

NRP-VISA Passport

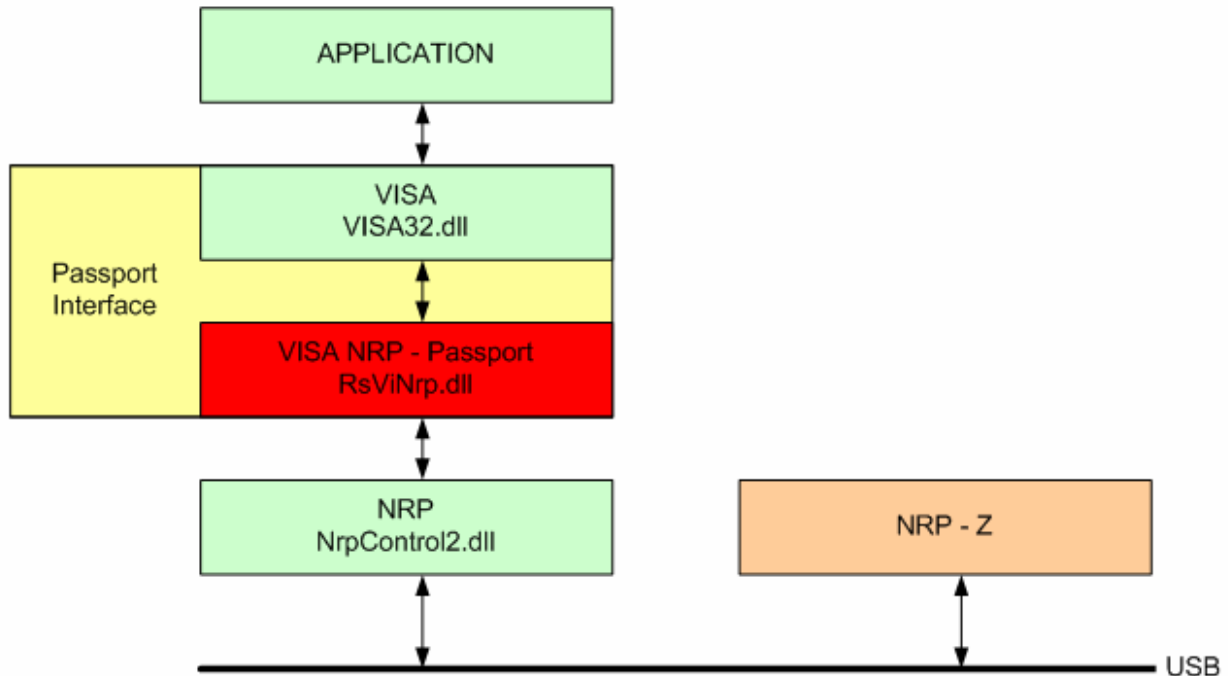
Operating Manual

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1 Overview

The following diagram shows where the RsViNrp.dll is located in the whole architecture and how the components relate to other libraries:



2 Installation

The following prerequisites are required:

- Operating System Windows NT, Windows 2000 and Windows XP
- NI VISA 2.6 or higher
- The user who is installing the setup must have administrator privileges

If the National Instrument (NI) VISA implementation has not been installed there is no option to install the passport.

The Passport requires the NRP-Toolkit Revision 1.24 or higher. The NRP-Toolkit installs the Windows (XP, 2000) USB drivers. Please install the NRP-Toolkit before connecting the instrument.

Download the NRP-Toolkit and the NRP-NI-VISA Passport from:

http://www.rohde-schwarz.com/product/nrp_sensors/downloads_tool.html

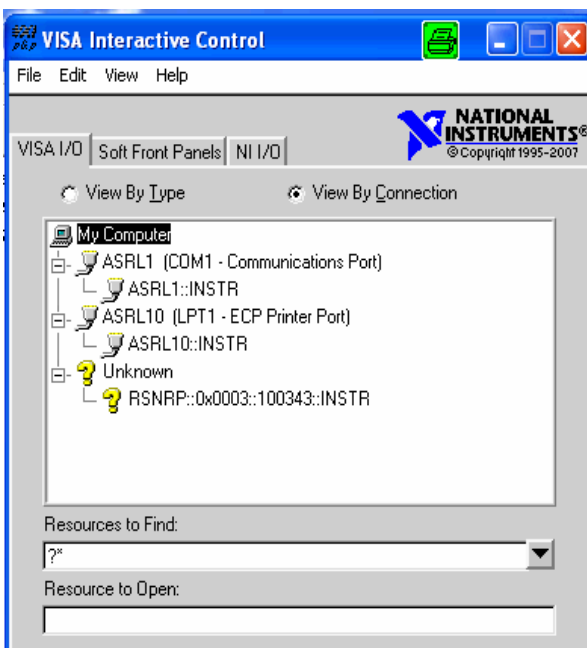
Install rsnrp_NI_Visa_Passport_xxx.exe.

When the installation is finished the installed files are located in the following directories:

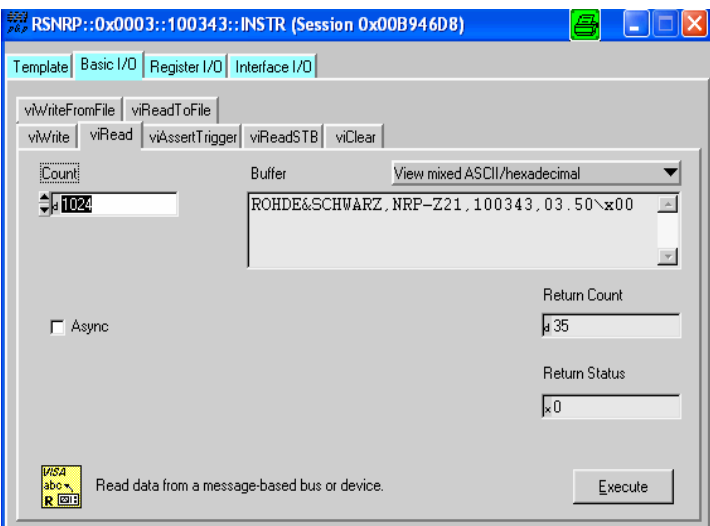
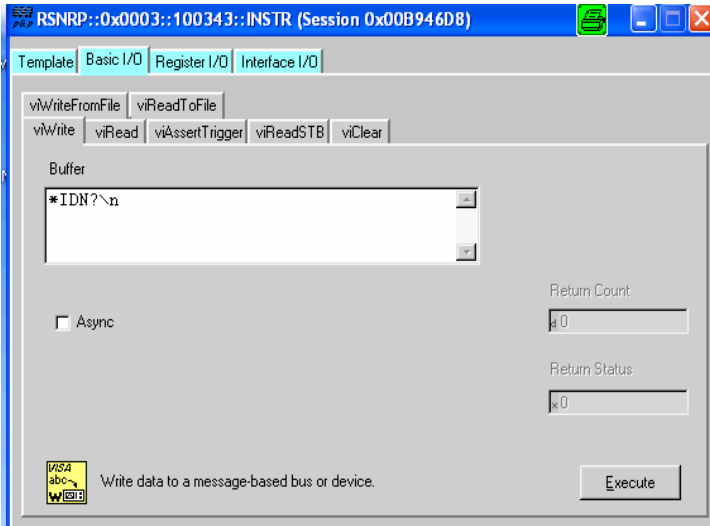
- **NrpControl2.dll** in the Windows System Directories (e.g. C:\Windows\System32)
- **RsViNrp.dll** passport DLL in the VISA Bin directory which is normally located in the **C:\VXIpn\WinNT\Bin** directory
- The information given below is not necessary for the ordinary user. It is only given for the sake of completeness. The entries can only be seen after starting registration editor **regedit**
 - a. HKEY_LOCAL_MACHINE\SOFTWARE\National Instruments\NI-VISA for Windows 95/NT\CurrentVersion\loLibraries\RsViNrp.dll
 - b. LibraryDescription: VISA Library Passport for NRP V1.0
 - c. LibraryEnabled: 0x00000001
 - d. LibraryPath C:\VXIpn\WinNT\Bin\RsViNrp.dll
 - e. LOG_FILE: C:\RsViNrp.log
 - f. LOG_LEVEL: NONE

2.1 Testing the Installation

- Connect one or more NRP-Z sensors to the USB bus
- Run the National Instruments Visa Interactive Control:
 Programs => National Instruments => VISA => VISA Interactive Control.exe
 All connected devices should be recognized and displayed.



After double-clicking on a **RSNRP::.....** entry you can directly communicate with the device via **Basic I/O** as the following screenshots show.



2.2 Logger

The NRP Passport Component supports a logging facility. By default the logger is switched off. The logger settings can be selected in the registry by changing the log level. The following log levels are supported:

- **DEBUG:** All messages will be printed to the file.
- **INFO:** Human Readable messages, warning and error will be printed to the file.
- **WARN** Warnings and errors will be printed to the file
- **ERROR** Errors will be printed to the file
- **FATAL** Fatal errors will be printed to the file
- **NONE** The logger does not print anything

3 Passport

The usage of the passport requires some specific knowledge. This specific knowledge will be described in the next chapters.

3.1 VISA

3.1.1 Resource Descriptor Definition

To acquire a NRP VISA session a resource descriptor is required. The format of the resource description is defined as follows:

```
RSNRP::mc::sn[::INSTR]
```

```
mc           : Model Code (Hex), (i.e. 0x0021 for a NRP-Z91)
sn           : SerialNumber (Dec)
[INSTR]      : INSTR is optional
```

3.1.2 Commands

The VISA supports methods for all kinds of request. Not all of these methods are supported in the NRP Passport. Following methods are supported:

- viGetAttribute
- viSetAttribute
- viEnableEvent
- viDisableEvent
- viWrite
- viRead
- viAssertTrigger
- viReadSTB
- viClear
- viOpen
- viClose
- viParseRsrc
- viFindRsrc

3.1.3 Attributes

The NRP Passport supports retrieving the following attributes:

- VI_ATTR_RSRC_SPEC_VERSION
- VI_ATTR_INTF_INST_NAME
- VI_ATTR_MANF_ID
- VI_ATTR_MANF_NAME
- VI_ATTR_RSRC_NAME
- VI_ATTR_RSRC_MANF_NAME
- VI_ATTR_RSRC_MANF_ID
- VI_ATTR_RSRC_IMPL_VERSION
- VI_ATTR_RSRC_CLASS
- VI_ATTR_TMO_VALUE (in ms)
- VI_ATTR_USB_INTFC_NUM
- VI_ATTR_USB_PROTOCOL
- VI_ATTR_USB_SERIAL_NUM

The NRP Passport supports setting of the following attributes:

- VI_ATTR_TMO_VALUE (in ms)

3.1.4 Events

The NRP Passport uses the following events:

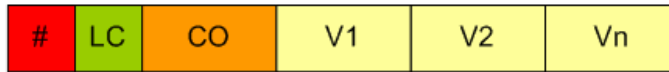
- VI_EVENT_SERVICE_REQ
 - If the status on NRP device is changing this event will be raised
- VI_EVENT_USB_INTR
 - If the device has been disconnected or been connected this event will be raised
- VI_EVENT_EXCEPTION
 - If an error has been occurred this event will be raised

3.2 Data Format

The viRead(...) Method reads from the NRP device. The data format depends on the SCPI command which has been written to the device. The result of the viRead(...) is always stored in an unsigned char buffer.

There are different formats supported. They are described below:

- Binary Result (unsigned char)
- Long number in ASCII
- Float number in ASCII as format x.yyyyyyEzzz
- Byte Stream



#: The literal '#' character
[LC]: Length of CO in decimal (2)
[CO]: Counter – Size of packets in bytes
[V1]: Data 1
[V2]: Data 2
[Vn]: Data n

- Multiple float value comma separated

To identify which format needs to be used the user has to know which SCPI command results in which format. Of course another solution would be to check and verify the result and decide which format is used exactly.

3.3 Special SCPI Commands

The NRP device doesn't know all requested commands. Therefore the NRP-VISA passport is parsing following commands:

- SYSTEM:ERRor?
 - To get an error queue entry
- STATus:OPERation:CONDition
 - Used for getting the status operation condition byte. The byte is defined as follows:

BIT	DESCRIPTION
0	Always 0
1	Always 0
2	Always 0
3	Always 0
4	TriggerState = MEASURING
5	TriggerState = WAIT_FOR_TRIGGER
6	Always 0
7	Always 0

- FORMAT ASCII
 - Activates the ASCII Format-Routine
- FORMAT REAL;32
 - Activates the Binary Format-Routine
- Fetch?
 - Doesn't clear the buffer
 - Doesn't send the command to the device