5.2.3.1 Remote Control over GPIB

The program example in this section is written in VISUAL BASIC. A condition for programming in VISUAL BASIC is that the modules NIGLOBAL (`Niglobal.bas`) and VBIB32 (`Vbib_32.bas`) are added to the projects.

> Drivers for instrument, e.g. IVI-COM and LabVIEW drivers, are available in the download area of the product website (http://www.rohde-schwarz.com/en/products/test_and_measurement/product_categories/signal_generation/).

Starting a remote control session over GPIB

As a prerequisite, the GPIB address of the instrument, which is factory-set to 28, must not have been changed.

1. Connect instrument and controller using GPIB cable and switch them on.

2. Execute following commands on the controller:

   a) Open port to the instrument
      ```
      CALL IBFIND("DEV1", generator%)
      ```
   b) Inform controller about instrument address
      ```
      CALL IBPAD(generator%, 28)
      ```
   c) Reset instrument
      ```
      CALL IBWRT(generator%, "*RST;*CLS")
      ```
   d) Set instrument to new address
      ```
      CALL IBWRT(generator%, "SYST:COMM:GPIB:ADDR 18")
      ```
   e) Inform controller about new address
      ```
      CALL IBPAD(generator%, 18)
      ```

   The GPIB address of the instrument is changed.

3. To return to manual operation sent `CALL IBLOC (generator%)` or press the [LOCAL] key at the front panel.

5.2.3.2 Remote Control over LAN using VXI-11 Protocol

In this example, the I/O software library R&S VISA from Rohde & Schwarz is used to set up a LAN remote control link and remotely control the R&S SMB. R&S VISA is running on a controller PC with Windows operating system. When the connection is set up you can send commands to the instrument, and receive the responses.

The remote control connection requires a VISA installation but no additional hardware on the controller PC. The LAN I/O channel is selected at initialization time using the VISA resource string (also referred to as "address string"). A VISA alias (short name) is used to replace the complete resource string. The host address is either the R&S SMB's hostname or IP address. See also Chapter 5.1.3, "LAN Interface", on page 242.

In this example, it is assumed that:

- A LAN remote control link between the controller and the R&S SMB is already set up.
- The R&S VISA program is installed on the remote PC, see "http://www.rohde-schwarz.com/rsvisa > RS VISA Release Notes".

Configuring the controller

To remote control the R&S SMB, we use the R&S VISA Tester application.

The instrument is preconfigured for networks using DHCP (dynamic host configuration protocol). If this configuration is used, enter the computer name in the position of the IP address.

To enable the external controller to communicate with the R&S SMB via TCP/IP protocol, set up a remote control link as follows:

1. Make sure that the controller and the instrument are connected in the network (network cable) and switched on.

2. On the controller, start "R&S VISA > Tester 32bit" or "R&S VISA > Tester 64bit", respectively.
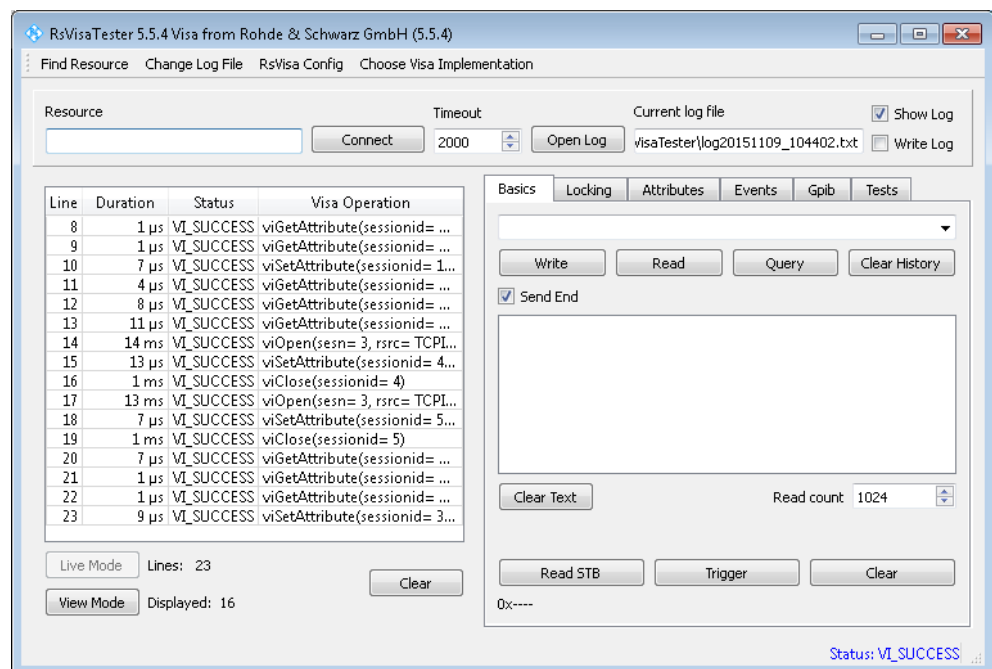
3. In the menu bar, select "Choose VISA Implementation > Rohde & Schwarz Visa".
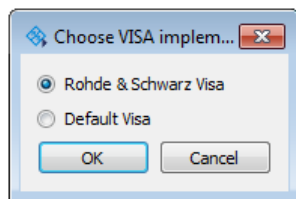
4. Select "Rohde & Schwarz Visa" and confirm with "OK".

5. In the menu bar, select "Find Resource" to search for the instrument in the LAN.
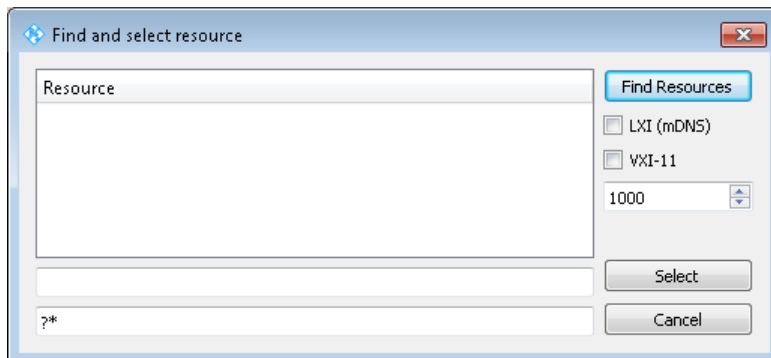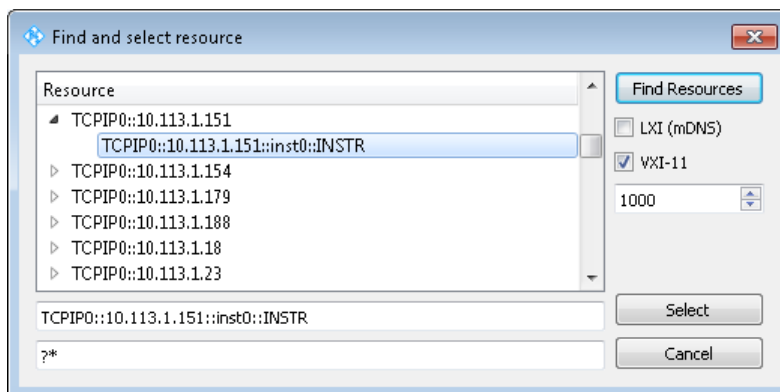

6. Select "VXI-11" and "Find Resources".

   R&S VISA scans the network for connected instruments and lists all detected instu-
   ments in the "Resource" list.
   Note: The search may take some time, particularly in large networks.
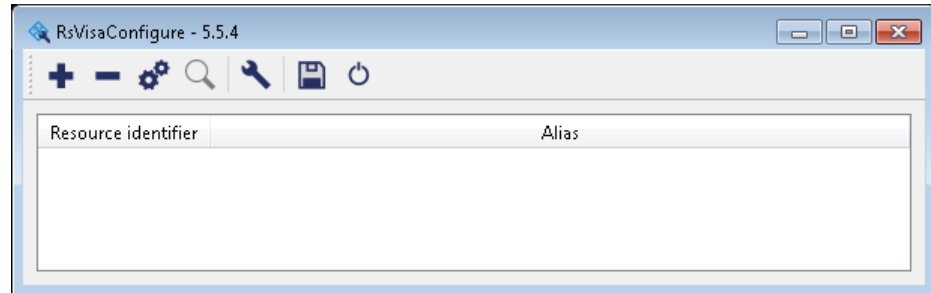
7. Select the required instrument and confirm with "Select".

   The "Find and select resource" dialog closes and R&S VISA indicates the instru-
   ments IP address in the "Resource" field of the main application window.

8. As an alternative to the IP address, you can assign an alias name to the
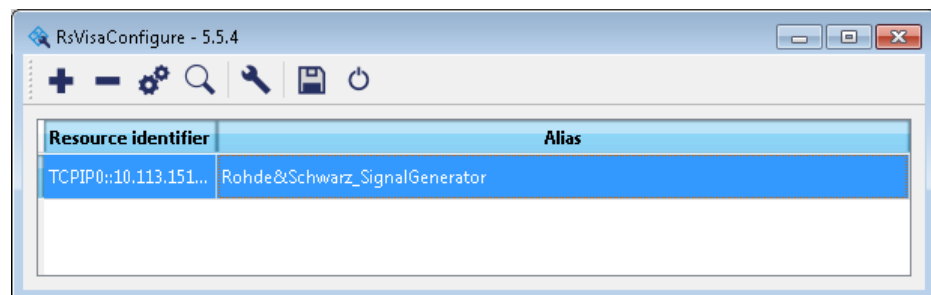   R&S SMB:

a) In the menu bar, select "RsVisaConfig".

b) In the toolbar, select "+" to access the "VISA Resource String Composer".
c) Fill in the "Alias" name, the "VISA Resource String" and the "Device IP Address or host name" as shown in the figure, and confirm with "OK".
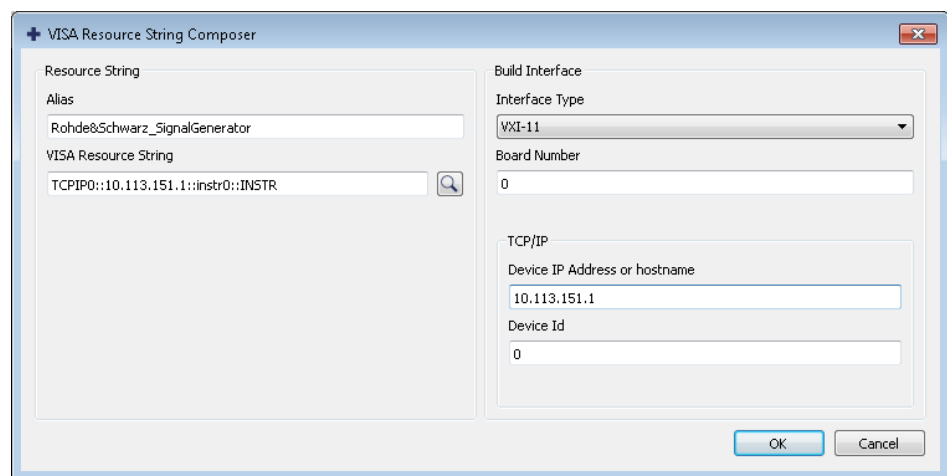
The "Alias" name is assigned to the instrument.

d) Close the dialog.
The R&S SMB is now registered in the program and can be addressed via the resource string or alias name.

9. In the main window, select "Connect".

R&S VISA establishes the connection to the R&S SMB.

Now you can send settings to configure the instrument and receive its responses.

Note: If the connection cannot be set up, R&S VISA displays an error in the log view. For information on how to proceed when network failures occur, see Chapter 9.5, "Resolving network connection failures", on page 505.

For further information on the functions to read and write to an open session, as well as the utility applications the software provides, see the R&S VISA User Manual.

Starting a remote control over LAN (using VXI-11)

To set the instrument to remote control, you can use the addressed command &GTR, or send any command from the controller.

1. Start the R&S VISA Tester and establish the connection to the R&S SMB, see "Configuring the controller" on page 252.

2. In the R&S VISA "Basics" tab, enter a SCPI command, e.g. "*IDN?" and confirm with "Query".

   The instrument is switched to remote control when it receives a command from the controller.

3. Select "Read" to obtain the instrument response.
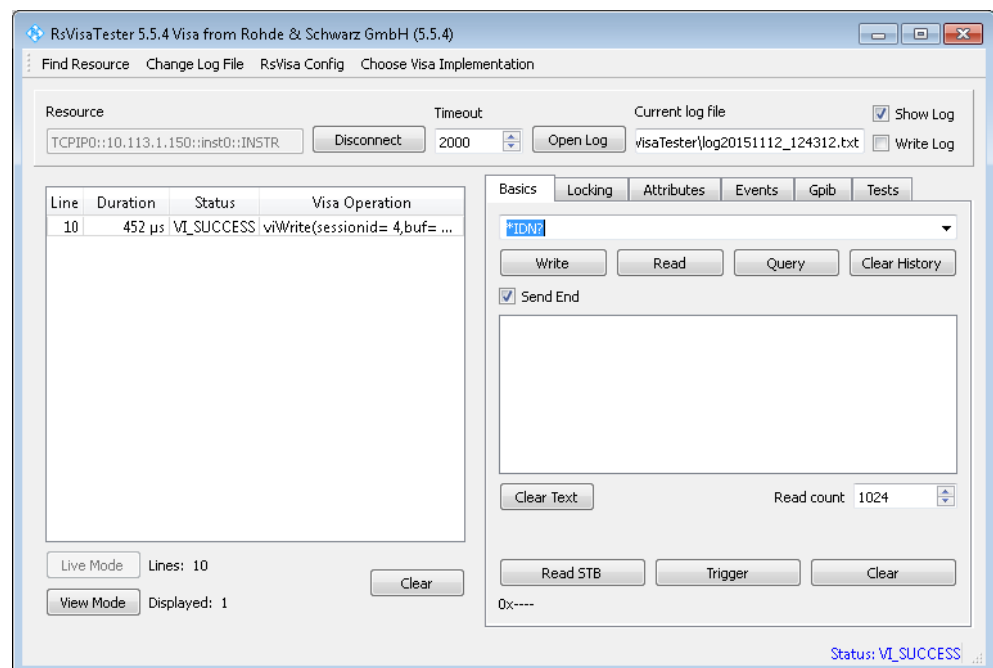
Tip: If the "Show Log" checkbox is checked R&S VISA displays each VISA function call in the log-view on the left. If you check the "Write Log" checkbox the log-view entry is written to the log file as well. You can operate the log-view in two modes: the "Live Mode" shows only the most recent messages whereas the "View Mode" allows you to scroll the history.

4. To set, e.g. the frequency, enter SOUR1:FREQ 4 GHz and select "Write".
   To check the performed setting, SOUR1:FREQ? and select "Read".