March 5, 2009

Les,

Enclosed is the original DEMO disk for the SS-9000 radio that I need duplicated. I have enclosed a new hard-sectored disk and $5 for return postage. If you could make a disk, an SVD image, and a hard copy, I would appreciate it.

Attached is the directions from the manual as to running the program as well as a copy of the Assembly Language routine for output to the radio, which I assume is part of the disk.

I still haven't forgotten that you want a list of the software/documentation that I got with the computer, and hopefully I can send you that soon.

I do appreciate your help. I am bound and determined to get this old Heathkit up and running, but I do have another job – a major distraction when it come to computer repair and pursuit of hobbies _ but it pays the bills.

Sincerely,

Reavis

Reavis

Return address:

Reavis T. Eubanks
86 Victoria Road, B-7
Asheville, NC 28801-4458

Only copy that I know of. Like the 'Blue Book' for the H-88 you sent me.

TERMINAL INTERFACE

The Terminal Interface allows you to control and monitor the Transceiver from a video terminal (such as the Heath Model H-19 or the Zenith Model Z-19), hard-copy (teletype) terminal, or computer (such as the Heath Model H-89 or Zenith Model Z-89). You can also remotely control the Transceiver over the telephone line by use of a modem. The interface complies with EIA standard RS-232C. Commands built into the Transceiver controller allow you to display and select the band, mode, operating frequencies, passband shift, scan rate, and baud rate. You can also place the Transceiver in the transmit or receive mode. When the available commands are combined in a computer program, many more useful functions may be implemented.

INSTALLATION

If you are using the Transceiver with a Heath H-19 or Zenith Z-19 Terminal, proceed to the "Heath/Zenith System Configuration" section that follows. If you are using the Transceiver with a non-Heath or Zenith terminal, proceed to "Non-Heath/Zenith System Configuration" on Page 32.

If you will be using the Transceiver with a modem or a computer, proceed to the appropriate section which follows.

Pertinent info

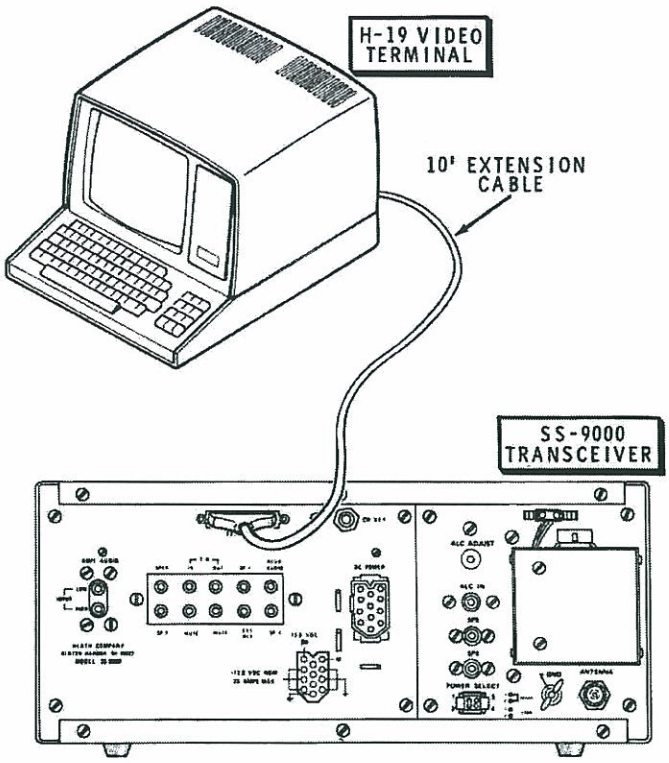
HEATH/ZENITH SYSTEM CONFIGURATION

Refer to Pictorial 3-1 as you read the following information.

The terminal interface in your Transceiver communicates with your terminal through a serial interface at RS-232C signal levels. The 25-pin "D" connector on the rear panel conforms to RS-232C standards. It will mate with most equipment that conforms to this standard. Use the 10' extension cable supplied with your terminal to connect the two units together.

Plug the male connector at one end of the extension cable into the "D" connector on the rear panel of the Transceiver. Plug the other end of the extension cable into the "D" connector on the rear panel of the Terminal.

Proceed to "Operation" on Page 34.



PICTORIAL 3-1

F. RUNNING THE DEMONSTRATON PROGRAM

NOTE: Although the following information refers to the H/Z-89 Computer, the demonstration program will also work with an H-8, H-19, and H-17 system. You will also need a Multiport Serial I/O Card in your Computer.

1. Hardware/software requirements:

   A. H/Z-89 with 48 kilobytes of RAM.
   B. 3-port serial interface, with accessory IC's installed at 330Q.
   C. HDOS, MBASIC

2. Boot up an HDOS system disk, and use INIT and SYSGEN to make a new Demonstration disk. Then copy MBASIC and SSDEMO.BAS onto it. Store the original disk in a safe place.

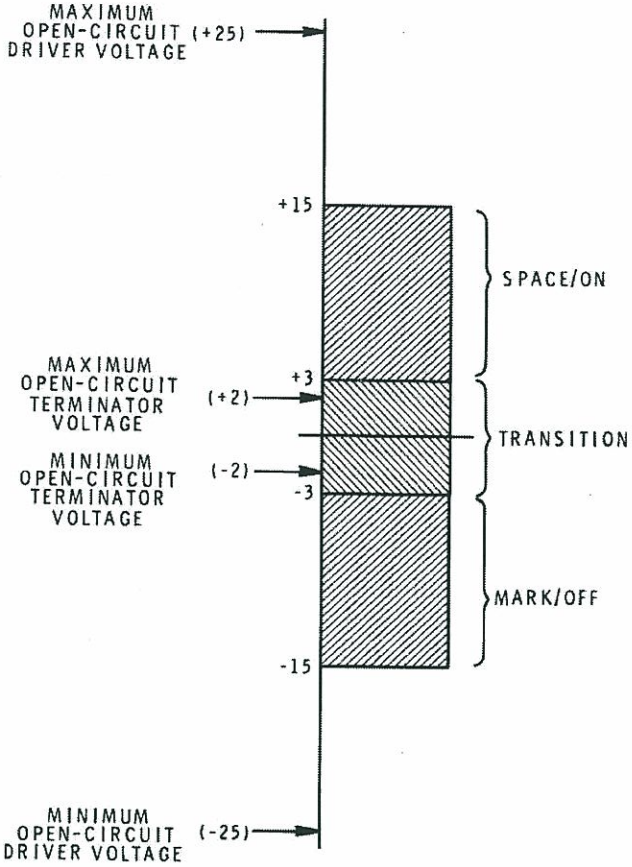
3. Connect the Transceiver to the Power Supply, if this has not already been done.

4. **Connect the proper output port (330Q) on the H/Z-89 to the terminal interface port on the Transceiver. Make sure the Transceiver is set to 4800 baud. Now boot up your system and, when the system prompt ">" appears, type:**

   MBASIC SSDEMO<CR>

NON-HEATH/ZENITH SYSTEM CONFIGURATION

The terminal interface in your Transceiver is designed to operate with serial I/O terminals that use the RS-232C standards of the Electronic Industries Association (EIA). This standard defines an asynchronous serial interface, its voltages (see Pictorial 3-2), its impedances, and its physical connectors.

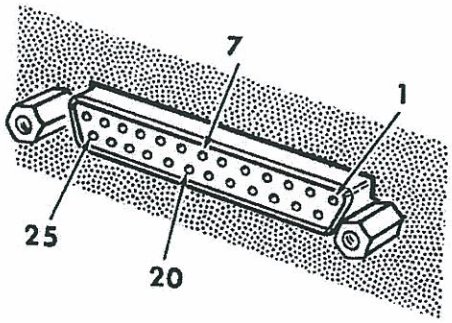


PICTORIAL 3-2

RS-232C places all equipment into one of two general categories:

DTE — Data Terminal Equipment
DCE — Data Communications Equipment

Computers and modems are two types of DCE; while terminals, printers, and most peripherals are DTE. Always connect a DTE to a DCE. Never connect two like types together.



PICTORIAL 3-3

The 25-pin "D" connector on the back panel of the Transceiver is a DCE (DB-25S) connector. Pictorial 3-3 shows the pin numbering of this connector. The following chart describes the DCE outputs of the rear panel connector:

TERMINAL	INTERCONNECTION CABLE	TERMINAL INTERFACE
P GND	1 → 1	Protective Ground
S OUT	2 → 2	RS-232C Serial Output
S IN	3 ← 3	RS-232C Serial Input
RTS	4 → 4	Request To Send Output
CTS	5 ← 5	Clear To Send Input
DSR	6 ← 6	Data Set Ready
S GND	7 → 7	Signal Ground
RLSD	25 → 25	Received Line Signal Detect
DTR	20 → 20	Data Terminal Ready Output

Make sure your terminal is configured as required by your terminal manual and operates at RS-232C signal levels. The baud rates of the terminal interface and terminal must be the same.

After you connect the terminal interface to your terminal, proceed to "Operation" on Page 34.

Otter Lake

CONNECTION TO A MODEM

The Transceiver is configured as DCE (Data Communication Equipment). Since modems are also DCE, you must change definition within the interconnecting cable in order to connect the two (as shown in the chart below). You can accomplish this by interchanging the wires at pins 2 and 3, 4 and 5, and 6 and 20 at **ONE END** of the cable. We recommend that pin 25 of the terminal interface connector be connected to pin 8 of the modem connector to provide RLSD (Receive Line Signal Detect).

TERMINAL INTERFACE	INTERCONNECTION CABLE	MODEM
P GND	1 — 1	P GND
S OUT	2 — 2	S IN
S IN	3 — 3	S OUT
CTS	5 — 4	RTS
DSR	6 — 6	DSR
S GND	7 — 7	S GND
DTR	20 — 20	DTR
RSLD	25 — 8	RSLD

The modem holds RLSD "on" while it is receiving an acceptable carrier (audio tone) from the telephone line. The terminal interface monitors this line and forces the Transceiver into the receive mode should the carrier be lost. If you implement this option, you should remove the jumper on the controller circuit board inside the Transceiver (next to U818). Do not remove the jumper if you are not going to use this option.

If the modem does not require handshaking signals, you may simplify the wiring by removing the wires at pins 5, 6, and 20 of the terminal interface plug and installing a jumper between pins 6 and 20.

CONNECTION TO A COMPUTER

You can interface the Transceiver to a computer such as the Heath Model H-89 or the Zenith Model Z-89 using a standard RS-232 cable, if you use a computer port that is configured as DTE (Data Terminal Equipment). The software package that is furnished with the terminal interface is written for connection to port 330Q (octal). This is the AT (Alternate Terminal) port, and requires that an ACE and RS-232 interface integrated circuits be installed on the serial interface circuit board in the computer. If you desire to use a DCE port, see "Connection to a Modem" and the chart below regarding rewiring the interface cable.

TERMINAL INTERFACE	INTERCONNECTION CABLE	COMPUTER (DCE)
P GND	1 — 1	P GND
S OUT	2 — 2	S IN
S IN	3 — 3	S OUT
CTS	5 — 4	RTS
DSR	6 — 6	DSR
S GND	7 — 7	S GND
DTR	20 — 20	DTR

The software demonstration package (5-1/4" diskette), included with the terminal interface, represents only one of many ways of providing communication between a computer and the Transceiver. It consists of a program, written in MBASIC, and a USR assembly language routine. Refer to "I/O Routine" for the listing of the USR routine.

OPERATION

Be sure the Terminal Interface is connected as directed in "Installation" on Page 30. Then proceed to the "Switch Settings" section below.

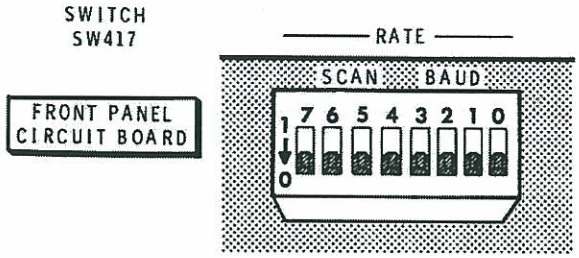
SWITCH SETTINGS

Refer to Pictorial 2-3 (fold-out from Page 25) and Pictorial 3-4 and remember that, as you look at switch SW417 on the front panel circuit board, you select the one (1) positions of the switch by pushing the switches up, and you select the zero (0) positions by pushing the switches down.

Baud Rate

You can select any of 16 different baud rates (50 – 9600). To do this, place sections 0, 1, 2, and 3 of switch SW417 in the proper positions as shown below. The baud rate is initialized upon power-up. Therefore, if you change the baud rate while the Transceiver is turned on, you will have to turn the Transceiver off and then back on before the baud rate will actually change. NOTE: The baud rate is preset at the factory to 4800.

BAUD RATE	SWITCH SECTION			
	3	2	1	0
50	0	1	0	0
75	1	0	0	0
110	1	1	1	1
134.5	0	0	0	1
150	1	0	1	1
300	0	1	1	1
300	0	0	0	0
600	0	0	1	1
1200	1	1	0	1
1800	0	1	0	1
2000	1	0	0	1
2400	1	1	1	0
3600	0	1	1	0
4800	1	0	1	0
7200	0	0	1	0
9600	1	1	0	0



PICTORIAL 3-4

NOTE: The four left-hand switches (7, 6, 5, and 4) are described under "Rate" on Page 19.

1. Commands are provided to control and monitor all functions of the Transceiver that are under control of the microprocessor. You can use the same commands that allow you to set a parameter to a particular value to examine the current set value. To do this, simply enter a carriage return <RET> (or line feed) immediately following the "=". For example, BA=15<RET> sets the band to 15 meters, while BA=<RET> returns the current band. In the list below, the characters in brackets are optional.

NOTE: Setting a parameter to "SW" returns it to its physical setting. Setting a parameter to "L" locks it to its current setting.

2. If you send a command to the Transceiver that is not in the proper syntax, the terminal will display one of 12 error codes in the form ERR #n. These error codes are listed on Page 38.

3. The normal system prompt is ">", which indicates that the interface is ready to receive a command. If this prompt appears as "U>", along with a bell (or beep), one or more of the phase-locked loops in the Transceiver is unlocked.

4. Terminate each command with a carriage return or a line feed. (These are not shown in the list of commands below.) You may issue commands even during the time that the interface is returning a response to an earlier command. All commands are processed in the order received. See "Interface Protocol" below. If you type the wrong character by mistake, you can use the DELETE or BACKSPACE keys to correct the error before you press the <RET> key.

COMMANDS

BR[ate]=	Prints the current Baud Rate setting.
BR[ate]=n	Sets the Baud Rate setting. where: n = 50, 75, 110, 150, 300, 600, 1200, 1800, 2000, 2400, 3600, 4800, 7200, or 9600.
BA[nd]=	Prints the current Band switch setting.
BA[nd]=n	Rotates the Band switch to the n meter band. where: n = 16[0], 8[0], 4[0], 3[0], 2[0], 17, 15, 12, or 1[0].
MO[de]=	Prints the current Mode switch setting.
MO[de]=n	Sets the Mode to n. where: n = LO[wer], UP[per], W[ide], M[edium], N[arrow], or R[TTY].
SH[ift]=	Prints the current PASSBAND SHIFT switch setting.
SH[ift]=n	Sets the Passband Shift to n. where: n = −6[00], −4[00], −2[00], −1[00], 0, 1[00], 2[00], 4[00].
S[can]=	Prints the current SCAN switch setting.
S[can]=n	Sets the Scan rate to n. where: n = 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, or 16. NOTE: 1 = approximately 2.5 kHz per second; 16 = approximately 300 kHz per second.
SW[itch]=	Releases all switches to their physical settings. NOTE: This includes the BAUD RATE switches.
L[ock]	Locks all switches to their current state.

Commands (Cont'd.)

PS[witch]	Prints the switch settings. NOTE: An "L" (locked) appears after any switch setting that was set from the terminal.
PF[req]	Prints the frequencies in memory for all bands.
PF[req]<band>	Prints the frequencies in memory for <band>, where <band> is one of the values for n listed in the BA[nd] command (see above). NOTE: The frequencies that are selected for receive and transmit are indicated by R and T, respectively.
RI[ndicator]	Toggles the receive indicator for the current band.
RI[ndicator] <band>	Toggles the receive indicator for <band>.
TI[ndicator]	Toggles the transmit indicator for the current band.
TI[ndicator] <band>	Toggles the transmit indicator for <band>.
RE[ceive]	Sets the Receive mode.
TR[ansmit]	Sets the Transmit mode.

EXPRESSIONS

Expressions provide you with the flexibility to specify frequencies for either the display or memory.

A. Symbols

A	Represents the left display frequency.
B	Represents the right display frequency.
M	Represents the memory frequency.
T	Represents the frequency in the display that is selected for transmit.
R	Represents the frequency in the display that is selected for receive.

NOTE: Each of these symbols may be followed by a band specifier. For example: M12 represents the memory frequency on the 12 meter band.

B. Operators

+	Addition.
−	Subtraction.
=	Assignment.
X	Exchange.

C. Constants

Constants may be in the range of 0.0 to 99999.9, where only one digit to the right of the decimal point is selected.

Expressions may be in one of the following general forms, where <S> and <C> are symbols and constants, respectively.

a. <S>=<S1>+<S2>+...+<Sn>+<C>+<C1>+<C2>+...+<Cn>

This evaluates the expression to the right of the "=" and assigns the result to <S>.

b. <S>X<S1>+<S2>+...+<Sn>+<C>+<C1>+<C2>+...+<Cn>

This exchanges the values on each side of the X. In the above case, the first symbol encountered on the right side, <S1>, assumes the value of <S>, and <S> assumes the value of the entire expression.

c. <S1>+...+<Sn>+<C1>+...+<Cn>=

This evaluates the expression and prints the result.

NOTE: The memory in this Transceiver allows you to store frequencies for one band in locations allocated for a band you do not intend to use. This allows you to store more than three frequencies on a given band in memory. If you later turn the Band switch to the band where you have these frequencies stored, however, the frequency will change to the nearest band edge and the previous stored frequency will be lost.

Examples of legal commands are:

1. R16=A1+5.1 Which adds 5.1 kHz to the frequency in the left display on the 10-meter band and inserts this value into the display currently selected for receive on the 160-meter band.

2. A8×R4+2 Which increments by 2 kHz the value in the display that is selected for receive on the 40-meter band, stores this value in the left display on the 80-meter band, and stored the frequency that was on the left display on the 80-meter band in the display that is selected for receiver on the 40-meter band.

NOTES:

1. If an expression evaluates to a number outside of the allowed range for constants, the closest limit value (0 or 99999.9) is used.

2. When a band is selected where the receive frequency has been set outside of the allowed limits for that band, the band edge that is closest to the set value is substituted.

CONTROL FUNCTIONS

Several control functions are provided. To send these functions from the terminal, hold down the CTRL key while you type the letter.

CTRL-B	Toggles an echo of the typed characters.
CTRL-O	Toggles the printout of the response from the interface.
CTRL-S	Suspends the printout.
CTRL-Q	Resumes the printout.
CTRL-U	Kills the command line.
ESC	The ESCape key disables communications with the Transceiver.
ESC1	This enables communications with the Transceiver. It also resets the control functions.

NOTE: If you press the ESCape key (or the ESCape character sent to the interface via a computer program) without immediately following it with a "1", the communications with the Transceiver will be lost until you send ESCape 1. Communications is **NOT** automatically re-established upon power-up. If the Transceiver does not respond, and you are sure the baud rates match, type (or send) the ESC1 code.

D. ERROR CODES

Error codes are returned by the interface in the form ERR #n, where n may be 0 through 11, as indicated below:

1	Operation is not allowed in transmit.
2	X operator is being used improperly.
3	= operator is being used improperly.
4	− operator is being used improperly.
5	Improper operator is following a symbol or a constant.
6	+ operator is being used improperly.
7	A switch command is being used improperly.
8	A switch value is illegal or missing.
9	An unrecognized command.
10	The BAND switch is inoperative.
11	A constant is greater than 99999.9.
12	You are attempting to transmit out-of-band.

E. INTERFACE PROTOCOL

The interface provides a 16-character buffer for the input commands and a 64-character buffer for the output response. For normal terminal functions, there is little danger of them overflowing and losing characters. If the input buffer should fill up, the interface will respond with a BELL character to the terminal for any character that is not accepted.

When a computer is in control, the chance of overflowing the buffer is much greater. To protect against lost characters, the interface sends a CTRL-S and removes RTS (Request to Send) when the input buffer fills to 75% of its capacity (12 characters). When the input buffer empties to 25% of its capacity (4 characters), the interface sends a CTRL-Q and asserts RTS. These control characters are sent immediately after detection of the appropriate fullness condition, regardless of the current output conditions (CTRL-S in effect, output buffer full, etc.).

The DSR (Data Set Ready) input can be used as a hardware handshake for suspending the output in the same manner as receiving a CTRL-S from the computer.

In computer-controlled applications you should send an ESCape1, followed by a single CTRL-B, to disable the echo. When the echo is disabled, the interface also sends a CTRL-R whenever any display or switch changes state. This can be used to request the computer to interrogate the Transceiver to determine what changed. NOTE: Many CTRL-R's are sent when you rotate the tuning knob or push a scan pushbutton.

Briefly, the RS-232 handshake line states are as follows:

INPUT:

DSR	Low to inhibit output, high to enable output.
CTS	Not implemented.

OUTPUT:

DTR	Always high.
RTS	Low when input buffer is more than 75% full, high when less than 25% full.

I/O ROUTINE

```
ACE330 - I/O ROUTINE FOR H-89 & SS-9000                    HEATH MBASM V1.5  07/28/81
GENERAL INFORMATION                          INFO          08:13:57  10-DEC-81      PAGE     1

                ;
                ;       This routine allows communication between the H-89 computer and the
                ;       SS-9000 transceiver via port 330Q.  This port is configured as DTE
                ;       (Data Terminal Equipment).  The SS-9000 is configured as DCE (Data
                ;       Communication Equipment).  Therefore, a standard EIA RS-232 interface
                ;       cable may be used for interconnection.  If you want to use a
                ;       different port, you can change the address in the EQUate table.
                ;       If you use a port which is configured as DCE, the interconnecting
                ;       cable must have connectors with male pins on each end, and it must
                ;       be wired as shown on Page 33, "Connection to a Computer".
                ;
                ;       You may poke the routine into memory as a USR subroutine from an
                ;       MBASIC program like the one provided, and call it by assigning the
                ;       string to be transmitted to the SS-9000 to a string variable, such as
                ;       D$, and making this variable the argument of the USR function call.
                ;       The string must terminate with a line-feed character (CHR$(10)) to
                ;       indicate 'end-of-command' to the SS-9000.  When the SS-9000 responds
                ;       to the command, it will end its response with a '>' character.  This
                ;       character terminates this I/O routine and leaves the SS-9000's
                ;       response in memory as follows: the length of the response (number of
                ;       characters, not including the '>') is stored in memory at decimal
                ;       addresses 45440 (low byte) and 45441 (high byte).  The actual response
                ;       begins at address 45442.  The MBASIC program returns this response by
                ;       PEEKing.
                ;
                ;       Note the extra +"" on the end of the string sent to the radio.  This
                ;       is recommended in the MBASIC manual to insure that the string is
                ;       passed to the USR routine properly.
                ;
                ;       Note also that the port is initialized from the Basic program.  In the
                ;       demonstration program provided, the baud rate is set to 4800.  The
                ;       SS-9000 MUST be set to the same baud rate before running the program!
                ;       The demonstration program was written to run under HDOS version 2.0
                ;       and MBASIC version 4.7, on a 48 kB system.
                ;
                ;       More pertinent information can be found in Appendix E of the Microsoft
                ;       Basic manual, the H-89 Operation manual, and 'REMark', Issue 12.
```

I/O ROUTINE

```
ACE330 - I/O ROUTINE FOR H-89 & SS-9000                    HEATH MBASM V1.5  07/28/81
GENERAL INFORMATION                          INFO          08:13:57  10-DEC-81      PAGE     1

                *       This routine allows communication between the H-89 computer and the
                *       SS-9000 transceiver via port 330Q.  This port is configured as DTE
                *       (Data Terminal Equipment).  The SS-9000 is configured as DCE (Data
                *       Communication Equipment).  Therefore, a standard EIA RS-232 interface
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                *       different port, you can change the address in the EQUate table.
                *       If you use a port which is configured as DCE, the interconnecting
                *       cable must have connectors with male pins on each end, and it must
                *       be wired as shown on Page 33, "Connection to a Computer".
                *
                *       You may poke the routine into memory as a USR subroutine from an
                *       MBASIC program like the one provided, and call it by assigning the
                *       string to be transmitted to the SS-9000 to a string variable, such as
                *       O$, and making this variable the argument of the USR function call.
                *       The string must terminate with a line-feed character (CHR$(10)) to
                *       indicate 'end-of-command' to the SS-9000.  When the SS-9000 responds
                *       to the command, it will end its response with a '>' character.  This
                *       character terminates this I/O routine and leaves the SS-9000's
                *       response in memory as follows: the length of the response (number of
                *       characters, not including the '>') is stored in memory at decimal
                *       addresses 45440 (low byte) and 45441 (high byte).  The actual response
                *       begins at address 45442.  The MBASIC program returns this response by
                *       PEEKing.
                *
                *       Note the extra +"" on the end of the string sent to the radio.  This
                *       is recommended in the MBASIC manual to insure that the string is
                *       passed to the USR routine properly.
                *
                *       Note also that the port is initialized from the Basic program.  In the
                *       demonstration program provided, the baud rate is set to 4800.  The
                *       SS-9000 MUST be set to the same baud rate before running the program!
                *       The demonstration program was written to run under HDOS version 2.0
                *       and MBASIC version 4.7, on a 48 kB system.
                *
                *       More pertinent information can be found in Appendix E of the Microsoft
                *       Basic manual, the H-89 Operation manual, and 'REMark', Issue 12.
```

```
ACE330 - I/O ROUTINE FOR H-89 & SS-9000                          HEATH H8ASM V1.5  07/28/81      PAGE    3
I/O ROUTINE                                                IO    08:13:58  10-DEC-81
```

```
                                84
                                85  *       I/O ROUTINE
                                86  *
                                87  *       ENTER:  [D,E] POINTS TO 'STRING DESCRIPTOR' (3 BYTES):
                                88  *                       BYTE 0:  LENGTH OF STRING (0 TO 255 BYTES)
                                89  *                       BYTE 1:  LOW BYTE OF STRING STARTING ADDR
                                90  *                       BYTE 2:  HIGH BYTE OF STRING STARTING ADDR
                                91  *       EXIT:   # OF CHARACTERS RECEIVED FROM SS-9000 STORED AT RAM & RAM+1:
                                92  *                       RAM:  LOW BYTE OF #; RAM+1: HIGH BYTE OF #.
                                93  *               CHARACTERS RECEIVED FROM SS-9000 STORED BEGINNING AT RAM+2.
                                94  *               (EXITS WHEN '>' IS RECEIVED FROM SS-9000).
                                95
260.000                         96          ORG     45056
                                97
                                98  **      OUTPUT SECTION
                                99
260.000  353                   100  OUTPUT  XCHG                    SAVE STRING POINTER
260.001  106                   101          MOV     B,M             LENGTH OF INPUT STRING TO B
260.002  043                   102          INX     H               POINT TO LSB OF STRING ADDR
260.003  136                   103          MOV     E,M             LSB TO E
260.004  043                   104          INX     H
260.005  126                   105          MOV     D,M             MSB TO D
260.006  353                   106          XCHG                    RESTORE STRING POINTER
                               107
                               108  *       READY TO SEND CHARACTERS TO RADIO
                               109
260.007  076 002               110          MVI     A,MC.RTS
260.011  323 334               111          OUT     R.MC            SET REQUEST TO SEND BIT
260.013  333 336               112  OUT.1   IN      R.MS
260.015  346 020               113          ANI     MS.CTS          RADIO READY TO RECEIVE A CHAR?
260.017  312 013 260           114          JZ      OUT.1           LOOP TILL READY
260.022  333 335               115  OUT.2   IN      R.LS
260.024  346 040               116          ANI     LS.THE          COMPUTER PORT READY?
260.026  312 022 260           117          JZ      OUT.2           LOOP TILL READY
                               118
                               119  *       SEND A CHARACTER
                               120
260.031  176                   121          MOV     A,M             GET CHARACTER FROM MEMORY
260.032  323 330               122          OUT     R.DR            TO DATA REGISTER
260.034  043                   123          INX     H               POINT TO NEXT
260.035  005                   124          DCR     B               ANY CHARACTERS LEFT?
260.036  302 013 260           125          JNZ     OUT.1           YES
                               126
                               127  *       STRING HAS BEEN TRANSMITTED
                               128
260.041  076 000               129          MVI     A,0
260.043  323 334               130          OUT     R.MC            CLEAR RTS
                               131
                               132  **      INPUT SECTION
                               133
260.045  041 202 261           134  INPUT   LXI     H,RAM+2         POINT TO FIRST CHARACTER LOCATION
260.050  001 000 000           135          LXI     B,0             CLEAR CHARACTER COUNTER
260.053  076 001               136          MVI     A,MC.DTR
260.055  323 334               137          OUT     R.MC            SET DATA TERMINAL READY
                               138
                               139  *       READY TO RECEIVE CHARACTERS
```

```
ACE330 - I/O ROUTINE FOR H-89 & SS-9000                          HEATH H8ASM V1.5  07/28/81        PAGE    4
I/O ROUTINE                                                      08:13:58  10-DEC-81
                                                          IO

                                 140
    260.057  333 335             141  IN.1    IN      R.LS
    260.061  346 001             142          ANI     LS.DR          HAVE A CHARACTER YET?
    260.063  312 057 260         143          JZ      IN.1           NOT YET
    260.066  333 330             144          IN      R.DR           YES - GET IT
    260.070  346 177             145          ANI     M.PAR          STRIP PARITY
    260.072  376 076             146          CPI     EOT            IS IT THE '>'?
    260.074  312 130 260         147          JE      FINISH         YES - WE'RE ALMOST DONE
                                 148
                                 149  *       SAVE RECEIVED CHARACTER
                                 150
    260.077  376 022             151          CPI     CTL.R          CONTROL-R?
    260.101  312 057 260         152          JE      IN.1           YES - IGNORE IT
    260.104  376 000             153          CPI     NULL           NULL?
    260.106  312 057 260         154          JE      IN.1           YES - IGNORE IT
    260.111  167                 155          MOV     M,A            SAVE IT
    260.112  003                 156          INX     B              BUMP CHARACTER COUNTER
    260.113  043                 157          INX     H              AND CHARACTER POINTER
    260.114  170                 158          MOV     A,B
    260.115  376 003             159          CPI     MAXL/256       COMPARE HIGH BYTE OF LENGTH WITH MAX ALLOWED
    260.117  332 057 260         160          JC      IN.1           NOT TOO LONG YET - READ ANOTHER
    260.122  171                 161          MOV     A,C
    003.000                      162          SET     MAXL/256*256
    260.123  376 350             163          CPI     MAXL-.         COMPARE LOW BYTE OF LENGTH
    260.125  332 057 260         164          JC      IN.1           READ ANOTHER
                                 165
    260.130  041 200 261         166  FINISH  LXI     H,RAM
    260.133  161                 167          MOV     M,C            SAVE LOW BYTE,
    260.134  043                 168          INX     H
    260.135  160                 169          MOV     M,B            AND HIGH BYTE OF STRING LENGTH
    260.136  311                 170          RET                    RETURN TO BASIC PROGRAM
                                 171
    260.137                      172          END
ASSEMBLY COMPLETE
  172 STATEMENTS
    0 ERRORS DETECTED
15690 BYTES FREE
```