SEIKO RC-1000 WRIST TERMINAL

Kevin D. Packard

The Seiko RC-1000 is now at liquidation prices. You can find the advertisements in some of the non-ATARI only magazines. The most likely reason for this is they don't make an ATARI version of the software. But if you own an 850 or P:R: interface you can develop the software and down load information to it.

The Seiko RC-1000 Wrist Terminal is a digital watch and data base that you wear on your wrist. The watch is much like most digital time pieces. You can tell the time, date, and day of the week at a glance. An alarm can be set using the function keys on it's face. The 2K of programmable memory makes this watch unique.

The memory can be sectioned into 12 distinct data areas. Some areas can be defined for specific functions. Each data area has a title that is accessed by using the center key-bottom row(TERMINAL). Each time the TERMINAL key is pressed the next data area label is displayed. Once the data title is displayed the other keys on the bottom row are used to step through the individual entries.

A total of 24 characters can be displayed at any one time. Capital letters, numbers, and some punctuation can be used. This can be some what limiting when trying to enter some data.

In addition to storing data the watch can be programmed to sound an alarm for a weekly schedule, those important yearly dates, and calculate world times.

The weekly schedule alarm can be programmed to sound as a reminder of meetings, appointments, or when to take medication. Twelve characters are used as a label. The remainder are used to hold the day and time of the alarm.

Yearly alarms are much the same but are triggered by a match of the programmed month and day with those shown on the watch. These can be set a year in advance. You should always remember to set the alarm so that you have extra time to order those important anniversary flowers.

World time calculates the difference in time due to time zone changes. The name of a city in a time zone can be used as a label and the number of time zone changes is inputted. When you call up this data area the time is calculated for that area. This is handy if you travel. Just bring up the city name and leave it on the watch face. No resetting your watch each time you change time zones.

The only real problem when using the watch is that it beeps any time a button is pushed. The last thing you want to do is draw attention to yourself when your taking that big exam.

As stated above, there is no ATARI version of the program. In the instruction manual they provide an address of where you can write to receive the technical data sheets. They will provide a listing of the IBM program and the technical data pertaining to the communication protocol and how the data must be organized before it can be transmitted to the watch. This will be of great help when trying to write an ATARI version.

At this point I have a bare bones program. Data is organized by

changing data statements within the program. My big achievement has been just getting this data into the proper form to be sent to the watch and setting up the RS232 port on my 850.

I'm hoping that I can inspire someone to purchase the watch and program a full fledged editor for the data. Now that you know something about the watch in the proceding months I will try to explain how to connect the watch to the RS-232 port, the proper XIO commands for setup, and explain how the data must be processed before it can be sent to the watch.

Seiko RC-1000 (part 2)

Kevin Packard

In the last POKEY a description of the RC-1000 Wrist Terminal was given. This month I would like to continue the discussion by explaining the cable modifications and program that are required to download information to the watch.

The watch comes with a cord that connects the watch to the RS-232 port. If you examine the cord you will note that it does not match any of the plugs on your interface. You will need a DB-9 pin plug that fits the interface. This can be purchased at your local electronics store.

To replace the computer plug simply cut off the old plug and strip the wires. Solder the red wire to pin 3 of the plug and the white to pin 9. Pin 3 of the port is TDX(transmit data). Pin 9 is SG(signal ground). Both of these are required to transmit data. The shielding wire is to be hooked to frame ground. I have not yet done this and have had no problem loading data into the watch. If you wish, just cut it back so it does not interfere with the other wires.

As I mentioned before, if you purchase the watch there is an address that you may write for technical information. I received a packet with 19 pages of technical information about the watch. Also included was a 36 page printout of the IBM version of the software. I'm not even going to try to summarize all the information here but most of it will be mentioned as I explain the short program I wrote.

The 2k RAM that the watch contains is sectioned into pages. Page 1 contains the directory data. The Directory keeps track of where the start of each section(data file) of data is. There is enough room in the directory to define 12 data files. There must be at least one page of data in any file. There can only be one data file for the Time Zone, Weekly , and Yearly Schedule. The way the memory is sectioned there is a total of 80 pages(screens) of 24 characters that are available.

Confused? It gets better.

The short program allows you to program DATA lines at the end. As the program runs it reads each line of text from the DATA statements. Checks to see if there is any thing special about the line and then adds it to the end of a long string that is eventually sent to the watch during the send routine.

Each data line or screen requires 25 bytes. The first byte is a letter code that will tell the watch what kind of data it is. "L","T","S", and "W" are used to indicate the type of data area you are setting up. "d" indicates a line of data under each topic. Each line of data will have to start with one of these code letters. The remaining 24 characters are what will be seen on the watch screen as it is called up. If the information in the data line has blanks at the end a 26th character will have to be place at that location. This will force the string to contain the full 25 characters.

If you examine the program you should note the DATA statements. This is the data that will be sent to the watch. Examine the program as I run through the different data files that can be used in the

watch. Also note the REM statements. These will give you the general form for each data file and how the data must be organized for the special functions.

Data File(type "L") are Memo Files. These would contain information for that topic. More than one Memo File can be present at any time. The data lines("d") following this file label would appear under this label until the next data file was reached. Information such as phone numbers, conversion factors, notes for school or work, ect. can be kept in this type of file. Only upper case letters, numbers, and some punctuation can be used to represent the data. This is also true for the remaining file types.

Schedule Alarm Files(type "S") are for the yearly alarms. At the programmed month and day the alarm will sound. The data under this label must be organized in a specific way. The 14th character of the data must be the month, then a "/" then the day. Month and day require the 2 digit code. Then a space, "A" for AM or "P" for PM, and then the time of the alarm.

Weekly Alarm Files(TYPE "W") are for alarms that you want to go off during the week. The data lines have a 12 character string and then the data. The 14th character is a number that corresponds to the day of the week. 0 for Sunday to 6 for Saturday. I'll let you figure out the rest. Then a space, and three letters for the day. After another space, the time is entered just like the Schedule Alarms.

World Time Files(type "W") can display the place and local time anywhere in the world. The first 12 characters can be used to hold the name of a city. Positions 14 to 18 contain the number of time zones to the east you must go through. The instruction book contains a map of the world with the time zones on it. To find the time differential for the city, find the time zone you are in. Now count toward the east the number of time zones between the places. The 14th character toggles the AM/PM. If the place is more then 12 time zones put a 1 in the 14th place and subtract 12 to get the next two characters of data.

Now that you know how to program the DATA lines and the type of files that can be created let's examine how the computer gets the information to the watch.

Line 10 dimension A$ and B$. A$ is used to hold the long string that contains the directory and data. B$ is used as a temporary string to hold each data statement while Processing is done on the directory.

Line 40 and 45 sets up the A$ string. This is required by the watch so it can tell when the data starts and stops.

46 to 49 reads each DATA line and count the number of data files and screens are present. You can only have 12 data files and a total of 80 screens of data. If either of these are above the limit, press the break key to abort the program.

60 starts building the data string (A$). Each time a line of DATA is read the first character is checked to see if it is a data file. If it is, the type of data file and location is placed in the directory page. Then the line is added to the end of A$.

After this has been done the XIO command executed. XIO 34 turns off the DTR and RTS. This means that the port will not check to see if the watch is ready to receive data or send out a signal to tell the

watch that the computer is ready.(DTR-data terminal ready, RTS-request to send). XIO 36 sets the baud rate to 2400bps, the word length to 8 bits and the number of stop bits to 2. XIO 38 sets the port for no translation, parity to none, and will not append a line feed after carriage return.

Lines 140 to 260 opens port #2 on the 850 interface, send out the A$ string, and then closes the port. I used port #2 because I have a serial printer hooked up to port 1. You may change the "R2:" to "R:" if you prefer.

Really not much to it at all. Just be sure that the watch is hooked up to the interface and set to RECEIVE before you type RUN.

Two final notes. If you send for the technical manuals don't forget to tell them what computer you are hooking the watch up to. And- ST owners should be able to modify this program and download data to the watch through the RS-232 port.

```
10 DIM A$(25*81+3),B$(25)
40 FOR X=1 TO 26:A$(X,X)=CHR$(0):NEXT X
41 A$(2,2)="L"
45 A$(2027,2027)="L"
46 X=0:Y=0:TRAP 49
47 READ B$:X=X+1:IF B$(1,1)  "d" THEN Y=Y+1
48 GOTO 47
49 ? "LABLES:";Y;"   SCREENS";X
55 NL=0
57 TRAP 100
59 RESTORE
60 FOR X=1 TO 80:READ B$
70 IF B$(1,1)="L" THEN TD=0:GOSUB 300
71 IF B$(1,1)="S" THEN TD=16:GOSUB 300
72 IF B$(1,1)="W" THEN TD=32:GOSUB 300
73 IF B$(1,1)="T" THEN TD=48:GOSUB 300
75 IF B$(1,1)  "d" THEN B$(1,1)="L"
80 A$(X*25+2,(X+1)*25+2)=B$:NEXT X
100 A$(X*25+2,X*25+2)="L"
110 XIO 34,#1,128+32+0,0,"R2:"
120 XIO 36,#1,12+0+128,0,"R2:"
130 XIO 38,#1,32+0+0+0,0,"R2:"
140 OPEN #1,8,0,"R2:"
200 ? #1;A$
260 CLOSE #1
270 END
300 REM ***SET UP DIRECTORY***
310 DD=25*(X-1)
320 HD=INT(DD/256)
330 LD=INT(DD-(HD*256))
340 A$(NL*2+3,NL*2+3)=CHR$(HD+TD)
350 A$(NL*2+4,NL*2+4)=CHR$(LD)
360 A$(NL*2+5,NL*2+5)="@"
370 NL=NL+1
380 RETURN
1000 REM -L   DATA          FILE     *
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```
1001 REM -dccccccccccccccccccccccc*
1002 REM -S  SCHEDULE      ALARM     *
1003 REM -dccccccccccccMO/DD AHH:MM
1004 REM -W   WEEKLY       ALARM     *
1005 REM -dccccccccccccD DAY AHH:MM
1006 REM -T   WORLD         TIME     *
1007 REM -dccccccccccccTHHMM         *
2000 DATA L - PHONE        NUMBERS   *
2010 DATA d  THE PUB       826-5733  *
2020 DATA d  NO WHERE      555-5555  *
3000 DATA L CONVERSION     FACTORS   *
3010 DATA d1M/39.37IN  1L/61.02 IN3
3020 DATA dVELOCITY SO.1088FT/SEC    *
3040 DATA d1MIN = 60SEC1HR  = 60MIN
3050 DATA d1LB =453.6GR              *
4000 DATA S  SCHEDULE      ALARM     *
4010 DATA dWNYAUG MEET 07/07 P07:30
4020 DATA dWNYAUG MEET 08/04 P07:30
4030 DATA dWNYAUG MEET 09/02 P07:30
5000 DATA W   WEEKLY        ALARM    *
5010 DATA dWAKE UP      1 MON A06:00
5020 DATA dGO WORK      1 MON A07:30
5030 DATA dSTART WORK   1 MON A08:00
5040 DATA dLUNCH        1 MON P12:00
5050 DATA dBACK TO WORK1 MON P12:30
5060 DATA dGO HOME      1 MON P04:30
5070 DATA dCALL SICK    2 TUE A08:00
6000 DATA T   WORLD         TIME     *
6010 DATA d DENVER CO  11000         *
6020 DATA d  GLASGOW   00500         *
6030 DATA d   MOSCOW   00700         *
6040 DATA d   TOKYO    10200         *
6050 DATA d   TAHITI   10700         *
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