Setup AvaGigE

Quick start

Product introduction

The AvaGigE is a smart Ethernet device enabling Avantes spectrometers to be connected to a network. The AvaGigE will make a USB spectrometer seen as an Ethernet connected device without the need for drivers on the PC side.

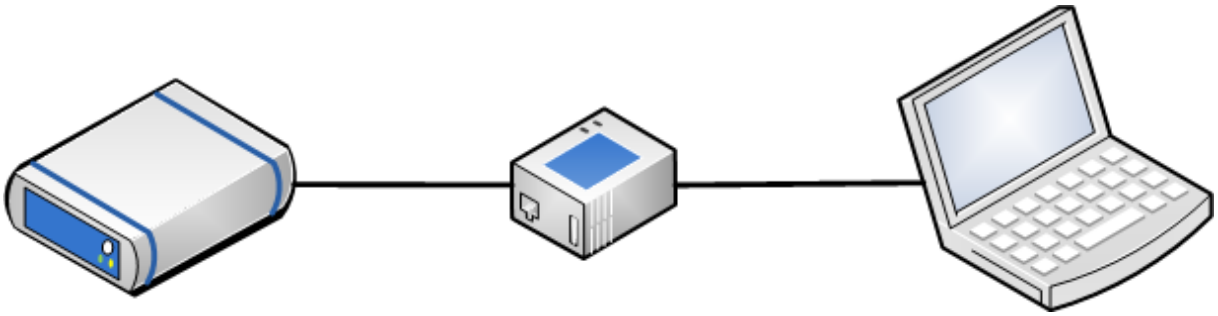
With our new AS5216.DLL version 8 or above the AvaGigE works as if it were connected to the PC via USB. It is also possible to connect multiple spectrometers to one AvaGigE with the help of an external USB HUB or to connect more than one AvaGigE to the same network.

Product package

Your package should contain:

- AvaGigE
- Ethernet Patch cable
- Power cable

Connecting the AvaGigE for the first time



1. Connect the AvaGigE to the PC with the supplied patch cable.
2. Connect a spectrometer to the USB port of the AvaGigE.
3. Plug-in the power cable so the AvaGigE has power.
4. Check that the blue light on the top of the AvaGigE is ON and the orange or green light near the Ethernet connector blinks or is continuously on.

Setup the PC for first connection

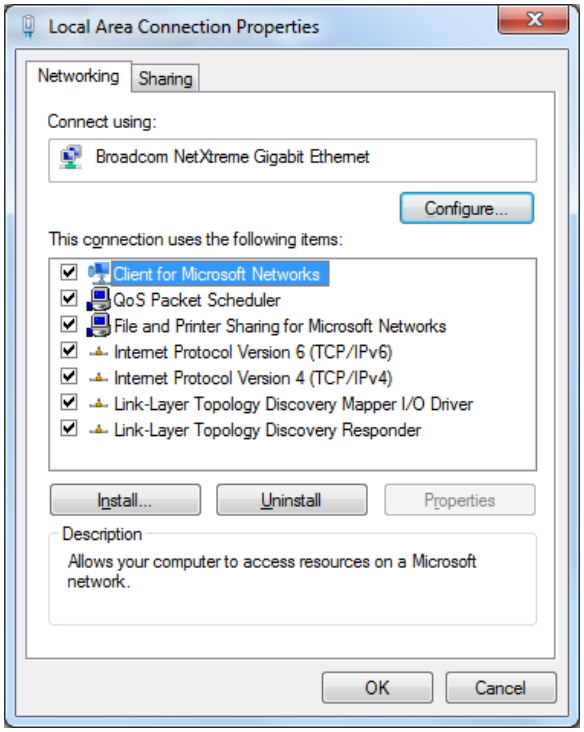
Out of the box the AvaGigE is provided with a fixed IP address, this address is 192.168.1.85. For the PC to be able to communicate with the AvaGigE it also needs a fixed IP address. The address of the PC must begin with 192.168.1, the last number can be any number between 0 and 255 (except for 85).

In the example below we will change the IP address of the PC to: 192.168.1.3 with a subnet mask of 255.255.255.0.

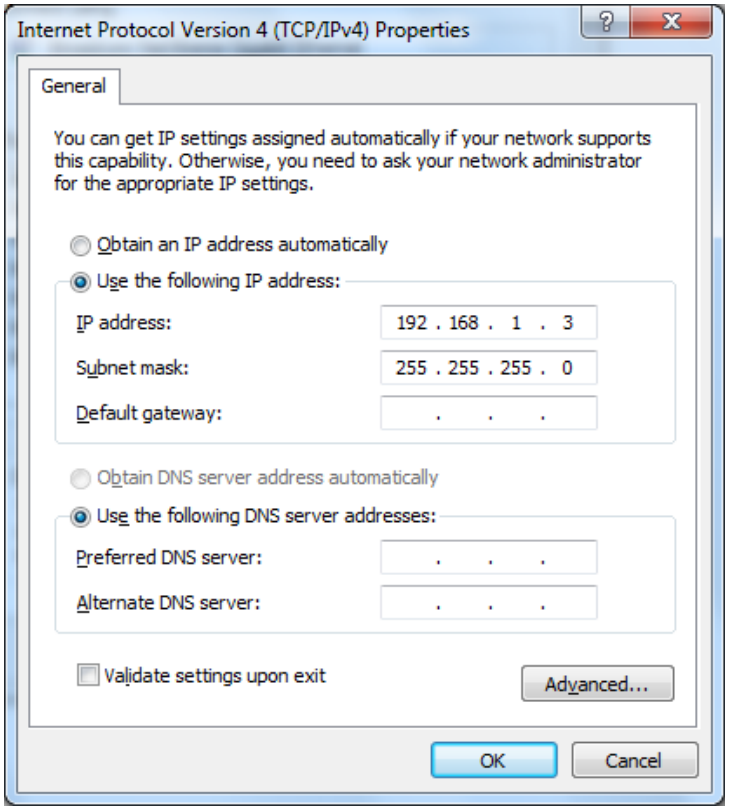
Setup a static IP address for Windows 7 or XP.

Open the “Network Connections”: Start/Run (Windows key + r) type **ncpa.cpl** and press enter or click on the button OK.

Then right click on the “Local Area Connection” and select “Properties” from the menu:



Next Select “Internet Protocol Version 4 (TCP/IPv4)” and click on Properties:
Copy the settings from the figure below:



Press OK, and again OK on the “Local Area Connection Properties”.
The static IP is now set.

Test the connection with the AvaGigE

The connection can be tested by going to the web interface. Open a web browser on your PC and enter the following address:

http://192.168.1.85:8080

If there is a good Ethernet connection the next main page will be shown in the browser:

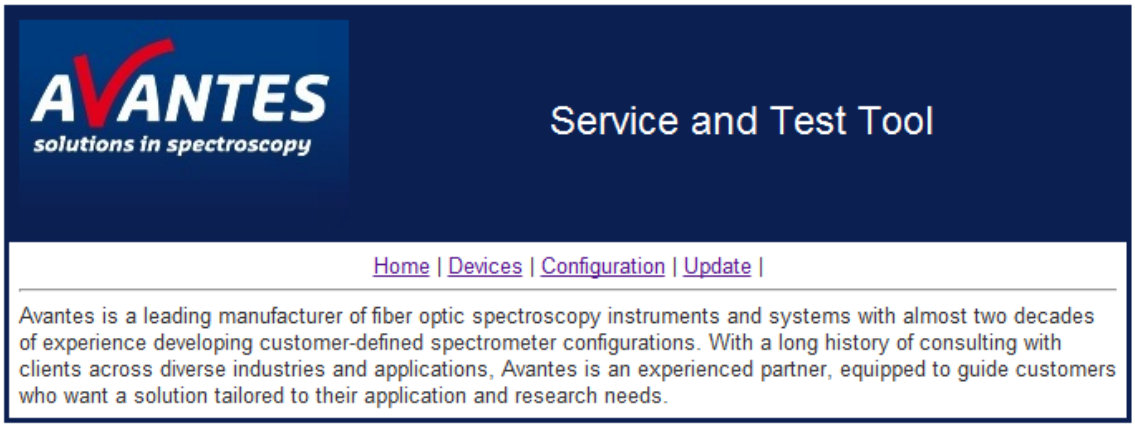


Figure 1 Main page web interface

Do a measurement through the web interface

It is possible to execute measurements through the web interface. To do a measurement, first you need to select and activate a spectrometer. This can be done on the page “Devices”. Press on “Devices” in the main page, and the next page will be shown (see figure 2).

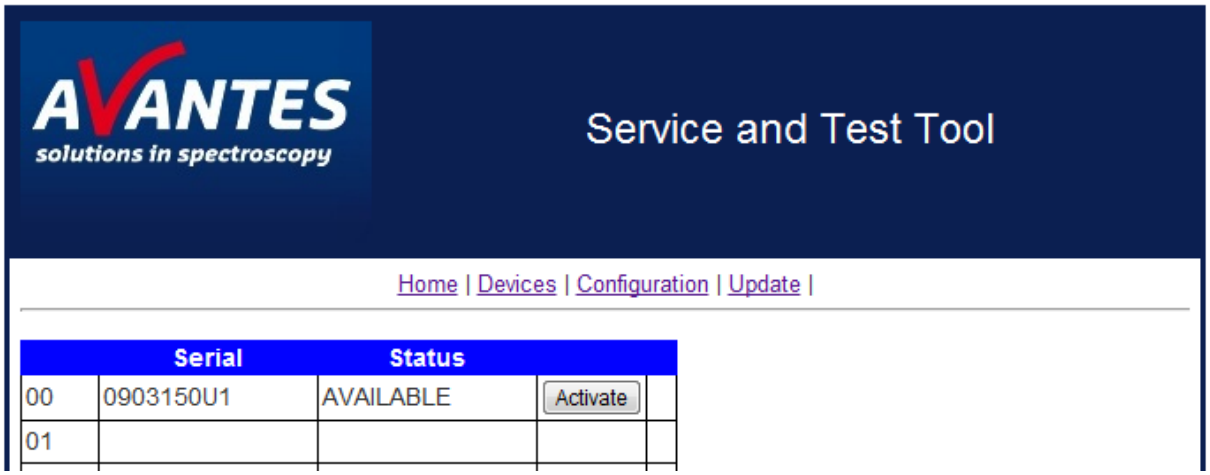


Figure 2 Devices Page

Click on the “Activate” button of one of the devices in the list. The page is reloaded and should show a Measure and a Deactivate button in the row of the activated spectrometer. Next press the Measure button. The measurement page below is shown:

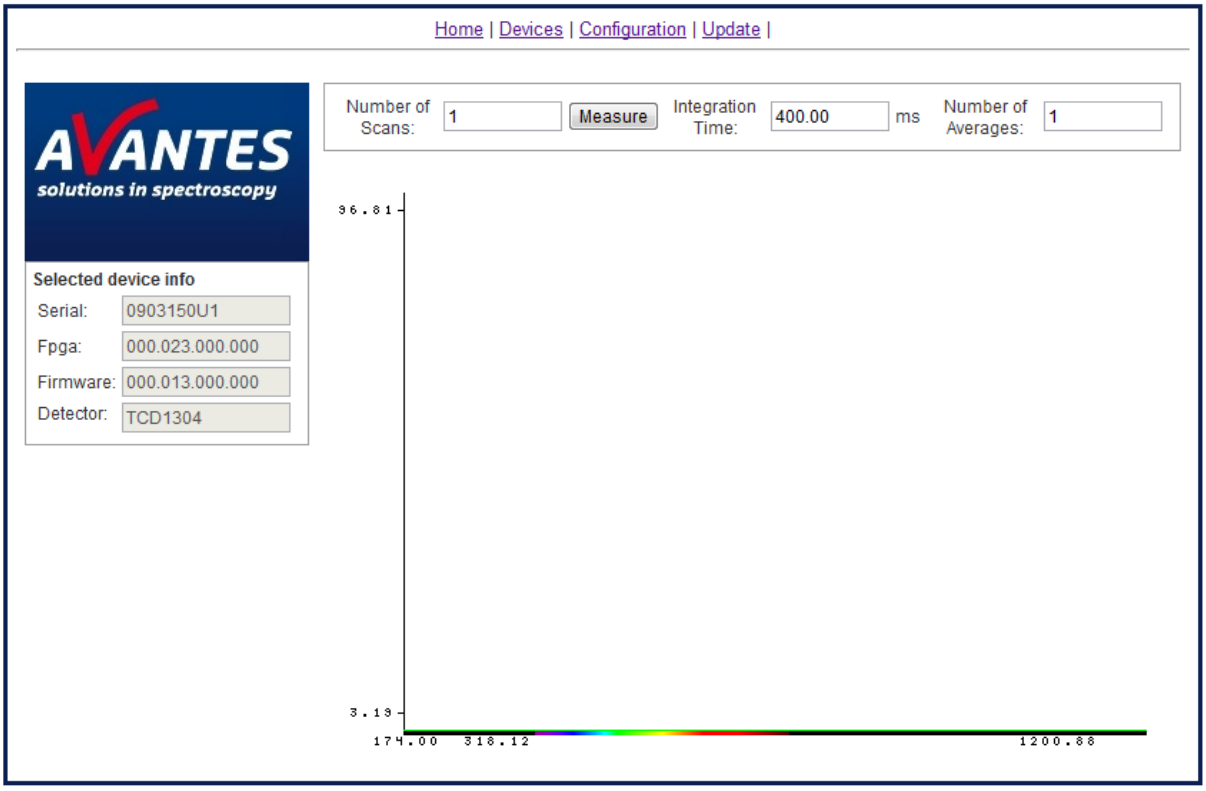


Figure 3 Measurement screen

To actually do a measurement press on the “Measure” button. The spectrometer will now do a measurement with the specified integration time and number of averages. The result will be shown on the screen.

When finished measuring please deactivate the AvaGigE. Press “Devices” and in the loaded page press the “Deactivate” button.

Setup the AvaGigE for use in a network

Before the AvaGigE can be used in your own network, the network settings of the AvaGigE need to be set up.

The AvaGigE needs to get a unique IP address, this can be done through the network setup of the AvaGigE.

If the network has a DHCP server, the network settings of the AvaGigE can be set to Auto. An IP address will then be assigned to the AvaGigE by the DHCP server.

With a direct cable connection, both the PC and the AvaGigE need a fixed IP address, as a DHCP server will not be available.

AvaGigE network settings

The network settings of the AvaGigE need to be configured through the Web interface. (See chapter “Test the connection” on how to go to the web interface).

http://192.168.1.85:8080/NETWORKINFO

The following page should be shown:

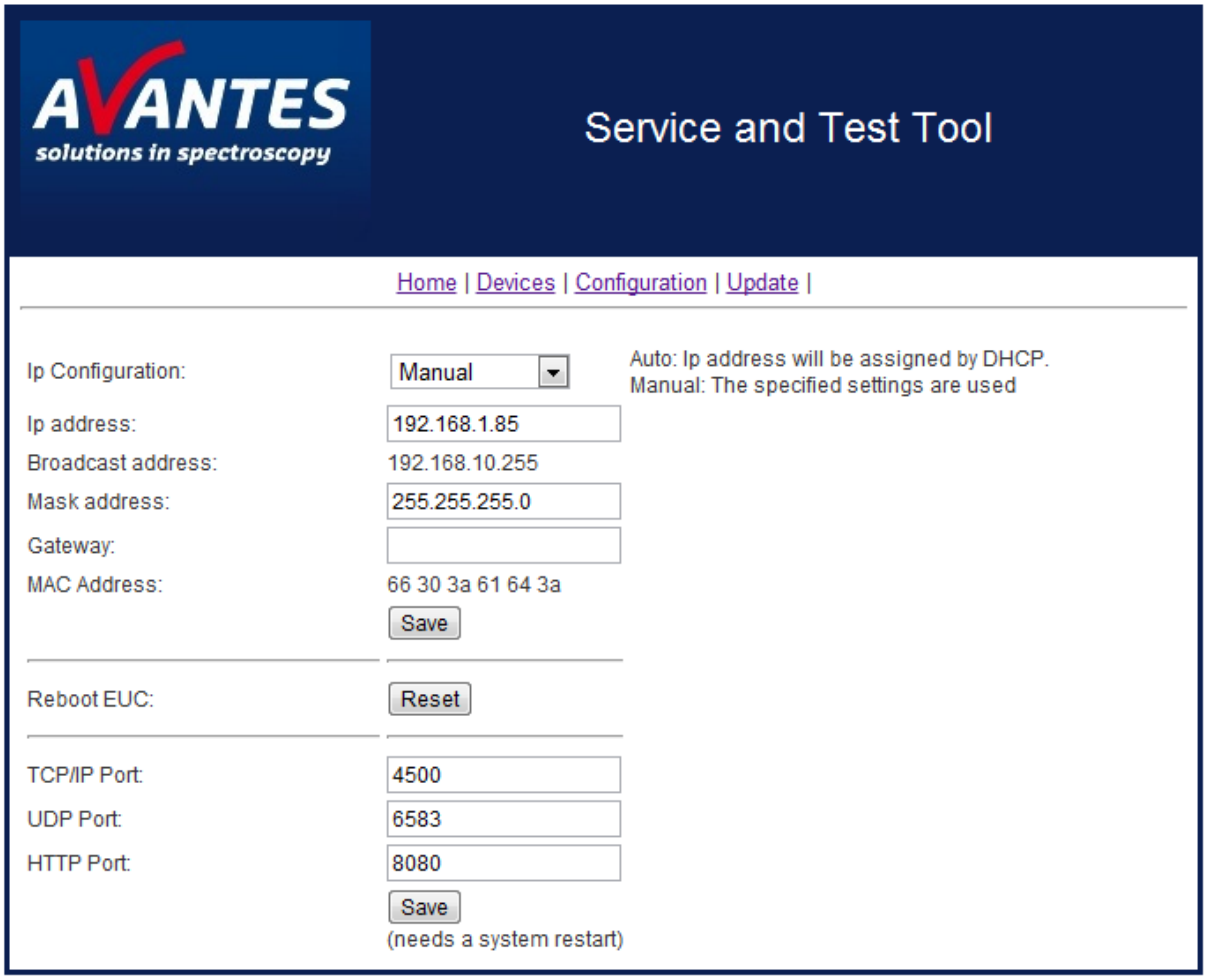


Figure 4: Web interface network settings page

Explanation of the “Configuration” page:

The network settings are set immediately after the save button is pressed. If the IP address or IP configuration are changed, your internet browser will not be connected anymore, and will have to be directed to the new IP address.

IP Configuration:
Two types of network setup can be chosen: Manual or Auto.

- If Auto is set, the AvaGigE needs to get an IP address from a DHCP server
  (If the AvaGigE is set to Auto, make sure your PC is set back from static IP to auto)
- If Manual is set, the IP must be given through the web interface.

Mask Address:
Insert a subnet mask, default: 255.255.255.0

Gateway:
The IP address of an internet server or router, if it is known.

Reboot AvaGigE
The Reset button will reboot the AvaGigE, this can take up to 30 seconds to complete.
(A web page refresh is needed after about 30 seconds)

TCP/IP Port: (Advanced network settings)
The communication port on which the Avantes protocol is transmitted.
(A system reboot might be necessary after changing this value)

UDP Port: (Advanced network settings)
The identification port on which the AvaGigE can be found.
(A system reboot might be necessary after changing this value)

HTTP Port: (Advanced network settings)
The web interface port on which the AvaGigE can be found.
(A system reboot might be necessary after changing this value)

Hardware connection options

Direct cable connection:

Needed:
- AvaGigE
- Power cable
- Ethernet patch cable

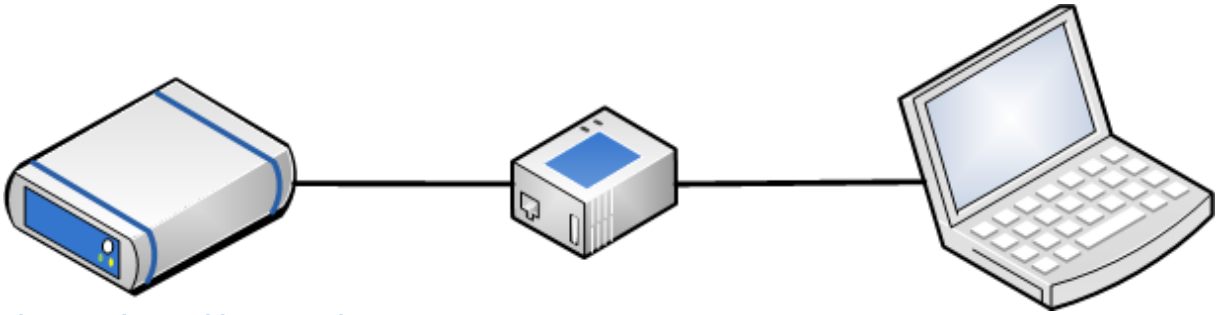


Figure 5 Direct cable connection

Network connection

The AvaGigE is connected through a network. This can be an existing larger company network or a smaller setup with a switch or router.

Needed:
- AvaGigE
- Power cable
- Ethernet Patch cable

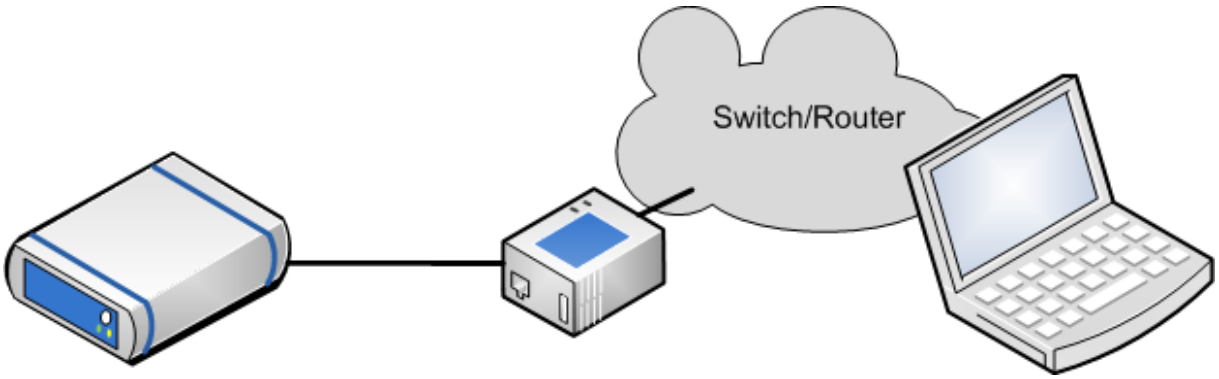


Figure 6 Connected through a network

Work with an AvaGigE on a larger network

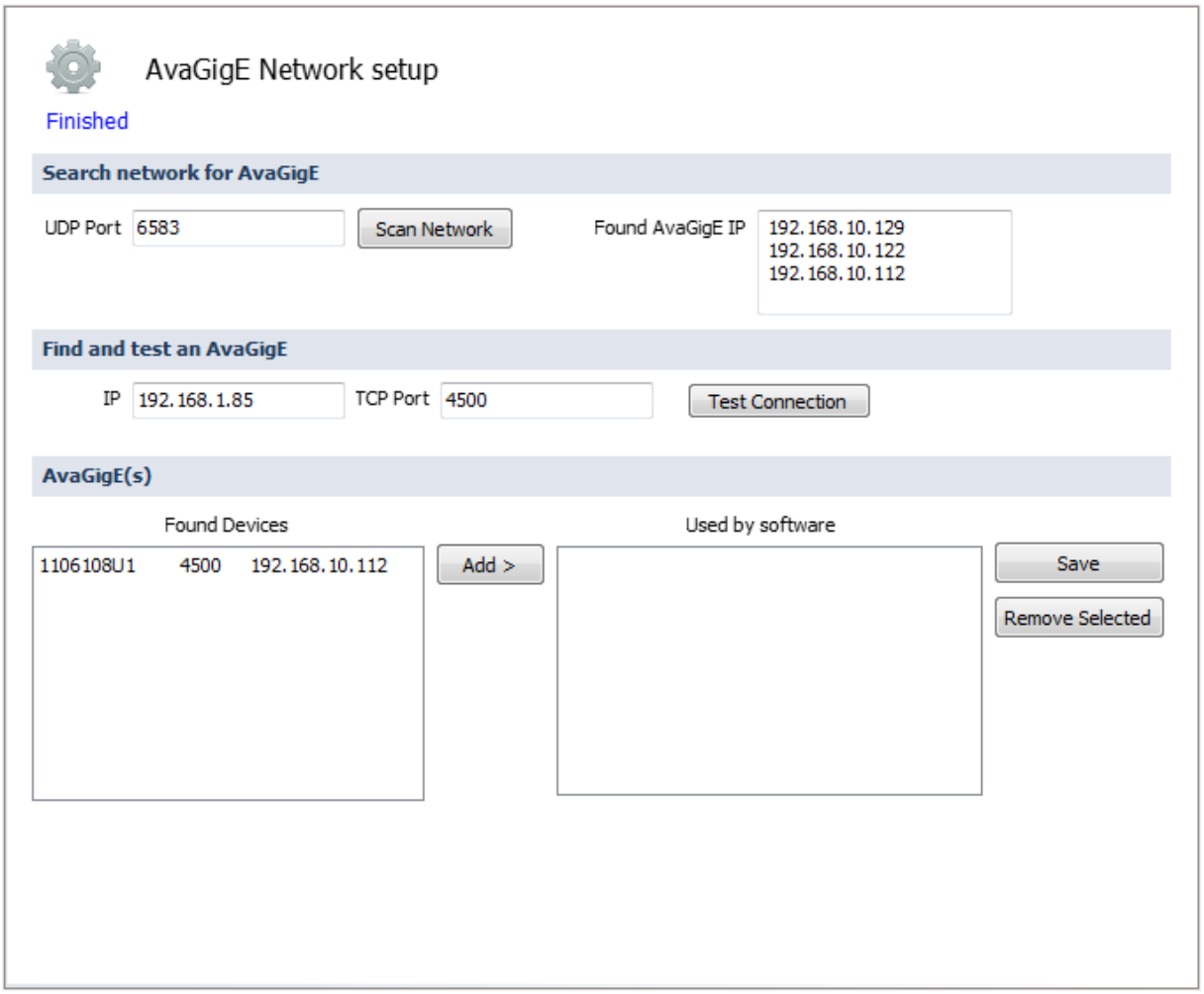
An Avantes spectrometer can only be controlled by one PC at a time. On a network with multiple AvaGigE and PCs, an AvaGigE can be accessed by all PCs on the network, therefore filtering is required on the network. Before you can use an AvaGigE, the DLL needs to know which AvaGigE it may use.

With the AvaGigE Setup utility, an AvaGigE can be located and the connected spectrometers can be added to the list of spectrometers the DLL may use.

Find the AvaGigE with the AvaGigE Setup utility

Press the button **Scan Network** under “Search network for AvaGigE”.
The tool uses Limited Broadcast to search for an AvaGigE. A Limited Broadcast is sent to all NICs on the same network segment as the source NIC. This is represented by the 255.255.255.255 address. This broadcast is not forwarded by routers so it will only appear on one network segment. The blue status text will show the progress of the search.

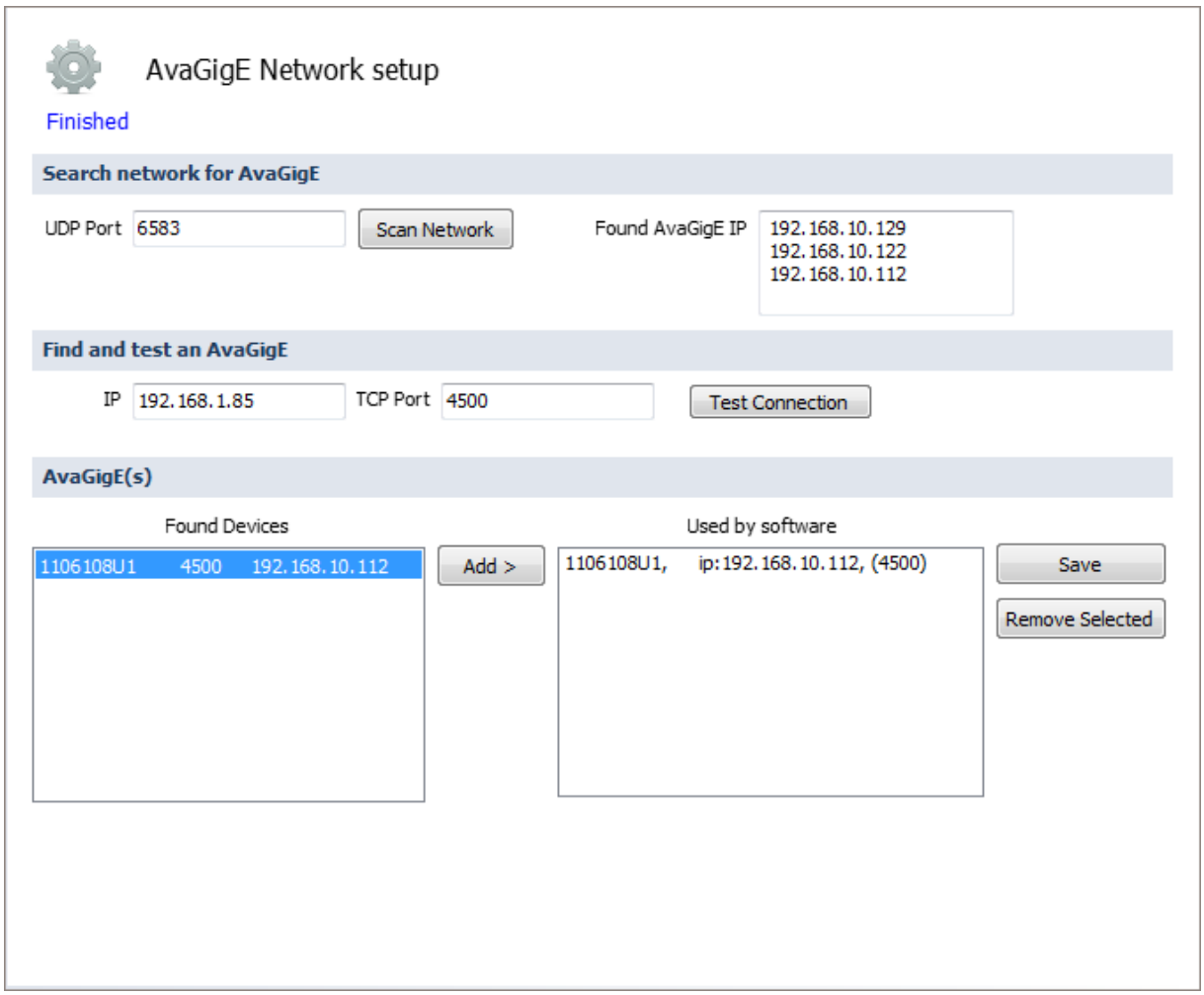
If an AvaGigE is found, its IP address will be added to the list **Found AvaGigE IP** next to the Scan Network button. The connected spectrometers will be added to the **Found Devices** list.



Add a spectrometer to the Filter list.

Follow the instructions of the chapter: “Find the AvaGigE with the AvaGigE Setup utility”.

The spectrometer(s) found connected to the AvaGigE will be shown in the Found Devices list. To add a spectrometer to the filter, select the spectrometer in the Found Devices list and press the Add > button, the spectrometer will be copied to the “Used by software” list. Repeat this process for all spectrometers. Press the button “Save” to save the filter setup.


AvaGigE Network setup
Finished
Search network for AvaGigE
UDP Port
6583
Scan Network
Found AvaGigE IP
192.168.10.129
192.168.10.122
192.168.10.112
Find and test an AvaGigE
IP
192.168.1.85
TCP Port
4500
Test Connection
AvaGigE(s)
Found Devices
1106108U1 4500 192.168.10.112
Add >
Used by software
1106108U1, ip:192.168.10.112, (4500)
Save
Remove Selected

Find an AvaGigE if its IP is unknown

If you do not know the IP address of the AvaGigE or the AvaGigE network settings are set to Auto this next section can help you to find the AvaGigE IP Address.

First we need to know if the AvaGigE network setting is set to Manual or Auto.
If you do not know if the AvaGigE is set to Manual or Auto follow the next step to find out, else go directly to “Find the AvaGigE with the AvaGigE Setup utility”.

Test for manual setup:

1. Connect the AvaGigE directly to the PC with a patch cable.
2. Next set up your network with a fixed IP address 192.168.1.3 (see “Setup a static IP address for Windows 7 or XP”)
3. Set the Subnet Mask to 255.255.255.0
4. Go to “Find the AvaGigE with the AvaGigE Setup utility”

Test for Auto setup:

1. Connect the AvaGigE directly to the PC with a patch cable.
2. Next Setup your network with a fixed IP address 192.168.1.3 (see “Setup a static IP address for Windows 7 or XP”)
3. Set the Subnet Mask to 255.255.255.0
4. Start the tool **dhcpsrv.exe** (available from Avantes support)
5. Power on the AvaGigE.
6. Go to “Find the AvaGigE with the AvaGigE Setup utility”