GPIB & RS232C
(Bench Top)

USER'S MANUAL

Ref # GPRS-E050520-R00

Safety rules to using his device

Safety Regulations

1. Do not touch any part of high voltage circuit or make any unnecessary high voltage measurements. Do not remove the top or bottom covers of this unit unless you are a qualified service person. Remove the power from this unit before removing the top and bottom covers.

2. When servicing this unit, the work area should be free from any electrical hazards. The floor and workbench where the unit is operated should be insulated and free from any exposed high voltage conductors. Remove any source of water or other conductive liquids in the working area.

3. Connect this unit only to a 3-prong AC outlet, which conforms to electrical safety, codes. Do not use any adapters to connect this unit to an AC receptacle.

4. Before operating or servicing this instrument, read the instruction manual and fully understand the operating procedures. If you are servicing the unit, check the circuit you are testing for high voltage.

5. Do not use this device in a room alone; be sure there are other people in the vicinity of your work area in case of an emergency arises. Have emergency telephone numbers posted in the work area in case a quick response is necessary.

Contents

1. General Introduction

This section describes how to remotely control all instrument functions and how to download and upload waveform data using either the RS-232C or GPIB interface. It is necessary to read the section on how to set the GPIB address or RS232 parameters on the Bench top if you have already installed a GPIB card and the required software on your computer. Included are an overview of remote control, a complete tabulation and explanation of control commands.

1.1. To set GPIB address

Each device on the GPIB (IEEE-488.2) interface must have a unique address. You can set the address of the equipment to any value between 0 and 30.

1.2. How to set the address of the equipment

1.2.1. Procedure

1) Press the Menu button.
2) Select the Equip mode to display the equipment setup mode.
3) Press Edit button to display “the movement cursor (<)”.
4) Move “the movement cursor (<)” to GPIB address setup field.
5) Press  button to change the “(<) movement mode” to “(◄) correction mode”.
6) Select the address by turning the rotary dial. (0-30).
7) Press F5 button to exit.

1.3. Before sending commands

Whether you use RS-232C or GPIB as the communication interface to the equipment, you should examine the following.

1.3.1. For RS-232C

1) Check the cable connection.
   Make sure the proper end (PC or Instrument) of the cable supplied is connected to the respective ends.

   PC-to-PC COM port
   Instrument to RS-232 connector

2) Setup the PC Port.
   Select a COM port on the PC. Make sure that the baud rate and other interface parameters are set to the same parameters as the equipment.

1.3.2. For GPIB

1) Check the cable connection.
2) Set up the GPIB board on the PC to a proper setting.
3) Make sure that the GPIB address set on the PC matches the equipment address.

2. RS232C Overview

2.1. Introduction

RS-232 is an industry-standard method of sending data back and forth between two pieces of equipment. With the equipment, a computer can remotely control the instrument, download waveform data and upload waveform data. This overview explains the interface requirements, instrument setup, how to verify communications.

2.2. Interface Requirements

All IBM (or IBM compatible) personal computers (PCs) should be equipped with at least on serial interface port. It may be either a 9-pin DB-9 or a 25-pin DB-25 connector. An 8-foot 9-pin cable is included with the instrument.
Most any software, which defines communication protocols, may be used. This includes the programming languages Quick Basic, GW Basic, Visual Basic, Quick C, Turbo C and Turbo C++. Communications programs such as ProComm, a “shareware” version, are also usually acceptable.

2.3. RS232C Specifications

Baud Rate	9600, 4800, 2400, 1200 (option)
DATA LENGTH	8 BIT
START BIT	1 BIT
STOP BIT	1 BIT
PARITY BIT	NONE

3. RS232C Communication

3.1. Hardware and Software requirement:

1) IBN PC/XT/AT (8088,80286, 80386, 80486) or Compatible Computer.
2) Microsoft Windows VER 3.1 or Windows 95, 98
3) Serial Port for Connection with Instrument.

3.2. RS232C Cable Pin Connection

Instrument	Computer		
D-sub 9-Pin Male	D-sub 9-pin Female	D-sub 25-Pin Female	Pin Name
2	2	3	Rx
3	3	2	Tx
4	4	20	DTR
7	7	4	RTS

3.3. Installation of Supplied Software

1) Insert the supplied diskette into the Drive A. (or B).
2) Select File from the Program Manager screen, and then select Run.
3) Type A:\(or B:\) Setup.exe. Then ENTER.
4) If you are using Windows 95/98 click the mouse on MY computer ICON, then Floppy Drive A icon. When the menu is displayed click on SETUP.EXE.
5) Monitor Program will be installed and create a directory named “Model No.” automatically in Hard Disk.

3.4. Communication with PC

1) Start the program by clicking the mouse on the icon.
2) Click on the **SetUp** button to open the setup dialog. Then select appropriate Serial Port and Baud Rate and click on the **OK** button
3) Click on the S TIME button and type in the appropriate sampling time.
4) Click the “START” button with mouse to start the program.

Start : Starts the program.
Stop : Stops the program.

4. GPIB (IEEE-488.2) Overview

4.1. Introduction

The instrument conforms to the Institute of Electrical and Electronics Engineers (IEEE) Standard 488.2-1992. The specific implementation of IEEE-488.1 includes the following functions and subsets:

Interface Function	Subset
Source Handshake	SH1
Acceptor Handshake	AH1
Talker	T6
Listener	L4
Service Request	SR1
Remote Local	RL1
Parallel Poll	PP0
Device Clear	DC1
Device Trigger	DT1
Controller	C0
Electrical Interface	E1

To facilitate programming, a brief overview of the IEEE-488.2 Standard (as it specifically applies to the instrument) is provided.

For a more detailed discussion of these topics, a copy of IEEE Standard 488.2-1992 may be obtained from:

The Institute of Electrical and Electronics Engineers, Inc.
345 East 47th street, New York, NY 10017

5. GPIB Port

Standard IEEE-488.2 connector for connecting multiple devices to the GPIB interface.

*Note
The total cable length should be less than 25m (80ft) and the maximum number of device connections (including controller) is 15.

5.1. GPIB Example

Figure below is an example of connecting multiple devices to the GPIB port.

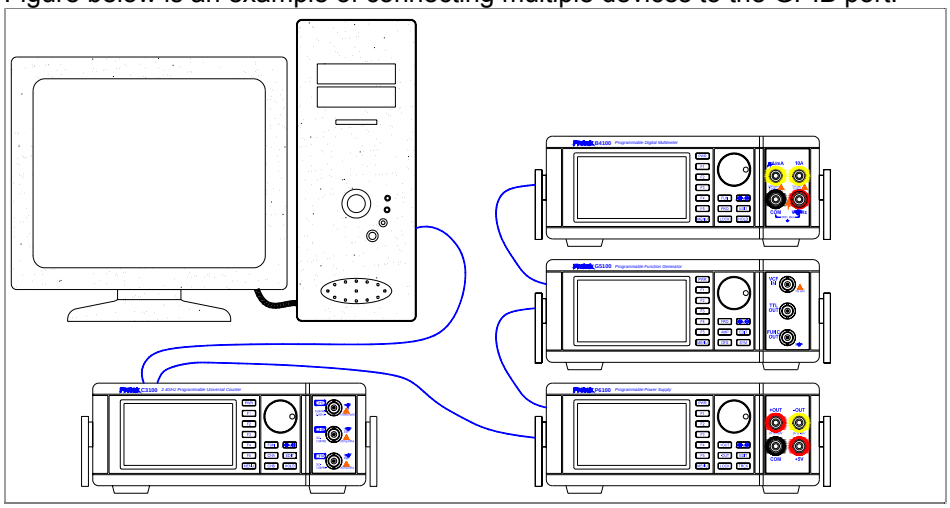


Figure. Example of connecting the connector

5.2. GPIB cable PIN number and signal

Pin number	IEEE Standard	Pin number	IEEE Standard
1	DIO 1	13	DIO 5
2	DIO 2	14	DIO 6
3	DIO 3	15	DIO 7
4	DIO 4	16	DIO 8
5	EOI	17	REN
6	DAV	18	GND (6)
7	NRFD	19	GND (7)
8	NDAC	20	GND (8)
9	IFC	21	GND (9)
10	SRQ	22	GND (10)
11	ATN	23	GND (11)
12	Shield	24	Logic GND

6. Status and Event Registers

There are four required status or event registers. They are:

1) Standard Event Status Enable (ESE) Register
2) Standard Event Status (ESR) Register
3) Service Request Enable (SRE) Register
4) Status Byte (STB)

The following diagram shows how the registers are related to each other. These registers indicate device status, and allow the programmer to specify which device events will enable a service
request

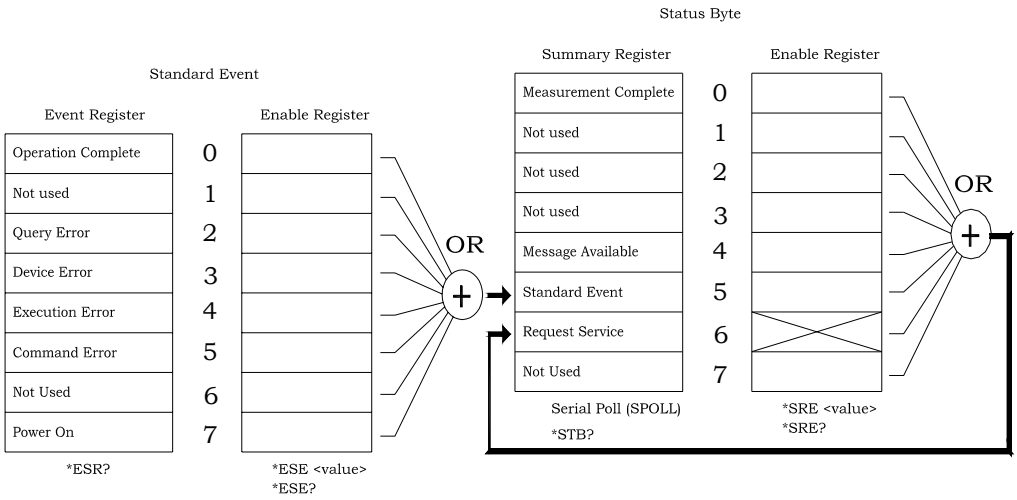


Diagram. Status and Event Registers

7. Command Set or Query message terminator

7.1. Common command

Commands can be divided into two major categories: common commands and instrument specific commands. Instrument specific commands are detailed in next section. Common commands are defined by the standard, and, among other things, are used to manage status registers and synchronization. The following is a list of common commands as implemented in the instrument:

Command	Description
*CLS	Clear Status
*ESE (GPIB ONLY)	Standard Event Status Enable
*ESE?	Standard Event Status Enable Query
*ESR?	Standard Event Status Register Query
*IDN?	Identification Query
*OPC	Operation Complete
*OPC?	Operation Complete Query
*RST	Reset
*SRE (GPIB ONLY)	Service Request Enable
*SRE?	Service Request Enable Query
*STB?	Status Byte Query
*TRG	Trigger Command
*TST?	Self-Test Query
*WAI	Wait-to-Continue
*OPT?	System Option Query

7.2. Verification of Communication

After the PC and the instrument have been connected together and programmed for compatible interface parameters, the interface should be tested for proper operation. To test the interface, type the following:
***IDN?**

The instrument should identify itself with the following:
Model NO,V.x.xx
(x.xx represents the current firmware revision number.)

7.3. Command set (RS232 & GPIB)

Command	Limits	
	Min	Max
*CLS		
*ESE (GPIB only)	0	255
*ESE?	0	255
*ESR?	0	255
*SRE?	0	255
*SRE?	0	255
*SRE?	0	255
*IDN?		
*RST		
*TRG		
*TST?		
*WAI		
*SRE?		
*OPC?		
*OPT?		

7.4. Query message terminator

In order for the device to recognize the end of a command or query message, a special terminator is required.

CR LF **CR** represents carriage return and is an ASCII code **0D** (CHR$(13) for basic),
LF represents line feed and is an ASCII code **0A** (CHR$(10) for basic).

Command Execution examples

Example1. To set Function to FREQ A and Gate time to 1S for the C3100
You would send the following program message:

F	0	;	G	10	CR	LF

Example2. How to get the response from a query message
If you send a query message below

MD	?	CR	LF

You would get the response below from a query message.

-	1	9	.	9	9	9	9	CR	LF

8. Commands Set for Products

8.1. C3100 Commands

8.1.1. Command Set

Command set Name	Command	Format	Command description (**Variables**)
Function	F	F**0**	F**0**=FREQ A F**1**=FREQ B F**2**=FREQ C F**3**=A→B F**4**=TOT.A F**5**=A/B F**6**=A-B F**7**=DTY.A F**8**=RPM A
		F?	Function query
Gate Time	G	G**0**	G**0**=50mS G**10**=1S G**1**=100mS G**11**=2S G**2**=200mS G**12**=3S G**3**=300mS G**13**=4S G**4**=400mS G**14**=5S G**5**=500mS G**15**=6S G**6**=600mS G**16**=7S G**7**=700mS G**17**=8S G**8**=800mS G**18**=9S G**9**=900mS G**19**=10S
		G?	Gate time query
Trigger level	TA TB	TA**0**	**-99**~**+99**
		TA?	Trigger level query
Slope	SA SB	SA**0**	**0** (+), **1** (-)
		SA?	Slope query
Coupling	CA CB	CA**0**	**0** (DC), **1** (AC)
		CA?	Coupling query
Attenuator	AA AB	AA**0**	**0**(*1), **1** (*10)
		AA?	Attenuator query
Low pass Filter	LA LB	LA**0**	**0** (NOR), **1** (LPF)
		LA?	Low pass filter query
Request Measurement	RM	RM?	Request for measurement data
Go to local (RS232C Only)	GTL	GTL	Remote disable

8.1.2. Command Features

The following examples will illustrate the specific features of the instrument remote programming commands using RS-232 or GPIB. All commands are executed immediately.

Function Command Execution examples

Example1:
To set **FREQ A**
You would send the following program message:
→ **F0**

Example2:
To set **FREQ B**
You would send the following program message:
→ **F1**

Trigger Command Execution examples

Example1:
To set **Trigger level A 30**
You would send the following program message:
→ **TA30**

Example2:
To set **Trigger level B 30**
You would send the following program message:
→ **TB30**

8.1.3. More in one line

It is allowed to combine multiple commands and/or queries with their respective data into one single line. To combine multiple commands and queries with their respective data, a separator must be used. The semicolon (;) is used as a separator between commands and/or queries. This separator is officially called a “program message unit separator”. The followings are the examples to combine multiple commands and/or queries.

Example1:
To set **Func A, Trigger level A 30**
You would send the following program message:
→ **F0;TA30**

Example2:
To set **Func A, trigger level B, Slope A+**
You would send the following program message:
→ **F0;TB30;SA0**

8.2. B4100 and B4200 Commands

8.2.1. Command set

Command set Name	Command	Format	Command description (**Variables**)
Function	FUN	FUN**0**	FUN**0**=DCV FUN**1**=ACV FUN**2**=OHM FUN**3**=BEEP FUN**4**=DIODE FUN**5**=FRQ FUN**6**=DCuA FUN**7**=DCmA FUN**8**=DCA FUN**9**=ACuA FUN**10**=ACmA FUN**11**=ACA
		FUN?	Function query
Range	RGE	RGE**0**	Each function has respective ranges. (Refer to Range description)
Hold	HLD	HLD**0**	HLD**0**=NOR HLD**1**=HOLD
Measurement Data	MD	MD?	Measurement data query
Go to local (RS232C Only)	GTL	GTL	Remote Disable

8.2.2. Range description (Range Command Set)

Range Name (Function)	Command	Format	Command Description (**Variables**)
DCV (FUN0)	RGE	RGE**0**	RGE**0**=2V RGE**1**=20V RGE**2**=200V RGE**3**=1000V RGE**A**=AUTO (**A** is capital)
		RGE?	Range query
ACV (FUN1)	RGE	RGE**0**	RGE**0**=2V RGE**1**=20V RGE**2**=200V RGE**3**=1000V RGE**A**=AUTO (**A** is capital)
		RGE?	Range query
OHM (FUN2)	RGE	RGE**0**	RGE**0**=200Ω RGE**1**=2kΩ RGE**2**=20kΩ RGE**3**=200kΩ RGE**4**=2MΩ RGE**5**=20MΩ RGE**A**=AUTO (**A** is capital)
		RGE?	Range query
BEEP (FUN3)	RGE	RGE**0**	RGE**0**=2kΩ
DIODE (FUN4)	RGE	RGE**0**	RGE**0**=2V
FRQ (FUN5)	RGE	RGE**0**	RGE**0**=200Hz RGE**1**=2kHz RGE**2**=20kHz RGE**3**=200kHz RGE**4**=2MHz RGE**A**=AUTO (**A** is capital)
		RGE?	Range query
DCuA (FUN6)	RGE	RGE**0**	RGE**0**=200uA
DCmA (FUN7)	RGE	RGE**0**	RGE**0**=200mA
DCA (FUN8)	RGE	RGE**0**	RGE**0**=10A
ACuA (FUN9)	RGE	RGE**0**	RGE**0**=200uA
ACmA (FUN10)	RGE	RGE**0**	RGE**0**=200mA
ACA (FUN11)	RGE	RGE**0**	RGE**0**=10A

8.2.3. Command Features

The following examples will illustrate the specific features of the instrument remote programming commands using RS-232 or GPIB. All commands are executed immediately.

FUN Command Execution examples

Example1:
To set **DCV**
You would send the following program message:
→ **FUN0**

Example2:
To set **FRQ**
You would send the following program message:
→ **FUN5**

HLD Command Execution examples

Example1:
To freeze the screen
You would send the following program message:
→ **HLD1**

Example2:
To resume your measurement
You would send the following program message:
→ **HLD0**

8.2.4. More in one line

It is allowed to combine multiple commands and/or queries with their respective data into one single line. To combine multiple commands and queries with their respective data, a separator must be used. The semicolon (;) is used as a separator between commands and/or queries. This separator is officially called a “program message unit separator”. The followings are the examples to combine multiple commands and/or queries.

Example1:
To set **DCV**, **20V**
You would send the following program message:
→ **FUN0;RGE1**

Example2:
To set **OHM**, **AUTO**
You would send the following program message:
→ **FUN2;RGEA**

8.3. G5100 Commands

8.3.1. Command set

Command set Name	Command	Format	Command description (**Variables**)
Waveform	WFM	WFM**0**	WFM**0**=SINE WFM**1**=TRI WFM**2**=SQUARE
		WMF?	WAVEFORM query
Output	OUT	OUT**0**	OUT**0**= OFF OUT**1**= ON
		OUT?	OUTPUT query
Frequency	FRQ	FRQ**1Hz**	Frequency=**1Hz**~**15.00MHz**
		FRQ?	Frequency query
Amplitude	AMP	AMP**0**	Amplitude=**0**~**999**
		AMP?	Amplitude query
Offset	OFS	OFS**0**	Offset=**-999**~**+999**
		OFS?	Offset query
Attenuator	ATN	ATN**0**	ATN**0**=OFF ATN**1**=ON
		ATN?	Attenuator query
Symmetry	SYM	SYM**0**	Symmetry=**0**~**99.9**
		SYM?	Symmetry query
Sweep	SWP	SWP**0**	SWP**0**=OFF SWP**1**=ON
		SWP?	Sweep query
	SWR	SWR**0.05**	Sweep rate =**0.05**~**9.95** (Sweep rate step: 0.05)
		SWR?	Sweep rate query
	SWW	SWW**0**	Sweep width= **0**~**99**
		SWW?	Sweep width query
Go to local (RS232C Only)	GTL	GTL	Remote disable

8.3.2. Command Features

The following examples will illustrate the specific features of the instrument remote programming commands using RS-232 or GPIB. All commands are executed immediately.

WFM Command Execution examples

Example1:
To set **SINE waveform**
You would send the following program message:
→ **WFM0**

Example2:
To set **TRI waveform**
You would send the following program message:
→ **WFM1**

FRQ Command Execution examples

Example 1:
To set **1kHz**
You would send the following program message:
→ **FRQ1kHz**

Example2:
To set **10kHz**
You would send the following program message:
→ **FRQ10kHz**

Note:
* When you enter FRQ1.5kHz, the instrument generates 1.500kHz automatically.
* When you enter FRQ1.5MHz, the instrument generates 1.500MHz automatically.

8.3.3. More in one line

It is allowed to combine multiple commands and/or queries with their respective data into one single line. To combine multiple commands and queries with their respective data, a separator must be used. The semicolon (;) is used as a separator between commands and/or queries. This separator is officially called a “program message unit separator”. The followings are the examples to combine multiple commands and/or queries.

Example1:
To generate sine waveform, **1kHz**
You would send the following program message:
→ **WFM0;FRQ1kHz**

Example2:
To generate sine waveform, **1kHz, Amplitude 50**
You would send the following program message:
→ **WFM0;FRQ1kHz;AMP50**

8.4. P6100 Commands

8.4.1. Command set

Command set Name	Command	Format	Command description (**Variables**)
Positive Output	P	P**ON**	P**ON** = Positive on (1) P**OF** = Positive off (0)
		PON?	Positive output query
Positive voltage	PV	PV**0**	PV**0~29.9**
		PV?	Positive voltage query
Positive Ampere	PA	PA**1**	PA**0~2.999**
		PA?	Positive ampere query
Negative Output	N	N**ON**	N**ON** = Negative on (1) N**OF** = Negative off (0)
		NON?	Negative output query
Negative Voltage	NV	NV**0**	NV**0~29.9**
		NV?	Negative voltage query
Negative Ampere	NA	NA**1**	NA**0~2.999**
		NA?	Negative ampere query
Fixation output	F	F**ON**	F**ON** = fixation on (1) F**OF** = fixation off (0)
		FON?	Fixation query
Fixed current	FA	FA**1**	FA**0~1.999**
		FA?	Fixed current query
Tracking	T	T**ON**	T**ON** = Tracking on (1) T**OF** = Tracking off (0)
		TON?	Tracking query
Go to local (RS232C only)	GTL	GTL	Remote disable

8.4.2. Command Features

The following examples will illustrate the specific features of the instrument remote programming commands using RS-232 or GPIB. All commands are executed immediately.

PV Command Execution examples

Example1:
To set **+10.00V**
You would send the following program message:
→ **PV10**

Example2:
To set **+15.00V**
You would send the following program message:
→ **PV15**

PA Command Execution examples

Example 1:
To set **1.000A**
You would send the following program message:
→ **PA1**

Example2:
To set **2.000A**
You would send the following program message:
→ **PA2**

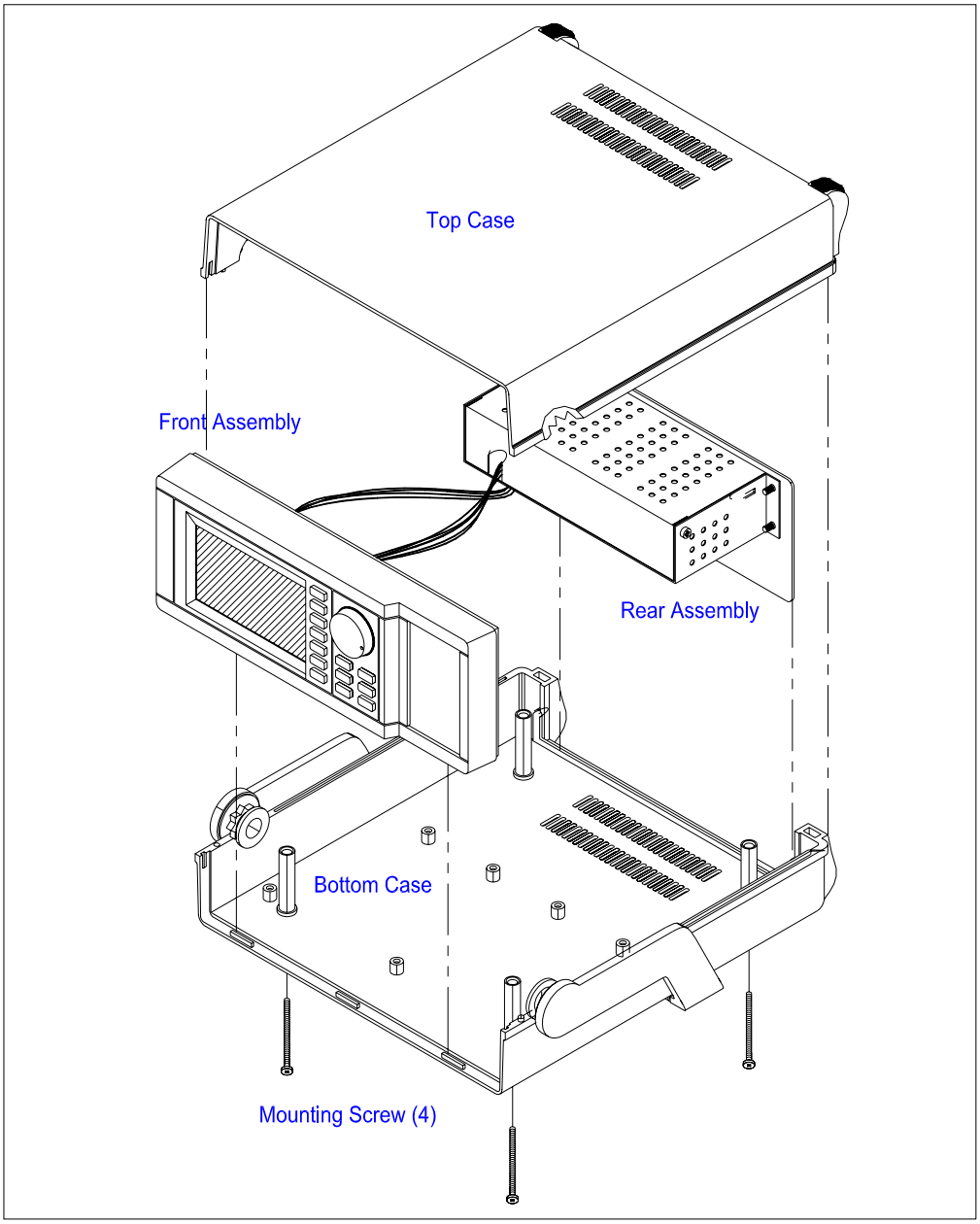
8.4.3. More in one line

It is allowed to combine multiple commands and/or queries with their respective data into one single line. To combine multiple commands and queries with their respective data, a separator must be used. The semicolon (;) is used as a separator between commands and/or queries. This separator is officially called a “program message unit separator”. The followings are the examples to combine multiple commands and/or queries.

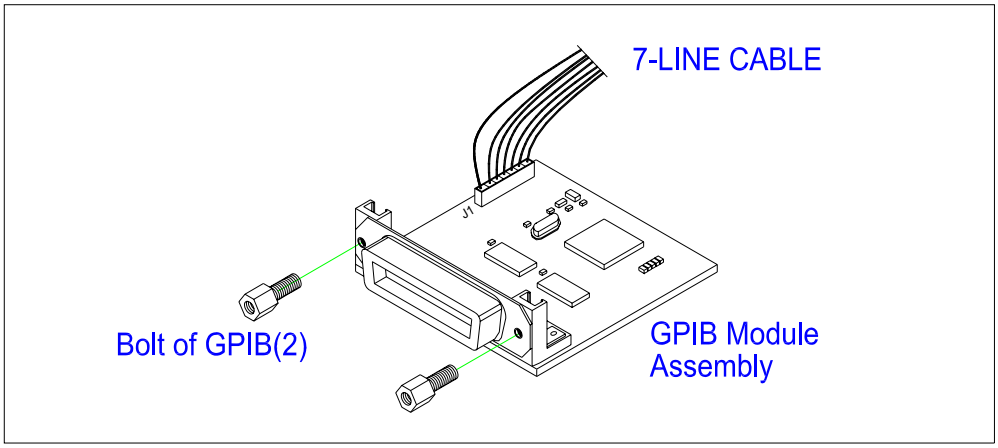
Example1:
To set **10V, tracking on.**
You would send the following program message:
→ **PV10;TON**

Example2:
To set **Positive output off, Negative voltage 5V, Negative current 1.0A**
You would send the following program message:
→ **POF;NV5;NA1.0**

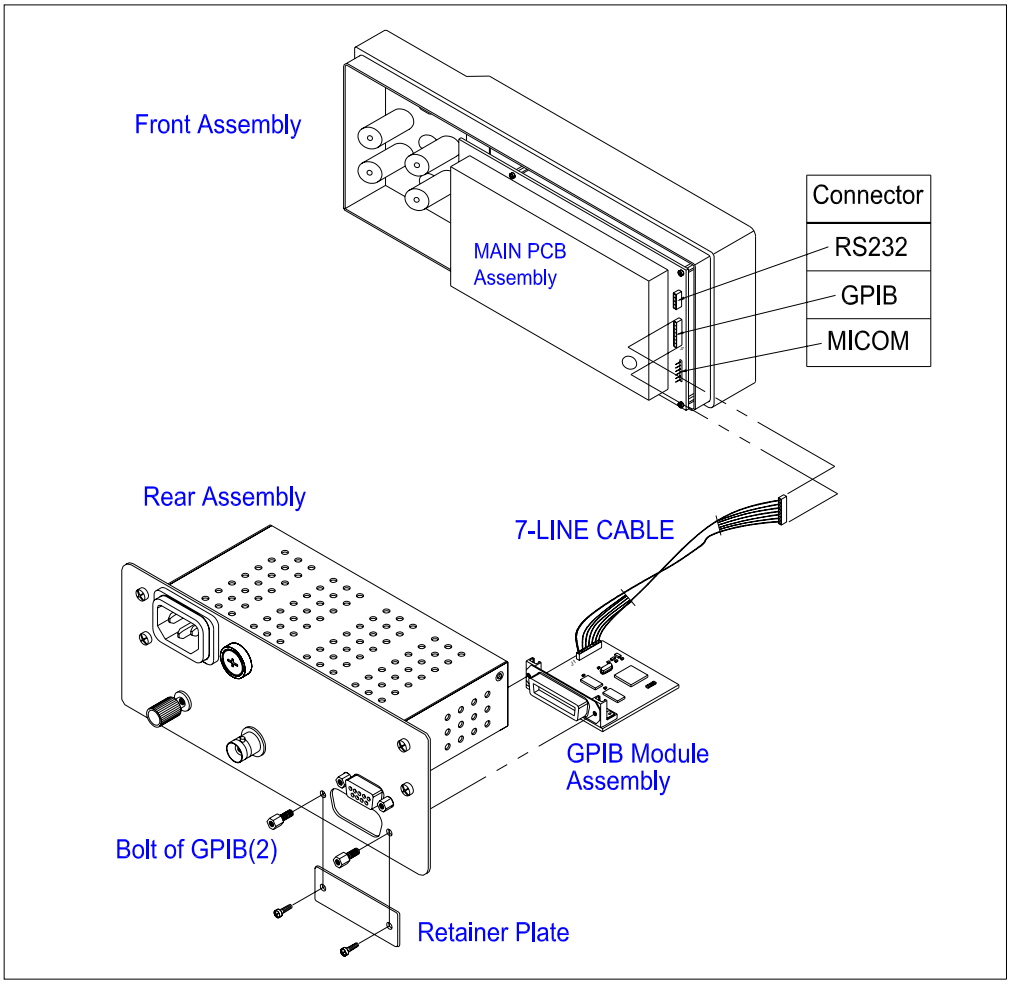
9. Installing and Removing the IEEE-488.2 Interface



[Figure GP-01] Disassembly



[Figure GP-02] IEEE-488.2(GPIB) Module Assembly



[Figure GP-03] Assembly Layout

9.1. Installing the IEEE-488.2 Interface

Use the following procedure to install the IEEE-488.2 Interface Option.

1) Make sure the meter is turned off and unplugged from the power outlet.
2) Remove the four mounting screws on the bottom of case.
   (See Figure GP-01)
3) Remove the two screws and the retainer plate on the rear panel.
   (See Figure GP-03)
4) Remove the two bolt of GPIB Connector at IEEE-488.2 MODULE.
   (See Figure GP-02)
5) The head of GPIB in IEEE-488.2 MODULE slips into the hole of GPIB in the rear panel of the meter. (See Figure GP-03)
6) Secure the rear of the IEEE-488.2 MODULE with the bolt of GPIB Connector.
7) Connect the 7-line cable to the Main PCB Assembly. (See Figure GP-03)
   The cable fits in only one socket and in only one direction. Make sure the cables lock firmly in place.
8) Reinstall the meter case so it seats properly in the front panel and secure the case with the flathead Phillips screw in the bottom.

9.2. Removing the IEEE-488.2 Interface

The following instructions can be used for access and servicing an IEEE-488.2 Interface Option that is already installed in a Seintek bench top series.

1) Make sure the meter is turned off and unplugged from the power outlet.
2) Remove the four mounting screws on the bottom of case.
   (See Figure GP-01)
3) Using needle nose pliers, disconnect the 7-line cable at the Main PCB Assembly. (See Figure GP-03)
4) Remove the two bolt of GPIB Connector on the rear panel.
   (See Figure GP-03)
5) Install the two screws and the retainer plate on the rear panel.
   (See Figure GP-03)
6) Reinstall the meter case so it seats properly in the front panel and secure the case with the flathead Phillips screw in the bottom.

9.3. Performance Testing

Use the performance test program in Table GP-01 to verify operation of the IEEE-488.2 Interface.
This program is written for use with the Seintek Instrument Controller and its interpreted BASIC language. The program may be adapted to the language of any IEEE-488.2 controller.
This performance test communicates to a meter that has been configured for IEEE-488.2 operation at address 0.

Lines 160 and 170 initialize the IEEE-488.2 bus and send a selective device clear to the meter.
A multiple byte command is sent to the meter (by line 190) to clear the meter status. Another command sequence (including a query) is sent to the meter by line 210; the meter asserts Service Request (SRQ) to signal that a response is available. Lines 530 through 560 first poll the meter for status, then input the response from the meter. Lines 230 through 270 test for proper operation and print the results.

```
140 IA% = 0%                                  ! instrument IEEE address
150 S% = -1%                                  ! initialize spl response
160 TERM                                      ! terminate input only on EOI
170 INIT PORT 0                               ! initialize IEEE-488.2 bus
180 CLEAR @IA%                                ! selective device clear
190 PRINT @IA%,"*cls"                         ! clear instrument status
200 ON SRQ GOTO 530                           ! enable SRQ interrupt
210 PRINT @IA%,"*cls;*sre 16;*idn?"           ! SRQ on Message Available
220 WAIT 500% FOR SRQ                         ! allow time to execute commands
230 IF S% >= 0% THEN 260
240 PRINT "Instrument failed to generate a Service Request"
250 STOP
260 PRINT "Serial Poll =";S%;"(should be 80)."
270 PRINT "Identification Query Response = ";R$
280 STOP
500 !
510 ! Service Request interrupt
520 !
530 S% = SPL(IA%)                             ! get instrument serial poll status
540 IF S% AND 16% THEN 550 ELSE 560
550 INPUT LINE @IA%,R$                        ! if MAV set get the response
560 RESUME 230                                ! end of SRQ interrupt
999 END
```

[Table GP-01] IEEE-488 Interface Performance Test

9.4. List of Replaceable Parts

Ref No	Parts Code	Description	Qty
U2	10278F0058GC	IC,Micom,UPD78F0058GC-8BT	1
U1	19275ALS1600	IC,T.I 75ALS160 SOP	1
U3	19275ALS1610	IC,T.I 75ALS161 SOP	1
R1	202ECJ1K0000	CHIP RES,2012 1kohm (102) 5%	1
C1,C6,C7	301EFK104000	CER CAP,2012 Y5V 50V 104(0.1uF)	3
C3,C4	301EFK20P000	CER CAP,2012 COG 50V 200(20pF)	2
C2,C5	306HTA475000	CHIP TANTAL CAP,4.7uF/16V A case	2
X1	3414M1943041	CRYSTAL,4.194314MHz,SMD,20pF	1
J2	50224PC00000	Connector,Centronic, 24P,Right Angle	1
J1	5317P5264000	Harness MOLEX-5264 to 51088-7PIN	1
	703799000000	PCB for GPIB CARD	1
	844BOSSGPIB0	BOSS, 7X14 ,Connector Hex	2

[Table GP-02] IEEE-488 Part List

10. MEMO