
ADVANTEST®
ADVANTEST CORPORATION

R3261/3361
OPTION81
Controller Function (Guide)
HANDBOOK

MANUAL NUMBER HEA00 9406

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R3261/3361 OPTION 81
CONTROLLER FUNCTION (GUIDE)
HANDBOOK

PREFACE

1. Manual configuration

Configuration	Contents	Remarks
R3261/3361 OPTION 81 Controller Function (Guide) HANDBOOK	<ol style="list-style-type: none"> 1. Preparation before Application of Option 81 2. Creation of Program 3. Execution of Program 4. Applied Operation 	Describes the controller function by using the form of Q&A.
R3261/3361 OPTION 81 Controller Function (Reference) HANDBOOK	<ul style="list-style-type: none"> ● PART I ate EDITOR <ol style="list-style-type: none"> 1. Outline 2. ~ 5. When using the measuring instrument together with the external terminal 6. ~ 9. When using only the measuring instrument ● PART II SYSTEM CONTROLLER <ol style="list-style-type: none"> 1. Option 81 (BASIC GPIB controller) 2. Grammars and Description of Commands and Statements 3. Built-in function ● APPENDIX <ol style="list-style-type: none"> A.1 Commands and Statements A.2 Built-in Function and Graphic Function A.3 Parameter A.4 Error Message 	Describes the details of the controller function.

Note 1: Reading (Guide) in order from Chapter 1 makes it easy for a person of using the controller function first to understand (Reference).

Note 2: For the main body (R3261/3361), refer to "R3261/3361 series instruction manual".

2. The controller function in option 81 of R3261/3361 contains editor function for serial I/O (RS-232), and parallel I/O.

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Preface

3. Available external terminals

External terminals which can be connected to option 81 of R3261/3361 are VG-920, VT-220, and their equivalent.

VG-920 is used and referred to in this manual.

4. The following abbreviations are used in this handbook:

HP : Personal computer manufactured by Hewlett-Packard Co.
VG-920: Terminal manufactured by Victor Data Systems Co.
VT-220: Terminal manufactured by DEC.

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1. Preparation Before Application of Option 81

1. Preparation Before Application of Option 81

Q1. What do you need to prepare to create the programs?

A1. You have to prepare a measuring device and external terminal (VG-920) in order to create a BASIC program using the controller function (ate editor+BASIC interpreter). You have to connect the external terminal to the RS-232 connector on the back panel of the measuring device. Arrange the wiring as follows:

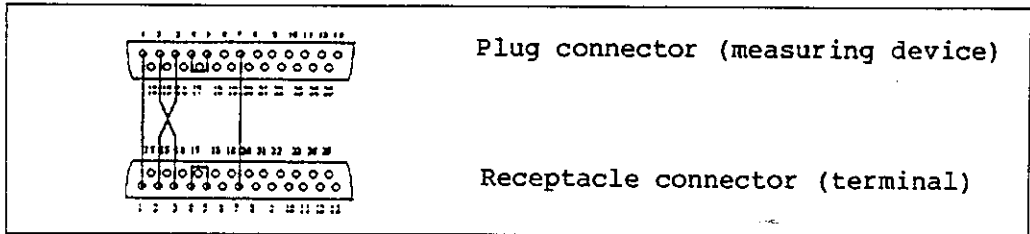


Figure 1 Wiring of RS-232 Cables

In addition, you have to prepare the memory card for the storing program (standard equipment (32Kbyte)) and a GPIB cable.

Q2. How do you start the controller?

A2. First, turn on the power supply switch of the terminal. When the message "VG-920 OK" is displayed, turn on the power supply switch of the measuring device. When the following initial screen is displayed with buzzer sound, the controller starts the operation.

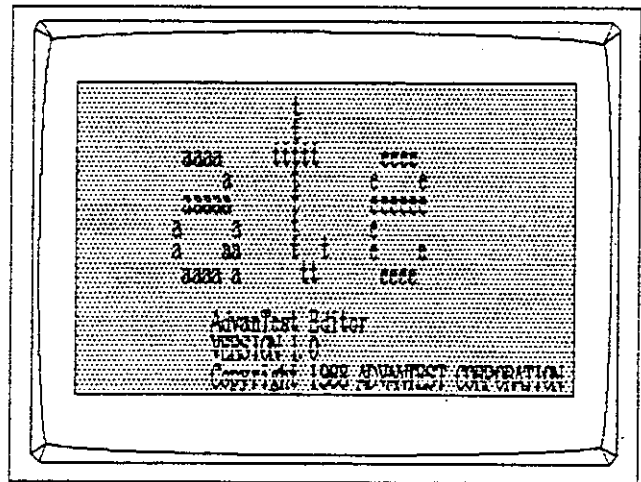


Figure 2 Initial Screen of ate Editor

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1. Preparation Before Application of Option 81

Q3. How do you initialize the memory card?

- A3. Insert the memory card into the measuring device and operate it as follows:
However, if you initialize the card saved data, all saved data will be deleted.

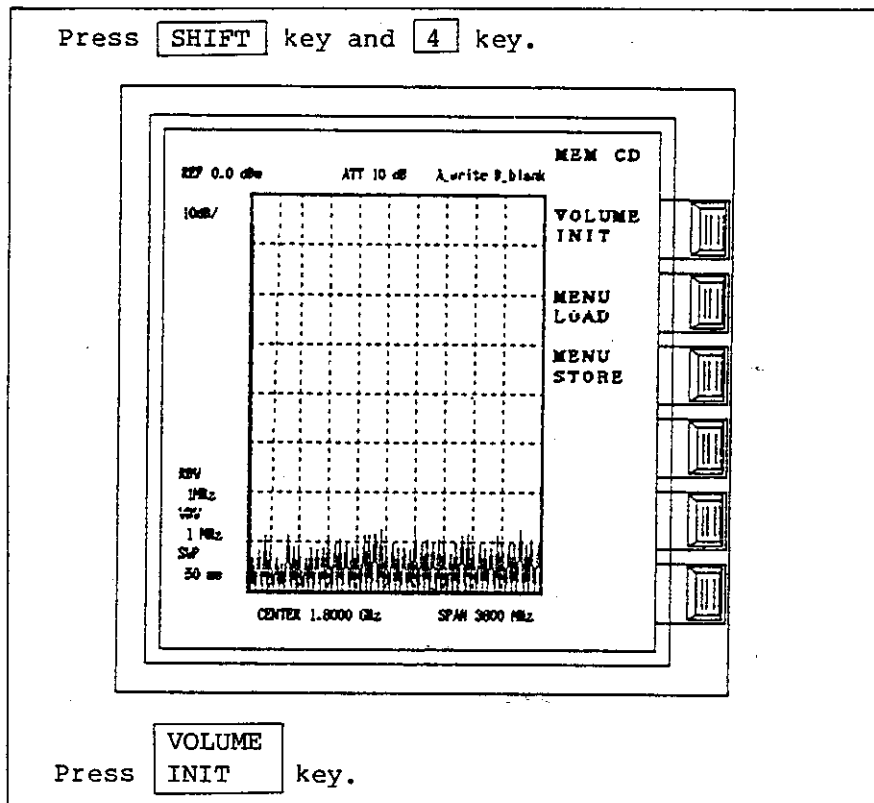


Figure 3 Initialization Procedure of the Memory Card

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1. Preparation Before Application of Option 81

Q4. How do you set the terminal?

A4. The following is a typical setting procedure:
Refer to the instruction manual of VG-920 for details.

```
Set-Up Directory VG-920 1.1  
Display General Comm Printer Keyboard Tab  
On Line Clear Display Clear Comm Reset Terminal Recall Save  
Set-Up=English North American Keyboard Default Exit  
-----  
Replace Mode Printer: None
```


Figure 4 Set-Up Directory

```
General Set-Up VG-920 1.1  
To Next Set-Up To Directory VT200 Mode, 7 Bit Controls  
User Defined Keys Unlocked User Features Unlocked  
Application Keypad Normal Cursor Keys No New Line  
-----  
Replace Mode Printer: None
```

Figure 5 General Set-Up

```
Communications Set-Up VG-920 1.1  
To Next Set-Up To Directory Transmit=9600 Receive=Transmit  
Xoff at 64 8 Bits, No Parity 1 Stop Bit No Local Echo  
EIA Port, Data Leads Only Disconnect, 2 s Delay Limited Transmit  
-----  
Replace Mode Printer: None
```

Figure 6 Communications Set-Up

MEMO 

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2. Creation of Program

2. Creation of Program

Q5. How do you create a program?

A5. Since the controller starts operation when you turn on the power supply switches of the measuring device and terminal, key-in the data using the terminal.

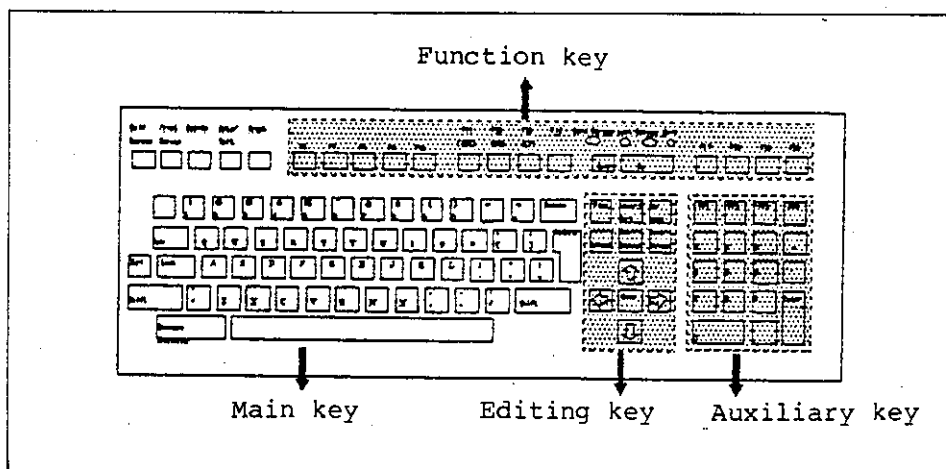


Figure 7 VG-920 Keyboard

The following is an example of the simple program:

```
TOTAL=0
FOR I=1 TO 100
  TOTAL=TOTAL+I
NEXT I
PRINT "1 100 TOTAL = ",TOTAL
STOP
END
```

Figure 8 Example of Simple Program

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2. Creation of Program

Q6. The machine does not execute the auxiliary functions even if you press the auxiliary keypad.

A6. Since the setting of the auxiliary keypad is in a numeral mode instead of editing mode, the editing mode is not recognized. Reset the auxiliary keypad to the application keypad.

See Figure 7 for arrangement of the auxiliary keypad.

General Set-Up	VG-920 1.1	
To Next Set-Up	To Directory	VT200 Mode, 7 Bit Controls
User Defined Keys Unlocked	User Features Unlocked	
Application Keypad	Normal Cursor Keys	No New Line

Replace Mode	Printer: None	

Figure 9 Setting of Auxiliary Keypad

Q7. I cannot key-in the data correctly. How do you key-in in the data correctly?

A7. Check if the terminal setting is "VT200 Mode, 7 Bit Controls" or if the transfer rate is correct?

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2. Creation of Program

Q8. How do you use the popup menu?

A8. Press "Do" key or "Ctrl-A" key of the function keypad. Then, the popup menu is displayed at the top of the screen. Select the menu with the cursor key and press the "Return" key.

See Figure 7 for arrangement of the function keypad.

BASIC	Region	Window/Other	File	Search/Replace
MOVE and RUN	Set mark	Only	Visit	Forward search
BASIC mode	Kill region	Split	Save	Backward search
RUN	Copy region	Next	Write	Query replace
CONT	Yank	Redisplay		
Line No.		Help		
Renumbering		SCRATCH		

Figure 10 Popup Menu List

Q9. How many lines can this editor create in a program?

A9. Suppose there are 40 letters in one line with no line numbers, the editor can create a program with about 2500 lines.

2. Creation of Program

Q10. The execution result of the program created in lowercase letters is incorrect.

A10. Since the lowercase letters in the program are recognized as variables, the machine outputs the data different from what you expected.
Therefore, use uppercase letters for programming. Use lowercase letters for variables is placed.

Q11. How do you save the created program in the memory card?

A11. First, insert the card into the measuring device. Next, select "Write" in the popup menu or press the "9" key of the auxiliary keypad. The mini window is displayed at the lower right-hand portion of the screen. Then, input the file name to be saved. The number of lines written will be displayed if the file is correctly saved.

See Figure 7 for the arrangement of the auxiliary keypad.

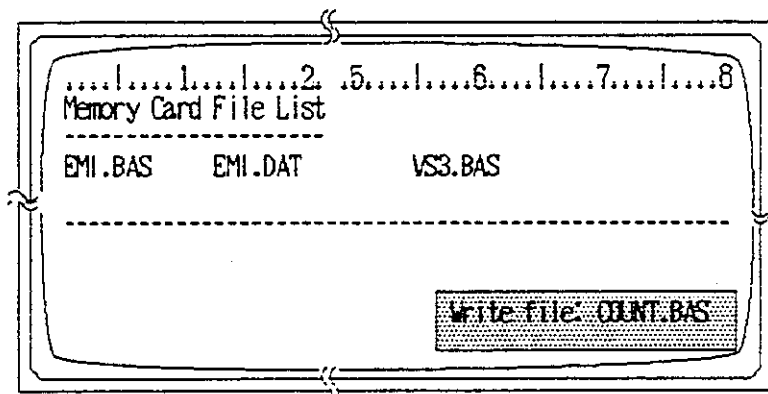


Figure 11 Saving a File

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2. Creation of Program

Q12. I cannot save a file in the memory card.

A12. Is the "Write protect" switch of the memory card turned on?
Is the card full? You can check the remaining space in the card with
the CAT command in the BASIC mode.

```
Card:032k      Page:02/02
File:023/024 MAXbyte:025600
NO.+ File-Name + Type      + Byte
013+ LPRINT      + P      + 000038
014+ INTEGER     + P      + 000199
015+ DIM         + P      + 000237
016+ IF-THEN     + P      + 000243
017+ GOSUB       + P      + 000159
018+ CURSOR      + P      + 000088
019+ FOR-NEXT    + P      + 000178
020+ SELECT      + P      + 000220
021+ READ        + P      + 000105
022+ PRINTER     + P      + 000059
023+ PAUSE       + P      + 000061
024+ GOTO        + P      + 000051

Page= 1:next / 2:prev / 3:end
```

Figure 12 Execution of CAT Command

Q13. How do you load the file from memory card?

A13. First, insert the memory card into the measuring device. Next, select "visit" in the popup menu or press the "7" key of the auxiliary keypad. The screen is divided into two windows. The top window displays a file list and the bottom section displays a mini window. Then, input the file name to be loaded. If your file is not there, an error message is displayed.

See Figure 7 for the arrangement of the auxiliary keypad.

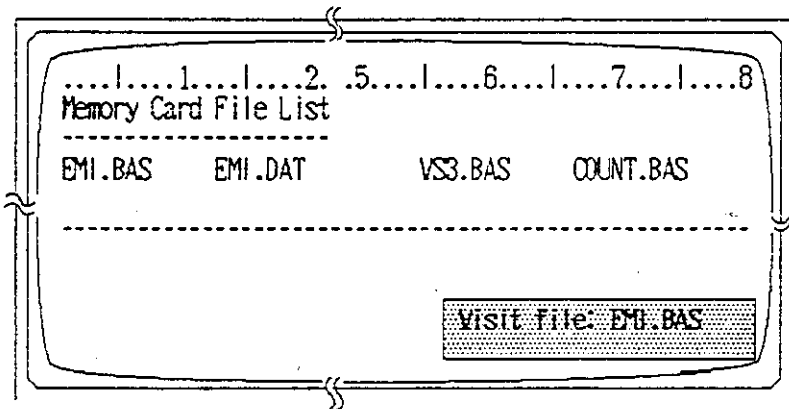


Figure 13 Loading a File

3. Execution of Program

Q14. How do you execute the program?

A14. Select "MOVE and RUN" in the popup menu or press the "F17" key of the function key. Then, the program is executed and the result is displayed.

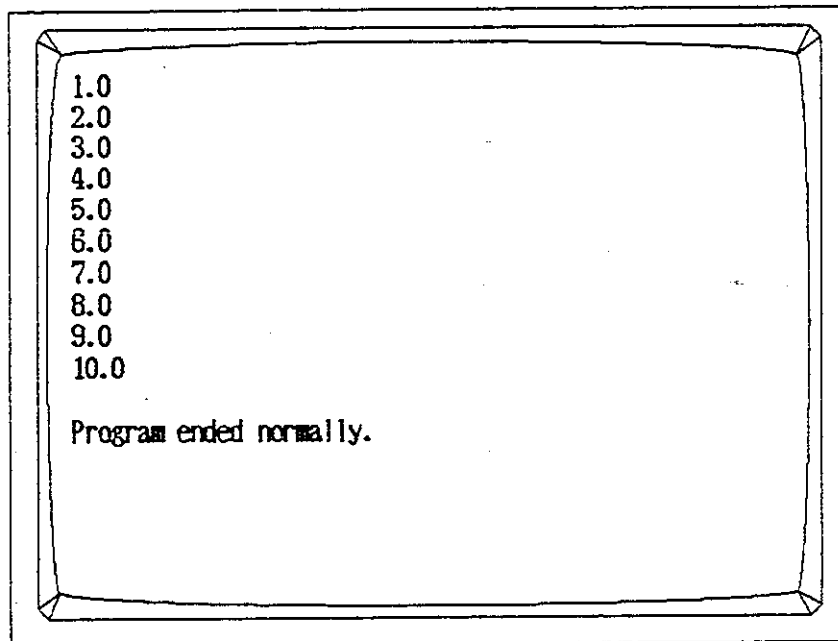


Figure 14 Execution Result of Program

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3. Execution of Program

Q15. How do you display the execution result on the measuring device screen?

A15. If an external terminal is connected to the measuring device, the execution result cannot be displayed on the measuring device screen. If there is only the measuring device, the result can be displayed on its screen. This time, select the following display conditions with the GPIB command:

Display condition	Screen setting	Delete the screen	
	GPIB command	BASIC command	
Waveform only	OUTPUT 31;"VS0"		
Waveform + execution result	OUTPUT 31;"VS1"		
Execution result only	OUTPUT 31;"VS2"	CLS	Simultaneous
Graphic	OUTPUT 31;"VS3"	CLS 1	CLS 2

Figure 15 Displaying the Conditions of Measuring Device

However, only graphics are displayed on the measuring device screen if the external terminal is connected to it. But they are not displayed on the external terminal.

Q16. How do you print the program source list with the GPIB printer?

A16. First, connect the printer GPIB port to the measuring device GPIB port (controller side), then turn on the power supply switch.

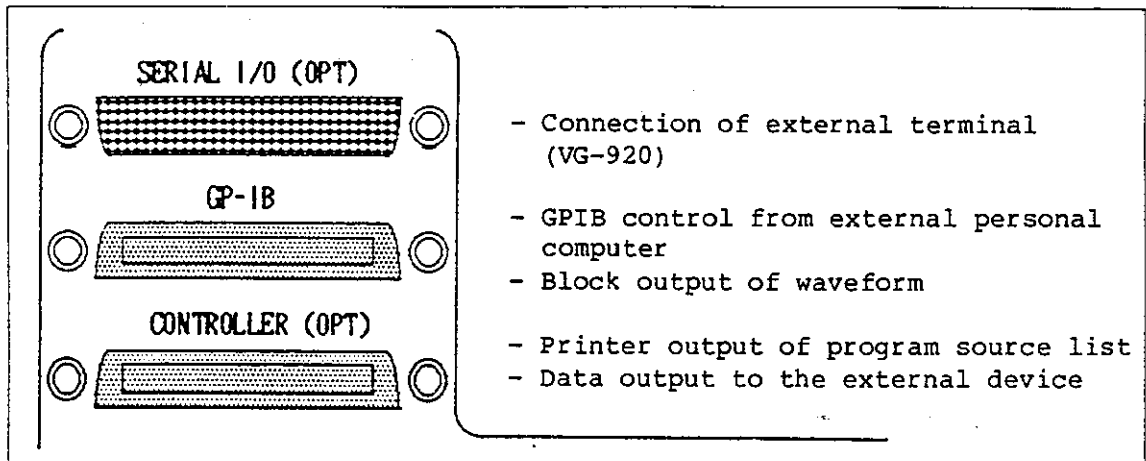


Figure 16 GPIB Port on Rear Panel of Measuring Device

Next, select "BASIC mode" in the popup menu or press the "F18" key of the function key. You can input the following command in the mini window displayed at lower right-hand side of the screen. However, "MOVE and RUN" must be executed beforehand.

Input procedure	Explanation
PRINTER 3 GLIST	Specify the printer. ("3" is the GPIB address) Output the program source list with the GPIB printer.

Figure 17 Source List Printer Output

Q17. How do you output the execution result with the GPIB printer?

A17. First, connect the printer and measuring device with cables using the same procedure in A16. Next, input the following command in the BASIC mode.

Input procedure	Explanation
PRINTER 3 GPRINT	Specify the printer. ("3" is the GPIB address) Output the execution result by the GPIB printer.

Figure 18 Execution Result Printer Output

Q18. How do you automatically load the multiple programs from the memory card for execution?
Also, how do you reside the program in the internal memory for execution?

A18. Both are not available. The ate editor loads only one program, and the BASIC interpreter executes only the program saved in the ate editor. Therefore, you cannot perform the above executions.

4. Applied Operation

Q19. How do you set the data in the measuring section?

A19. Use the OUTPUT command. The address number is 31. In "31", the communication is done internally without passing through the external GPIB cable. The following shows a sample program.

```
OUTPUT 31;"IP"           ! Preset
OUTPUT 31;"CF200MZ"      ! Set the center frequency 200MHz.
OUTPUT 31;"SP100KZ"     ! Set the frequency span 100kHz.
WAIT 200                 ! Wait approx. 200ms
OUTPUT 31;"PS"          ! Peak search
```

Figure 19 "OUTPUT 31" Sample Program

Q20. How do you read the measurement data from the measuring section?

A20. Use the ENTER command. The address number is 31. In "31", the communication is done internally without passing through the external GPIB cable. Specify the data to be read with the OUTPUT command. Place "?" at the end of the GPIB command like "OUTPUT 31;"MF?". The following shows a sample program:

```
OUTPUT 31;"IP"           ! Preset
OUTPUT 31;"CF200MZ"      ! Set the center frequency 200MHz.
OUTPUT 31;"SP100KZ"     ! Set the frequency span 100kHz.
WAIT 200                 ! Wait approx. 200ms
OUTPUT 31;"PS"          ! Peak search
OUTPUT 31;"MF?"         ! Read the peak frequency.
ENTER 31;MKRF            ! Read the peak frequency.
PRINT "MARKER FREQ = ",MKRF !
OUTPUT 31;"ML?"         ! Read the peak level.
ENTER 31;MKRL           ! Read the peak level.
PRINT "MARKER LEVEL = ",MKRL !
```

Figure 20 "ENTER 31" Sample Program

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4. Applied Operation

Q21. How do you read or write the data in the parallel I/O?

A21. Use the OUTPUT and ENTER commands. The address number is 32.
16 bit data is available in the parallel I/O.
The following shows a sample program:

```
A=1
OUTPUT 32;A           ! Set the data.
!
ENTER 32;B            ! Read the data.
  SELECT B
    CASE 1:  TOTAL=1
    CASE 16: TOTAL=16
    CASE 256: TOTAL=256
  END SELECT
STOP
```

Figure 21 Sample Program Using Parallel I/O

Q22. How do you read or write the data in the serial I/O?

A22. You cannot read the data from the serial I/O. Use the LPRINT command to write the data. This time, since you have to set the conditions such as transfer rate, you can set them with the CONTROL command. The data is then output in ASCII code. The following shows a sample program.

```
CONTROL 1;2+12+0+64   ! 4800bps, 8Bit, No Parity, Stop 1 Bit
LPRINT                ! Printer output
STOP
! SAMPLE PROGRAM      ! Source program
!
!
```

Figure 22 Sample Program Using Serial I/O

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4. Applied Operation

Q23. How do you execute the program in conversation form?

A23. Use the ON KEY command or INPUT command. You can specify the range from 1 to 6 in the ON KEY command. Set the INPUT command by pressing the "Return" key or "Unit" key. Key-in of the numerals is available without connecting to the terminal. Input of letters or negative numbers is available only by the keyboard. It is not available if there is only the measuring device. The following shows a sample program:

```
ON KEY 1 GOTO *KEY1           ! Specify the ON KEY command.
ON KEY 2 GOTO *KEY2
ON KEY 3 GOTO *KEY3
*L
  ENABLE INTR                 ! Approve the interruption.
  PRINT" >> key in !"
*LL
  GOTO *LL                   ! Wait for the interruption.
!
*KEY1
  DISABLE INTR: INPUT "----> key 1 OK? (Y=1/N=0)",I
                               ! Interruption is disabled and execute
                               the INPUT command.
  IF I=0 THEN GOTO *KEY1
  GOTO *L
*KEY2
  DISABLE INTR: INPUT "----> key 2 OK? (Y=1/N=0)",I
  IF I=0 THEN GOTO *KEY2
  GOTO *L
*KEY3
  DISABLE INTR: INPUT "----> key 3 OK? (Y=1/N=0)",I
  IF I=0 THEN GOTO *KEY3
  GOTO *L
STOP
```

Figure 23 Sample Program for Executing Conversation Form

Q24. How do you control the other measuring device by the GPIB?

A24. Use the OUTPUT command. The address number is 0 to 30. The following shows a sample program:

```
X$=1500:Y$=600           ! Draw a real line from (1500,600)
                          ! to (2000,600).
OUTPUT 5;"PU;PA"&X$&","&Y$&";"
                          ! The GPIB address is 5.
X$=2000;Y$=600
OUTPUT 5;"PD;PA"&X$&","&Y$&";"
```

Figure 24 Sample Program for Plotter Control

Q25. How do you save the data in the program execution stage in the memory card?

A25. Use the OPEN/CLOSE and OUTPUT commands. If a file is already saved there, delete it, then, save the new file. The following shows a sample program:

See the OPEN/CLOSE command for details.

```
DIM A(100)
FILES$="ABC"             ! The file name is "ABC."
INPUT "Is Y"ABCZ" file new ? (Y=1/N=0) ->","NEW
IF NEW=0 THEN PURGE FILES$
OPEN FILES$ FOR OUTPUT AS #FD;ASCII
                          ! Open the "ABC" file.
FOR I=1 TO 100
  A(I)=I
  OUTPUT #FD;A(I)         ! Write the data.
  PRINT "Save = ",A(I)
NEXT I
CLOSE #FD                ! Close the "ABC" file.
STOP
```

Figure 25 Sample Program for Saving Variables

Q26. How do you load the data saved in the memory card?

A26. Use the OPEN/CLOSE and ENTER commands. The file to be loaded must already exist. Also, it must be written in the same format. The following shows a sample program:

See the OPEN/CLOSE command for details.

```
DIM B(100)
FILE$="ABC"           ! The file name is "ABC."
OPEN FILE$ FOR INPUT AS #FD;ASCII
                        ! Open the "ABC" file.
FOR I=1 TO 100
  ENTER #FD;B(I)       ! Read the data.
  PRINT "Load = ",B(I)
NEXT I
CLOSE #FD              ! Close the "ABC" file.
STOP
```

Figure 26 Sample Program for Loading Data

Q27. How do you read the trace data in the variables?

A27. Use the GTA/GTB command and built-in function RTRACE(). The GTA/GTB command reads the trace data in the work area of the measuring device. The GTA/GTB command must be executed before the built-in function RTRACE() is used. The following shows a sample program:

```
INTEGER T1(701)           ! Specify the storage area.
!
OUTPUT 31;"GTA"          ! Read the trace A in the work area.
FOR I=1 TO 701
  T1(I)=RTRACE(I-1,0)    ! Read the trace data in the variables.
NEXT I
STOP
```

Figure 27 Sample Program for Reading the Trace Data

Use the PTA/PTB command and built-in function WTRACE() when you want to write the trace data. The PTA/PTB command transfers the data written in the work area by the built-in function WTRACE() to the trace memory in the measuring device. The following shows a sample program:

```
INTEGER T1(701)           ! Specify the variable.
!
FOR I=1 TO 701
  WTRACE(T1(I),I-1,1)    ! Write the data to the work area.
NEXT I
OUTPUT 31;"PTB"          ! Write the data, which is in the work
! area, in trace B.
OUTPUT 31;"BV"           ! Set B view.
STOP
```

Figure 28 Sample Program for Writing the Trace Data

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4. Applied Operation

The following sample program saves the trace A data in the memory card and writes it to trace B.

```
! trace A          ->Memory card (FILE$)
! Memory card (FILE$) -> trace B
INTEGER T1(701),T2(701)
!
GOSUB *SETUP          ! Set up
GOSUB *FSAVE          ! Save the data in the memory card.
GOSUB *FLOAD          ! Load the data from the memory card.
!
*SETUP
  OUTPUT 31;"VS2":CLS
  PRINT "##### OPEN/CLOSE #####"
  BUZZER 1000,500
  CURSOR 5,5:PRINT ">>Please, write protect switch is off !"
  CURSOR 5,7:INPUT ">>Save file name = ?", FILE$
                    ! Input the file name.
  CURSOR 5,9:INPUT ">>New file ? (Y=1/N=0) ",NEW
  IF NEW=0 THEN PURGE FILE$ ! Current file is deleted.
  OUTPUT 31;"IP VS1":CLS
  OUTPUT 31;"CLN CF30MZ SP1MZ RE-10DB RB100KZ"
  RETURN
!
*FSAVE
  OUTPUT 31;"VS1":CLS
  BUZZER 500,500
  PRINT "trace A ->Card saving .. (file) = ",FILE$
  OPEN FILE$ FOR OUTPUT AS #FD;ASCII
                    ! Open the file.
```

Figure 29 Sample Program for Read/Write
the Trace Data from/to the Memory Card

```

OUTPUT 31;"GTA"           ! Read trace A.
FOR I=1 TO 701
  T1(I)=RTRACE(I-1,0)     ! Save the data in the variables.
  OUTPUT #FD,T1(I)        ! Save the data in the memory card.
NEXT I
CLOSE #FD                 ! Close the file.
OUTPUT 31;"AB"           ! A blank
CLS:BUZZER 500,500
RETURN

:
*FLOAD
OUTPUT 31;"VS1":CLS
BUZZER 500,500
OUTPUT 31;"CWB BV"       ! B clear & view
CLS:PRINT "Card loading .. ->trace B (file) = ",FILE$
OPEN FILE$ FOR INPUT AS #FD;ASCII
                           ! Open the file.
FOR I=1 TO 701
  ENTER #FD;T2(I)         ! Load the data from the memory card.
  WTRACE(T2(I),I-1,1)    ! Write the data in the work area.
NEXT I
OUTPUT 31;"PTB"          ! Write the data in trace B.
OUTPUT 31;"BV"           ! B view
CLOSE #FD                ! Close the file.
CLS:BUZZER 500,500
RETURN
  
```

Figure 29 Sample Program for Read/Write the Trace Data from/to the Memory Card (cont'd)

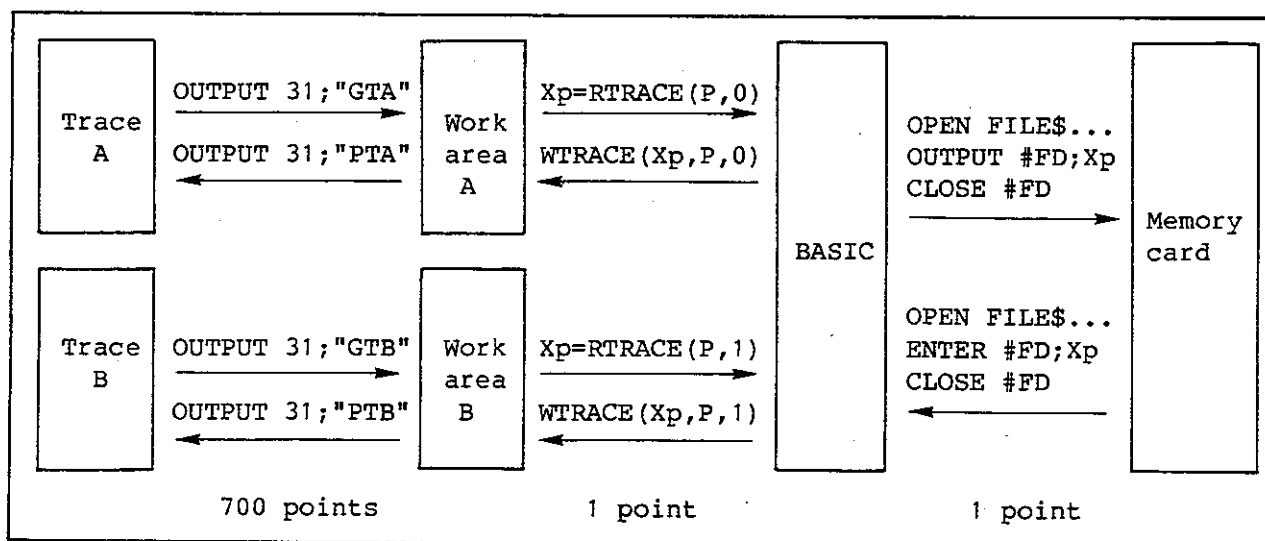


Figure 30 Data Transfer Between the Trace and Memory Card

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4. Applied Operation

Q28. How do you use the service request (SRQ)?

A28. Use the SPOLL and bit operator. Interruption can be applied. The following shows a sample program using the interruption function:

```
INTEGER S
SPA=31
ON ISRQ GOSUB *SRQCHK           ! Specify the interruption.
OUTPUT SPA;"IP"
OUTPUT SPA;"VS1 S0"
!----- Calibration -----!
DATA "CLG","IT0","IT1","IT2","IT3","IT4"
FUNC$="CAL"
RESTORE
FOR I=0 TO 5
  READ CAL$
  OUTPUT SPA;CAL$
  GOSUB *SWAIT
  WAIT 1000
NEXT I
!----- Sweep end -----!
FUNC$="SWP"
OUTPUT SPA;"IP CLN CF30MZ SP500KZ SW2SC SI"
FOR I=0 TO 5
  OUTPUT SPA;"SP DN SR"
  GOSUB *SWAIT
NEXT I
STOP
!
!----- SRQ interrupt wait -----!
*SWAIT
  FLAG=0
  ENABLE INTR                   ! Approve the interruption.
*LL
  IF FLAG=1 THEN RETURN         ! Wait for the interruption.
  GOTO *LL
!----- SRQ status check -----!
*SRQCHK
  DISABLE INTR                  ! Interruption is disabled.
  S=SPOLL(SPA)                  ! Status polling
  IF FUNC$="CAL" AND (S BAND 2) <>0 THEN
    GOSUB *CALEND: RETURN
  END IF
```

Figure 31 Sample Program Using SQR Function

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```
IF FUNC$="SWP" AND (S BAND 4)<>0 THEN
  GOSUB *SWPEND: RETURN
END IF
ENABLE INTR                ! Approve the interruption.
RETURN

!
!----- Calibration end -----!
*CALEND
  BUZZER 500,50
  PRINT "CAL. end -->",CAL$
  FLAG=1
  RETURN

!
!----- Sweep end -----!
*SWPEND
  BUZZER 500,50
  FLAG=1
  FREQ=BND(PMAX(0,700,0),10,0)
  PRINT "10 dB down band = ",FREQ/1000,"kHz"
  RETURN
```

Figure 31 Sample Program Using SQR Function (cont'd)

Q29. How do you transfer the program created by the personal computer to the ate editor?

A29. First, change the branched statement having the line number (example: GOTO 100) in the program to be transferred into the label, and save it as an ASCII file.
Next, create the control program. The control program transfers the program to the measuring device in the following procedure:

- (1) Load the program to be transferred.
- (2) Delete the line number.
- (3) Place '@' at the beginning of the line.
- (4) Transfer the line separately to the measuring device.

Figure 32 Transfer Procedure

The transfer of one line needs a waiting time of approx. 1 second. If the transfer cannot be made smoothly, you have to increase the waiting time. Make sure that one line does not exceed 128 bytes.

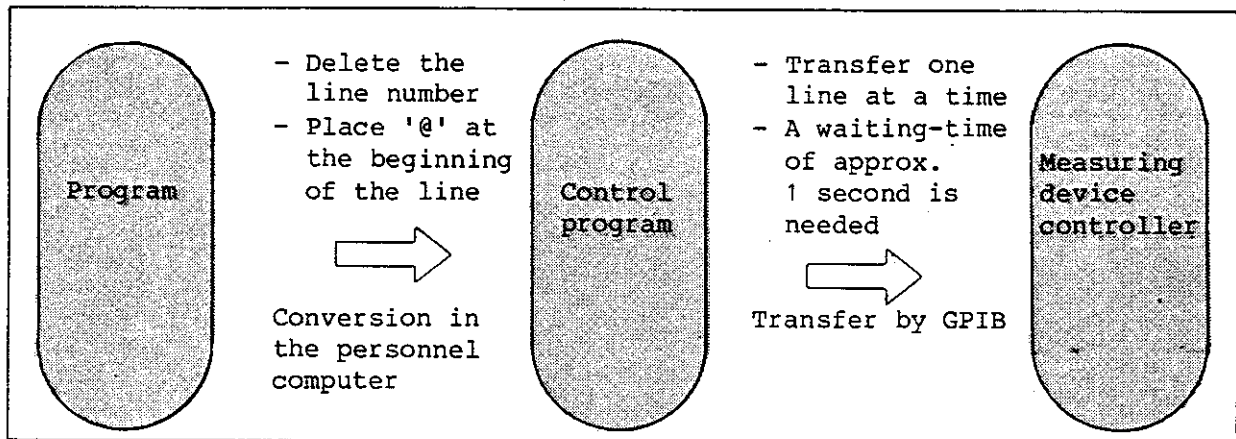


Figure 33 Outline of Program Transfer

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When you complete the setting for the transfer on the external personal computer, you have to set the measuring device. First, connect the GPIB port on the rear panel of measuring device and GPIB port of the external personal computer with a cable.

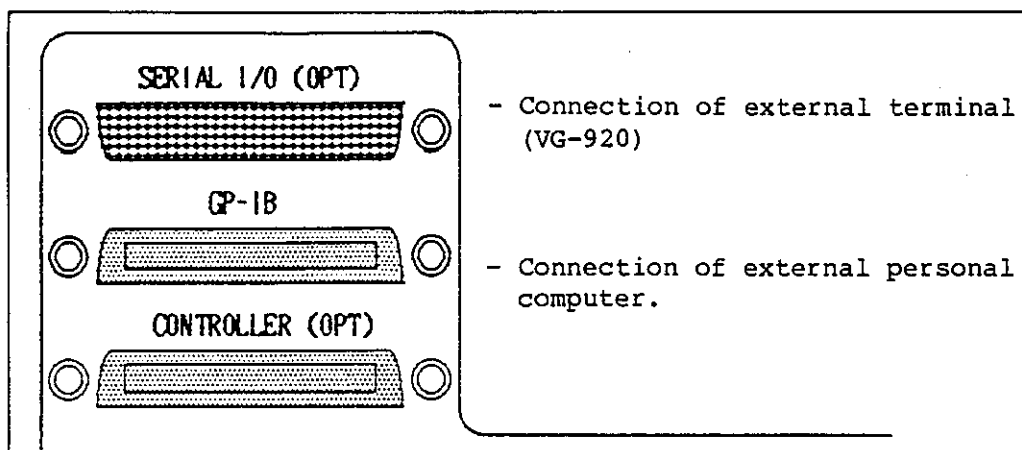


Figure 34 GPIB Port of on the Rear Panel of Measuring Device

Next, connect the external terminal to the measuring device. Then, turn on the power supply switch of the measuring device. When the initial screen of the ate editor is displayed on the external terminal, you can execute the control program created on the external personal computer.

Then, the program is transferred from the external personal computer to the measuring device starts.

After completing the transfer, you have to check the existence of the program by the ate editor. If the data is insufficient, the waiting time is not enough. Therefore, you have to reset a longer waiting time and re-transfer the data.

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Note that you have to execute "SCRATCH" in the popup menu to initialize the editor before transferring the program.

The following control program sample is of the HP version:

HP version control program

```
10 DIM A$[128],B$[128]
20 Adrs=708 ! GPIB address
30 !
40 Restart:
50 INPUT "Down load file name = ? ",Name$ ! Input the file name.
60 MASS STORAGE IS ":HP913X,701" ! Specify the disk.
70 ASSIGN @Fd TO Name$ ! Open the file.
80 ON END @Fd GOTO End_load
90 D_load:
100 ENTER @Fd;A$ ! Load the program to be transferred.
110 Cnt=1 ! Delete the line number (up to 190)
120 LOOP !
130 Chk$=A$[Cnt,Cnt] !
140 EXIT IF Chk$=" " !
150 A$[Cnt,Cnt]=" " !
160 Cnt=Cnt+1 !
170 END LOOP !
180 B$=" " !
190 B$=A$[Cnt,127] !
200 B$="@ "&B$ ! Place '@' at the beginning of the
! line.
210 PRINT B$
220 OUTPUT Adrs;B$ ! Transfer one line.
230 WAIT 1 ! Waiting time of approx. 1 second
240 IF B$<>"65525 END" THEN GOTO D_load
250 GOTO 250
260 !
270 End_load:
280 ASSIGN @Fd TO * ! Close the file.
290 DISP "Down load end !!"
300 END
```

MEMO



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