

SCPI (Standard Commands for Programmable Instruments)

SCPI commands - messages - are used for remote control. Commands that are not taken from the SCPI standard follow the SCPI syntax rules. The instrument supports the SCPI version 1999. The SCPI standard is based on standard IEEE 488.2 and aims at the standardization of device-specific commands, error handling and the status registers. The tutorial "Automatic Measurement Control - A tutorial on SCPI and IEEE 488.2" from John M. Pieper (R&S order number 0002.3536.00) offers detailed information on concepts and definitions of SCPI.

Tables provide a fast overview of the bit assignment in the status registers. The tables are supplemented by a comprehensive description of the status registers.

5.1.1 VISA Libraries

VISA is a standardized software interface library providing input and output functions to communicate with instruments. Thus, you can configure the interface and must not adjust the application program to the used interface. The I/O channel (LAN or TCP/IP, USB, GPIB,...) is selected at initialization time with the channel-specific address string ("VISA resource string"), or by a defined VISA alias (short name). See also [Chapter 5.1, "Remote Control Interfaces and Protocols"](#), on page 240 for an overview.

Instrument access via VXI-11 or HiSLIP protocols is achieved from high level programming platforms using VISA as an intermediate abstraction layer. VISA encapsulates the low-level VXI or GPIB function calls and thus makes the transport interface transparent for the user.

A VISA installation is a prerequisite for remote control using the following interfaces:

- LAN Interface using [Chapter 5.1.3, "LAN Interface"](#), on page 242
- LAN interface using [Chapter 5.1.3.2, "VXI-11 protocol"](#), on page 244
- [Chapter 5.1.4, "USB Interface"](#), on page 245
- [Chapter 5.1.6, "GPIB Interface \(IEC/IEEE Bus Interface\)"](#), on page 246
- [Chapter 5.1.5, "Serial Interface"](#), on page 246

Instrument access via the LAN socket protocol or GPIB connections can be operated both, with or without the VISA library.

See also [Chapter 5.1.3.3, "Socket communication"](#), on page 244 and [Chapter 5.1.6, "GPIB Interface \(IEC/IEEE Bus Interface\)"](#), on page 246.

For more information about VISA, refer to the user documentation.

5.1.2 Messages

The messages transferred on the data lines are divided into the following categories:

- Interface messages

Interface messages are transmitted to the instrument on the data lines, with the attention line being active (LOW). They are used to communicate between the controller and the instrument. Interface messages can only be sent by instruments that have GPIB bus functionality. For details see the sections for the required interface.