Remote Control Guide for HAMEG Instruments

Products:
| All R&S®HAMEG

This document provides basic information of remote control function for HAMEG instrument.
## History

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2.1 Local Area Network (LAN) interface

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1 Introduction on remote control interface

There are 2 standard interfaces that can be used in connection with HAMEG instruments for remote control function.

The picture on the left shows the standard interface R&S® HO720 and the right is R&S®HO730.

The R&S®HO720 contains a USB and RS-232 interface protocols while the R&S®HO730 has Ethernet as interface protocol. Either of the interface cards has in connection with HAMEG Com-biScopes, the Mixed Signal Oscilloscopes of the R&S®HMO series, the Arbitrary Function Generators of the R&S®HMF series, the Power Supplies of the R&S®HMP series, as well as the HAMEG Spectrum analyzer HM5530 and the R&S®HMS(-X) series for remote control and data transfer. Both cards cannot be used at the same time.

Please ensure the following requirements are met when installing R&S®HO720 / R&S®HO730.

1. The instrument is with an activated USB interface. The USB driver can be downloaded from Rohde & Schwarz website.

   The R&S®HO720 / R&S®HO730 USB driver ZIP file includes a native USB and virtual COM port driver. When the connection between PC and instrument has been established, there is a message indicating “Found New Hardware”. In additional, the “Found New Hardware” wizard is displayed. By following the steps, the USB driver is then installed successfully.

2. The PC/laptop is installed with operating system Windows XP™, VISTA™, Windows 7™, Windows 8™ or Windows 10™ (32 or 64Bit).

3. Contact the IT department if the installation rights was not given.
2 Remote control interfaces.

The following sections describe the essential steps for remote control.

2.1 Local Area Network (LAN) interface

HAMEG instruments which are equipped with a network interface (R&S®HO730) can be connected to an Ethernet LAN for remote control function. The instruments respond to remote control commands via the LAN interface using Virtual Instrument Software Architecture (VISA). It is a standard for configuring, programming, and troubleshooting instrumentation systems comprising GPIB, VXI, PXI, Serial, Ethernet, and/or USB interfaces.

There are 2 standard protocols that support the LAN communication:
   (1) VXI-11 protocol which has been developed specially for test and measurement instruments. It is highly recommended for remote control via LAN interface.
   (2) Raw socket mode which is a synchronous, streaming oriented protocol.

In order to set up a connection, IP (Internet Protocol) address has to be assigned. It can be found on the instrument by pressing “SETUP” key and choose “INTERFACE” as shown below.
The IP address is part of the resource string used by the program to identify and control instrument. The VISA resource string has the form for both VXI-11 and raw socket protocol:

1. **VXI-11**

   \[\text{TCPIP}::<\text{IP\_address}>::<\text{INSTR}\]

   (e.g. \text{TCPIP}::192.168.000.124::<\text{INSTR})

   It is based on the ONC PRC (Open Network Computing Remote Procedure Call) protocols which rely on TCP/IP as a network layer.

2. **Raw socket**

   \[\text{TCPIP}::<\text{IP\_address}>::<\text{IP\_port}>::<\text{SOCKET}\]

   (e.g. \text{TCPIP}::192.168.000.124::<\text{IP\_port}>::<\text{SOCKET})

   The default port number for SCPI socket communication is 5025. In most case, the \text{IP\_PORT} can be ignored.

### 2.2 USB interface

Both interface cards (R&S®HO720 / R&S®HO730) should be equipped with a type B USB connector. For direct connection with PC, a USB cable with type B connector at one end and type A male connector at the other ended is required to be connected.

![Type A and Type B connectors](image)

Upon first connection, the Windows will ask for a driver which can be found in delivered CD or downloadable from the website.

From the Device Manager, once the connection is successful, the HAMEG measurement devices will show the respective instrument connected.
The VISA resource string for USB interface has the form as follows:

\[
\text{USB::<manufacturer-ID>::<model code>::<IF-serial number>::RAW}
\]

(eg USB::0x0403::0xED73::101010::RAW)

There are 2 ways to obtain the manufacturing ID and model code.

1. If the installed interface is R&S® HO730.
   
   Ensure that the LAN connection is established between the PC and instrument. Enter http://172.25.52.105 in internet explorer (In this example "172.25.52.105" is the IP address obtained from the instrument.) The device information at the bottom right shows the USB port information on the vendor ID (also known as manufacturing ID) and product ID (model code).
The serial number can be also obtain from the device information.

(2) If the installed interface is HO720.

Ensure that the USB driver is installed.

Once the USB connection is established, the Windows will search and refresh the USB device of the instrument.

Right-click mouse to select “Properties”.

![Device Information](image)

![Device Manager](image)
Click on the tab “Details” where it shows the available information of the HAMEG instruments' property. Click to select “Hardware Ids” and both the vendor ID and Product code can be obtained from the value window.
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Rohde & Schwarz is an independent group of companies specializing in electronics. It is a leading supplier of solutions in the fields of test and measurement, broadcasting, radiomonitoring and radiolocation, as well as secure communications. Established more than 75 years ago, Rohde & Schwarz has a global presence and a dedicated service network in over 70 countries. Company headquarters are in Munich, Germany.

Environmental commitment
- Energy-efficient products
- Continuous improvement in environmental sustainability
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