



ROHDE & SCHWARZ

Test and Measurement
Division

Manual

APPLICATION:

**GPIB-BUS DEVICE FINDER
GPIBFIND**

FOR UP TO FOUR INSTALLED GPIB BOARDS

1MA17_2E

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Contents:

1	INTRODUCTION	3
1.1	Overview	3
1.2	Software Features	3
1.3	Hardware and Software Requirements	3
1.4	Connecting the Computer and the Instruments	4
1.5	Installing the Software	4
1.6	Starting the Software	4
2	THE USER INTERFACE	5
2.1	The Main menu	5
2.1.1	Test GPIB0	6
2.1.2	Test GPIB1	6
2.1.3	Test GPIB2	6
2.1.4	Test GPIB3	6
2.1.5	Write/Read function	7
2.1.6	Show Status Panel	8
2.1.7	Timeout	9
2.2	The Status Panel	9
2.2.1	Status Byte ibstat	10
2.2.2	Error Byte iberr	10
2.2.3	EDVR Error Conditions (Windows 95 Only)	11
2.3	The Help Menu	12
2.4	Errors	12
3	CONTACTING ROHDE & SCHWARZ	12

1 Introduction

This manual introduces the program GPIB-Bus Device Finder GPIB FIND. Use this program to find all devices connected to the GPIB bus.

1.1 Overview

GPIB FIND helps you to identify all devices connected to a GPIB (IEC or IEEE) bus. It shows the addresses of these devices and their response to the identity query (***idn?**) Additionally GPIB FIND helps you to locate GPIB problems such as:

- incorrect GPIB card installation
- incorrect address setting
- broken cables

GPIB FIND includes an additional program to:

- send (write) a message to a device
- receive (read) a message from the device

Separate versions of the program are provided for:

- Windows NT/95/98
- Windows 3.1

Download the version you require (see section 1.5).

The program comes complete with a comprehensive help system. Additionally a user manual is included in PDF format as **GPIBFind.pdf**.

1.2 Software Features

GPIB FIND provides functions for GPIB address finding as follows:

- list the installed GPIB boards (up to 4 boards)
- select the GPIB board to test
- display GPIB status bytes
- display errors if test fails.

1.3 Hardware and Software Requirements

Hardware Requirements

The program will run on any IBM AT compatible computer with

- CPU: 486, Pentium or better; clock rate >100 MHz
- RAM: > 32 Mbyte (for Windows NT >48 Mbytes)
- Monitor: VGA color monitor at least 800x600 points, better 1024x768
- GPIB: up to four
GPIB -bus card Rohde & Schwarz: IEEE 488.2 Bus Interface PS-B4, 1006.6207.04
or National Instruments AT-GPIB / TNT
or National Instruments PMCIA

Software Requirements

- Windows 3.x, Windows 95/98 or Windows NT (version 4.0 or later)
- GPIB(IEC) -bus driver for Windows from National Instruments

1.4 Connecting the Computer and the Instruments

Connect all the devices via GPIB cables to the controller.

1.5 Installing the Software

GPIB FIND is supplied as a packed file. Download the version you require depending on your Windows version, run the packed file and install the program.

Downloading:

- for Windows 95/98 and for Windows NT download **IBFind32.exe**
- for Windows 3.1. download **IBFind16.exe**

Run the downloaded EXE file.

The following 3 files are expanded to the chosen directory on your hard disk:

Win95/98/NT	Win 3.1
IBFind32.001	IBFind16.001
IBFind32.002	IBFind16.002
setup.exe	

Installation:

To install GPIB FIND run **setup.exe** from the hard disk.

The setup program prompts you to select an installation directory.

Once the setup program has run the GPIBFind directory is created, containing the following files:

Win95/98/NT	Win 3.1
uninst.exe	uninst.exe
uninst.lrm	uninst.lrm
IBFind32.exe	IBFind16.exe
IBFind32.uir	IBFind16.uir
GPIBFind.HLP	GPIBFind.HLP
visa32.dll	visa.dll

Creating Installation Disks

If you want to create installation disks you will need two 3.5" disks.

Copy:


- IBFind**.001 and setup.exe to Disk 1, and
- IBFind**.002 to Disk 2

To install GPIB FIND from the disks, insert Disk 1 in the disk drive and start setup.exe.

1.6 Starting the Software

Start the program with:

Start / Programs / GPIB FIND/  GPIB Find

or double click on  GPIB FIND in the installed directory.

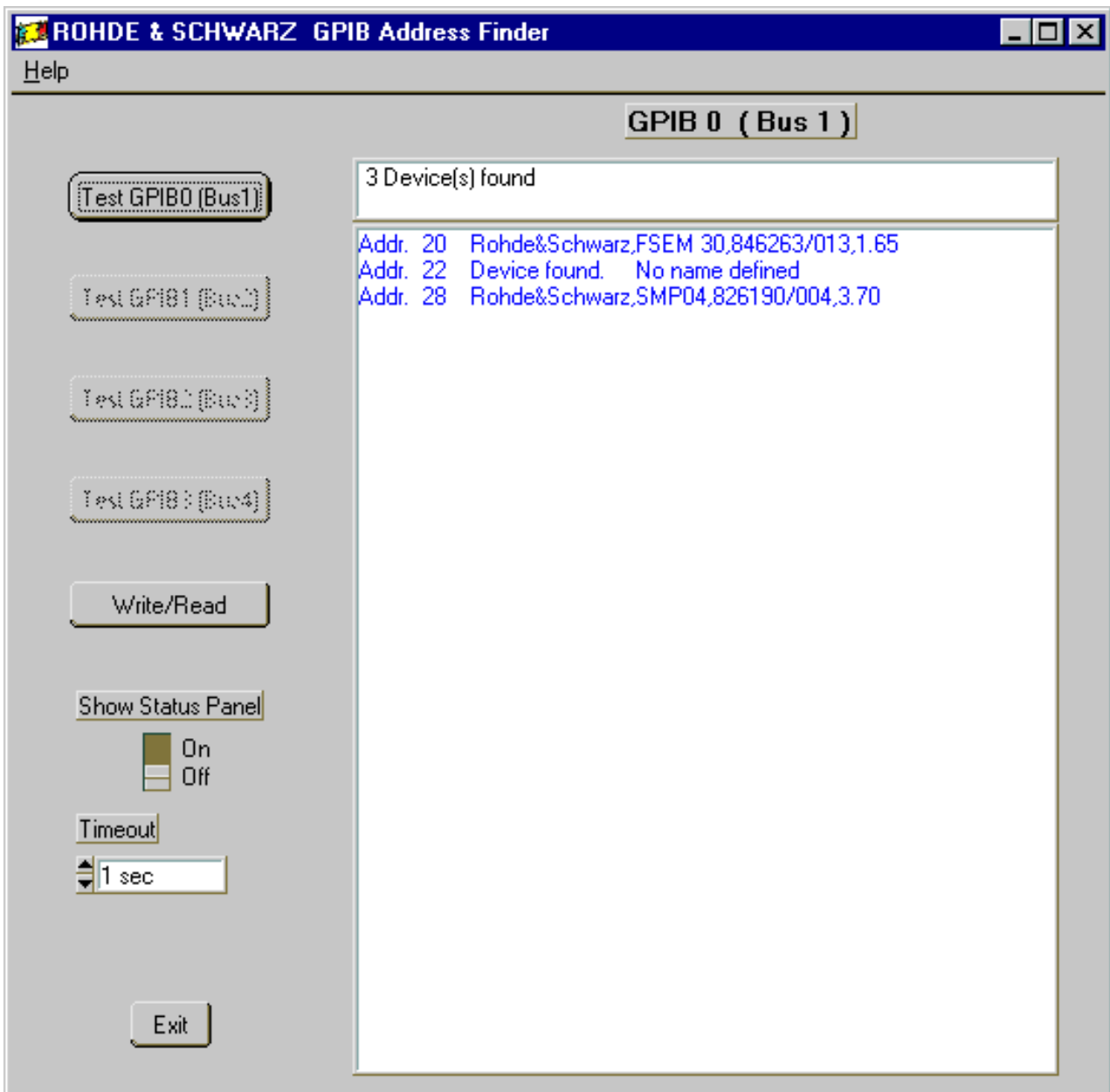
The main menu appears, with the configuration last used loaded.

2 The User Interface

The user interface consists of a main menu, a status panel, and a help menu.

2.1 The Main menu

The main menu appears as shown below, and features a help pulldown menu, 5 function buttons, *Test GPIB0*, *Test GPIB1*, *Test GPIB2*, *Test GPIB3*, *Write/Read*, the *Show Status Panel* switch, and the *Timeout* selection.



2.1.1 Test GPIB0

Test GPIB0 (Bus1) search for devices connected on the GPIB Bus 1 using the GPIB0 board. The following results are displayed:

- for a device responding to the command ***idn?** the device address and the returned string are displayed
- For a device found at an address but not returning a name, the message "Device found. "No name defined" is displayed.
- For an address where no device is found, nothing is displayed.

See the previous Page for an example.

If a hardware or software install error occurs, one of the following messages is displayed:

- " GPIB-PC Board not installed"
- "Error"
- "Check I/O Address, Interrupt Level and DMA Channel"

2.1.2 Test GPIB1

If the **Test GPIB1 (Bus2)** is illuminated a GPIB1 Board has been found. The results displayed are as for **GPIB0 (Bus1)**.

If the **Test GPIB1 (Bus2)** command button is dimmed, but a GPIB1 Board is installed, the board has not been found by the program. Please check the hardware and software installation of the board.

2.1.3 Test GPIB2

If the **Test GPIB2 (Bus3)** is illuminated a GPIB2 Board has been found. The results displayed are as for **GPIB0 (Bus1)**.

If the **Test GPIB2 (Bus3)** command button is dimmed, but a GPIB2 Board is installed, the board has not been found by the program. Please check the hardware and software installation of the board.

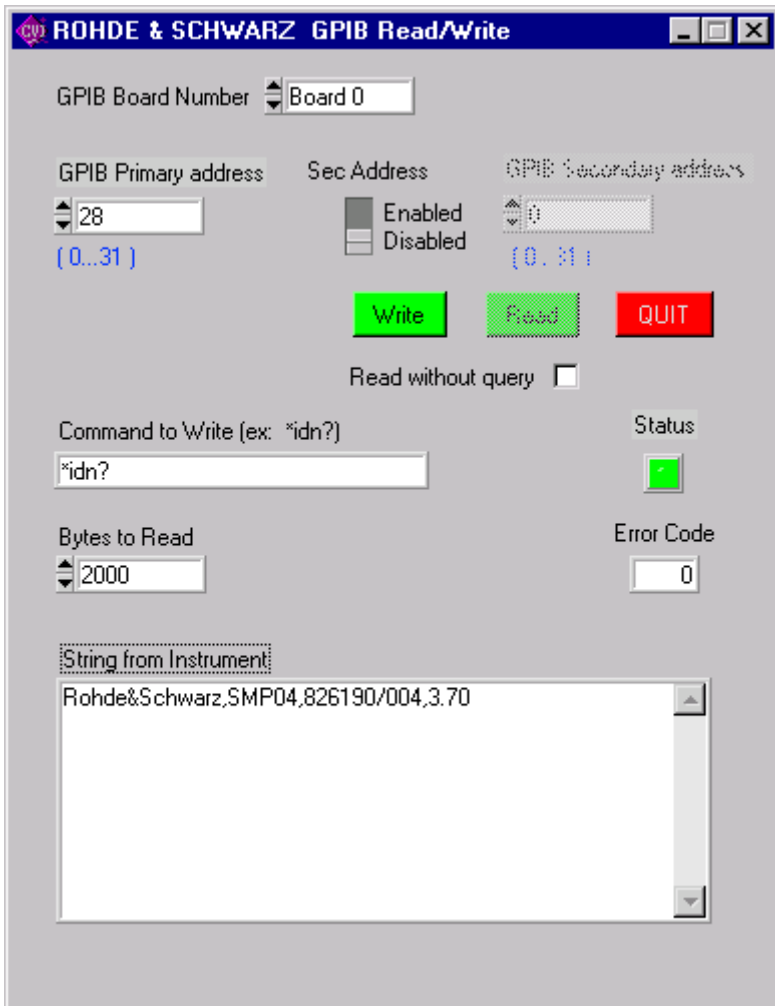
2.1.4 Test GPIB3

If the **Test GPIB3 (Bus4)** is illuminated a GPIB3 Board has been found. The results displayed are as for **GPIB0 (Bus1)**.

If the **Test GPIB3 (Bus4)** command button is dimmed, but a GPIB3 Board is installed, the board has not been found by the program. Please check the hardware and software installation of the board.

2.1.5 Write/Read function

The **Write/Read** function allows the user to send a message to an instrument and to receive a message from the instrument.



The functions of the **Write/Read** panel

- **GPIB Board Number**
Set the number of the GPIB Board used (0 to 3).
- **GPIB Primary address**
Set the primary GPIB address of the instrument (0 to 31).
- **Sec Address**
Enable or disable the use of the secondary address:
- On disable the character 0 is sent to the instrument.
- On enable the character of the value of the secondary address plus 96 is send to the instrument.
- **GPIB Secondary address**
Set the secondary address of the instrument (0 to 31) if enabled.
- **Write**
Write the command set in **Command to Write** to the instrument.
- **Read**
Read a message from the instrument. The **Read** button is normally enabled after a query (?) is sent to

the instrument. If an answer is expected without sending a query, enable the **Read** button with **Read without query**.

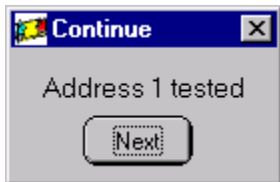
- **QUIT**
Return to the **GPIB Address Finder** panel.
- **Read without query**
Enable the **Read** button.
- **Command to Write**
Input the string to send to the instrument
- **Bytes to Read**
Number of bytes to read from the instrument.
- **Status**
The status of the GPIB transmission. Green = no error, Red = error.
On error the error code is displayed in **Error Code** ad the **Status Panel** is opened.
- **Error Code**
Displays the value of the error code.
- **String from Instrument**
Displays the received string from the instrument.

2.1.6 Show Status Panel

Show Status Panel switches the status panel on or off.

Off: the Status panel is displayed only if an error occurs.

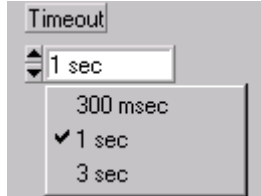
On: the Status panel is automatically displayed after a search listing the current status data for an address. The data for each address is shown in separate invocations of the status panel. After the search at one address the Continue panel appears:



Press the **Continue** button to go to the next address.

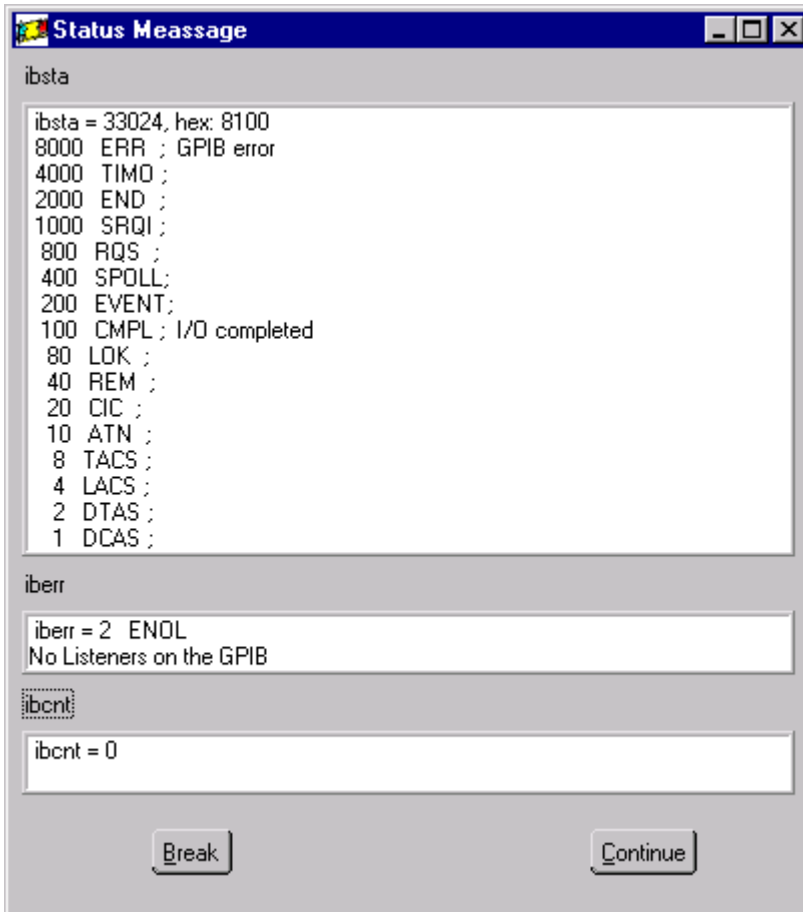
2.1.7 Timeout

The response time of a device on the bus is dependent on the internal functions of the device. The initial bus timeout of the program is set to 1 second, which is valid for most devices. To specify an other value for timeout, select from the timeout field.



2.2 The Status Panel

The Status panel shows the current values of the GPIB status byte **ibsta**, the GPIB error byte **iberr**, and the GPIB counter **ibcnt**. The address is shown in the Continue panel.



2.2.1 Status Byte *ibstat*

<i>Hex Value</i>	<i>Constant</i>	<i>Condition</i>
1	DCAS	GPIB-PC in Clear state
2	DTAS	GPIB-PC in Trigger state
4	LACS	GPIB-PC is Listener
8	TACS	GPIB-PC is Talker
10	ATN	Attention is asserted
20	CIC	GPIB-PC is Controller-In-Charge
40	REM	GPIB-PC in Remote State
80	LOK	GPIB-PC in Lockout State
100	CMPL	I/O completed
200	EVENT	An event has occurred
400	SPOLL	Board has been serial polled
800	RQS	Device requesting service
1000	SRQI	SRQ on
2000	END	END or EOS detected
4000	TIMO	Timeout
8000	ERR	GPIB error

2.2.2 Error Byte *iberr*

<i>Value</i>	<i>Constant</i>	<i>Condition</i>
0	EDVR	System error / if <i>ibstat</i> <8000H No error
1	ECIC	Function requires GPIB board to be CIC
2	ENOL	No Listeners on the GPIB
3	EADR	GPIB board not addressed correctly
4	EARG	Invalid argument to function call
5	ESAC	GPIB board not System Controller as required
6	EABO	I/O operation aborted (timeout)
7	ENEB	Nonexistent GPIB board
8	EDMA	DMA error
9		
10	EOIP	Asynchronous I/O in progress
11	ECAP	No capability for operation
12	EFSO	File system error
13		
14	EBUS	GPIB bus error
15	ESTB	Serial poll status byte queue overflow
16	ESRQ	SRQ stuck in ON position
17		
18		
19		
20	ETAB	Table problem

2.2.3 EDVR Error Conditions (Windows 95 Only)

EDVR Error with ibcntl Set to 0xE028002C (-534249428)

If a call is made with a board number that is within the range of allowed board numbers (typically 0 to 3), but which has not been assigned to a GPIB interface, an EDVR error condition occurs with ibcntl set to 0xE028002C. You can assign a board number to a GPIB interface by configuring the NI-488.2M software and selecting an interface name. Refer to the getting started manual for information on how to configure the NI-488.2M software.

EDVR Error with ibcntl Set to 0xE0140025 (-535560155)

If a call is made with a board number that is not within the range of allowed board numbers (typically 0 to 3), an EDVR error condition occurs with ibcntl set to 0xE0140025.

EDVR Error with ibcntl Set to 0xE0140035 (-535560139)

If a call is made with a device name that is not listed in the logical device templates that are part of the NI-488.2M software configuration utility, an EDVR error condition occurs with ibcntl set to 0xE0140035.

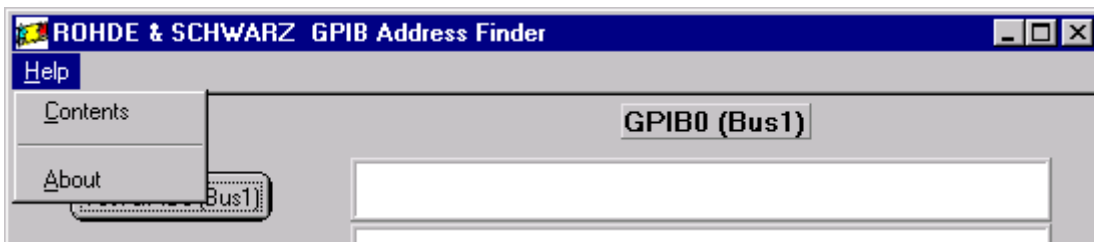
EDVR Error with ibcntl Set to 0xE0320029 (-533594071)

If a call is made with a board number that is assigned to a GPIB interface that is unusable because of a resource conflict, an EDVR error condition occurs with ibcntl set to 0xE0320029. Refer to the troubleshooting instructions in the getting started manual. This error is also returned if you remove a PCMCIA-GPIB or PCMCIA-GPIB+ while the driver is accessing it. This error is also returned if you try to access a PCMCIA-GPIB when 32-bit PCMCIA drivers are not enabled. Refer to the Install the PCMCIA-GPIB+ or PCMCIA-GPIB section in your getting started manual for more information about enabling 32-bit PCMCIA drivers.

EDVR Error with ibcntl Set to 0xE0140004 (-535560188)

This error may occur if the GPIB interface has not been correctly installed and detected by Windows 95. Refer to the Installation and Configuration chapter in your getting started manual for details on how to install the GPIB hardware. If you have already followed those instructions and still receive this error, Windows 95 might have configured the GPIB interface as an "Other Device". Refer to your getting started manual for information on how to force Windows 95 to detect the GPIB hardware.

2.3 The Help Menu



Help menu

- Contents* Opens the on-line help, displaying the list of contents.
- About* Displays information about the program version.

2.4 Errors

Errors are normally shown in a special error popup. Follow the hints in the popup to solve the problem.

3 Contacting Rohde & Schwarz

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