EL-CELL®
electrochemical test equipment

Installation & Quick Start Guide

Release 2.5

For EL-Software Version 2

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Content

1 Introduction

Congratulations on your new PAT-Tester. This document is a quick start guide for setting up your PAT-Tester. Please read it carefully.

The main hardware components are a computer (sometimes known as the LAB-PC) and the PAT-Tester, which are connected via an Ethernet network.

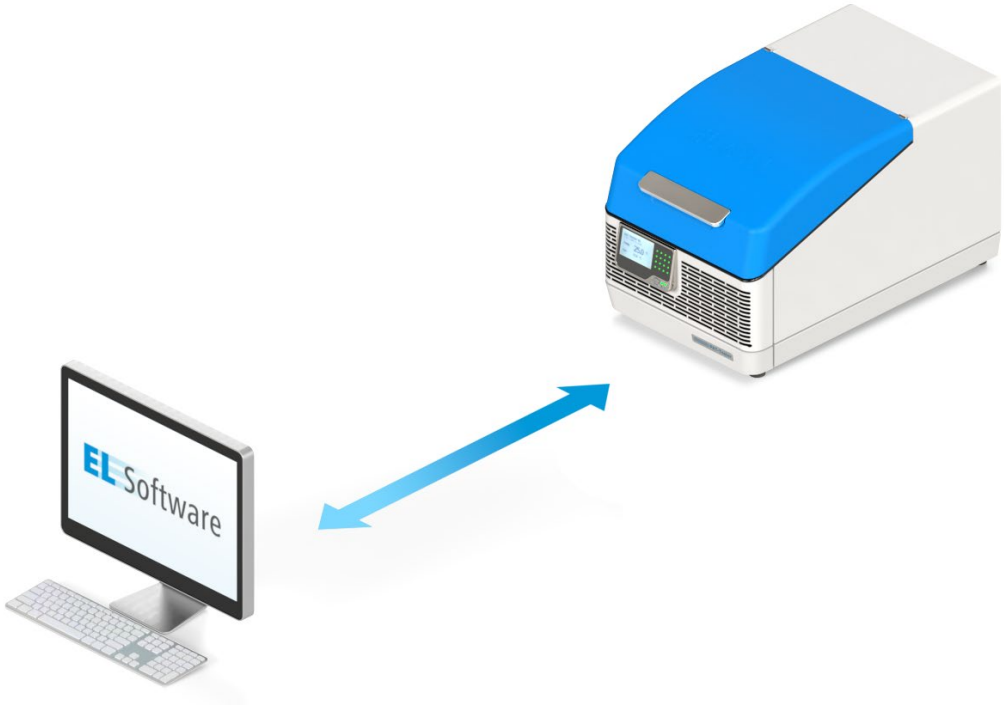

Figure 1: Computer and PAT-Tester Connection

The main software components are the **EL-Software Client** (Client) and the **EL-Software Server** (Server).
In this guide, we will show how to run the client and the server on the same computer, as this is the most straightforward setup

The **EL-Software Client** is software for end users that provides a graphical interface for controlling and working with PAT-Testers. It can be installed on any client PC within the network.
The **EL-Software Server** handles the core operations, stores data in the database, and serves as the interface between the EL-Software Client and the PAT-Tester device. It can be installed on the same computer as the Client or on a dedicated server within the network.

2 Requirements

2.1 Hardware Requirements

These are the minimum requirements for the hardware.

	EL-Software Server	EL-Software Client
CPU	Intel i5-12400 or comparable Intel Xeon or AMD64 processor	Intel i5 or comparable AMD64 processor
RAM	16 GB	8 GB
Free disk space	1 GB SATA-SSD	500 MB HDD
Network	1 Gbit	1 GBit
Display Resolution	-	1366 x 768 pixels and higher

PLEASE NOTE
EL-Software is scalable software designed for simultaneous operation with multiple PAT testers. The hardware requirements result from the number of test channels used simultaneously and the measurement data generated by the measurement protocols used and are thus variable depending on the application**. Therefore, the EL-Software Server's hardware requirements should only be a guideline for operating a system with up to 16 test channels.**

2.2 Software Requirements

	EL-Software Server	EL-Software Client
Operating System	Windows Server 2022 Windows 10 (x64) 21H2 or later Windows 11 Linux Ubuntu 18.04*	Windows 10 (x64) 21H2 or later Windows 11
Other	Microsoft Visual C++ 2015-2022 Redistributable (x64)	WebView2 (must be installed manually on older Windows 10 versions)

*Only PAT-Tester and Appliance

2.3 Network Requirements

This table is for reference when configuring a firewall and other network equipment.
Relevant network ports are:

Device	Port	Protocol	Description
EL-Software Server	4711	HTTP (and WebSockets)	Required for the client to connect to the server.
EL-Software Server	5711	HTTPS (and WebSockets)	Required for the client to connect to the server securely.
EL-Software Server	5432		Database port is used locally and can be blocked.
EL-Software Server (on Appliance and PAT-Tester)	445	SMB	Access to script data exports
PAT-Tester	22	SSH	Required by the EL-Software Server for updates, etc., and administration
PAT-Tester	4712	HTTP (and WebSockets)	Required by the server for the connection
PAT-Tester	5712	HTTPS (and WebSockets)	Required by the server for a secured connection

3 EL-Software Server (and Client) Installation

First, we will briefly show you how to set up the server component on a Microsoft Windows Server or Microsoft Windows.

1. Please visit the EL-Cell website first to download the EL software: https://www.el-cell.com/products/el-cell-software/el-software/#downloads

2. Once the download is complete, start the installation.

3. Select "Client" and "Server Components," then click "Next."

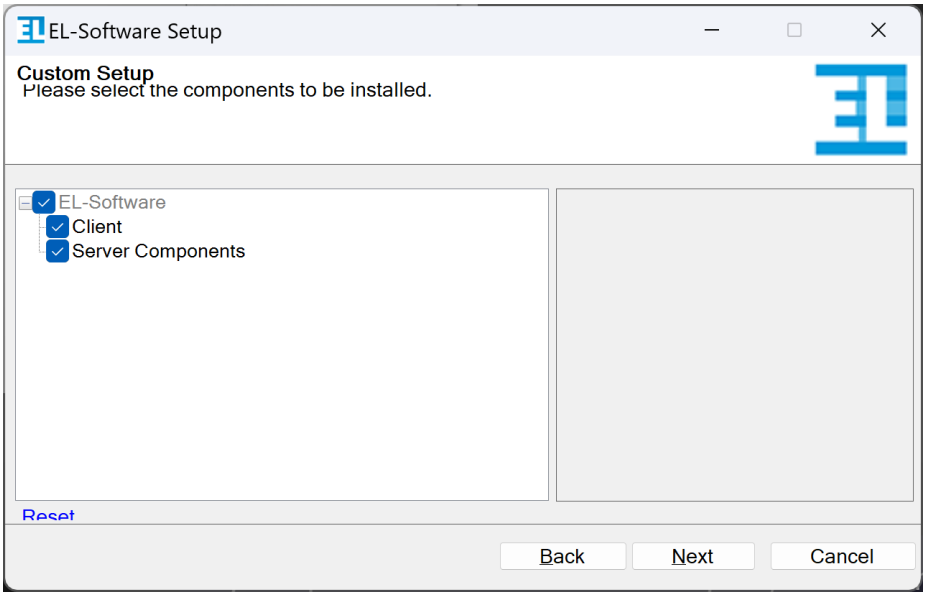

Figure 2: Component Selection on Installation

4. Review the predefined settings on the database page first. Suppose you have a separate SSD available for the database. In that case, it is recommended to use it, as the scripts can generate a large amount of data, potentially filling up the system disk. Click "Next" to confirm.

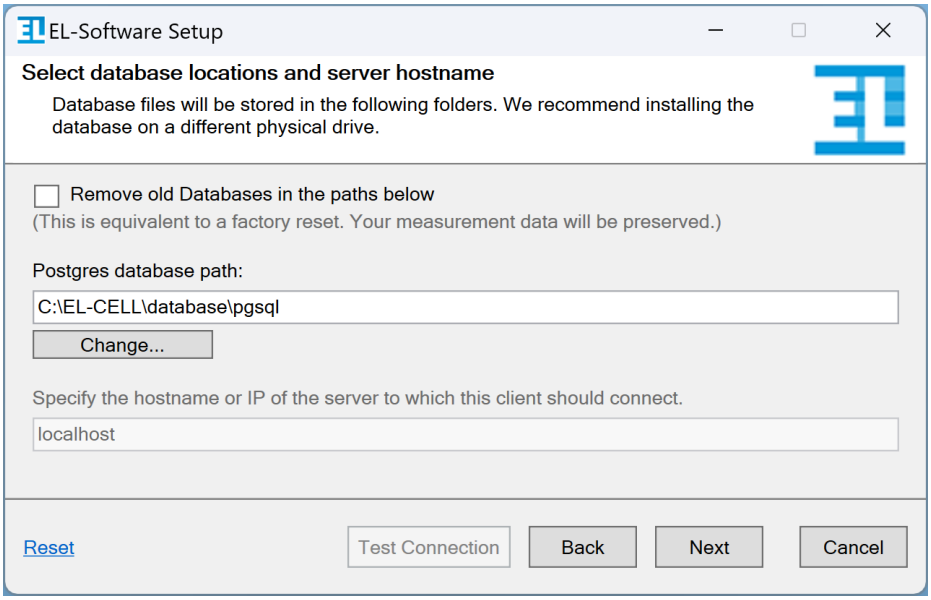

Figure 3: Database Settings on Installation

5. After installing, you can start the EL-Software Client from the Windows Start Menu.

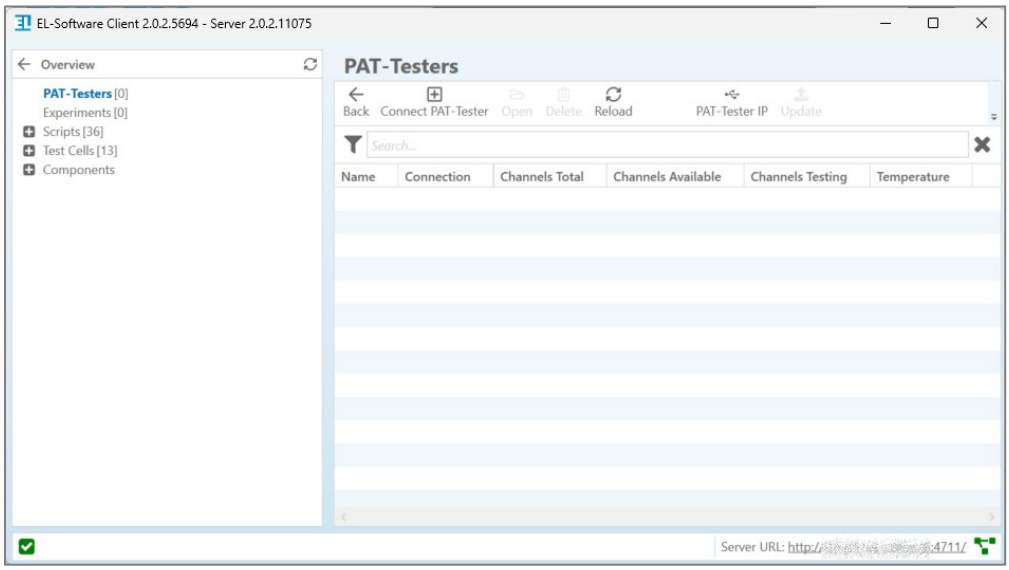

Figure 4: EL-Software Client

4 EL-Software Client (Only) Installation

If you use a dedicated server for the EL-Software Server, the EL-Software Client must be installed separately on a client PC.

Repeat the EL-Software Server installation, but **do not select the "Server Component."**

On the database page, enter the server's IP address to which the client should connect.

5 Prepare Network for PAT-Tester Connection

To ensure a smooth connection to the PAT-Tester, it is essential to configure the network correctly before proceeding with the installation. The PAT-Tester can be easily connected to your network through a direct LAN connection, a switch, or a router with DHCP enabled. This chapter provides simplified guidelines to help you understand and establish a connection to the PAT-Tester.

Understanding IP Configuration

Predefined IP: Starting in 2025, the PAT-Tester has a predefined static IP address set to 192.168.67.67. This is typically used for a single PAT-Tester **directly connected** to a computer. If multiple PAT-Testers are used, or if the PAT-Testers need to be integrated into an existing network, DHCP (as explained in the next section) is already prepared and should be used.

DHCP: Alternatively, the PAT-Tester can receive an IP address automatically from a DHCP server, typically provided by your network **router**. This method is preconfigured and is recommended for flexibility and ease of configuration. To determine the assigned IP, check the router's admin page or consult your IT administrator.

Hint: In some cases, the assigned IP address may change. Configuring a static lease on the DHCP server/router can prevent changes to the IP address.

5.1 Setting Up a Direct Connection using the Predefined IP

To set up a direct connection to the PAT-Tester, start by configuring the IP address of the client PC connecting to the device. For example, you can set the computer's IP address to 192.168.67.2, using a subnet mask of 255.255.255.0 (or alternatively, /24 or just 24). It's important to ensure that this IP address does not conflict with other devices on the network, allowing for smooth communication with the PAT-Tester.

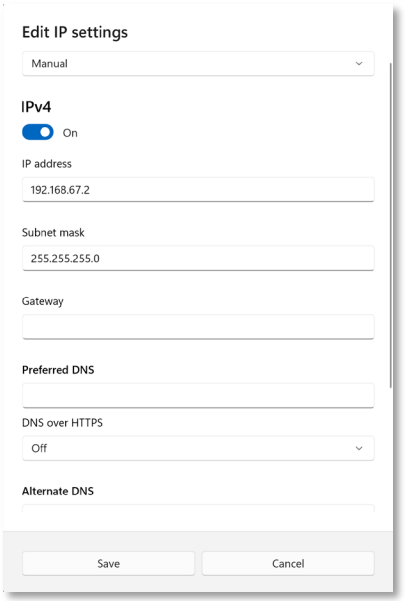

Figure 5: Network Configuration for Direct Connection on Windows 11

Connect the PAT-Tester to the client PC using a standard network cable for a direct connection. This method bypasses the need for additional network hardware, such as routers.

Alternatively, if you prefer, you can connect the PAT-Testers through a switch, allowing multiple devices to be connected within the same network.

5.2 Setting Up With a Router Using DHCP

When using DHCP, the DHCP server automatically assigns the PAT-Tester's IP address, eliminating the need for manual IP configuration and simplifying the setup process.

The process for finding the PAT-Tester's assigned IP address varies depending on the model.

- For the **PAT-Tester i16**, the current IP address is displayed directly on its screen, making it easy to locate.
- For the **PAT-Tester x8**, check the connected router's administrative interface to find the device's IP address.

Alternatively, if network discovery is available on your computer, you can explore your network environment for discovered PAT-Testers. The assigned IP address can be found by opening the device's settings.

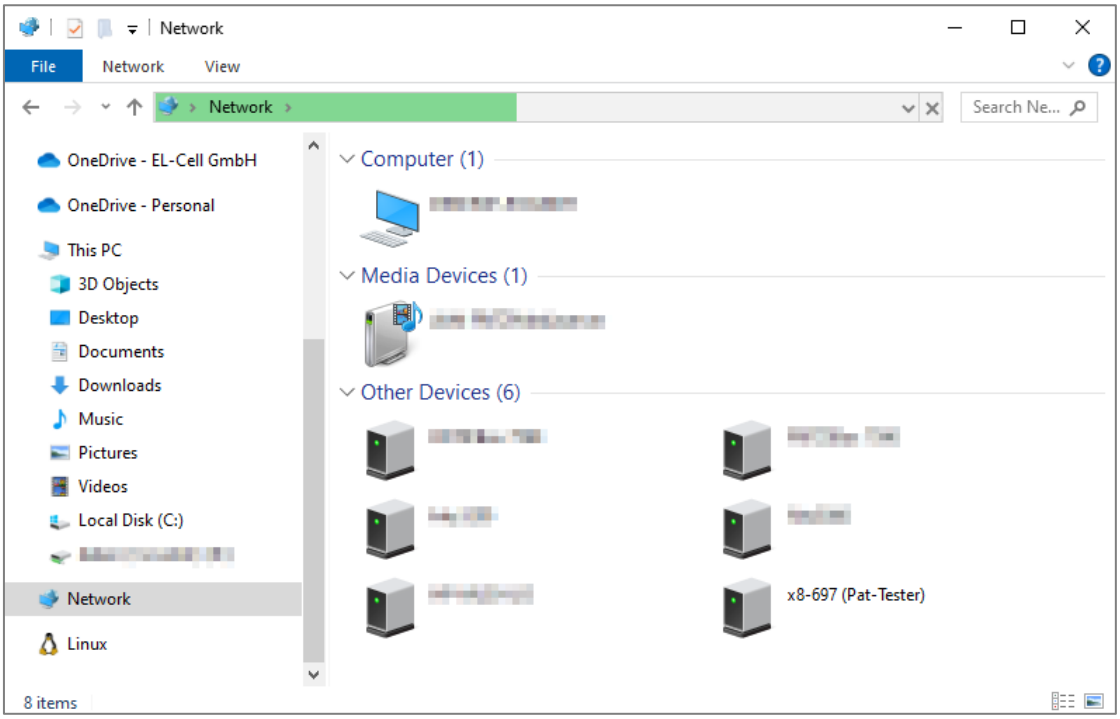

Figure 6: Network Devices discovered by Windows

5.3 Testing the Connection

Begin by checking the LEDs on the network ports being used. If they are blinking, it indicates that a physical connection has been successfully established.

Once connected—whether through a direct setup or DHCP—you can test the connection to the PAT-Tester. To do so, open a web browser and navigate to http://[PAT-Tester-IP]:4712, replacing [PAT-Tester-IP] with the actual IP address of your PAT-Tester. This will take you to a special administration page, which will be explained later.

If you can access the administration page, the connection is correctly established.

PLEASE NOTE
Starting with Version 2.4, there will be a redirect to **https**://[PAT-Tester-IP]:5712. You may encounter a security warning due to an unknown certificate, but this can be safely confirmed in this case.

5.4 Troubleshooting

IP Conflicts: If you encounter IP conflicts, refer to the later chapter, "Connecting the PAT-Tester," for instructions on changing the PAT-Tester's IP.

If the DHCP Lease expires and the PAT-Tester IP has changed: Consider using a static lease or setting up a static IP**,** as detailed in "Connecting the PAT-Tester."

Using Router WAN or ETH1 Port: Use other ports designated for LAN connections.

Check Network: If the PAT-Tester Administration Page does not show up, perform a network ping test to check connectivity.

This overview should assist you in setting up and troubleshooting your PAT-Tester connection, ensuring the device's efficient and effective use in your network environment.

6 Connecting the PAT-Tester

To begin, launch the client from the Start menu.

Make sure to remember the IP address of the PAT-Tester from the network setup.

Next, click "PAT-Testers" in the left navigation menu in the client interface. After that, click "Connect PAT-Tester" in the toolbar to initiate the connection.

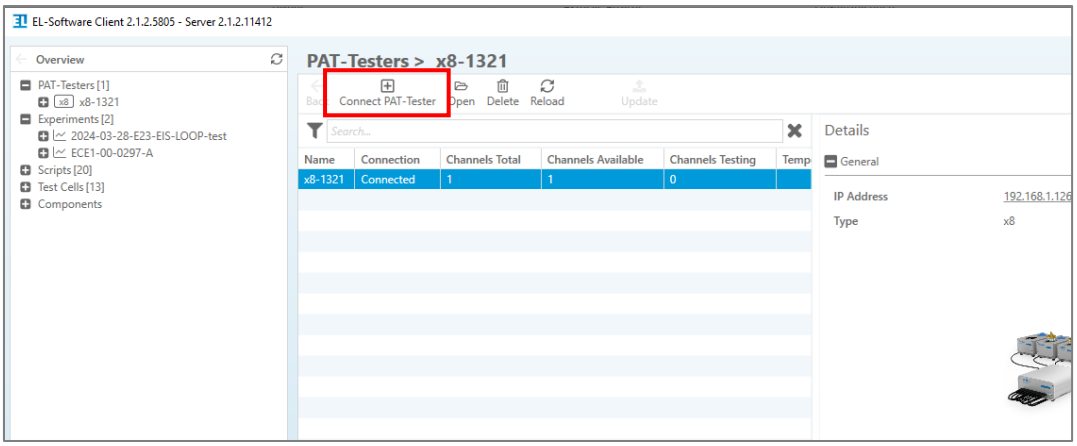

Figure 7: Connect PAT-Tester

To connect, select a discovered PAT-Tester from the list. You can manually enter the name and IP if the search does not yield any results.

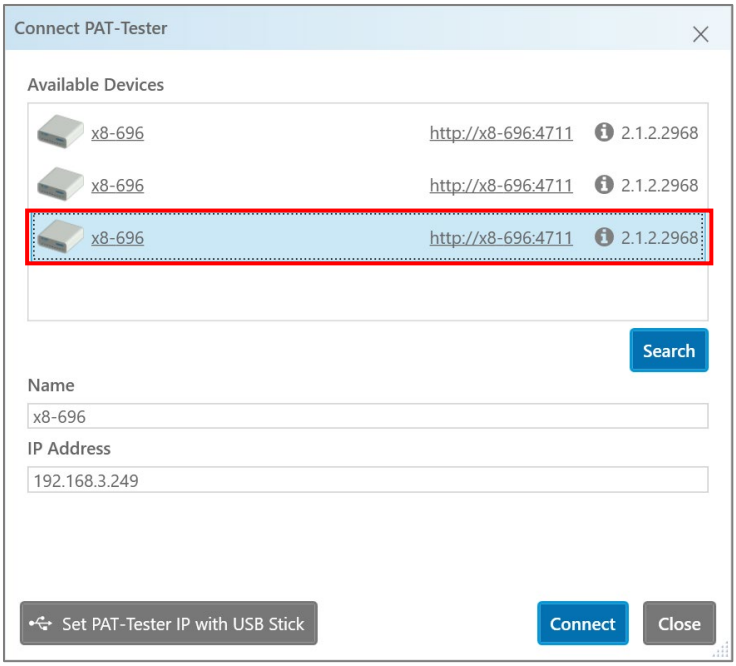

Figure 8: Select PAT-Tester to Connect

To administrate the PAT-Tester, please visit the administrator web user interface through the URL: **http://[PAT-Tester-IP]:4712**

6.1 Changing the PAT-Tester IP

If a different configuration is needed, it can be prepared as shown.

Go to *PAT-Testers*, select the device, and open the "Connect PAT-tester" dialog.

Then click on "Set PAT-Tester IP with USB Stick."

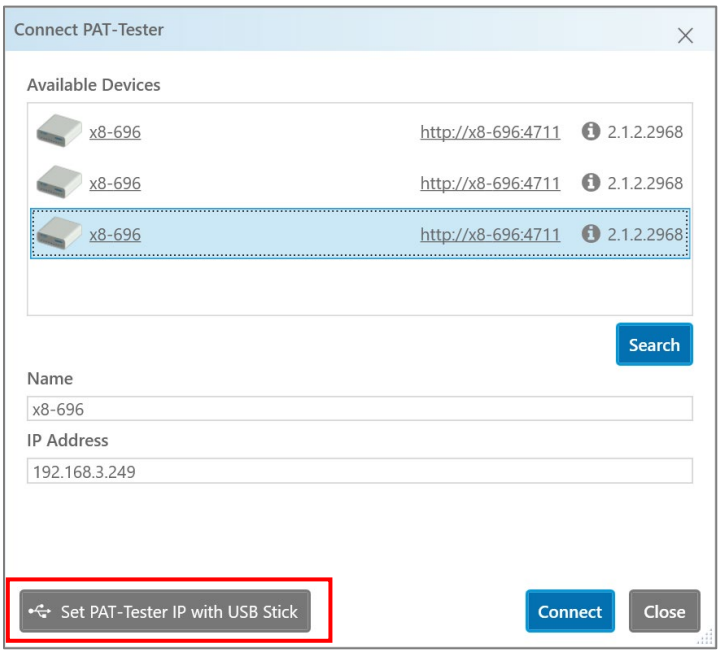

Figure 9: Change PAT-Tester IP

In this dialog, enter the IP address, for example, 192.168.67.67. The subnet mask should be set to 255.255.255.0.

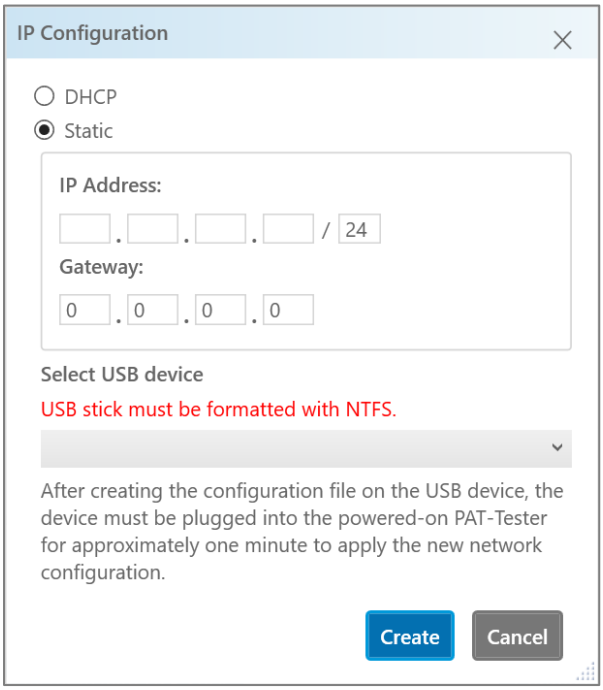

Figure 10: Enter New IP for the PAT-Tester

After the configuration is prepared, the USB stick must be inserted into the PAT-Tester and left there for approximately one minute until the configuration takes effect. Then, unplug the USB stick.

6.2 Decoupling a connected PAT-Tester

If you want to disconnect a connected PAT-Tester, open the device's administration website (http://[PAT-Tester-IP]:4712). Then, navigate to the settings and click on "Decouple."

Note that the position of the "Decouple" button changes in Version 2.1 and later.

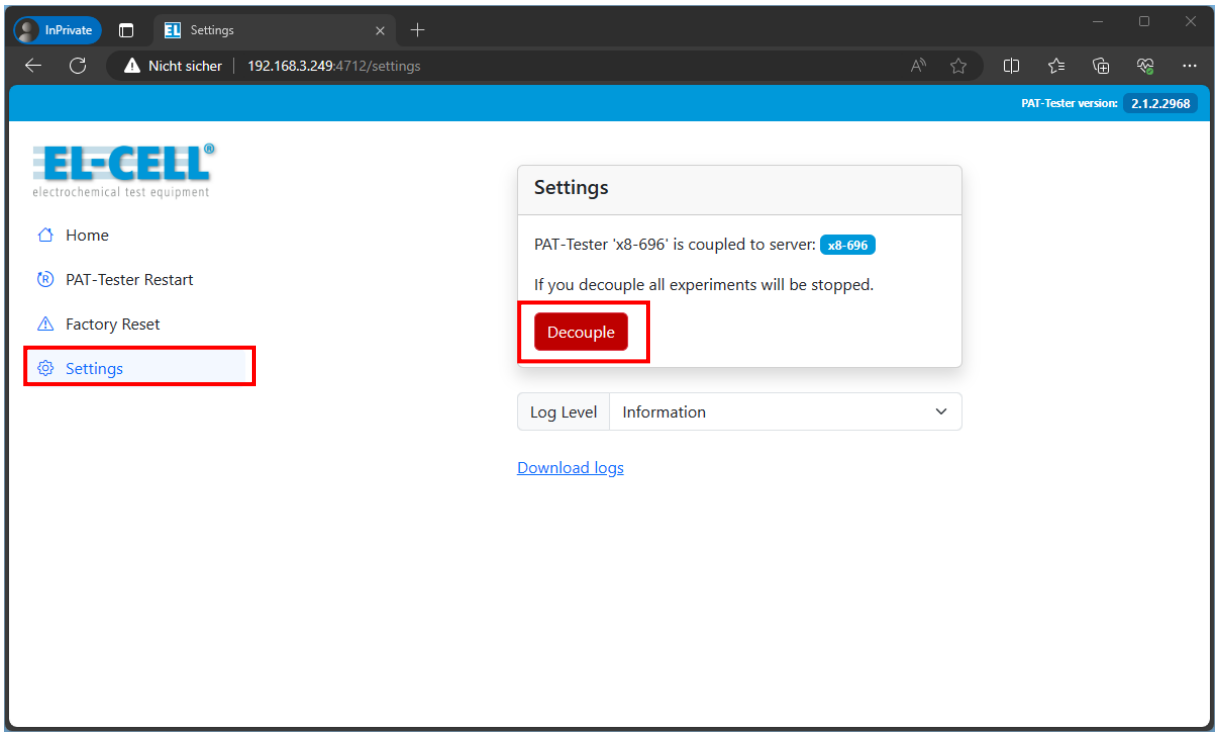

Figure 11: Decouple PAT-Tester from other Server

7 Create Your First Experiment

Once the PAT-Tester is connected, you can create an experiment. Click on *Experiments* in the left navigation menu and then "New Experiment" in the menu bar.

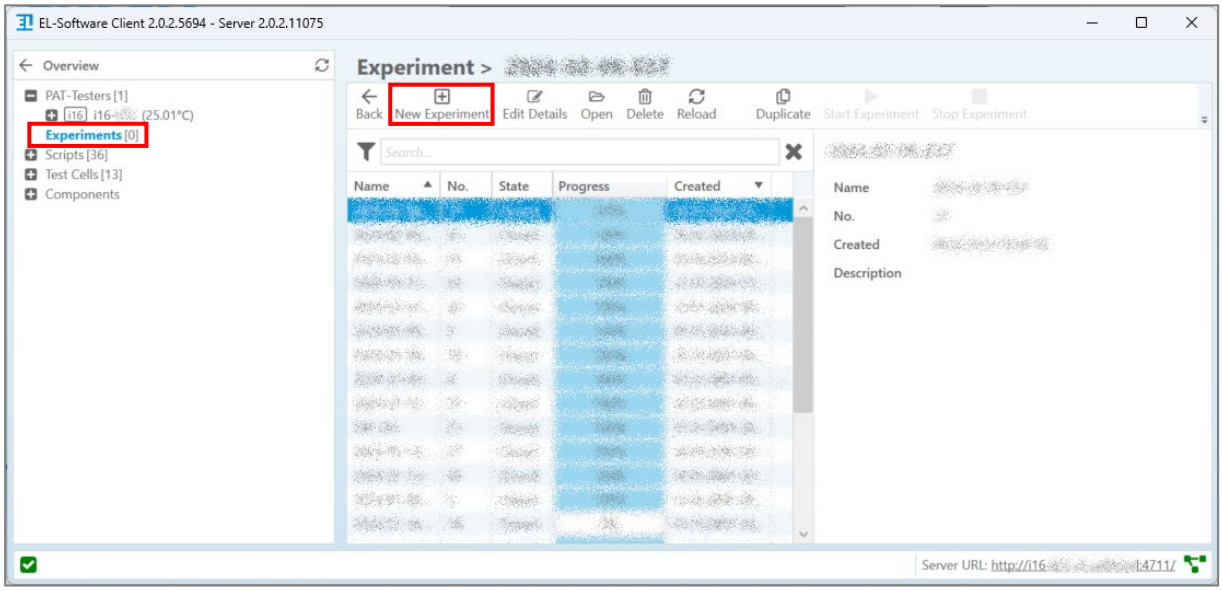

Figure 12: Create an Experiment

Make sure to insert a PAT-Cell in the PAT-Tester first. If the PAT-Cell has no PAT-Button, create a PAT-Cell manually in the client (to do this, click on *Test Cells* in the left menu, then on "Create" in the menu bar). Add at least one test cell to the experiment.

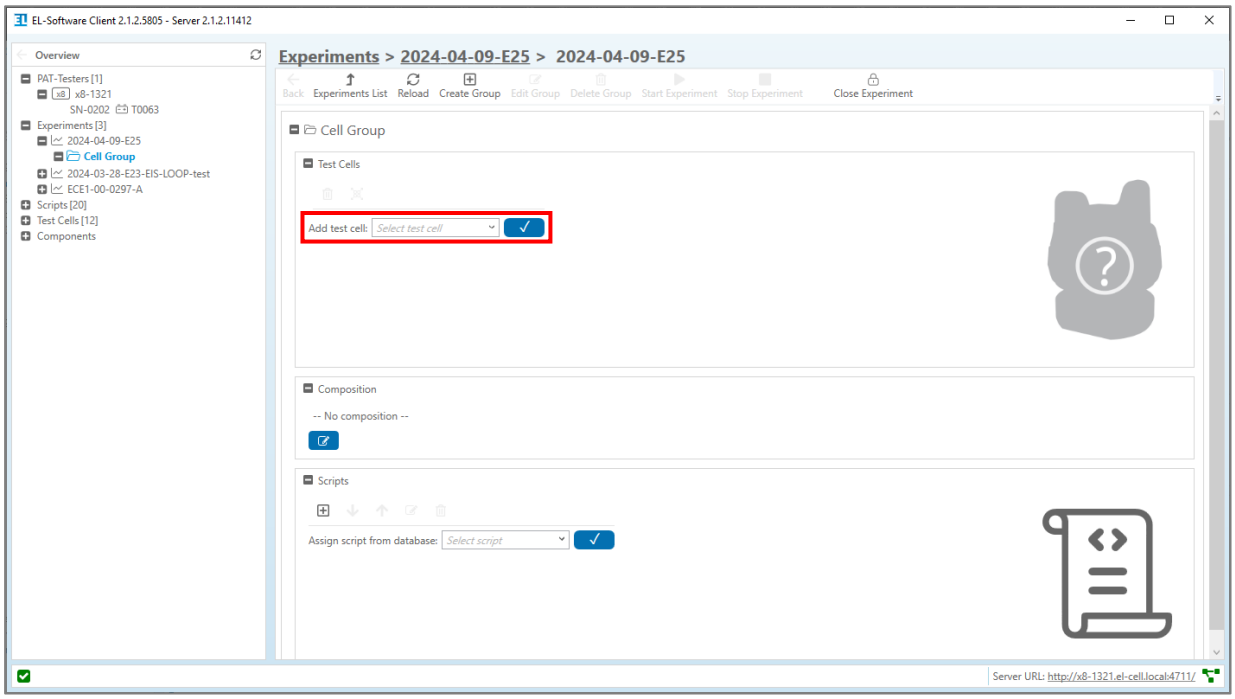

Figure 13: Select a Test Cell

Now, add a script to the experiment.

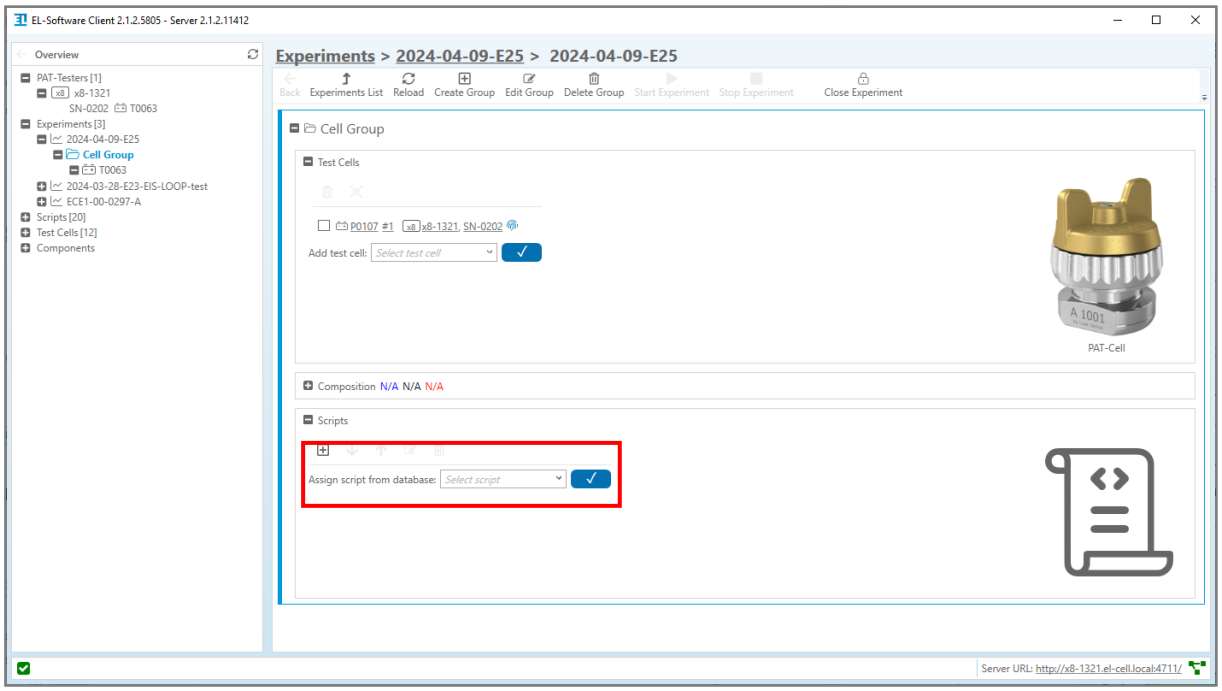

Figure 14: Select a Script

The experiment can be started now.

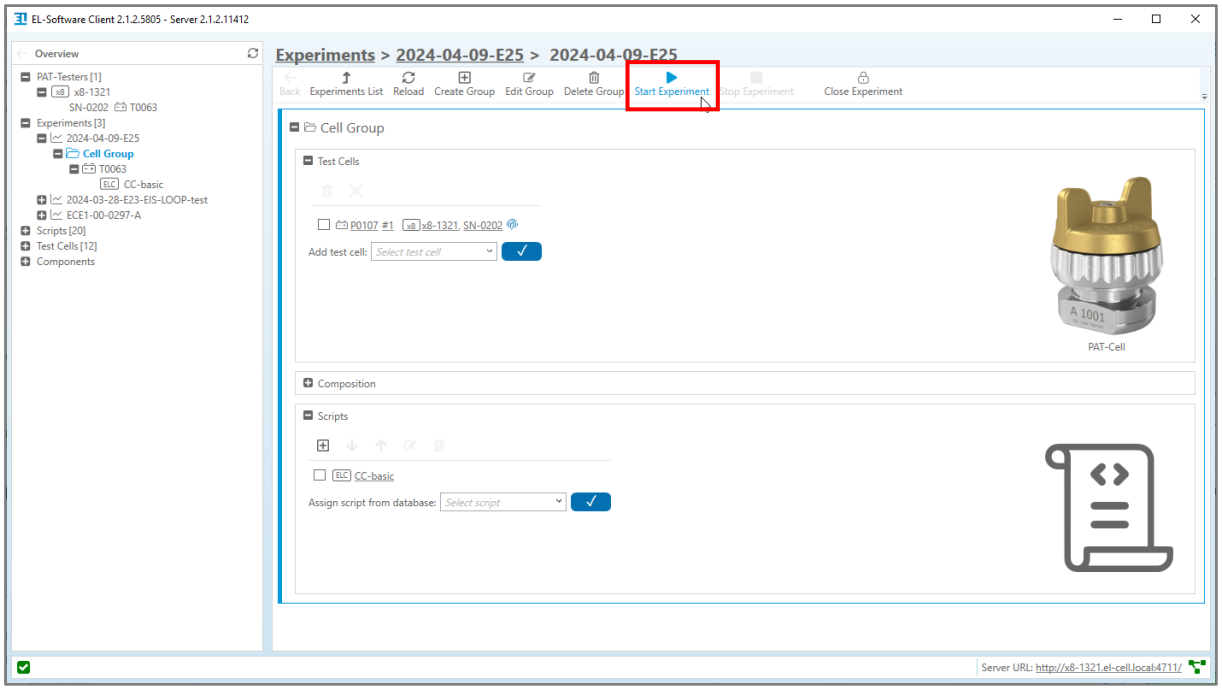

Figure 15: Start the Experiment

Click on a script name in the Test Cell section to enter the Data View. Here, you can see the measurement data.

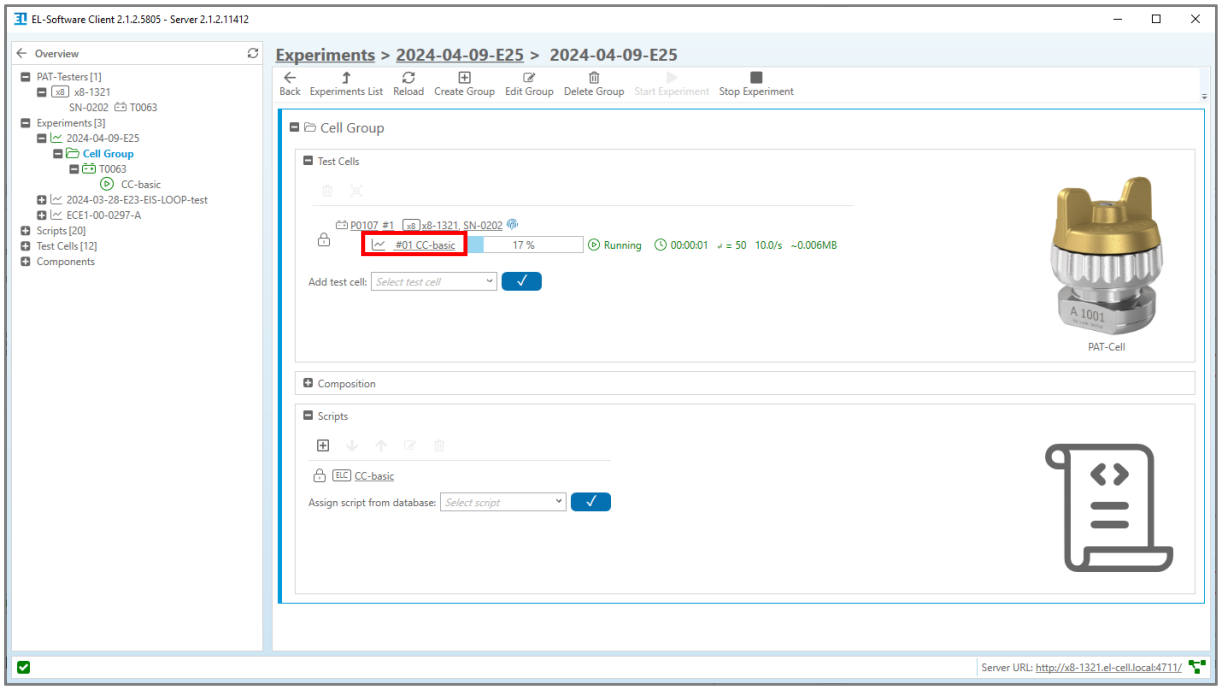

Figure 16: Open Data View

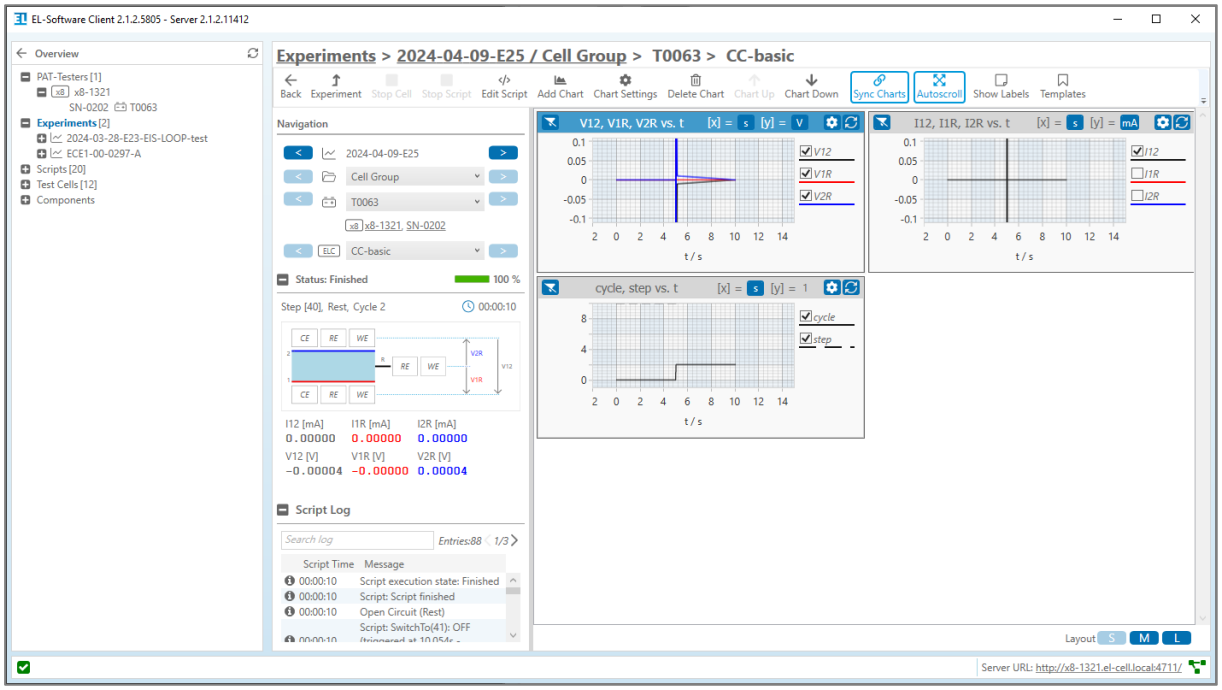

Figure 17: Data View

8 Access Administration Pages

All PAT-Tester devices and EL-Software Server installations can be administered via a built-in website.

8.1 Access the PAT-Tester Administration Page

Access via web browser:

Before Version 2.4:

http://[PAT-Tester-IP]:4712 (Example: http://192.168.1.126:4712)

Since Version 2.4:

http**s**://[PAT-Tester-IP]:**5**712 (Example: https://192.168.1.126:5712)

Access via EL-Software Client

To access the PAT-Tester administration page, go to *PAT-Testers* and select a device from the list. Click on the link on the right side to open it in a web browser:

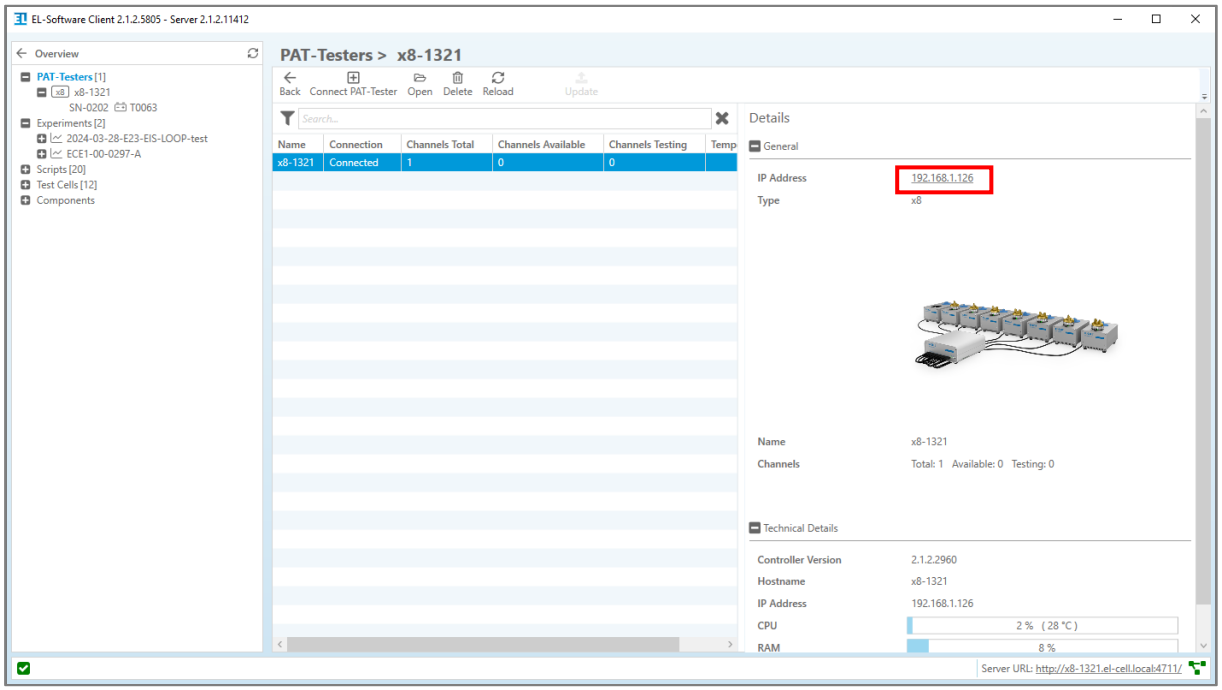

Figure 18: Open PAT-Tester Administration Page from the Client

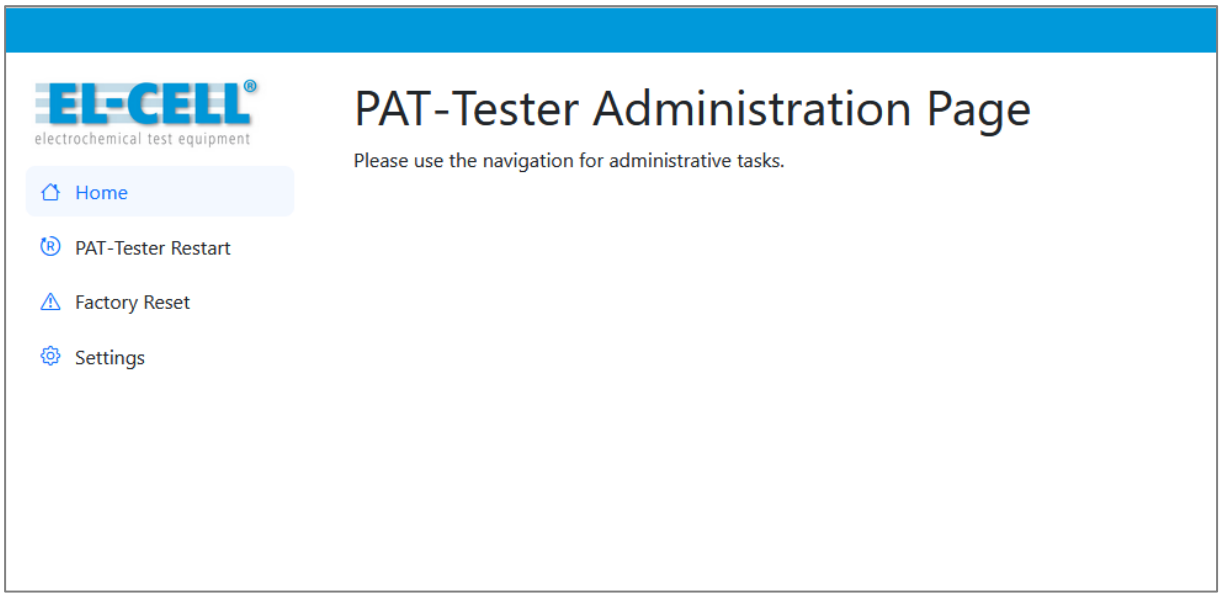

Figure 19: PAT-Tester Administration Page

8.2 Access the EL-Software Server Administration Page

Access via web browser:

Before Version 2.4:
http://[Server-IP]:4711 (Example: http://192.168.1.126:4711)

Since Version 2.4:
http**s**://[Server-IP]:**5**711 (Example: https://192.168.1.126:5711)

Access via EL-Software Client

To open the EL-Software Server Administration page, click the link in the footer.

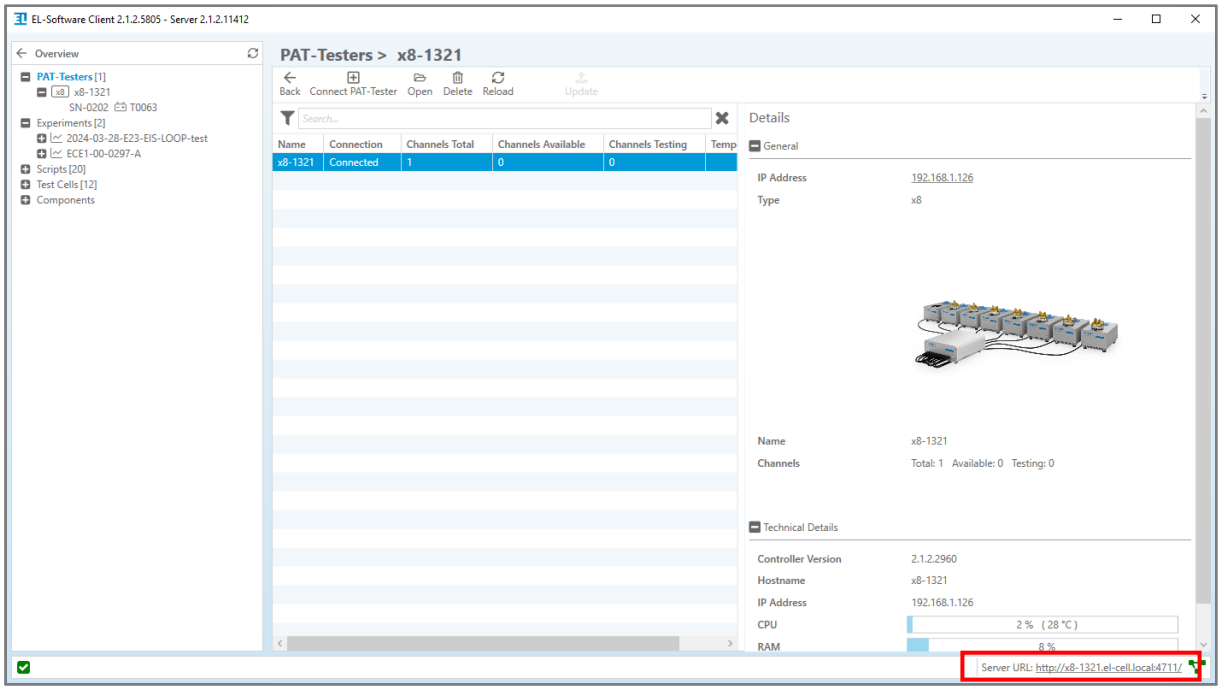

Figure 20: Open EL-Software Server Administration Page

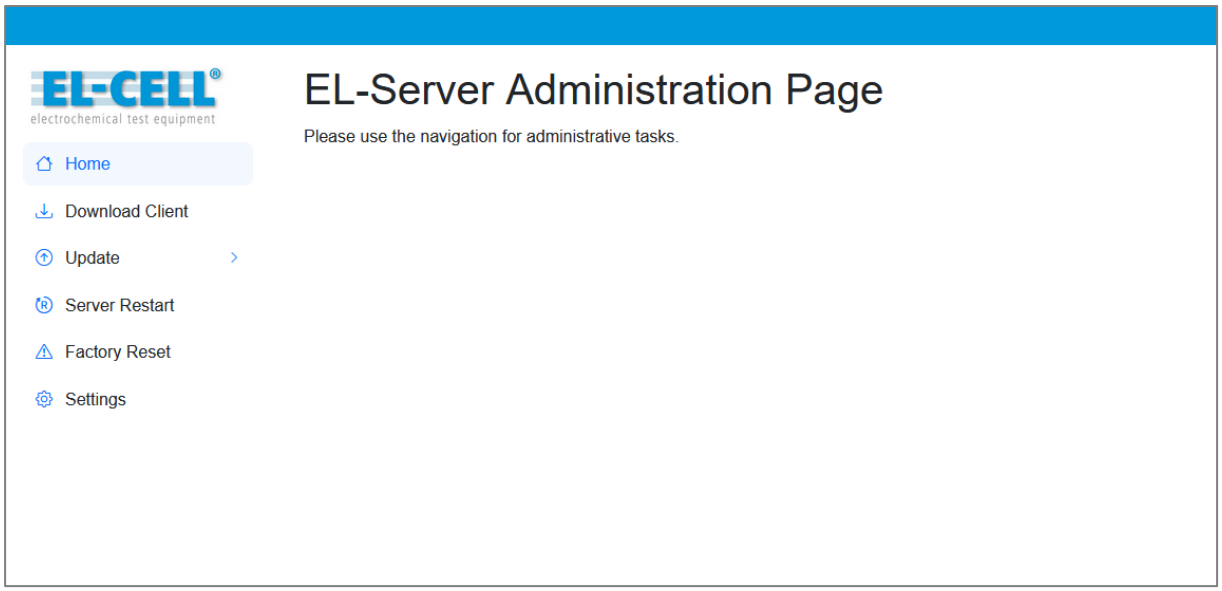

Figure 21: EL-Software Server Administration Page