)
7-	Ground (connected to pin 1)
8-	Carrier Detect (DCD)

Note that pins 5, 6 and 8 are tied together and held high. The printer must be set for 300 baud. There is no provision for handshaking at higher baud rates.

Before you "power up", remove the plastic cover at the left rear corner of your keyboard. Note the "card edge" connector inside the compartment. The end of the 12 inch ribbon cable from the MICROCONNECTION plugs onto this card edge. Use an eraser and clean the corrosion off the connectors, both on the top and bottom of the card.

Make sure that the ribbon is pointing downward from the connector. Slip the ribbon cable connector over the "card edge" straight and firm.

If you have the expansion interface, use the same procedure (don't forget to clean with an eraser). Slide the connector on the "card edge" identified as the screen printer port or buss extension port.

If you have completed the other instructions in SECTION I, you are now ready to load the software and go online.

T SMART - 850

MICROCONNECTION FOR THE ATARI

Most of the comments and instructions in SECTION I apply to the Atari MICROCONNECTION™, however there are a number of special considerations. After the software is loaded from the Atari data recorder, remove the plug from the computer I-O connector. Connect the cord from the MICROCONNECTION™ to this point.

If you are the fortunate owner of a disk operating system, the modem plugs into one of the disk drive I-O connectors at the end of the I-O chain. In this type of installation, the software is loaded from the disk. See the instructions which accompany the software for the proper loading procedure.

Note that the buss driven version of the MICROCONNECTION™ has no provision for the AutoDial-AutoAnswer module. The reason is that several signals are required to control the modem and these signals are not available without the Model 850 accessory.

If you have the Model 850, it is very likely that you purchased the RS-232 version of the MICROCONNECTION™. This modem connects to the 850 in exactly the same manner as does the product supplied by Atari. If you do not have the AutoDial-AutoAnswer module installed, the MICROCONNECTION is fully compatible with Atari Model 800 telecommunications software. However, if the AutoDial-AutoAnswer feature is used, the software must provide for proper control of the RTS and DTR lines. For additional information, see SECTION III relative to the AUTO MICROCONNECTION™.

Make sure you have completed the other steps in Section I. Then execute the software and go online with the MICROCONNECTION™.

SECTION II

AN INTRODUCTON TO "THE MICRO CONNECTION™

The MICROCONNECTION™ is a direct connect modem that is designed to work in conjunction with most popular microcomputers and terminals. The most popular version is designed to interface to the standard RS-232 serial I/O port. Other versions are available to interface to the TRS-80 data buss, the ATARI I/O cable, an Apple Serial Card, and the PET user interface connector.

The MICROCONNECTION plugs directly into the telephone line, either at the wall connection or at the rear of the telephone instrument. Thus, the telephone handset need not fit into an acoustic coupler. Transmission errors are thereby reduced and line sensitivity is increased because there is no coupling loss. The MICROCONNECTION™ is silent (no audible whistle) and there is no chance of room noise pickup because the handset is not used.

Most MICROCONNECTIONS™ provide an interface to a serial printer via a DB-25 connector on the rear of the modem. One exception is the RS-232 version, mentioned earlier, since the DB-25 connector is already allocated for the I/O line from the RS-232 circuitry in the computer or terminal. All data which appears on the CRT from online communications will echo simultaneously on the printer. Software is available for a number of computers that will permit routing listings and printouts to the printer via the MICROCONNECTION™ circuitry.

A unique feature of the MICROCONNECTION™ is its ability to "spool" ASCII data to an inexpensive cassette recorder attached to the MICROCONNECTION™. On line communications can be "transcribed" for later playback. The modem does not know if the data is coming from the cassette or the telephone line. This can be useful for saving data to be examined or utilized at a later time. The technique is described in more detail in the section called THE TAPE RECORDER CONNECTION.

TECHNICAL SPECIFICATIONS FOR THE AUTO MICROCONNECTION (tm)

Power Source-	115 vac., 60 Hz. input. Supplies 12 v. from UL listed AC adapter.
Dimensions-	7.7" W x 5.5" D x 1.7" H
Weight-	One Pound
Ambient-	Operating temperature: 0-50C Operating humidity: 10-90 w/o conds.
Data Rate-	Bell 103 compatible @ 300 Baud
Modes-	Originate & Answer, full/half duplex
Format-	Baud rate, word, parity and stop bits software selectable.
Receiver Sens.-	Up to -50 dbm (adjustable)
Send Level-	-10 dbm @ 600 ohms line impedance
AUTOMODULE-	Optional
Ring Detector-	Software selectable, default 1 ring
Data Delay-	2 seconds (see note)
Carrier Detect-	15 seconds (see note)
AutoDial-	Make-break keying
Answer Wait-	15 seconds (see note)

(Note) minimum from off hook

SECTION III

THE AUTO MICROCONNECTION™

With the addition of a small module, the MICROCONNECTION™ can be adapted to automatically dial and-or answer the telephone. The Auto-module can also be installed in the TRS-80 buss decoding version of the MICROCONNECTION™. The AUTO MICROCONNECTION™ is designed to function with all popular terminals and computers having an RS-232 serial I-O port and is capable of going on-line in response to a predetermined number of rings. If suitable data signals are received, the modem will remain on-line until the data signals cease or the modem is placed off-line by the data terminal equipment.

On and off line conditions are controlled by a relay in series with the telephone line. The software controls the opening and closing of this relay. Thus, if the software does not match the modem requirements, it will be impossible to go on line. For this reason, the following material is provided so the user can understand what conditions must be met by the software. Note that all software supplied by The MicroPeripheral Corp. after 1 March, 1980 meets the requirements outlined below.

INITIALIZING

When the AUTO MICROCONNECTION™ is connected to the data terminal equipment, and the software is loaded, the Data Terminal Ready line (DTR, pin 20) must be held high except when ring counting is desired. The Request to Send (RTS, pin 4) must be reserved for automatic or manual control and for the AutoDial function.

AUTOANSWER

Upon reception of a valid ring signal, the Ring Indicator (RI, pin 22) goes high for the period of each ring. This signal can be counted in software and the DTR line brought high after a predetermined number of rings to put the modem on-line. Assuming this feature is not used, the DTR[20] and the RTS[4] lines must be held high. The modem will go on-line after a default value of one ring.

The modem will expect to receive a low tone (1270 Hz) when in the answer mode or a high tone (2225 Hz) when in the originate mode. Assuming the proper tone is received, the Clear to Send (CTS, pin 5), Data Set Ready (DSR, pin 6) and Carrier Detect (DCD, pin 8) will go high. The modem will remain in this state until the carrier ceases (user disconnect) or the DTR line goes low (host disconnect).

While awaiting a valid tone, the modem will remain on-line for 15 - 20 seconds. If a valid tone is not received within this period, the modem resets to its initial conditions.

MANUAL ORIGINATE

Manual use of the modem (using the Voice-Data switch for a line connection) can be achieved by holding the DTR line high and the RTS line low. Line connection status can be controlled with the front panel Voice-Data switch in this manual mode.

A "manual communications program" (one which does not incorporate automatic dial or answer features) should hold the DTR high and the RTS line low. These conditions are met by SMART80D and the ST80 series programs.

AUTO ORIGINATE

When the AUTO MICROCONNECTION™ is used as an AutoDial modem, the DTR line should be high and the RTS lines should be held low to go on-line. Dialing occurs when the RTS line is held high for 38 ms then low for 62 ms as many times as required for a digit. An interdigit delay of 300 ms is required before the next digit is sequenced. This cycle then repeats for as many digits as required to ring the called number.

AUTO ANSWER

Programs which incorporate an AutoAnswer feature should hold the DTR line and the RTS line high. This condition is met by the Richard Taylor Message 80 Bulletin Board program available from The MicroPeripheral Corporation.

CARRIER LAMP

Note that when the line relay is closed, the carrier lamp will light to approximately the same intensity as the power on lamp. Upon receipt of a carrier signal, the carrier lamp will brighten noticeably.

RECOMMENDATIONS

The AUTO MICROCONNECTION™ should be placed in the originate mode when used for AutoDial and in the answer mode when used to AutoAnswer.

The FCC requires a 2 second delay after the time the modem goes on-line before data flow occurs. This requirement is met by a hardware delay circuit in the AUTO MICROCONNECTION™.

SECTION IV

WHEN THINGS GO WRONG

The reliability record of the MICROCONNECTION™ has been excellent, as a result of "burning in" the product prior to shipment. However, with any piece of complex electronic equipment, occasional problems can occur. The following troubleshooting tips may be helpful if problems occur in the operation of your MICROCONNECTION™.

PROBLEM: The MICROCONNECTION™ (TRS-80 version), plugged into the keyboard, does not print keyed characters on the screen.

1. Make sure software is loaded properly. Try second "cut" on the tape.

2. Make sure the contacts on the keyboard buss are clean and free of corrosion. "Erase" if necessary.

3. Make sure the connector cable is seated properly at both ends. Some card edges have a bit of "slop", permitting the connector to seat off center.

3. Inspect connector to make sure none of the pins are bent.

PROBLEM: The MICROCONNECTION™ (TRS-80 version), plugged into the expansion interface, does not print keyboard characters on the screen.

1. Make sure software is loaded properly. Try second "cut" on the tape.

2. Make sure clock is turned off (CMD "T") before loading S-80.

3. Disconnect cable from expansion interface buss extension port and connect directly to keyboard. See if it works there. Some software is difficult to load through the expansion interface.

PROBLEM: Does not transmit or receive (power light is on), cursor remains in upper left corner.

1. Make sure you can hear tone on telephone when switch is in the DATA position. If not, check that modular plug is in securely.

2. AUTO MICROCONNECTION™: The carrier lamp should be lit at approximately the same intensity as the power lamp. This indicates that the telephone line relay is closed. No tone will be heard if this relay is not closed. Check software for status of DTR and RTS lines.

PROBLEM: You suspect that software did not load properly.

1. Contact software supplier for replacement.

PROBLEM: Carrier light flashes when MICROCONNECTION™ is plugged into telephone line but switch is in the VOICE position.

1. Sensitivity control set too high. Sensitivity must be set so that carrier acquisition occurs between -60 and -70 dbm. A carrier level of below -70 db must not activate the modem.

PROBLEM: Same as above, but sensitivity control properly set.

1. The modem may be in the field of a strong radio station. Disconnect the cord from the telephone circuit. If the flashing stops, it does indicate a strong external interference. Request the telephone company to install a radio frequency filter on your line.

PROBLEM: Transmits correct character, but echo prints garbage on screen.

1. Demodulator adjustment may be off slightly.

PROBLEM: Transmits incorrect characters.

1. Tone setting potentiometers incorrect resulting in off-frequency operation. Unit requires factory realignment.

If problems are minor, or if you simply have a question, you ca contact The Micro Peripheral Corp. by logging into the MICROCONNECTION™ User Group on MicroNET (70003,241). If your problem is more urgent, feel free to contact us, between 3 and 5 PM Pacific Coast time, for technical assistance.

Until further notice, units may be returned to the factory for service (Express Mail recommended) without return authorization.

SECTION V

THE DATA BASE CONNECTION

The first "contact" you made with your MICRO CONNECTION™ was to call one of the local bulletin boards. These are a rudimentary form of public acess "data base". For the purposes of our discussion, a data base is simply a collection of information that can be accessed with a computer over the telephone line. It is possible to receive and send messages to over 100 of these bulletin boards (see Figure 5.1) For example, you can contact The Peripheral People and The MicroPeripheral Corp. directly, by dialing the FORUM-80 in Seattle (206-723-DATA).

Systems that do not cater to a particular type of computer are called community or computerized bulletin boards (CBBS). A number of standardized systems have come "on line" which specifically cater to the TRS-80 (FORUM-80) and the APPLE (ABBS).

The most technically advanced system was developed by Bill Abney and is called FORUM-80. You will access FORUM-80 often as they have provision for downloading (extracting by phone and saving) free programs!

THE SOURCE and MICRONET

Although the bulletin boards are free of service charges, you can only access local systems without paying long distance charges. There are several data bases that are nationwide in scope, but can be accessed from local telephone numbers. Two of the most popular systems are The Source and MicroNet. Both of these data bases have bulletin boards for their users. The Source permits access to literally hundreds of data bases such as The New York Times and United Press International news service. On either system you can access complete information on stocks, bonds, securities, commodities or check on the current status of your gold bullion.

MicroNet is business and professional oriented and allows extensive manipulation of files. You can access accounting, engineering, statistical and other programs, or write your own and transfer them to your MicroNet file. Even if you have a simple cassette based computer, you can program their DEC (Digital Equipment Corp.) equipment in BASIC, FORTRAN, COBAL, PASCAL and so on.

For more information on the Source and MicroNET, write to:

Telecomputing Corp. of America
1616 Anderson Rd.
McLean, Virginia 22102
(703) 821-6660

Compuserve
5000 Arlington Centre Blvd.
Columbus, Ohio 43220
(614) 457-8600

DOW JONES & COMPANY

It is now possible for the public to access the enormous data base of Dow Jones and Co. The Micro Peripheral Corp. has recently introduced "THE DOW JONES CONNECTION", a software package for use in conjunction with THE MICRO CONNECTION™. It permits the user to initially organize his stock porfolio. Then, each time an updating is desired, the program accesses the Dow Jones Computer in Princeton, New Jersey. The current portfolio is sent and the response updates the current condition of the users stock. The entire sequence is fully automatic, except for dialing a local telephone number.

Dow Jones and Co. also plans to open their news data base to the public during 1980. It will be possible to access the Wall St. Journal newspaper the evening prior to receiving the printed copy.

There are several thousand data bases of interest to business and professional people. A comprehensive listing of data bases can be obtained from Cuadra Assocates, 1523 Sixth St., Suite 12, Santa Monica, Ca. 90401. This organization provides an annual subscription, updated four times a year, for $48.00.

Telenet is a "packet" network that carries digital telephone line signals, rather than voice information. You can obtain a directory of their data base customers by writing Telenet Communications Corp., 8330 Old Courthouse Rd., Vienna, Va. 22180.

General Electric Information Services Co. supplies an impressive catalog of their Mark III data bases. Request a copy of their publication number 6104.03D by writing them at 401 N. Washington St., Rockville, Md. 20850.

THE MESSAGE CONNECTION

There are two services (one domestic, one international) that make the TRS-80 a valuable investment, even if used for nothing other than message sending. Did you know it is possible to send telegrams and overseas cables with your TRS-80? The "MAILGRAM CONNECTION"* is an automated program that utilizes the full computing power of the TRS-80. The operator enters the message(s), then makes menu selections and answers prompted questions regarding the disposition of the message. The operator then goes on-line and "dumps" the memory into the Western Union computer. The Mailgrams™ are delivered in the recipient's mail, the following day!

SECTION VI

PLANNING THE MICRO CONNECTION™ CONNECTION

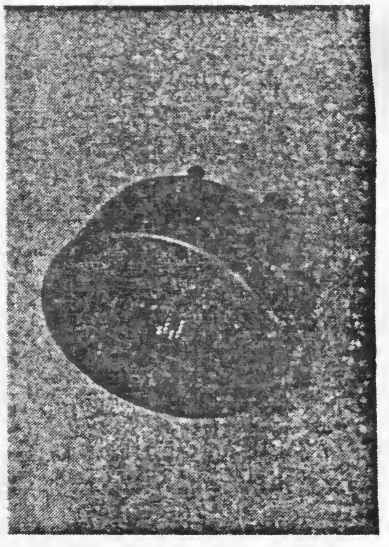
Since you are poking around in the back end of this manual already, there is a good chance you do not have the modular jack telephone system installed. Even if you have the modular jack system, this section may be valuable in planning your installation. Remember, it is YOUR RESPONSIBILITY to insure that your installation and interconnection is done carefully, to avoid introducing problems into the national telephone network.

If your phone was installed within the last few years, you probably have the modular plug and jack system. It uses tiny plastic connectors you probably never noticed. The little block has an "ear" that disconnects the plug when you press it and pull the cord slightly. Notice the cord that enters the rear of the telephone. If it disappears into a "U" shaped hole, you have an older system. If it goes into a plastic block, you are in luck.

The only additional part you will require is a "duplex" or "Y" (MPC Part # 902) to route the telephone line to two separate outlets (jacks). A photo of this duplex is shown in Section One. The jack can be installed at the wall connector by removing the existing cord (press on the plastic "ear), inserting the duplex, then replace the telephone cord into one of the two sockets. The other socket provides a jack for THE MICRO CONNECTION™ telephone cord.

It may be more convenient to install the duplex at the rear of the telephone instrument, where the cord enters through the modular jack. THE MICRO CONNECTION™ installs the same way, that is, by removing the cord, inserting the duplex jack and replacing the telephone cord in one of the sockets. This type of installation is shown in the accompanying photo.

If you would like to relocate the telephone some distance from the wall socket, a combination 25 foot extention and duplex jack can be obtained from Radio Shack (Part # 279-373).



FOUR PIN ADAPTER

THE FOUR PIN SYSTEM

Prior to the modular system, telephone companies used a four pin connector about the diameter of a silver dollar. If you have this system, adapters are available to convert to the modular plug arrangement. For example, if you can exchange your phone for the newer modular type, then a simple four pin to modular jack adapter (shown in the accompanying photo) is required, in addition to the duplex. This part is available from The MicroPeripheral Corp. as Part # 902 and is priced at $6.95. The telephone company may also provide you with adapter, so you should make inquiries before you purchase this part.

Assuming you have retained your old instrument, you will require a different type of adapter. It is called a "Universal Instant Jack" (Radio Shack Part # 279-360). This part connects to the four pin block, and has provision for inserting both a four pin plug (from your existing telephone) and a modular plug from THE MICRO CONNECTION™.

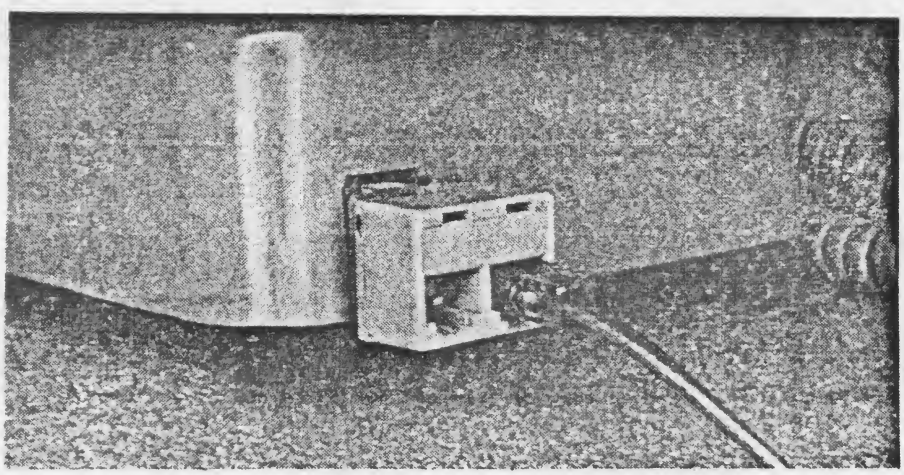
THE WALL BLOCK SYSTEM

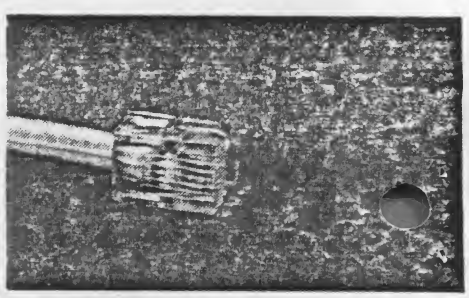
An even earlier system will be found in older homes. It uses a terminal block for the red, green and yellow telephone wires. This terminal block can also be adapted for the modular system. The same "universal" adapter mentioned earlier (RS Part # 279-360) will also adapt these older installations. However, you will also need a four pin plug (Radio Shack Part # 279-360) to insert into this adapter. First, remove the cap from the wall block. Next, remove the wires going to the telephone. There are usually three wires (red, green and yellow), but a fourth (black) wire may be used. The red and green wires carry the telephone signal and the others are ground. By the way, there is only 50 volts d.c on these wires and they do not represent a shock hazard. However, be careful not to short the wires together or anyone calling you will get a busy signal.

Replace the adapter over the old terminal block by tightening down the center screw securely. Open the plug (#279-366) and reconnect the telephone wires under the screws in exactly the same order as you took them off the block. If the red or green wires get reversed with a ground wire you will not get a dial tone when everything is reassembled. Should you get the red and green wires themselves reversed, the phone will work normally if you have a dial phone. However, if you have a "Touch Tone", you will hear the dial tone but no sound when you press the number buttons. Should this occur, reverse the red and green wires.

BUSINESS APPLICATIONS

Many business have rotary systems with four or more incoming lines. If you are in this category, you will require yet a different type of adapter. It is Radio Shack Part # 43-235 and is inserted between the heavy metal covered connectors used in business systems. It has a four position rotary swtich (so you can select the line to use) and a modular jack that THE MICRO CONNECTION™ plugs into. Complete installation instructions are provided with this part.





?	FORT LAUDERDALE FL	ABBS A.C.E.S	305-566-0805
	WEST PALM BEACH FL	ABBS	305-689-3234
	FORT LAUDERDALE FL	FORUM 80	305-772-4444
	MIAMI FL	ABBS	305-821-7401
?	HOLLYWOOD FL	ABBS GLTC	305-989-9647
!	WASHINGTON IL	ABBS	309-694-6531
	ARLINGTON HEIGHTS IL	ABBS	312-255-6489
	CHICAGO ILL	FORUM 80	312-269-8083
	CHICAGO IL	ABBS	312-337-6631
	NAPERVILLE IL	ABBS	312-420-7995
	CHICAGO ILL	CBBS	312-528-7141
!	CHICAGO IL	CBBS#1 HQ	312-545-8086
?	CHICAGO IL	ABBS	312-622-9609
	CHICAGO IL	CMMS	312-767-0202
	CHICAGO IL	COMM 80	312-782-9751
EW	DOWNERS GROVE IL	ABBS	312-964-7768
!	ROYAL OAK MI	CBBS	313-288-0335
	DETROIT MI	ABBS	313-357-1422
	MT CLEMENS MI	MEDICAL FORUM 80	313-465-9531
	FARMINGTON MI	ABBS	313-477-4471
!	YPSILANTI MI	PET BB	313-484-0732
	SOUTHFIELD MI	ABBS	313-569-2063
*3	ROYAL OAK MI	REMOTE CP M MINICBBS	313-588-7054
	ST LOUIS MS	FORUM 80	314-838-7784
	WICHITA KA	FORUM 80	316-746-2078
EW	IOWA CITY IA	ABBS	319-353-6528
?	DUBUQUE IA	ABBS	319-557-9618
!	CHAMBLEE GA	CBBS	404-394-4220
	AUGUSTA GA	ABBS	404-733-3461
	AUGUSTA GA	ABBS	404-790-8614
	AUGUSTA GA	ABBS	404-793-1045
!	TUCKER GA	REMOTE NORTHSTAR	404-939-1520
	ATLANTA GA	ABBS CYBERIAN SYS	404-939-8429
EW	SMYRNA GA	ABBS	404-953-0723
	OKLAHOMA CITY OK	ABBS	405-528-8009
!	SAN JOSE CA	ACBBS COMP EMP	408-227-5416
	SANTA CLARA CA	CBBS	408-241-1956
!	SANTA CLARA CA	ABBS#1	408-296-5799
!	SUNNYVALE CA	ABBS SUNNYVALE	408-737-0255
!	SAN MATEO CA	FORUM-80 SAN FRAN	415-348-2139
!	PALO ALTO CA	ABBS	415-493-7691
!	BERKELEY CA	CBBS PROXIMA	415-527-0400
!	FOSTER CITY CA	MAGMEDIA-80	415-573-8768
!	SAN CARLOS CA	ABBS	415-593-1200
!	SAN FRAN CA	KINKY KUMPUTER (GAY)	415-647-9524
	SAN FRAN CA	ABBS	415-661-0705
	FREMONT CA	ABBS ZORAM ASSOCIATES	415-792-8406
*5	MOUNTAIN VIEW CA	3KBBS HP3000	415-941-2922
?	LOS ALTOS CA	ABBS PCNET	415-948-1474
*2	MOUNTAIN VIEW CA	3KBBS HP3000	415-968-5140
	SPRINGFIELD MO	CBBS	417-862-7852
	LOUISVILLE KY	ABBS	502-245-8288
	LOUISVILLE KY	ABBS	502-426-2975
!	BEAVERTON OR	CBBS	503-646-5510
	SPOKANE WA	ABBS	509-534-2419
	SAN ANTONIO TX	ABBS	512-657-0779
	HAMILTON OH	ABBS	513-874-2283
	LONG ISLAND NY	CBBS	516-334-3134
!	CENTEREACH LI NY	B.T. ENT. BBS	516-588-5836
	LONG ISLAND NY	CBBS LI COMP ASSOC	516-938-9043

CODE	LOCATION	SERVICE	PHONE
*3	ISELIN NJ	CPM BBS	201-283-2724
	PATERSON NJ	ABBS	201-345-0998
	BOUNDBROOK NJ	SJ ELECT MAIL	201-457-0893
	UNION NJ	FORUM 80	201-688-7117
	POMPTON PLNS NJ	ABBS	201-753-1225
	HALEDON NJ	PHOTO-80	201-790-6795
	POMPTON LAKES NJ	ABBS CCNJ	201-835-7228
	WYCKOFF NJ	PHOTO 80	201-891-1819
	WYCKOFF NJ	ABBS	201-891-7441
	DUNELLEN NJ	ABBS	201-968-1074
!	LIVINGSTON NJ	COMMUNIQUE-80	201-992-4847
	WASHINGTON DC	FORUM80	202-337-4694
*1	WASHINGTON DC	WACS ELECT JOURNAL	202-635-5730
	DANBURY CT	BULLET80	203-744-4644
	BIRMINGHAM AL	ABBS	205-945-1489
!	SEATTLE WA	ABBS	206-244-5438
	SEATTLE WA	XBBS	206-246-8983
	EVERETT WA	MESSAGE 80	206-334-7394
	ELMA WA	ABBS	206-482-5134
!	SEATTLE WA	ABBS	206-524-0203
	SEATTLE WA	HAM BBS	206-546-6239
!	SEATTLE WA	FORUM80	206-723-DATA
!	SEATTLE WA	CBBS SEACOMM 80	206-763-8879
!	SEATTLE WA	ABBS APPLE BIN	206-937-0444
	FRESNO CA	LIMITED ACCESS	209-638-6392
!	NEW YORK NY	MODEM OVER MANHATTAN	212-245-4363
	STATEN IS NY	ABBS	212-448-6576
	LOS ANGELES CA	ABBS 27MICRO	213-276-4276
	TORRANCE CA	ABBS	213-316-5706
	TORRANCE CA	TSC	213-329-3715
!	CANOGA PARK CA	ABBS	213-340-0135
	LOS ANGELES CA	ABBS	213-349-5728
	LOS ANGELES CA	ABBS	213-360-6332
	SANTA MONICA CA	ABBS	213-394-1505
!	BRENTWOOD CA	ABBS	213-395-1592
	SANTA MONICA CA	ABBS	213-396-3905
	SIGNAL HILL CA	ABBS	213-424-3506
	LONG BCH CA		213-428-4718
	PAC PALISADES CA	ABBS	213-459-3177
	LOS ANGELES CA	ABBS	213-459-6400
	LOS ANGELES CA	FORUM 80 LA	213-631-3186
	LOS ANGELES CA	ABBS MORRIS MICRO	213-673-2206
!	HAWTHORNE CA	ABBS	213-675-8803
	VAN NUYS CA	ABBS	213-787-4004
	PASADENA CA	CBBS	213-795-3788
!	PASADENA CA	ABBS	213-799-1632
	SO PASADENA CA	ABBS	213-799-6514
!	LOS ANGELES CA	ABBS DELTREX	213-826-0325
	SANTA MONICA CA	ABBS	213-828-3400
	LOS ANGELES CA	CBBS	213-843-5390
	LOS ANGELES CA	ABBS	213-921-2111
	DALLAS TX	FORUM 80	214-288-4859
!	DALLAS TX	ABBS	214-634-2668
	DALLAS TX	ABBS	214-634-2775
	DALLAS TX	CBBS	214-641-8759
!	AKRON OH	ABBS AKRON DGTL GP	216-745-7855
!	GREENBELT MD	BBS NASA GSFC	301-344-9156
	DENVER CO	FORUM 80 (APARRAT)	303-789-0936

EW	PHOENIX AZ	ABBS	602-866-0258
	PHOENIX AZ	ABBS	602-955-1486
EW	PHOENIX AZ	CBBS	602-956-5612
!	PHOENIX AZ	EBBS DESERT TECH	602-957-4428
EW	PHOENIX AZ	EBBS	602-957-9282
!	VANCOUVER BC	CBBS	604-687-2640
!	ENDICOTT NY	CBBS	607-754-5571
!	MARLTON NJ	ABBS NJAUC	609-983-5970
!	MINNEAPOLIS MN	ABBS	612-929-8966
	COLUMBUS OH	CBBS	614-272-2759
!	NASHVILLE TN	ACSS	615-254-9193
	CAMBRIDGE MA	ABBS	617-354-4682
	BOSTON MA	FORUM 80	617-431-1699
!	WESTFORD MA	FORUM 80	617-692-3973
!	CAMBRIDGE MA	CBBS	617-864-3819
	MAYNARD MA	NEW ENG COMP SOC	617-897-0346
!	RANDOLPH MA	CBBS	617-963-8310
*7	RENO NV	AMOS BYTE SHOP	702-826-7234
	LAS VEGAS NV	FORUM 80	702-873-9491
!	VIENNA VA	CBBS WASHINGTON	703-281-2125
*4	WASHINGTON DC	AMRAD BLIND SVC	703-281-2222
!	WASHINGTON DC	?BBS TCUG BBS	703-620-4990
!	FALLS CHURCH VA	CBBS AMRAD	703-734-1387
*6	FALLS CHURCH VA	POTOMAC MICRO MAGIC	703-750-0930
!	FAIRFAX VA	FAM HIST FORUM 80	703-978-7561
!	HOUSTON TX	ABBS GULFCOAST	713-233-7943
E	HOUSTON TX	ABBS HAUG	713-654-0759
EW	COLLEGE STATION TX	ABBS	713-693-8080
	HOUSTON TX	ABBS HOUSTON	713-977-7019
!	EL CAJON CA	PEOPLES' MESSAGE SYS	714-449-5689
	LEMON GROVE CA	ABBS	714-463-0461
	FULLERTON CA	COMM 80	714-526-3687
!	GARDEN GROVE CA	FORUM 80	714-537-7913
	SAN DIEGO CA	NA	714-565-0961
	SAN DIEGO CA	CBBS	714-571-5550
	SAN DIEGO CA	ABBS	714-582-9557
	BUENA PK CA	ABBS	714-739-0711
!	SANTA ANA CA	ABBS	714-751-1422
	ANAHEIM CA	ABBS	714-772-8868
	WESTMINISTER CA	ABBS	714-898-1984
!	HUNTINGTON BEACH CA	ABBS	714-962-7979
	?	ABBS APPLE TREE	714-963-7222
!	SALT LAKE CITY UT	XBBS	801-466-1737
	LOGAN UT	ABBS	801-753-6800
	SAINT JOHNSBURY VT	XBBS	802-748-9089
	AUGUSTA GA	FORUM 80	803-279-5392
	COLUMBIA SC	COMPUSYSTEMS	803-771-0922
!	VIRGINIA BEACH VA	CBBS	804-340-5246
!	OXNARD CA	FORUM 80	805-484-9904
	SANTA BARBARA CA	REMOTE NORTHSTAR	805-682-7876
*6	SANTA BARBARA CA	REMOTE NORTHSTAR	805-964-4115
	TAMPA FL	FORUM 80	813-223-7688
!	KANSAS CITY MO	FORUM 80	816-861-7040
	KANSAS CITY MO	MARKET 80	816-931-3135
	WACO TX	ABBS	817-776-1325
	WICHITA FALLS TX	FORUM 80	817-855-3918
!	FORT WORTH TX	FORUM 80	817-923-0009
!	MEMPHIS TN	FORUM 80	901-276-8196
	MEMPHIS TN	HOBBIEST 80	901-362-2222
EW	MEMPHIS TN	ABBS	901-761-4743

	FORT WALTON BEACH FL	ABBS	904-243-1257
	FT WALTON BCH FL	NA	904-243-8565
	KETCHIKAN AK	CBBS	907-225-6789
	KANSAS CITY KS	BBS	913-362-6398
	OLATHE KS	ENGINEER 80	913-764-1520
?	KANSAS CITY KS	AVIONICS 80	913-782-5115
	EL PASO TX	CBBS	915-584-5393
!	SACRAMENTO CA	N*BBS AVIONICS	916-393-4459
	TULSA OK	FORUM 80	918-224-5347

NOTES

*1 300 BAUD #, TYPE CC I <CR> HELP WACS
*2 <CR> HELLO CBBS, MCICCS/TPBOSS
*3 CALL, LET RING ONCE, CALL BACK FOR ANSWER
*4 ALLOWS BAUDOT CODE AS WELL AS ASCII
*5 <CR> HELLO CBBS, B1016/RMAR85DZ
*6 ANSWERS AFTER FOURTH RING
*7 ENTER /FREE/ TO ACCESS SYSTEM
! - MEANS 24 HOUR SERVICE
EW - MEANS EVENINGS AND WEEKENDS
? - MEANS MAY NOT BE OPERATING

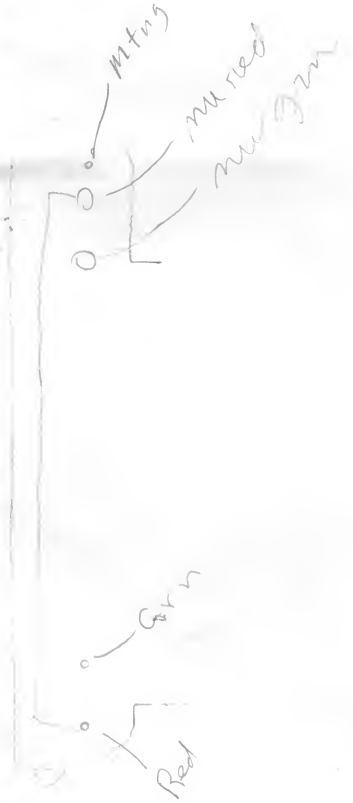
TYPED A

To install Autodial/Autoanswer board in Microconnection for Atari:

- ✓Locate R20 resistor and remove it. Brn Blk Brn Gold
- ✓Install jumper and wire at R 4
- ✓Disconnect red and green phone wires
- ✓Mount ADAA board on Modem board
- ✓Reconnect red and green phone wires on 2 spacers on ADAA board (position will be near upper left portion of modem board when Microperipheral Corporation trademark is on upper right corner of modem board).
- ✓Connect small ribbon cable from ADAA board to 6 pin make connector on modem board

① RS232 Board
6 wires / 9 pins

② Would like to use Manual Dial but not able to do so
Suspect CD not connected



Lizard

③ RI
Separate DSR / CTS / GND
CD
RI

DTR/