SOFTWARE

CHROMATEC ANALYTIC

USER MANUAL

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CONNECTING THE CHROMATOGRAPH TO THE COMPUTER, SETTING UP THE NETWORK

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1 CHROMATOGRAPH CONNECTION METHODS

Depending on the type of Processor Module, the chromatograph can be connected to a computer using one of the following data interfaces:

Table 1.1 – Data transmission interfaces

Processor module	**Interface**
PM31	Ethernet
PM3	Ethernet
PM2	Ethernet, USB, RS-232 (COM)

1.1 Ethernet connection features

Ethernet is the most reliable interface and is recommended for connecting PM3 and PM2 chromatographs whenever possible.

Chromatographs with PM2 manufactured before 2016 do not have an Ethernet adapter installed. It can be purchased separately.

A UTP cat.5e patch cord cable up to 10 m in length is used to connect the chromatograph.



Figure 1.1 – Ethernet cable

1.2 Features of USB connection

Can only be used with the PM2 processor module.

The USB interface is less reliable than Ethernet or RS-232 and should only be used if these interfaces are not possible.

PM2:

To connect the PM2 processor module via USB, the USB2COM driver is used. It converts the connection into a virtual COM port.

PM3:

To connect the PM3 processor module via USB, a USB-Ethernet adapter is used. In this case, an additional network adapter appears in the operating system and all settings for it are carried out similarly to those described for Ethernet.

We recommend using TP-Link adapters.

A USB-Ethernet adapter is not included by default. Can be supplied upon special order.



Figure 1.2 – Адаптер USB-Ethernet

1.3 Features of RS-232 connection

Can only be used with the PM2 processor module.

The RS-232 (COM) interface is considered obsolete due to its low data transfer rate. For this reason, it is not used in PM3. However, it should be preferred over USB for PM2 and PM1.

No RS-232 interface setup is required to operate the chromatograph.



Figure 1.3 –RS-232 9x25 Cable

Since RS-232 is not supported by motherboards of modern computers, it is necessary to use expansion cards (multiport cards, multicards) to work with it.

Expansion cards for PCI and PCI Express buses contain 2 or more COM ports.



Figure 1.4 – COM port expansion card

If it is not possible to use an expansion board (e.g., when connecting the chromatograph to a laptop), a USB-COM adapter can be used.



Figure 1.5 – USB-COM adapter

When two chromatographs (or more) are connected to a computer via USB and RS-232, there may be a port number conflict.

2 SETTING THE COMPUTER'S IP ADDRESS

When connecting the chromatograph via Ethernet, the network settings of the chromatograph itself, the peripheral devices (MSD), and the computer must be configured.

The following chromatograph connection options are possible:

The chromatograph is connected to the computer directly or via a switch, and there are no other computers on the network

The chromatograph is connected to a local network:

Computers and chromatographs are on the same network segment

Computers and chromatographs are on different network segments

The chromatograph specifies a static IP address. If the devices on your network receive an IP address dynamically from a DHCP server, contact your company's network administrator. He or she should assign an IP address for the chromatograph, excluding it from the automatic allocation by the DHCP server.

In this case, the computer's network settings are not changed (the default dynamic IP acquisition remains).

2.1 Chromatograph is connected to a computer directly or via a switch, and there are no other computers on the network

The simplest and most common method of connection. The user can make all the settings himself without having to contact the network administrator.

The network will consist of a computer, a chromatograph and an MSD (if available).

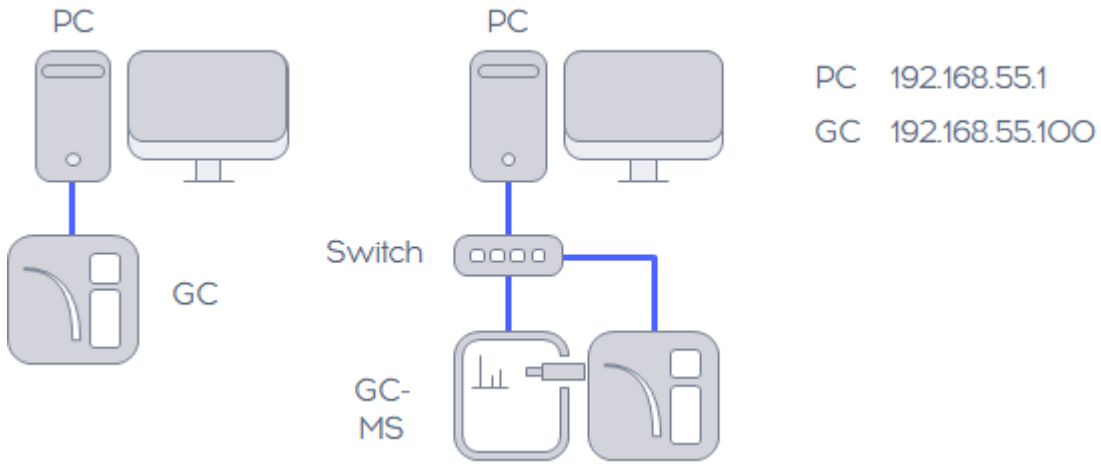


Figure 2.1 – The chromatograph is connected to the computer directly or via a switch

Configuring the computer's IP address in Linux

2.2 Local Area Network. Computers and chromatographs are on the same segment

A network for small laboratories that is not connected to other laboratories.

The network settings shown in the figure are for example. Your enterprise network administrator can issue other IP address settings.

Each computer on such a network is assigned an IP address of the following form: 192.168.55.xxx.

Here **xxx** is individual for each computer, must not match the addresses of the chromatographs.

The IP address of the chromatograph is set at the manufacturer's facility so that the last digit of the address can range from 100 to 250. Therefore, computers should be set to addresses outside this range.

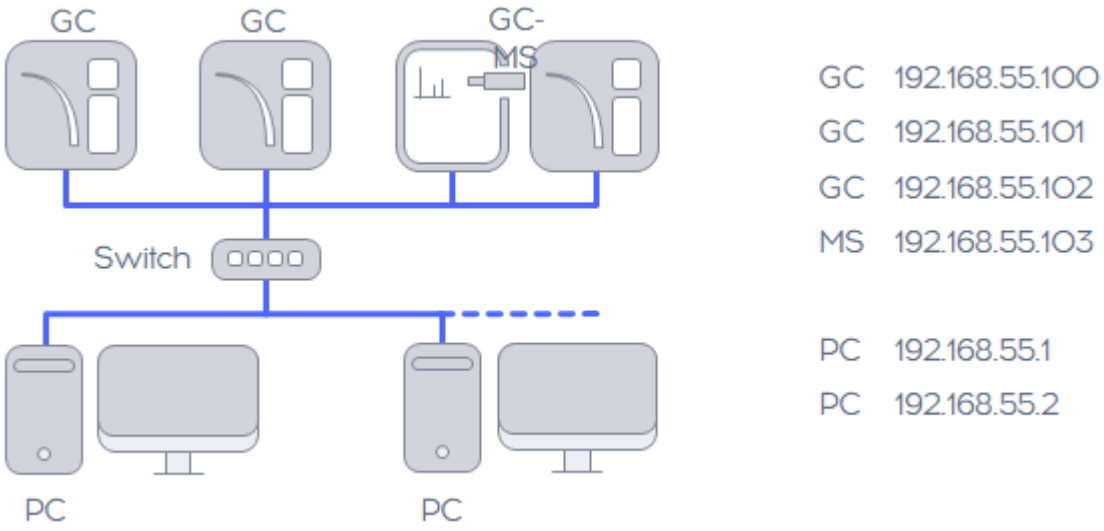


Figure 2.2 – Computers and chromatographs are on the same network segment

2.3 Local Area Network. Computers and chromatographs are located in different segments

This network organization is preferred for large enterprises where laboratory and workshop networks are interconnected.

If the computers and chromatographs are on different network segments, you can use two configuration options:

- Add another IP in the operating system's network settings that is on the same network as the chromatograph IP,

- or change the IP of the chromatograph.

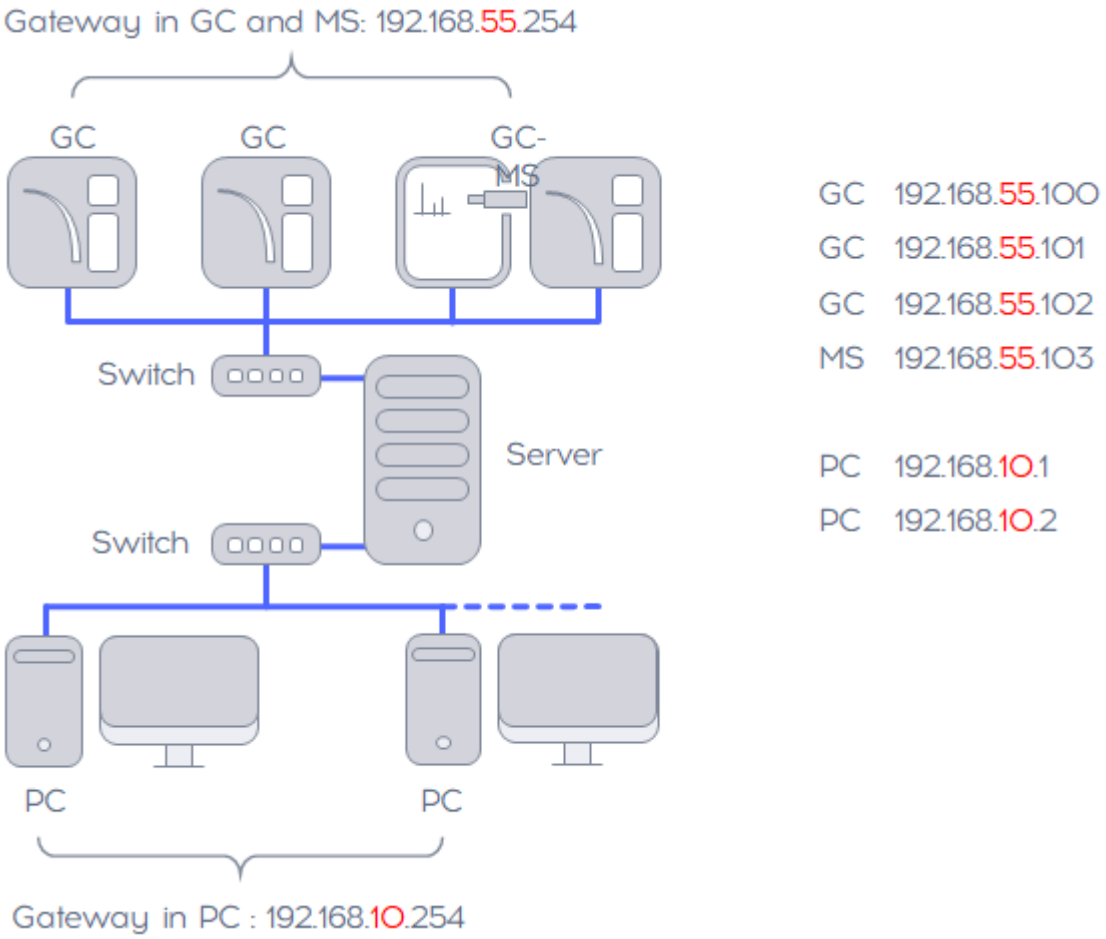


Figure 2.3 – The computers and chromatographs are on different segments of the network

The network settings shown in the figure are for example. The network administrator of your company can issue other gateway and IP address values.

Enter the IP address, visitor mask and default gateway issued by the network administrator.

Configuring the computer's IP address in Linux

Configuring the computer's IP address in Windows

2.4 Configuring the computer's IP address in Linux

The video shows how to configure the IP address of a computer in Ubuntu. In other Linux builds the setup is similar, although the appearance of the dialog boxes may differ.

{video network_ip_ubuntu Network IP address Linux}

2.5 Configuring an IP address in Windows

{video network_ip_windows Network Windows}

If the computer and chromatograph are on different subnets (for example, the computer IP is xxx.xxx.xxx.0.xxx and the chromatograph IP is xxx.xxx.55.xxx), you will need to add additional subnets.

1. Click the Advanced button.
2. Add a new subnet.
3. Enter the IP address of the computer in the subnet. It differs from the main one by the third digit.
4. Click "Add".
5. Click "OK".

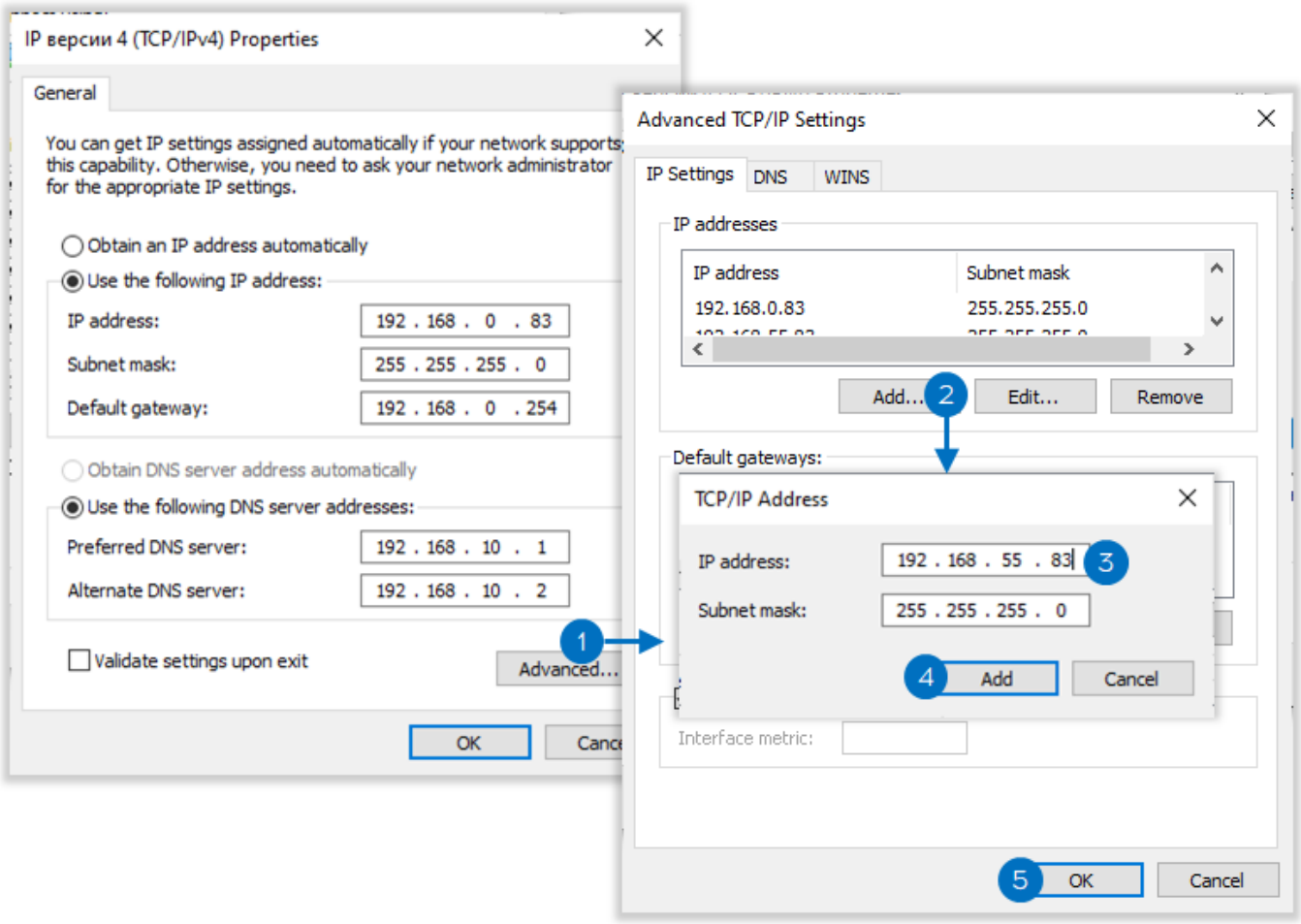


Figure 2.4 – Adding an additional subnet

3 SETTING THE CHROMATOGRAPH IP ADDRESS

If you have not added an additional subnet and the computer address is not **192.168.55.xxx**, then you must configure the IP address of the chromatograph.

3.1 Setting the chromatograph address with PM3

You can change the network settings of the chromatograph without connecting to the chromatograph. You must write a special settings file to a USB flash drive, connect the drive to the Firmware connector on the back of the chromatograph, and turn on the instrument. Once the instrument is booted, the network settings will be changed to the new settings.

The settings file is created using a special dialog box in the Chromatec Navigator program:

In the main window of Chromatec Navigator, click on the "Ethernet Setup" button.

- Set the settings given to the chromatograph by your facility's network administrator.
- **Save the settings to the USB memory device in the *settings* folder**.
- Select the USB memory device.
- Click "OK".
- Connect the USB memory device to the "Firmware" connector on the back of the chromatograph.
- Turn on the chromatograph. Once it has booted up, the USB memory stick can be disconnected. The network settings will be overwritten.

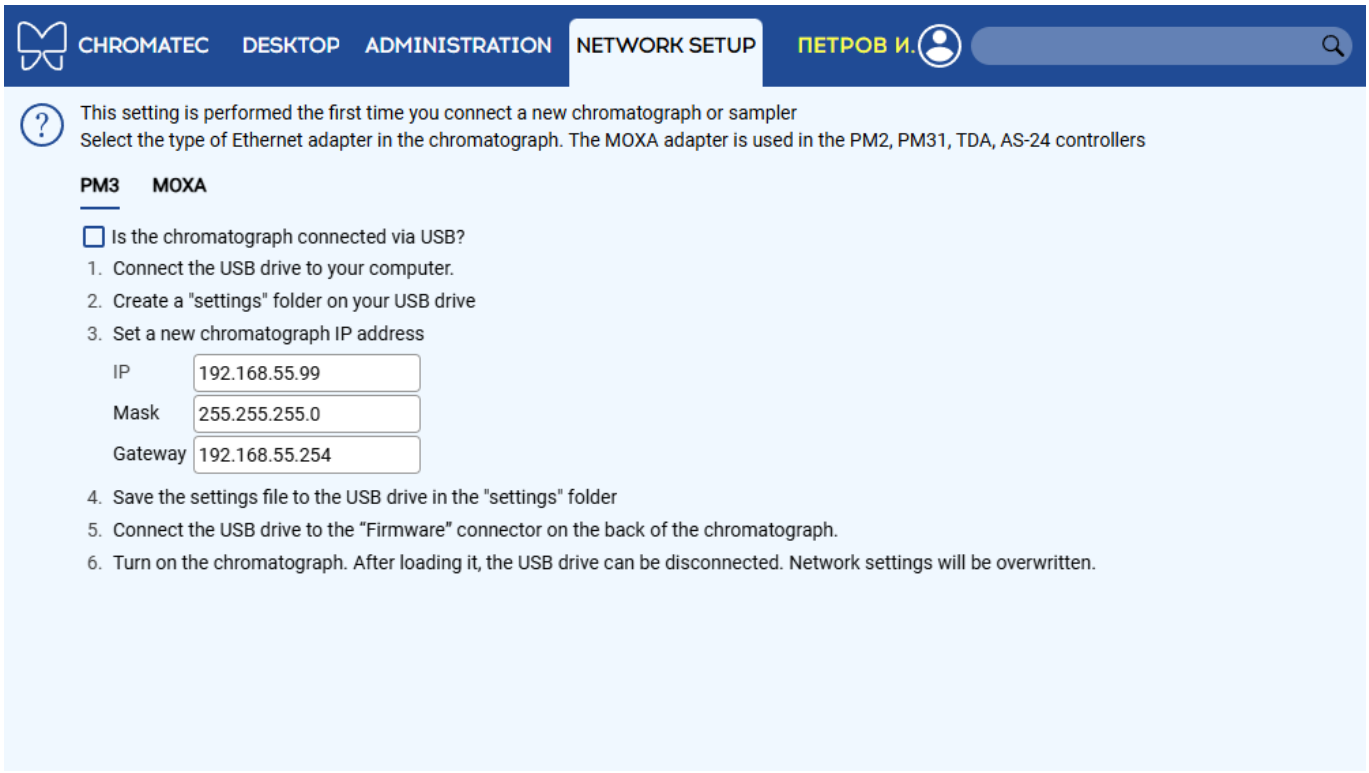


Figure 3.1 – Setting the IP address of the chromatograph with the PM3 processor module

3.2 Setting the device address with the Moxa adapter

Moxa NE-4110S adapter is installed in instruments:

- Chromatographs with PM2 processor module.
- Chromatographs with PM31 processor module.
- AS-2M-24 autosamplers.
- Automatic thermal desorbers TDA.

The IP address **192.168.127.254** is factory set in the configuration settings of the network adapter.

To use this unit on your local network, you must change the IP address. Contact your company's network administrator to obtain a new IP address.

In the main window of Chromatec Navigator, click on the "Ethernet Setup" button.

- Click on the "Moxa" tab.
- Configure the network settings of the computer.
- Select an instrument from the list of available instruments (the instruments must be enabled). The current Moxa IP adapter, its MAC address and serial number are available for selection.
- Set the new IP address of the device.
- Click "Apply". Confirm the application.

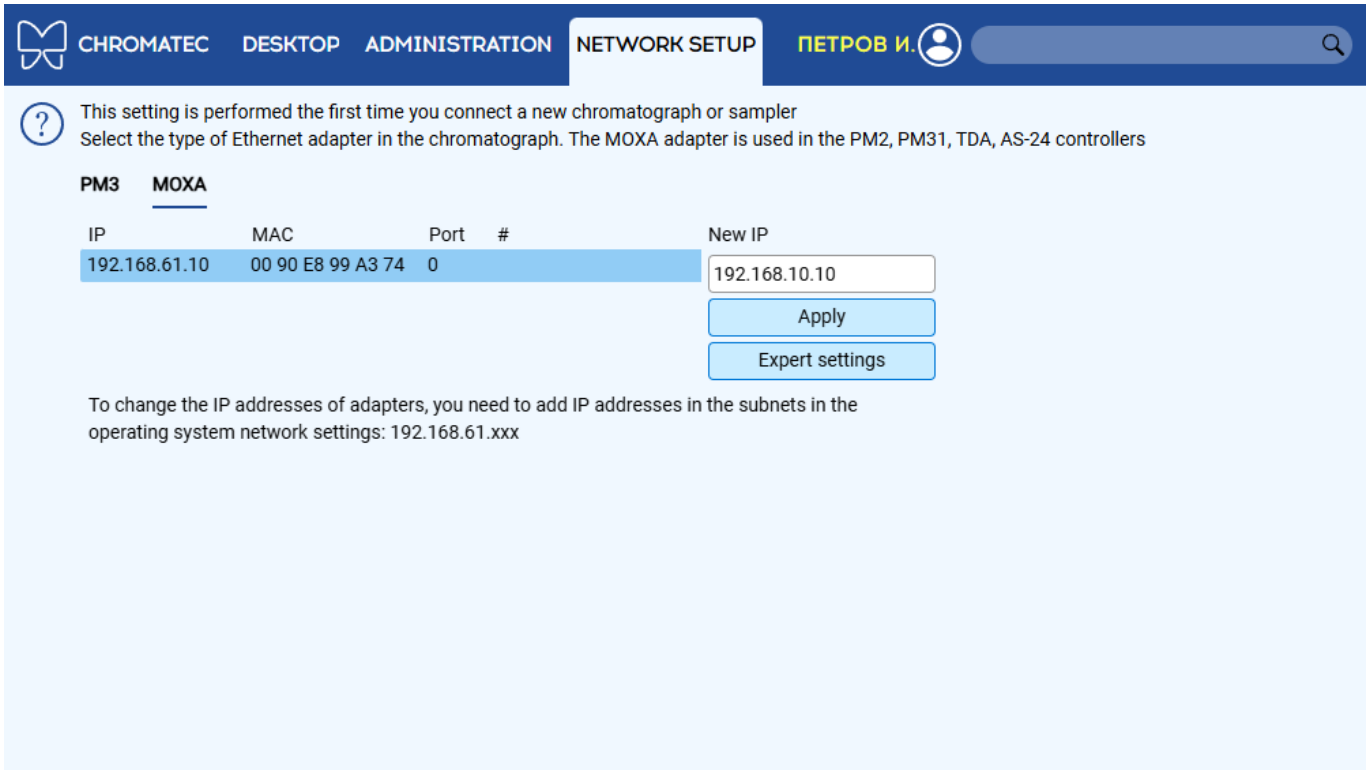


Figure 3.2 – Changing PM2 network settings

Advanced users and network administrators can access more settings of the network adapter. To do this, click on the "Expert Settings" button.

4 TROUBLESHOOTING CONNECTION PROBLEMS

For chromatographs with PM3 processor module and mass spectrometry detectors, there is a problem that sometimes leads to a disconnected connection. It is solved by reducing the speed of Ethernet adapter to 10 Mbit/s (default setting is 100 Mbit/s).

How to perform this setting in Ubuntu Linux and Windows is shown in the videos below:

{video network_speed_ubuntu Network speed Linux}

B In other Linux builds the setting is similar, although the appearance of the dialog boxes may differ.

{video network_speed_windows Network speed Windows}

In Windows, the appearance of the dialog boxes may also vary depending on the model and manufacturer of the network adapter.