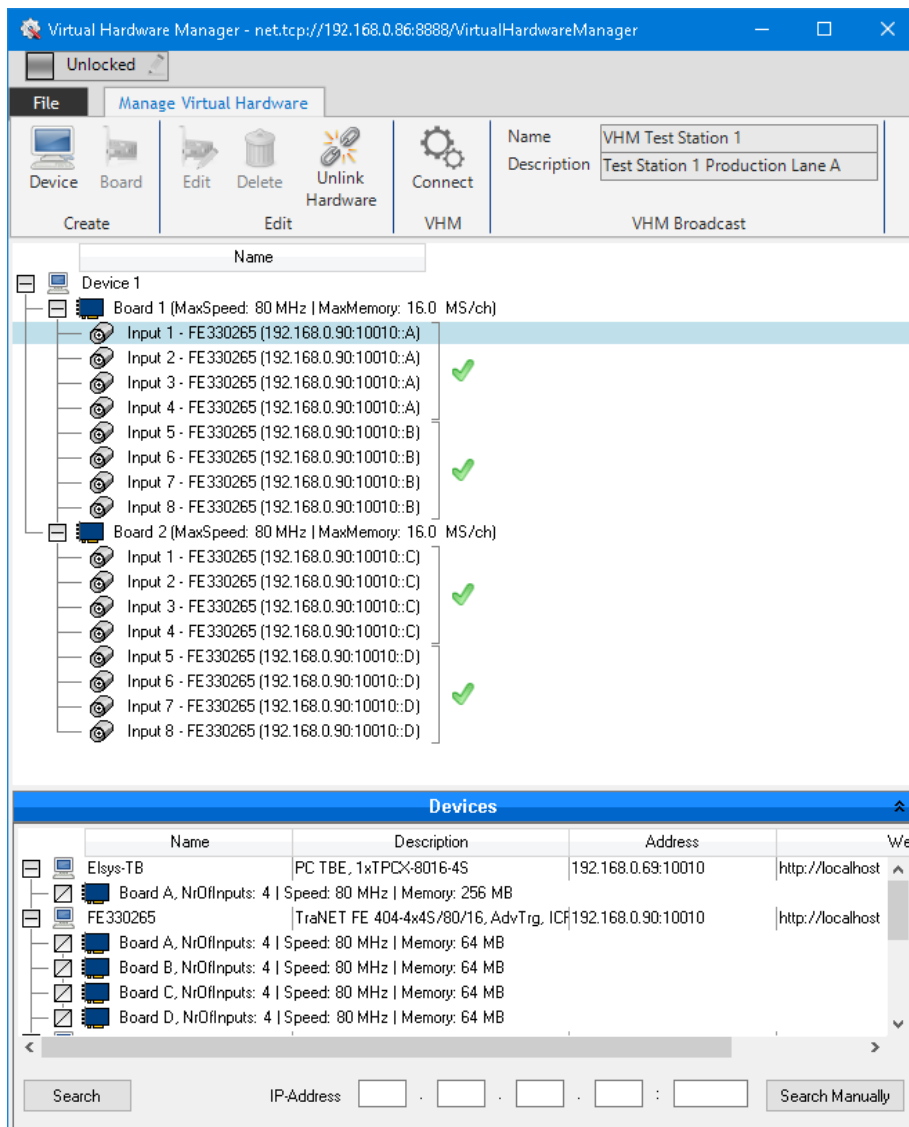


VHM 4.1

Virtual Hardware Manager



User manual



Elsys AG

Mellingerstrasse 12
CH-5443 Niederrohrdorf

+41 56 496 01 55

www.elsys-instruments.com

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1 Introduction and News

1.1 Preamble

Elsys's Virtual Hardware Manager (simple called VHM) gives whole new possibilities of the usage and utilizing TraNET, TPCX and TPCE instruments for measurement, data acquisition tasks and signal analysis.

The binding limitation between configuration and hardware setup can be ignored by using VHM. Preparation of experiments and settings without existing hardware and also combination and conversion of different devices and different number of channels can be done very simple.

This manual explains VHM configuration, functions and settings. It gives you an overview of the system and its extensive capabilities.

Features

- Server application (VHM Server), handles devices and DAQ modules
- Client application (VHM Client), simple configuration of virtual servers on different computers in the same network range
- Create virtual devices
- Create virtual modules, merge 2x4 channels to 1x8 channels
- Simple drag and drop existing DAQ modules into the virtual devices
- Lock configuration and password protection

Virtual Hardware manager requires TranAX 4.1 or newer.

1.2 System requirement

For using Virtual Hardware Manager Software and its benefits and features, the following software versions are minimum required:

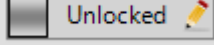






Software / Hardware	Requirement
Virtual Hardware Manager	4.1.0.1795
TranAX	4.1.0.1795
Hardware	Locally installed TPCX, TPCE, TPCE-LE, or TPCE-I module TraNET EPC, PPC or FE device Depending on the application, a SyncLink is required

2 Structure and components

Virtual Hardware Manager Client can divide the following main components:

2.1 Menu Bar and Ribbon Bar

Quick access to the main elements of the Virtual Hardware Manager Client.

	<p>Locks the Virtual Hardware Manager Server with the specified password. Prevents the unwanted modification of settings and configuration</p>
	<p>Creates a new Virtual device, where later can be added multiple virtual boards. A Virtual device can be compared with a physical TraNET device</p>
	<p>Creates a new Virtual Board to a Virtual Device. Physical boards can be added to this Virtual board. E.g. create a 16-channel board and add later 4x4channel modules.</p>
	<p>Edit the Virtual Board configuration. In case a physical device is disconnected or offline, the Virtual configuration will be visible in TranAX</p>
	<p>Remove the selected Virtual Board or a Virtual Device form the actual configuration</p>
	<p>Remove the connection between the virtual Board and the physical device. This can be undone be simple Drag & Drop the module back to this device</p>
	<p>Select the Virtual Hardware Manager Server for configuration</p>
<p>Name <input type="text"/></p> <p>Description <input type="text"/></p>	<p>Text box, enter name and description of the Virtual Hardware Manager Server. This will be shown in the Connect VHM dialog, and in the TPC Finder in TranAX</p>

3 Installation

Please contact your local distributor or call Elsys directly to get the latest Version of the Virtual Hardware Manager installation setup.



Double click the executable and follow the installation dialog, generally, there is no need to change any settings during the installation.

3.1 What will be installed?

The VHM setup installs two parts of the application:

- VHM Server, will be started as a Windows service
- VHM Client, this will be needed to configure the VHM Server settings.

Please note, the VHM Server can be accessed from any VHM Client in the same network range.

Default installation path

Name	Location
VHM Server	C:\Program Files\Elsys\VHM_4.1
VHM Client	C:\Program Files\Elsys\VHM_4.1
Settings	C:\ProgramData\Elsys\VHM_4.1

3.2 Configuration files

These files are used for configuration of the VHM Server:

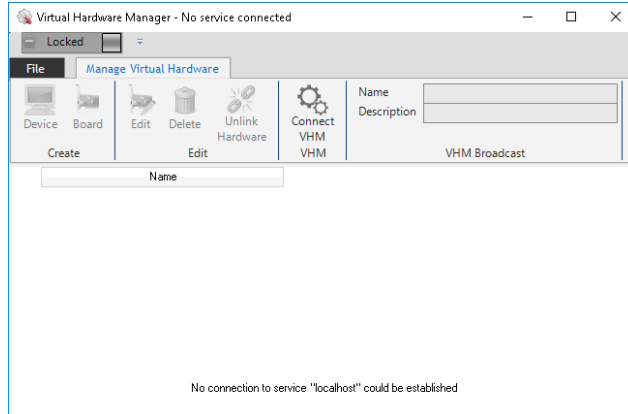
Name	Description
VirtualHardwareSettings.xml	Name description and password settings of the VHM Server
LastConfig.vhm	VHM settings can be saved and loaded manually to the VHM Server. Different configuration can be prepared and used depending on its application.

4 Configuration

This section explains all the necessary configuration to get VHM successfully running.

4.1 Start-up

After the first Start up, the VHM Client looks empty like in the picture below. As it is just a client application you first have to connect to a VHM Server.



4.2 Connect to a VHM Server

Click the Icon Connect VHM and select the VHM Server which you would like to configure.

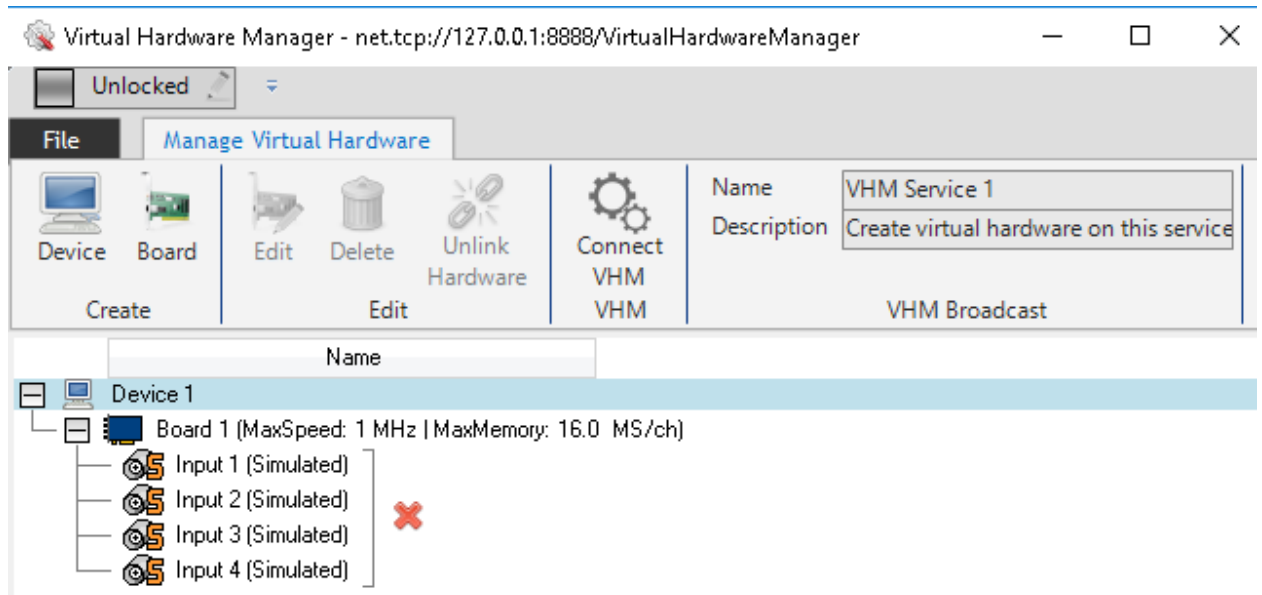


Your local installation is listed on top of the list, in this example, we use this local VHM Server. Any other VHM Servers can be configured exactly the same way.

VHM Services		
Name	Description	Address
VHM Service 1	Create virtual hardware on this service	net.tcp://127.0.0.1:8888/VhmTcpAccess

Click and select this "VHM Service 1" and click the "OK" button.

Now we are connected to the local VHM Server.

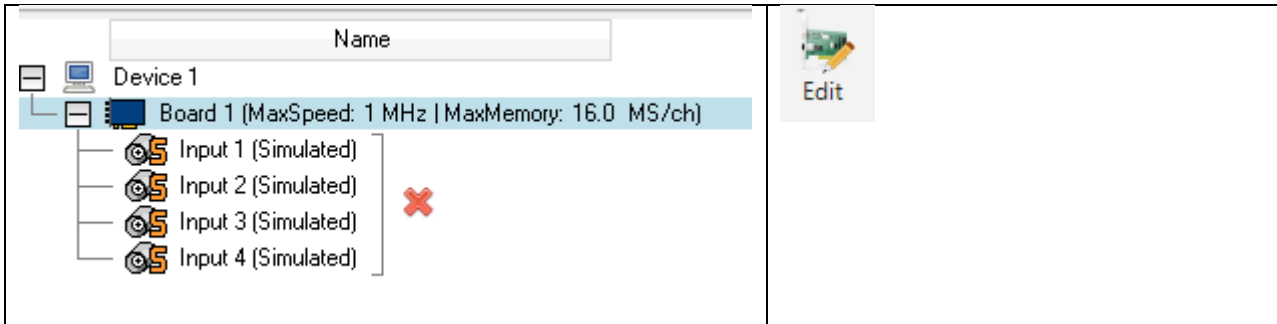


Change the Name and Description of these VHM Server. Use a name according your company standards or a name which identifies this VHM Server, location and usage as clear as possible.

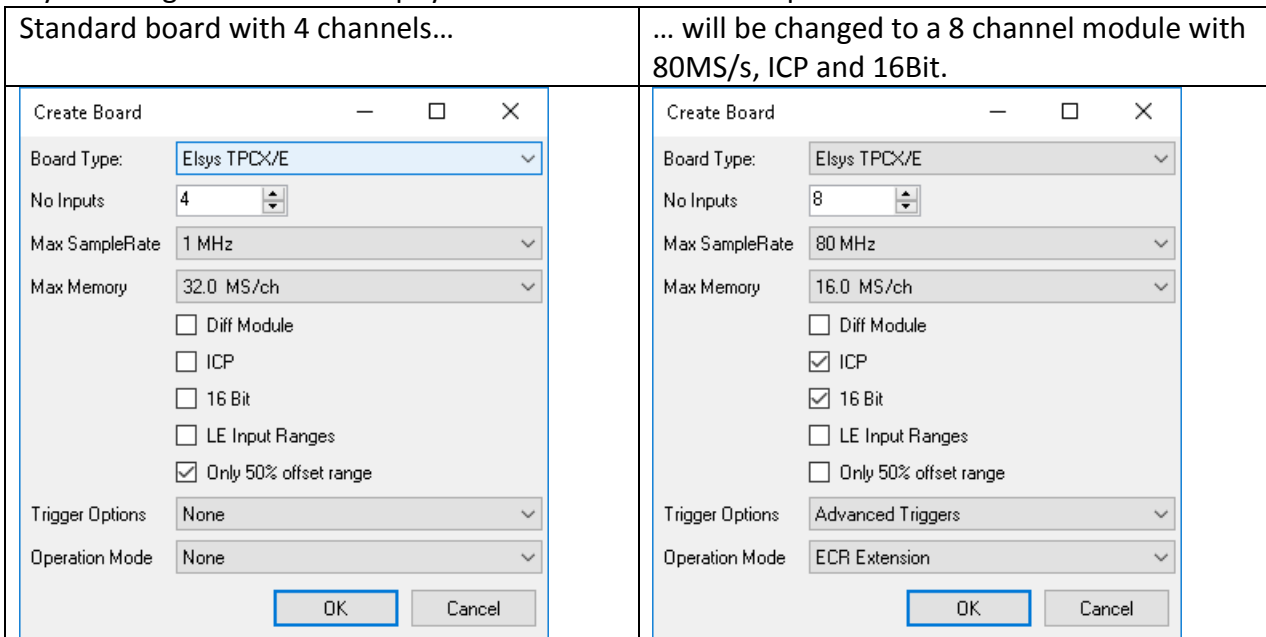
Name	VHM Test Station 1
Description	Test Station 1 Production Lane A

Now create a suitable measurement system according your requirements and available devices. In this case, we use a TraNET FE 404 with 4x4 channels, and build a virtual system with 2x 8 channels.

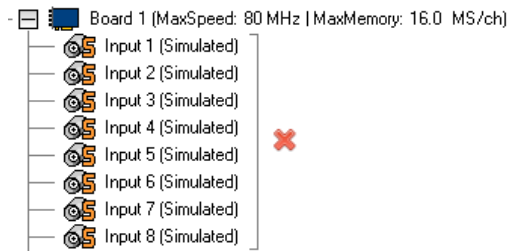
Select the Board and click the button "Edit" in the Ribbon bar.



The board settings configuration in "Create Board" is used for simulated channels; if the physical device is offline, the configuration in TranAX and its Control Panel can be done according these settings of the simulated device. To prevent any issues during configuration with TranAX, try to configure like the final physical hardware as exact as possible.

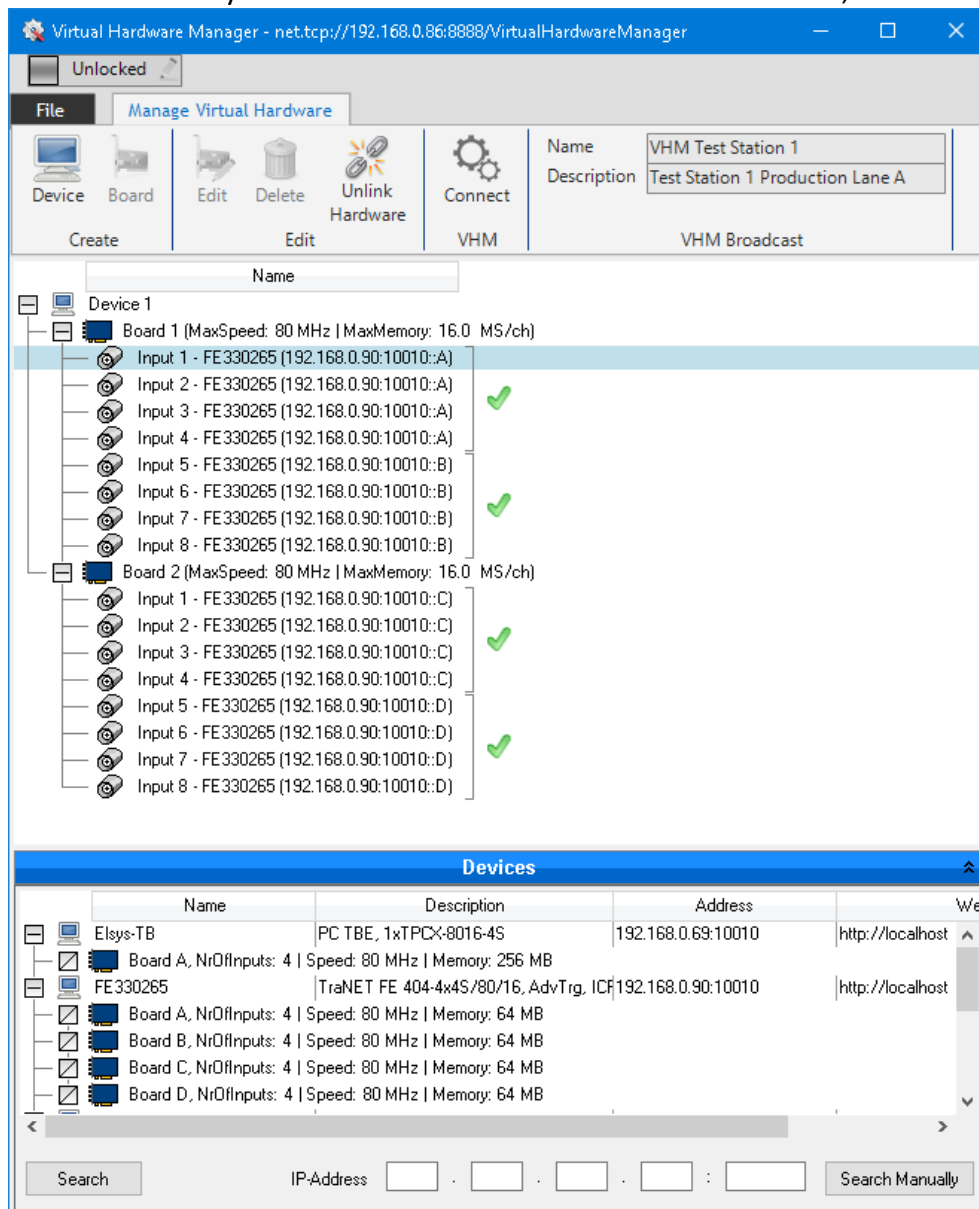


To add the second module, click on "Device", click on the Icon "board" and add a second module, the same settings as the first one, "Board 1"



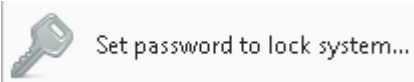
Now there are two 8 channel modules, please note the "S" on the BNC icon. As written in the description of the channel, this is a simulated channel. To measure with this VHM configuration, existing hardware devices has to be connected.

Next select and add the channels of your physical device. drag & drop the modules form the list "Devices" directly to the channels of the boards in the list above, "Board 1" or "Board 2".

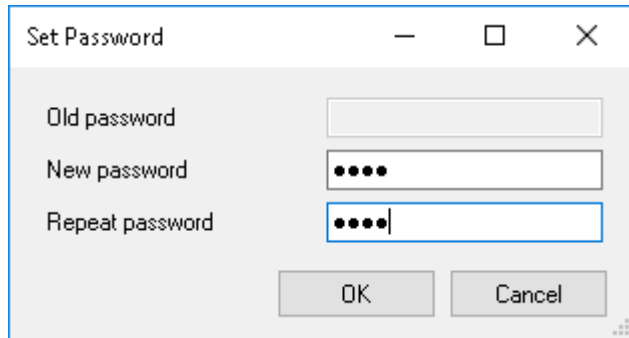
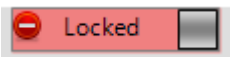
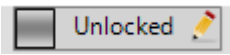


Afterwards, channel from modules A and B are now merged to module A, modules C and D are merged to modules B in the virtual system.

To prevent any changes in your VHM Client, click File -> "Set password to lock system..."



Enter a password, click OK, afterwards, click the slider on top to lock this configuration.

A screenshot of a "Set Password" dialog box. It contains three text input fields: "Old password", "New password", and "Repeat password". The "New password" and "Repeat password" fields are filled with four dots. Below the fields are "OK" and "Cancel" buttons.

To remove the password, enter your current password in the text field "Old password" and leave both text fields "New password" and "Repeat password" empty.



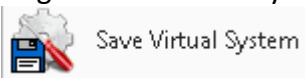
Please note this password is meant to prevent unwanted changes and modifications. This can be removed by editing the file VirtualHardwareSettings.xml in the directory C:\ProgramData\Elsys\VHM_4.1

In case of a forgotten password, clear the section between <Password> and </Password>. To remove the password protection from the Virtual Hardware Manager Server. You will need to restart the Server application or reboot the computer afterwards

4.3 Save settings and configuration.

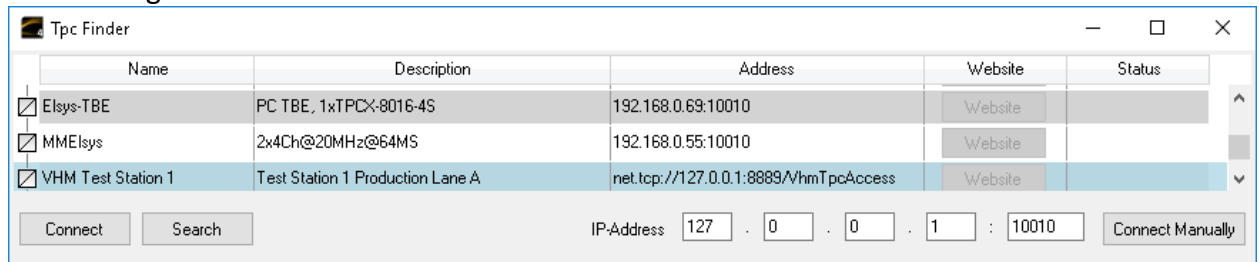
Close the VHM Client, the settings will be saved automatically to the file lastConfig.vhm in your documents\VHM_4.1 directory.

Click File -> "Save Virtual System" to save this configuration to a specific file. This can be used to handle different configurations. Connect to another running VHM Server to load the same settings on a different system.

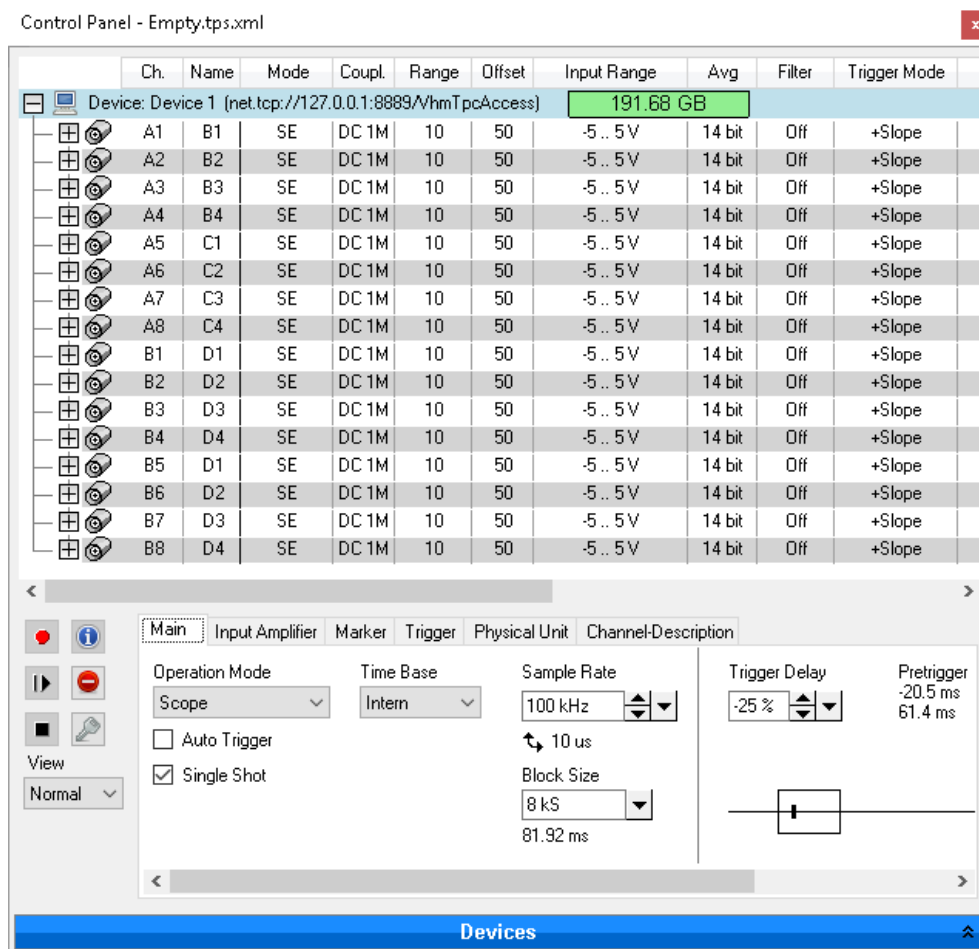


5 Connecting with TranAX



Start TranAX, click "Redefine Device Connection...", in the list of available devices in TPC Finder, the VHM Server will be listed as a new device. Please note that the TraNET device used in the VHM configuration will be listed too.

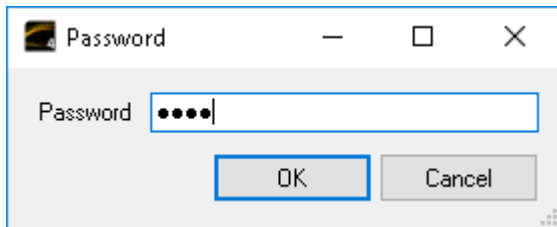


Connected to the "VHM Test Station 1" the hardware looks like this.



Please note you will have to unlock the VHM device in the Control Panel to allow to do changes in the configuration. Please click the locked icon, enter the password as set in the VHM client before.

	Configuration locked, read only operation
	Configuration enabled, sett



5.1.1 TranAX firewall and port settings

TranAX communicates over TCP/IP with the TPCServer. This is running on Windows based like EPC/PPC, as also on external devices like TraNET FE.

- Device Finder of TranAX uses Port 10020 UDP for searching for devices
- TranAX uses Port 10010 TCP for communication and data Transfer with devices
- 10025 UDP VHM search
- 8889 TCP communication



Make sure that these ports are activated for TranAX software in **both directions**. Windows standard firewall will be configured automatically.

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