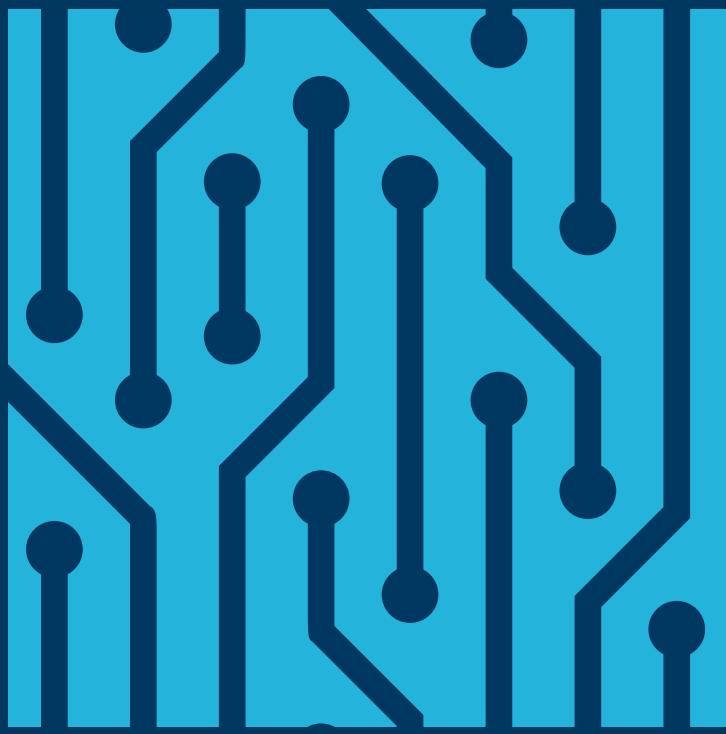
H&H Höcherl & Hackl
The electronic load

Application Note #19

# LAN Communication With H&H Devices



## Safety Instructions

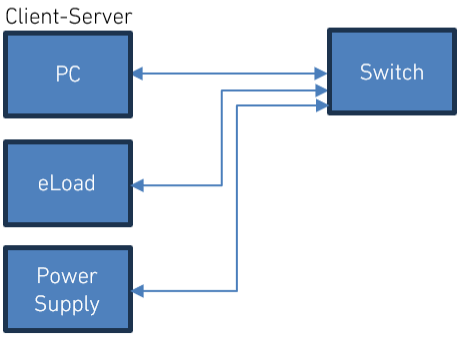
⚠ Before starting operation, read the operating instructions of your device and especially the general safety instructions before starting operation!

The purpose of this application note is to explain the various ways of configuring electronic loads and source-sinks from Höcherl & Hackl for LAN communication.

## Connection Options

You can either connect an H&H device directly (peer-to-peer) to the PC or integrate it into a network (client-server) via an Ethernet switch. The LAN connection (RJ45 socket) of the device has a so-called Auto-MDI-X functionality, which allows the use of crossed (crossover) and uncrossed (patch) cables.




## Configuring LAN Interface

Die The LAN interface can be configured via the menu at the user interface and by means of SCPI commands.

Series ACL, ERI, HES, PLI, PMLA, QL, SCL, TRL:
Main menu -> Configuration -> Communication -> LAN

Series PLA:
Main menu -> IFC -> LAN

Further information can be found in the user manuals of the respective device series in the chapter “LAN Interface”.

## Peer-to-Peer Connection

If the device is connected directly to a PC, usually no DHCP service is active on the PC and you have to work with a static IP address. To establish a direct connection with a PC, proceed as follows:

1. PC: Determine the IP address of the network card connected to the device, e.g. via the Windows command line: ipconfig /all .
2. Device: In the device menu, navigate to the LAN -> Configuration dialog window and deactivate "DHCP".
3. Enter the static IP address in "Static Settings". Make sure that the first three numbers are identical (here in the example: 169.254.16). However, the last number must be different from the IP address of the PC.
Acknowledge the changes with OK and restart the device.
4. Check communication with a terminal program, e.g. H&H Load Terminal (see chapter Communication below).

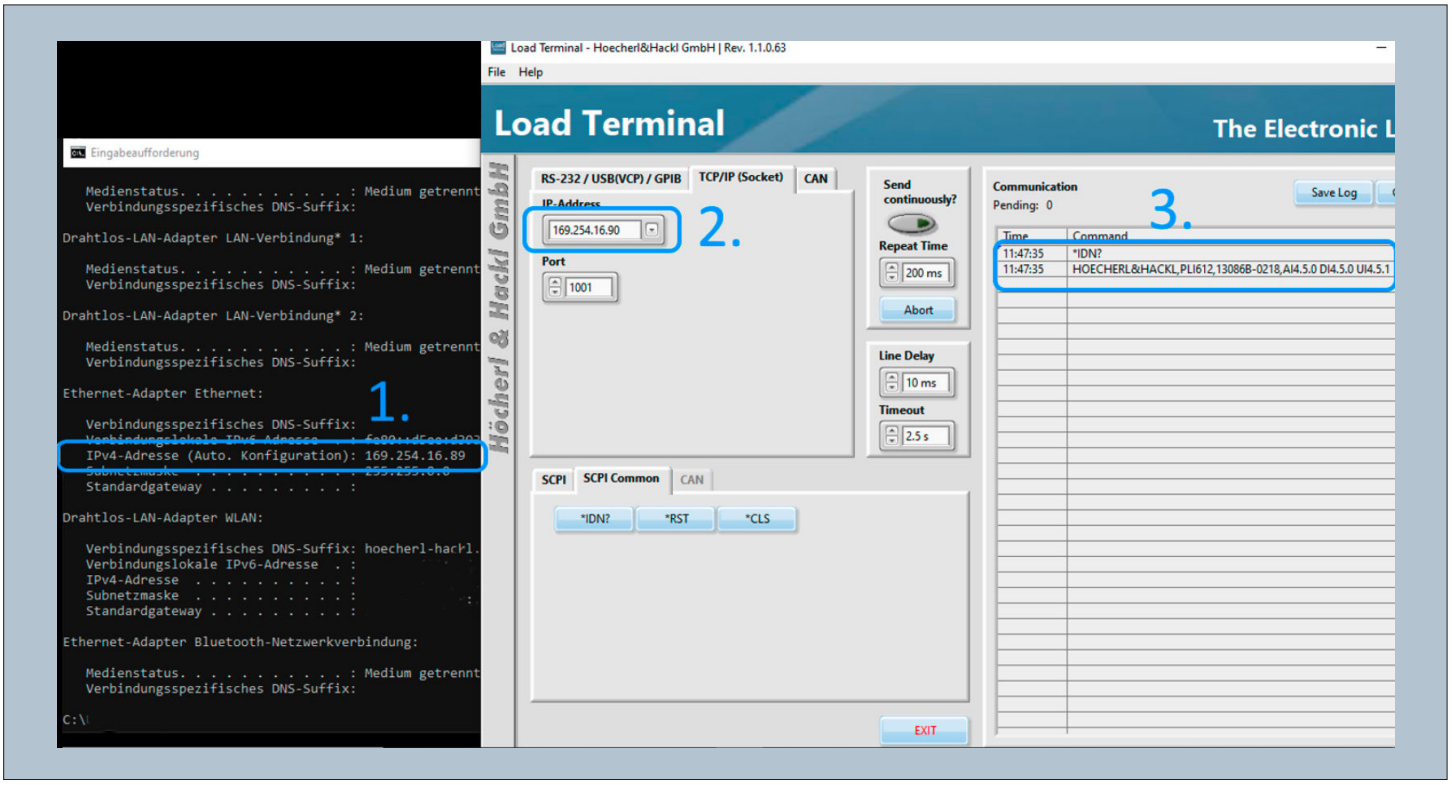
## Client-Server Connection

With the client-server connection, all devices in the network are connected via a switch, with or without automatic address assignment by DHCP.

### a) No DHCP Server available

If there is no DHCP server in the network, you must work with static IP addresses.

1. Device: In the device menu, navigate to the LAN -> Configuration dialog window and deactivate "DHCP".
2. Enter the static IP address in "Static Settings". Make sure that the first three numbers are identical to those of your static network. However, the last number must be different.
3. Acknowledge the changes with OK and restart the device. Check the communication with a terminal program, e.g. H&H Load Terminal.




Configuring and testing IP address

In Peer-to-Peer- oder Client-Server-Konfigurationen ohne DHCP-Server, bei denen keine automatische IP-Adressenvergabe erfolgt, können Sie alternativ eine andere Schnittstelle (z.B. USB) verwenden, um SCPI-Befehle zur Konfiguration der LAN-Schnittstelle über ein Terminalprogramm zu senden.

SCPI-Commands:

| | |
|---|---|
| SYST:COMM:LAN:DHCP OFF | Deactivate DHCP |
| SYST:COMM:LAN:IP "169.254.16.90" | The device's IP address is set to 169.254.16.90 |

Note: These parameters will only take effect after the device has been restarted.

To check the current IP address, use the following command:

SYST:COMM:LAN:IP?

The IP address will be returned as a string.

## b) DHCP-Server available

A DHCP server is responsible for automatic address assignment in a client-server based network. Make sure that the DHCP functionality of the device is enabled. The factory default setting is "DHCP on". You can change the setting in the device menu in the LAN -> Configuration dialog window

1. Device: In the device menu, navigate to the LAN -> Configuration dialog window and activate "DHCP".
2. Acknowledge the changes with OK and restart the device.
3. Navigate to the "LAN Status" dialog window or, respectively, with PLA series devices to "IP" sub menu to display the current IP address.
4. Check communication with a terminal program, e.g. H&H Load Terminal (see chapter Communication below).

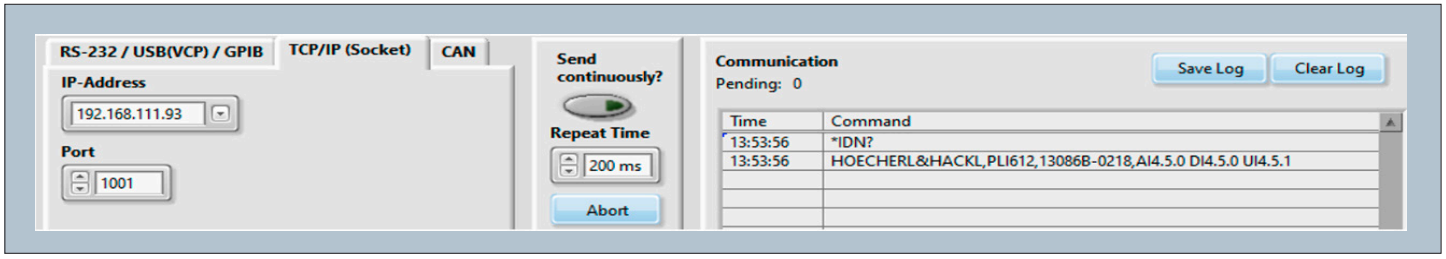
Alternatively, you can query the IP address assigned to the device using the SCPI command SYST:COMM:LAN:IP? via one of the other digital interfaces.

# Communication

To communicate with an H&H device via an IP socket, you need the IP address or host name and port of the device. The default port is 1001.

## Via IP-Adress

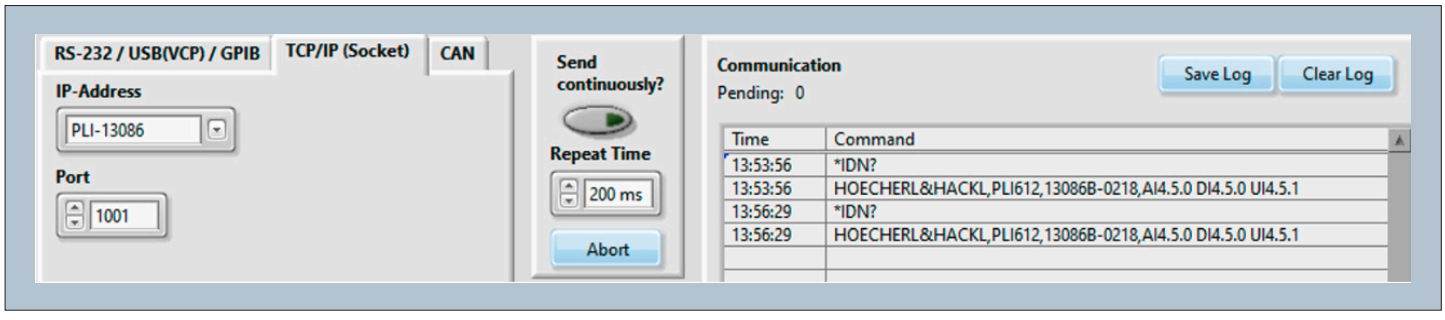
The IP address is available in the device menu in the "LAN Settings" dialog window.




Example with terminal program

## Via Hostnamen

If there is a DNS server in the network, you can also address the device via the host name. Especially in networks with automatic address assignment ("DHCP on"), the use of the host name has advantages, since the DHCP server can always reassign the IP addresses depending on its settings. The host name, on the other hand, remains the same and thus the device can always be accessed by the host name.
You can find the hostname in the device menu in the "LAN Settings" dialog window or alternatively via SCPI command: SYST:COMM:LAN:HOST?




Example with terminal program

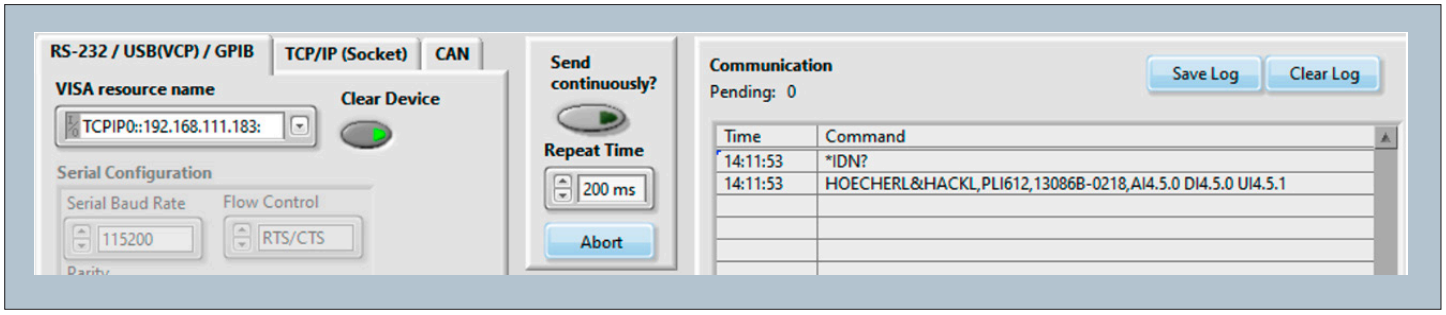
# Communication with NI Tools

## Via VISA Resource Name

If you work with NI tools, e.g. LabVIEW, you can also work with a VISA Resource Name. This has the following structure:

TCPIP0::IP-Address::Port::SOCKET

e.g.: TCPIP0::192.168.111.93::1001::SOCKET

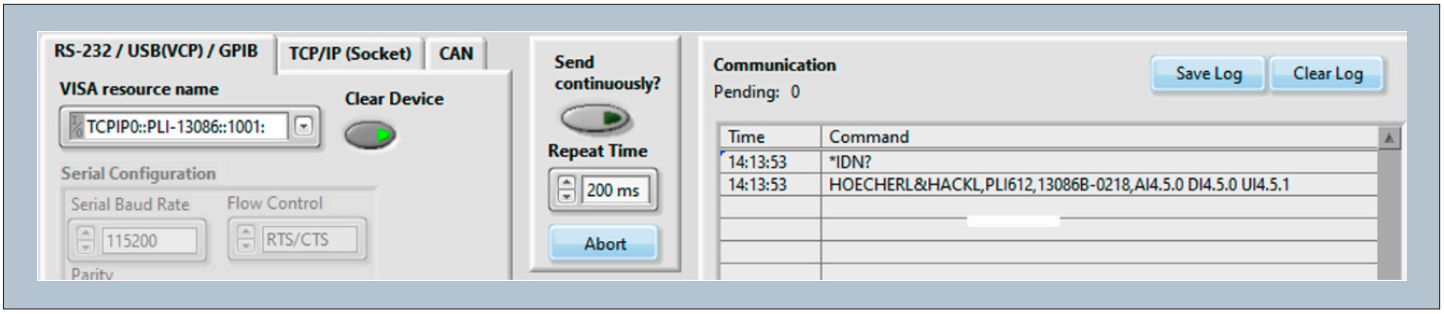



Example with terminal program

or

TCPIP0::Hostname::Port::SOCKET

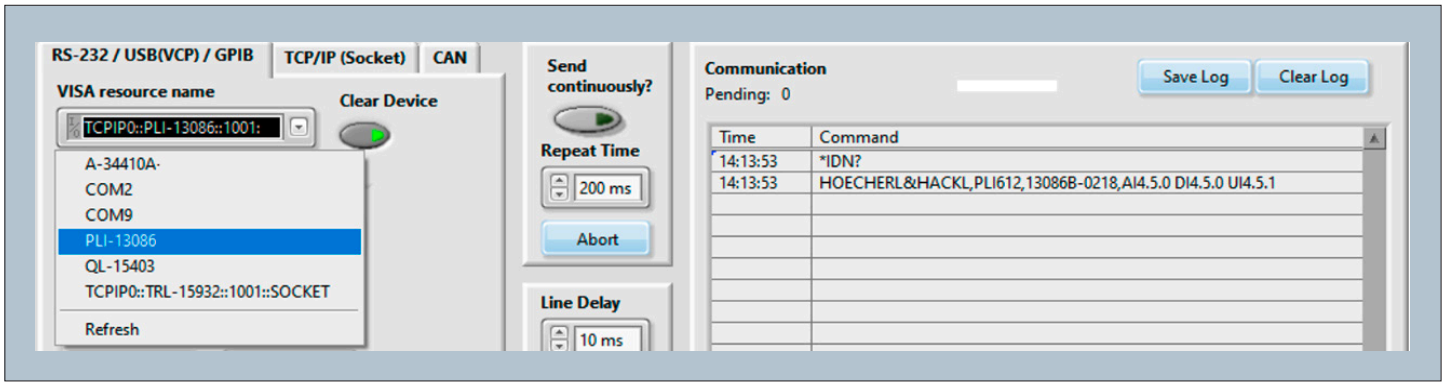
e.g.: TCPIP0::PLI-13086::1001::SOCKET




Example with terminal program

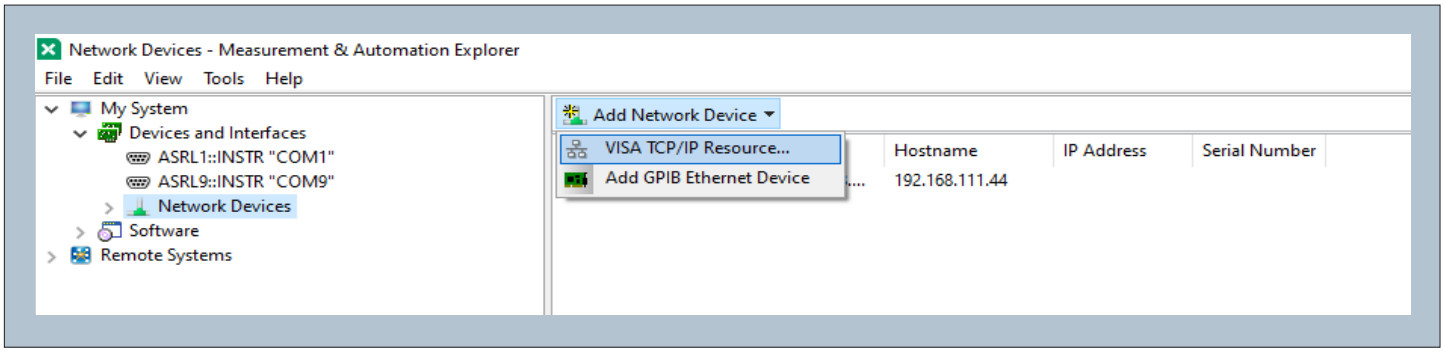
## Via NI MAX

Using the "Measurement & Automation Explorer" MAX from National Instruments, you can register the device as a network device. When using NI Tools, the connection to the device is then shown in the "VISA Resource Name" drop-down list

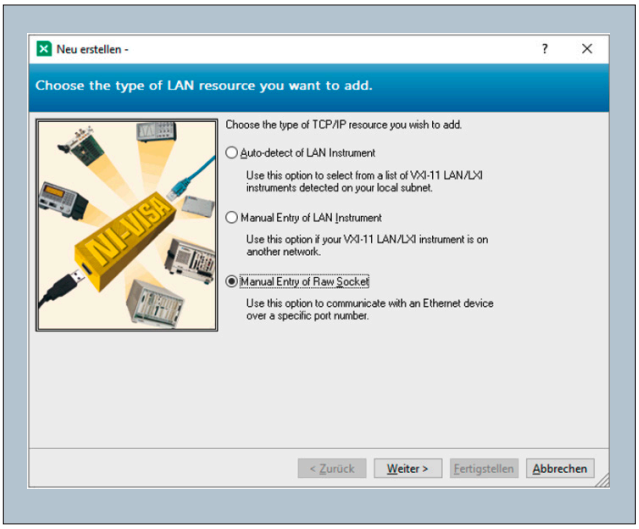



Start NI MAX.

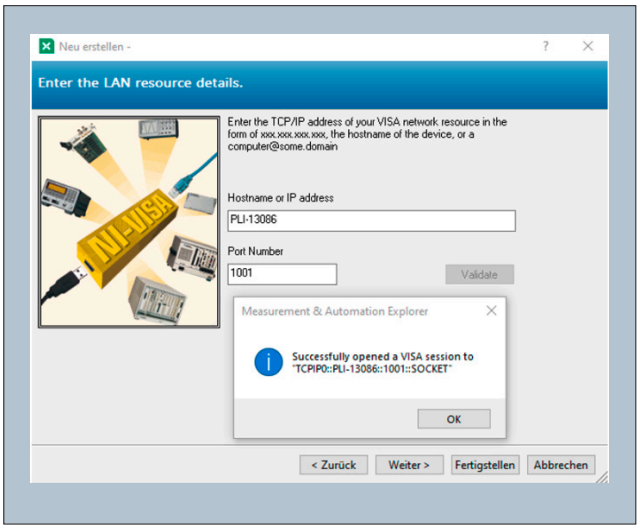
network devices -> add network device -> VISA TCP/IP Resource



"Manual Entry of Raw Socket".

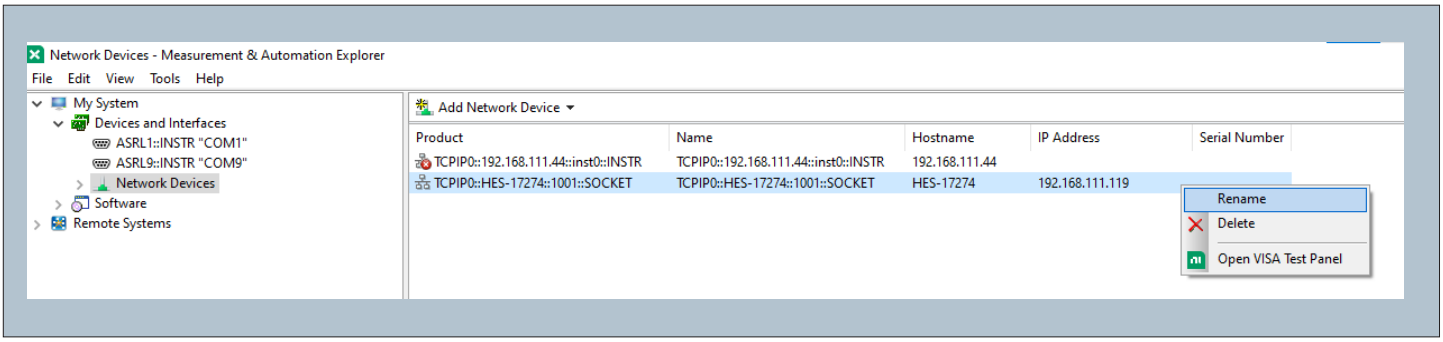



Enter host name or IP address and port. Check connection with "Validate".




Click "Finish".

Optional: Change the name of the network device.




The device now appears with the selected name in the selection list with the VISA Resource Names.

H&H cannot guarantee the correct function of the suggested applications.
H&H does not overtake the costs for damages which can be caused by using this application note.