

Installation & Quick Start Guide

Release 2.4

For EL-Software Version 2

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Content

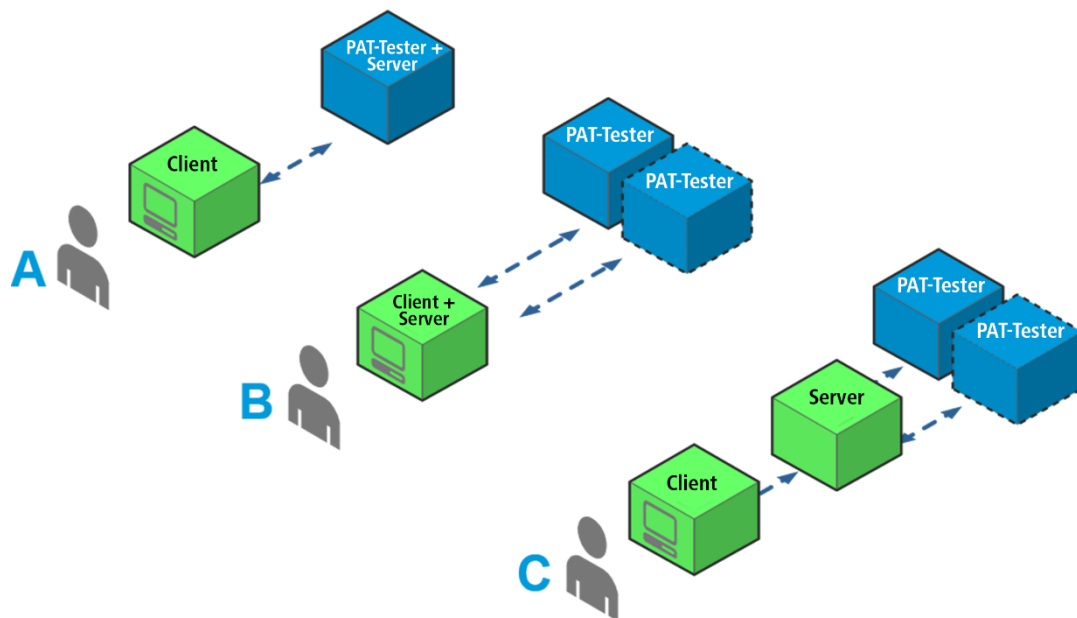
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1 Introduction

Congratulations on your new PAT-Tester. This document is a quick start guide for setting up your PAT-Tester. Please read it carefully. You will first need to choose one of the possible scenarios, then set up the network and install the software.

1.1 Different Setup Scenarios

EL-Software, the software for operating the PAT-Tester, can be used flexibly, depending on your requirements. Please review Scenarios A to C. Please also note the increased complexity with each scenario.



The main components are the EL-Software Client (Client), EL-Software Server (Server), and the PAT-Tester.

The *EL-Software Client* is a stand-alone software for end users that provides a graphical interface for controlling and working with PAT-Testers. It can be installed on any Client PC in the network.

The *EL-Software Server* hosts the database and serves as the interface between the EL-Software Client and the PAT-Tester device. The EL-Software Server installation is flexible and can be installed at different locations.

The customer administers the Client and Server PCs (green boxes), except for the appliance.

1.1.1 Scenario A: EL-Software Server running on the PAT-Tester

The most straightforward possible configuration involves running the EL-Software Server component on the PAT-Tester. The installation effort is minimal, as the server component is already pre-installed*. We recommend this scenario for operations with up to 16 channels when only a small amount of data is expected and no backup is necessary.

Please read the chapters "PAT-Tester Network Configuration" and "Connecting the PAT-Tester" for this configuration.

*This scenario is possible for PAT-Testers that are assembled after **01.03.2024**.

1.1.2 Scenario B: EL-Software Server running on the Client PC

The second scenario is based on a laboratory computer running the EL-Software Client and Server component. This is recommended if there is only one laboratory computer, more storage space is needed, or multiple PAT-Testers are being used. Please note the higher requirements for the computer to run the EL-Software Server.

Please read the chapter "EL-Software Server (and Client) Installation", "PAT-Tester Network Configuration", and then "Connecting the PAT-Tester" for this configuration.

1.1.3 Scenario C: EL-Software Server running on a dedicated Server PC

A dedicated server PC is required for demanding use with lots of data, multiple testers, and integration into the company network.

For this configuration, please start with the chapter "EL-Software Server (and Client) Installation" and study the other chapters too. Feel free to contact us if you have questions about integrating our devices into your company 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 a 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 is thus variable depending on the application. **The hardware requirements of the EL-Software Server should therefore only be regarded as 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 2019 Windows 10 21H2 or later Windows 11 Linux Ubuntu 18.04*	Windows 10 21H2 or later Windows 11
Other		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 (WebSockets)	Required for the client to connect to the server.
EL-Software Server	5432		Database port is used locally and can be blocked.
EL-Software Server (on Appliance and PAT-Tester)	22	SSH	Administrative Connection using SSH
EL-Software Server (Appliance)	8006	HTTPS	Administrative Connection to Proxmox
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 (WebSockets)	Required by the server for the connection

3 EL-Software Server (and Client) Installation

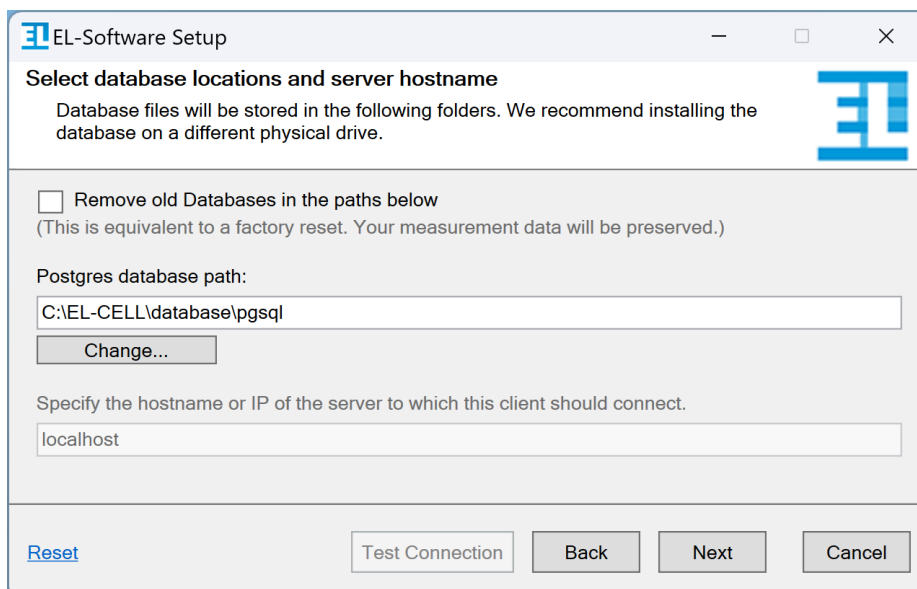
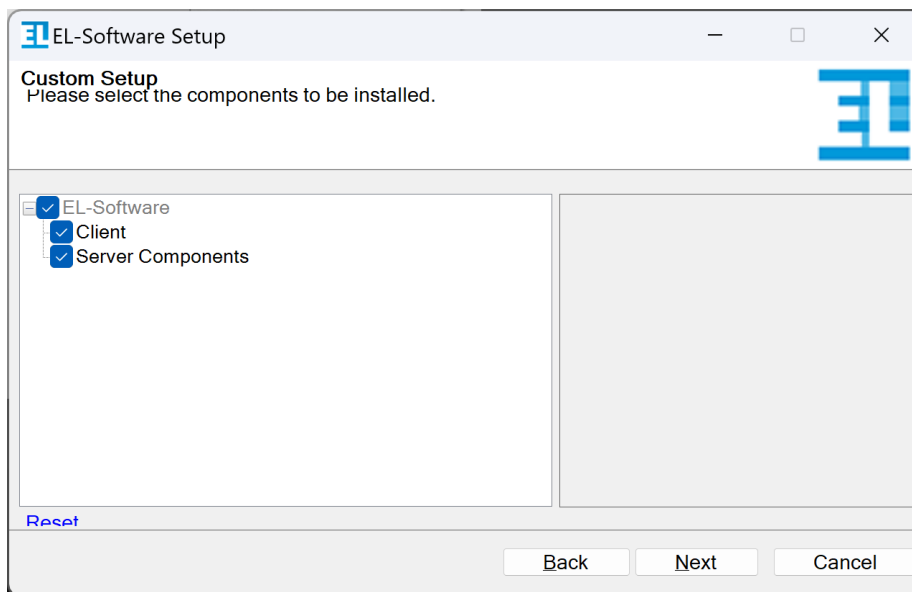
First, we will briefly show you how to set up the server component on a Microsoft Windows Server or Microsoft Windows.

Please visit the EL-Cell website first to download the EL software:

<https://www.el-cell.com/products/el-cell-software/el-software/#downloads>

Download the MSI installation package for version 2 or newer and install it.

For the database data, we recommend a separate SSD.



After installing, you can start the EL-Software Client from the Windows Start Menu. The EL-Software Client is also installed and can be started from the Windows Start Menu.

4 PAT-Tester Network Configuration

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 simple guidelines to help you understand and establish a connection to the PAT-Tester.

Understanding IP Configuration

Predefined IP: The PAT-Tester's predefined IP address is set to 192.168.67.67. This allows for a predictable and straightforward setup when connecting directly.

DHCP: Alternatively, the PAT-Tester can receive an IP address automatically from a DHCP server, typically provided by your network router. This method is recommended for flexibility and ease of configuration.

4.1 Setting Up a Direct Connection

Configure Client PC: Set the IP address of the computer connecting to the PAT-Tester to, for instance, 192.168.67.1, with the subnet mask set to 255.255.255.0 (alternative notation: /24). Ensure the IP does not conflict with other devices to enable seamless communication with the PAT-Tester.

Direct Cable Connection: Connect the PAT-Tester directly to the client PC using a standard network cable. This setup bypasses the need for additional network hardware like routers.

Switch: Alternatively, connect your PAT-Testers through a switch.

4.2 Setting Up With a Router Using DHCP

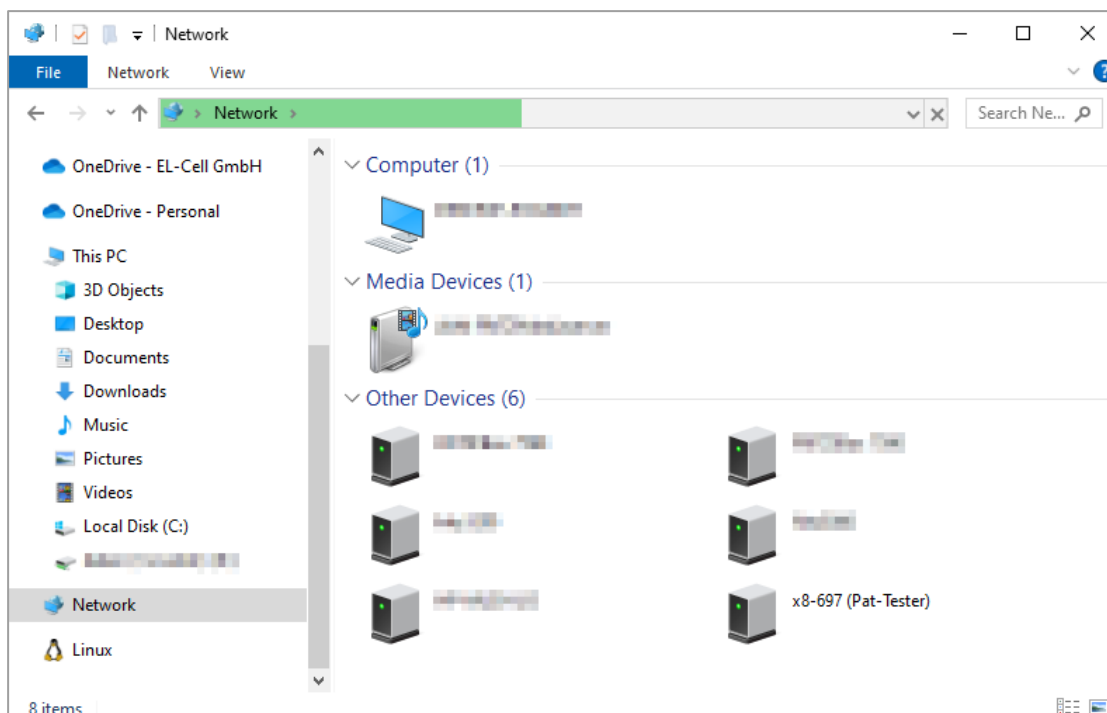
Automatic IP Assignment: When using DHCP, the DHCP server assigns the PAT-Tester's IP address. There is no need for manual IP configuration, which simplifies the setup process.

Finding the PAT-Tester IP:

PAT-Tester i16: This model directly displays the current IP address on its screen.

PAT-Tester x8: Check the connected router's administrative interface to determine the IP address assigned to this model.

You can also check your network environment for discovered PAT-Testers. The IP address can be found by opening the settings.



4.3 Testing the Connection

First, check if the LEDs on the network cable are blinking. This indicates that a physical connection has been established.

Once connected, whether through a direct setup or via DHCP, you can test the connectivity to the PAT-Tester:

Access Test Page: Open a web browser and navigate to `http://[PAT-Tester-IP]:4712` — replace [PAT-Tester-IP] with the actual IP address of your PAT-Tester. This address takes you to a special administration page that will be explained later.

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

4.4 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.

DHCP Lease Expired and the PAT-Tester IP 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.

5 EL-Software Client Installation from Server

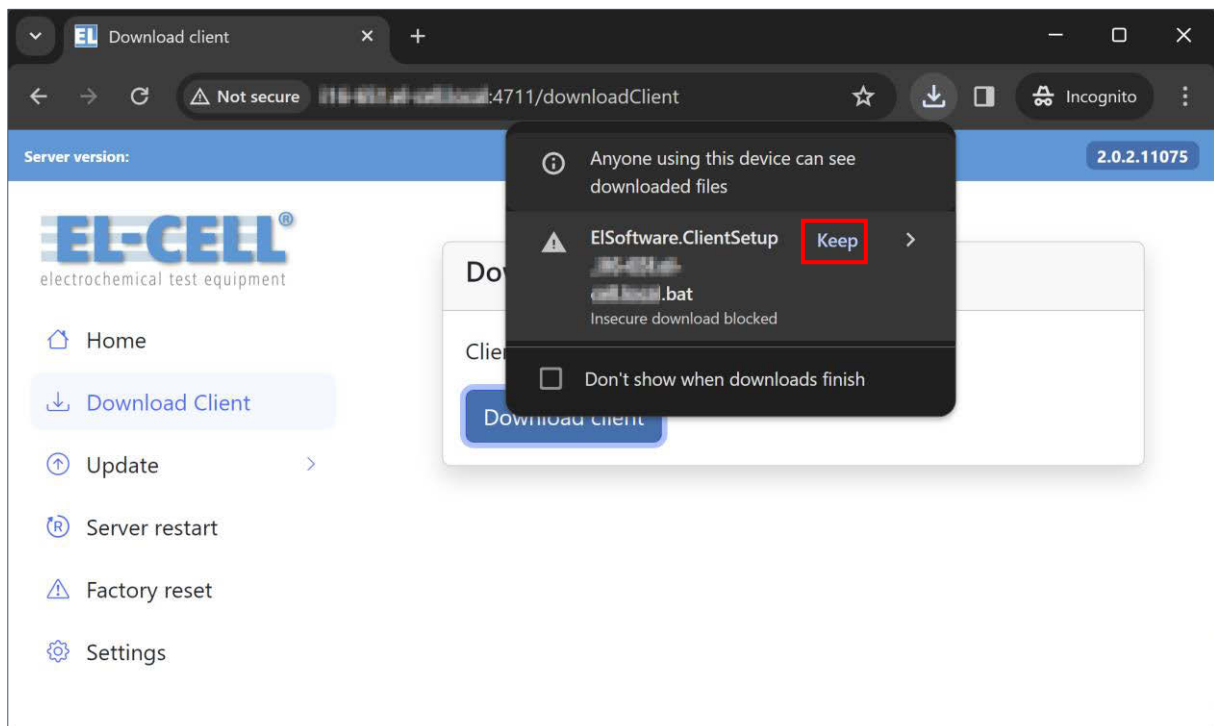
The EL-Software Client can be installed in two ways: with the MSI from the website (please see the chapter "EL-Software Installation") or from the EL-Software Server.

To install it from the EL-Software Server, open the server's admin web interface in your browser and download the client.

[http://\[Server-IP\]:4711](http://[Server-IP]:4711)

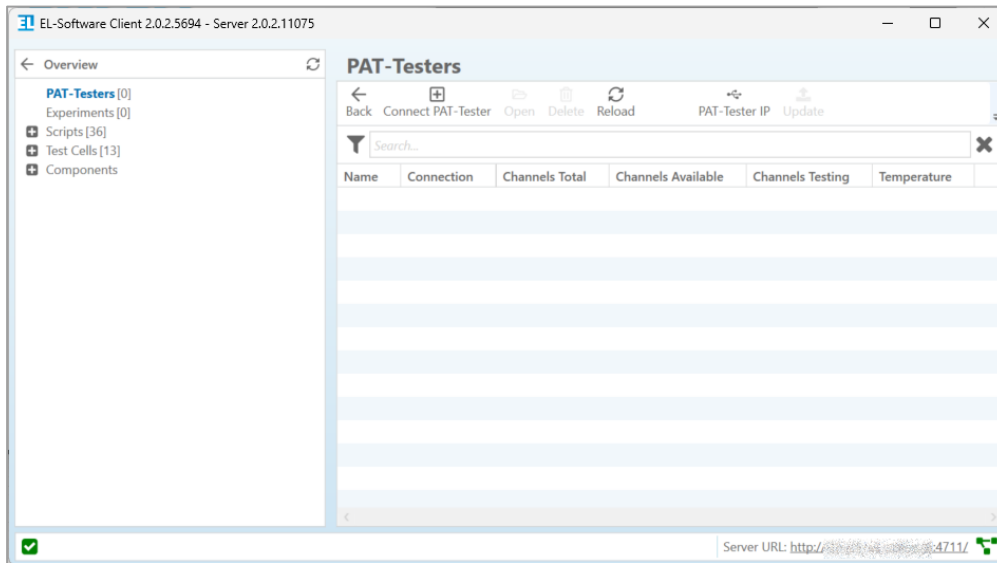
In „Scenario A“ the server IP is the same as the PAT-Tester IP. And in case of a direct network connection the URL is usually the following:

<http://192.168.67.67:4711>



While downloading the client, please confirm that you want to keep the file and start the script.

Next, please start the client via the Windows Start Menu.

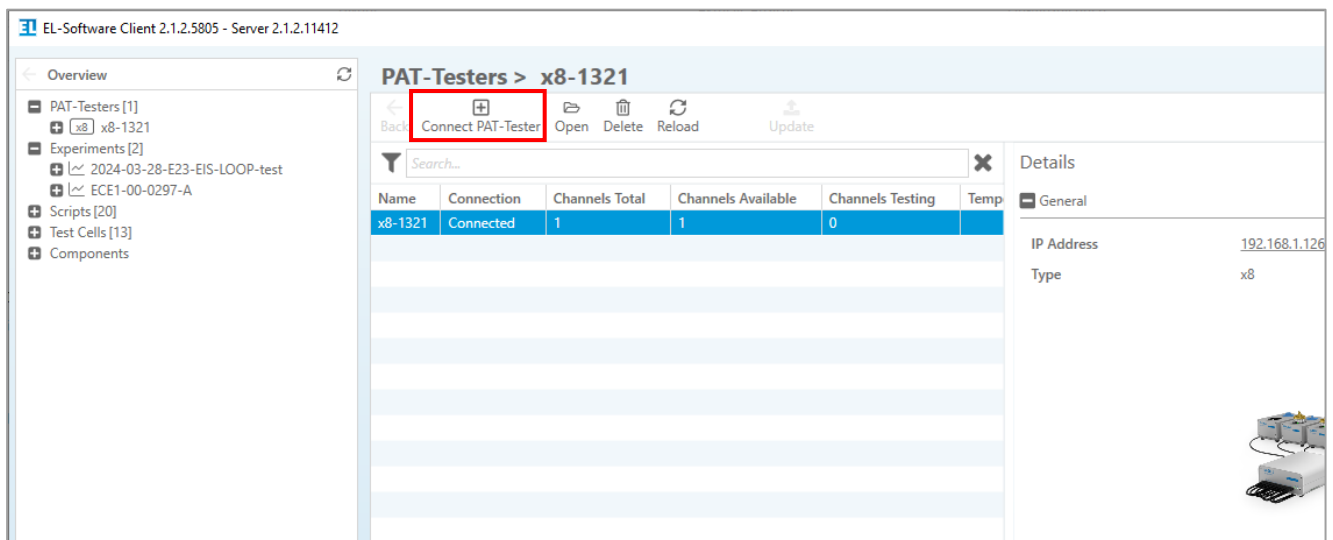


The client installation is complete.

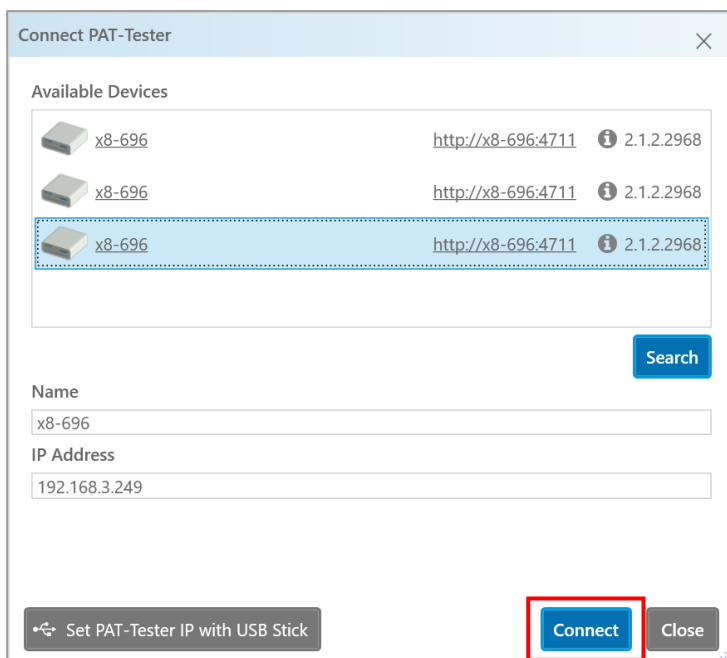
6 Connecting the PAT-Tester

In all scenarios, the PAT-Tester is connected to the network. We recommend using a router with a DHCP server, but a direct connection is also standard.

Please first connect the PAT-Tester to the network. It is helpful to know the IP address for this step. In the EL-Software client application, click "Connect PAT-Tester" in the menu.



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.



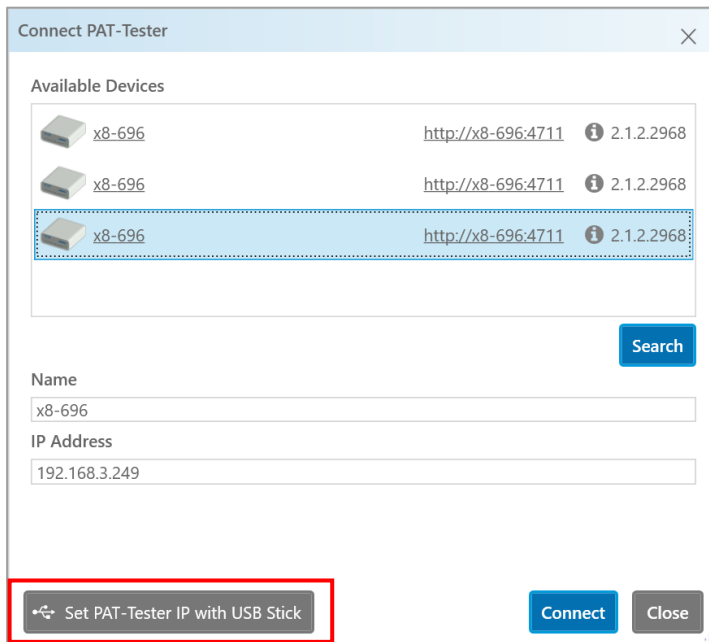
To administrate the PAT-Tester, please visit the administrator web user interface through the URL: [http://\[PAT-Tester-IP\]:4712](http://[PAT-Tester-IP]:4712)

6.1 Changing the PAT-Tester IP

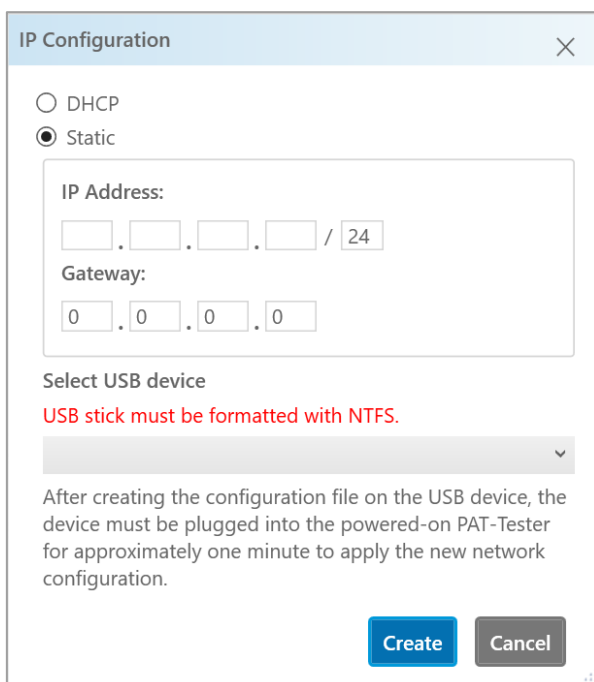
If a different configuration is needed, it can be prepared as shown.

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

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



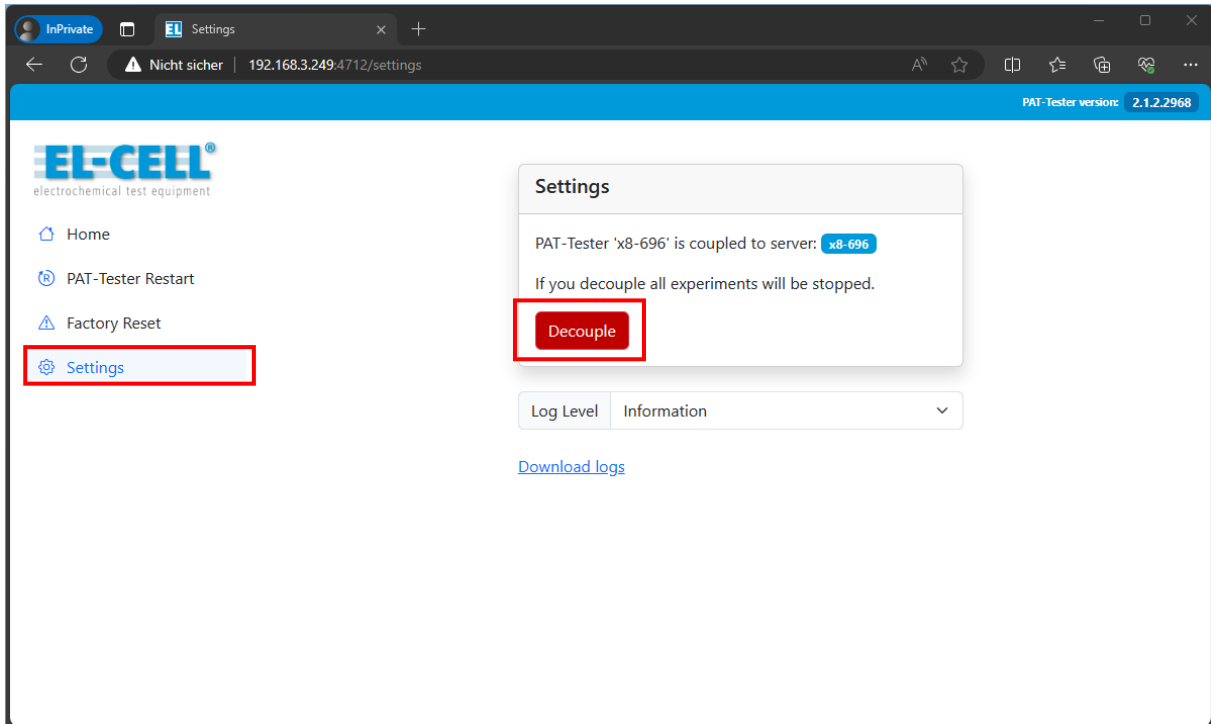
In this dialog, enter the IP address, for example, 192.168.67.67. The subnet mask should be set to 255.255.255.0.



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.

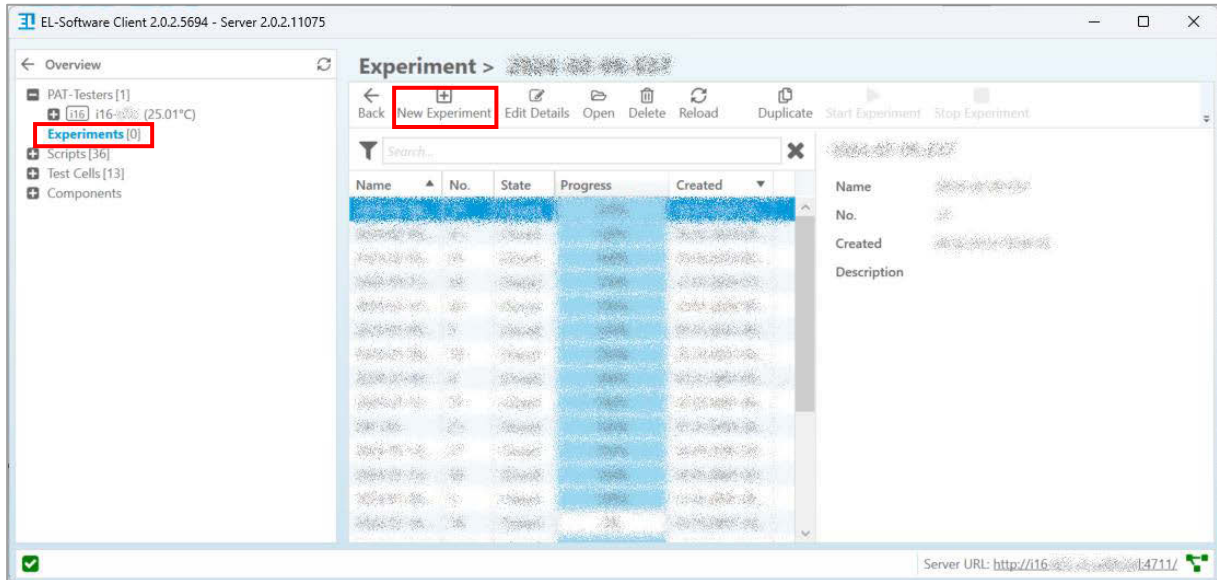
6.2 Decoupling a connected PAT-Tester

If you want to decouple a connected PAT-Tester, open the device's Administration Website. Then open the Settings and click on "Decouple."



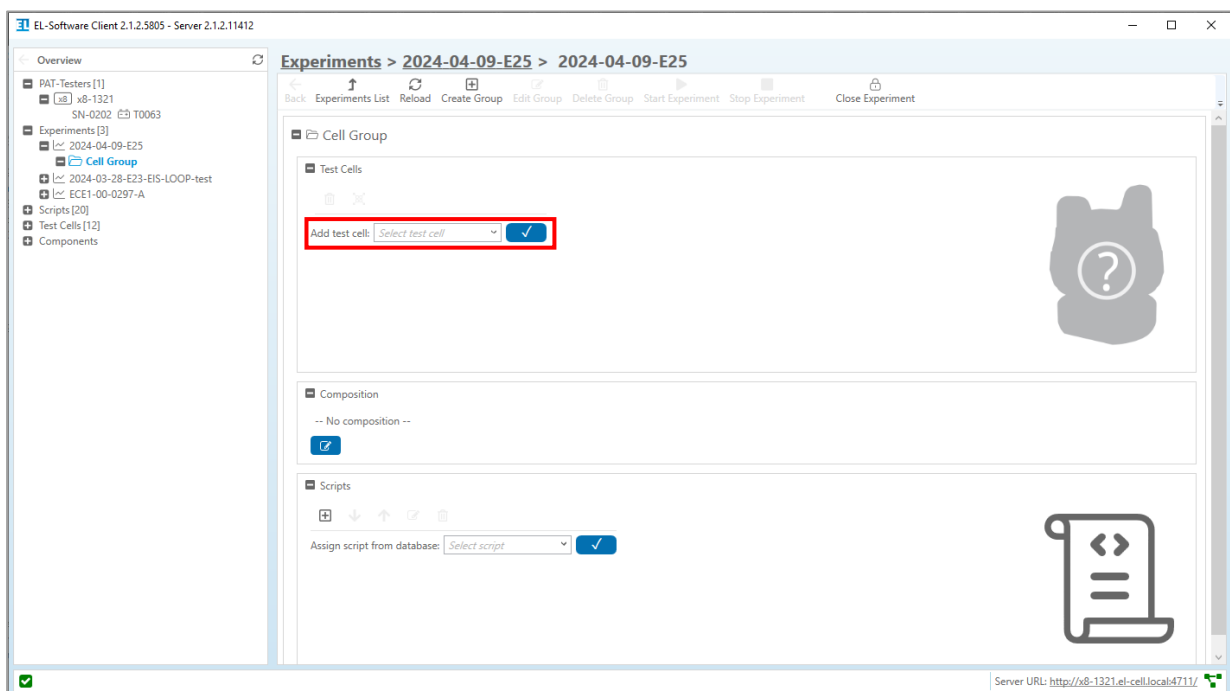
7 Create Your First Experiment

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.

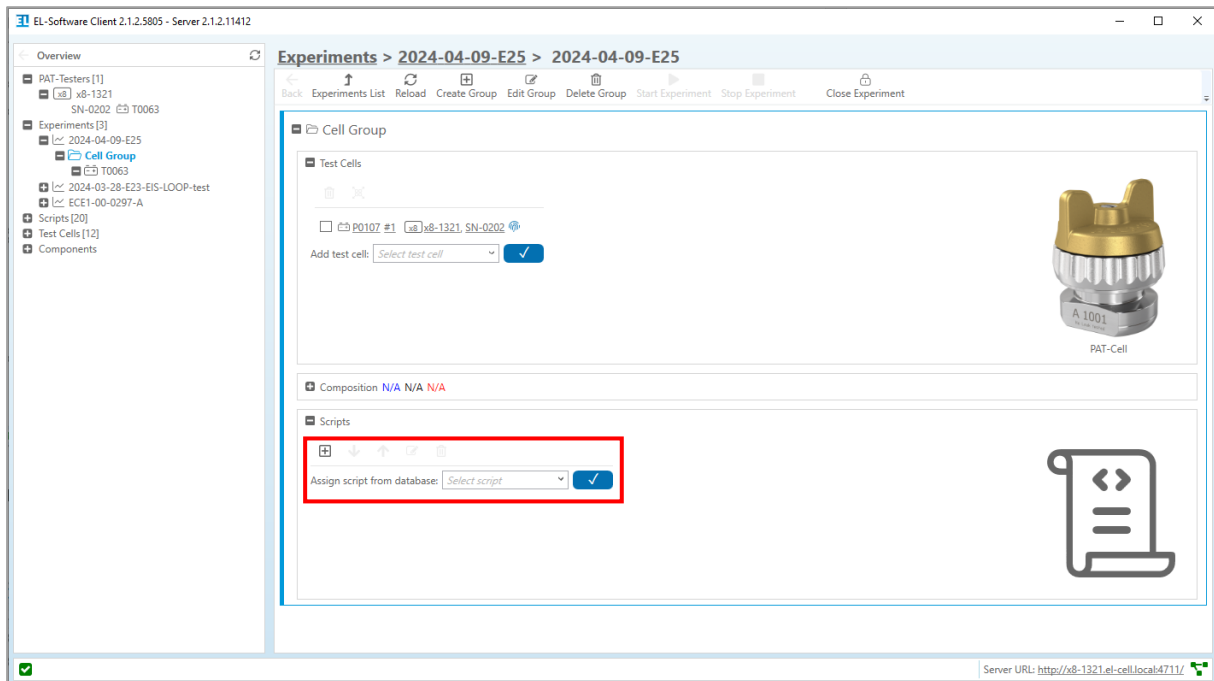


Make sure to insert a PAT-Cell in the PAT-Tester first. If the PAT-Cell has no PAT-Button, create a PAT-Cell manually in the client (To do this, click on *Test Cells* in the left menu, then on “Create” in the menu bar).

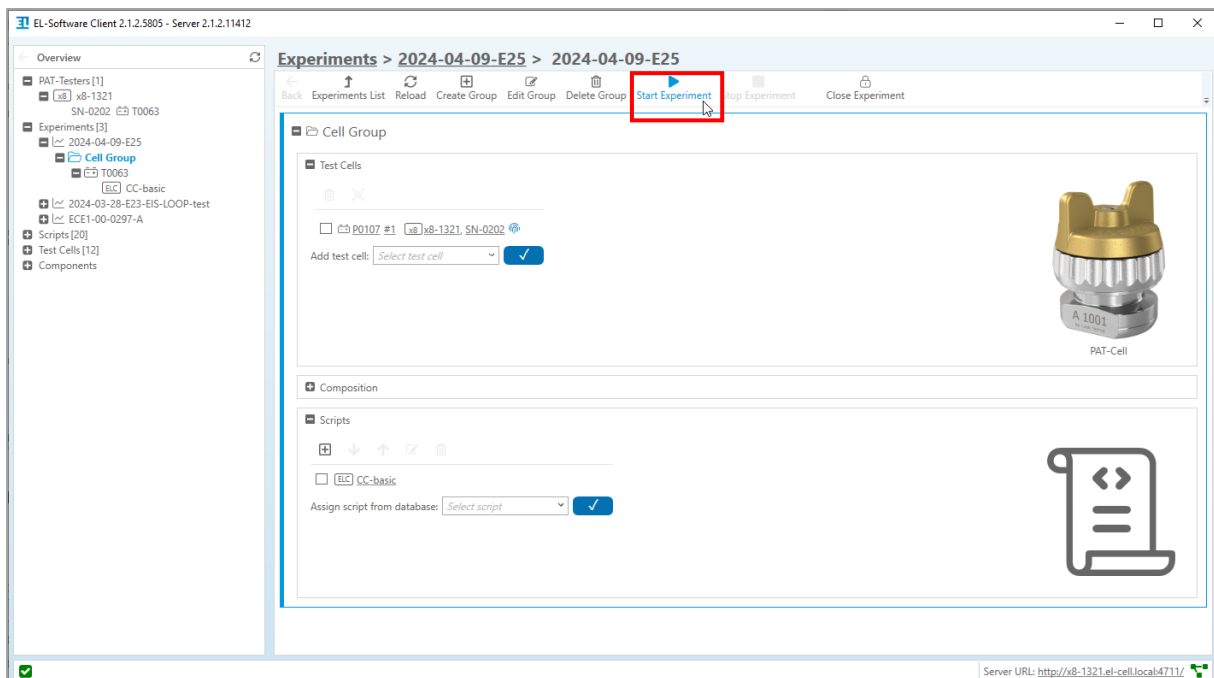
Add at least one test cell to the experiment.



Now, add a script to the experiment.



The experiment can be started now.



Click on a script name in the Test Cell section to enter the *Script Execution Viewer*. Here, you can see the measurement data.

The screenshot shows the 'Script Execution Viewer' window. The title bar indicates 'Experiments > 2024-04-09-E25 > 2024-04-09-E25'. The main area is divided into sections: 'Cell Group', 'Test Cells', 'Composition', and 'Scripts'. In the 'Test Cells' section, a cell named '#01 CC-basic' is highlighted with a red box, showing a status of 'Running' with a progress bar at 17%. Below this, there is a 'PAT-Cell' image and a 'Scripts' section with a 'CC-basic' script selected. The bottom right corner shows the server URL: <http://x8-1321-el-cell.local:4711/>.

The screenshot shows the 'Script Execution Viewer' window for a specific test cell. The title bar indicates 'Experiments > 2024-04-09-E25 / Cell Group > T0063 > CC-basic'. The main area is divided into sections: 'Navigation', 'Status', 'Step', 'Cycle', 'Measurement Data', and 'Script Log'. The 'Status' section shows 'Finished' with a 100% progress bar. The 'Step' section shows 'Step [40], Rest, Cycle 2' with a duration of 00:00:10. The 'Cycle' section shows a cycle diagram with 'CE', 'RE', and 'WE' phases. The 'Measurement Data' section shows three charts: 'V12, V1R, V2R vs. t', 'I12, I1R, I2R vs. t', and 'cycle, step vs. t'. The 'Script Log' section shows a log of script execution events.

Measurement	Value
I12 [mA]	0.00000
I1R [mA]	0.00000
I2R [mA]	0.00000
V12 [V]	-0.00004
V1R [V]	-0.00000
V2R [V]	0.00004

The bottom right corner shows the server URL: <http://x8-1321-el-cell.local:4711/>.

8 Administration Webpages

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

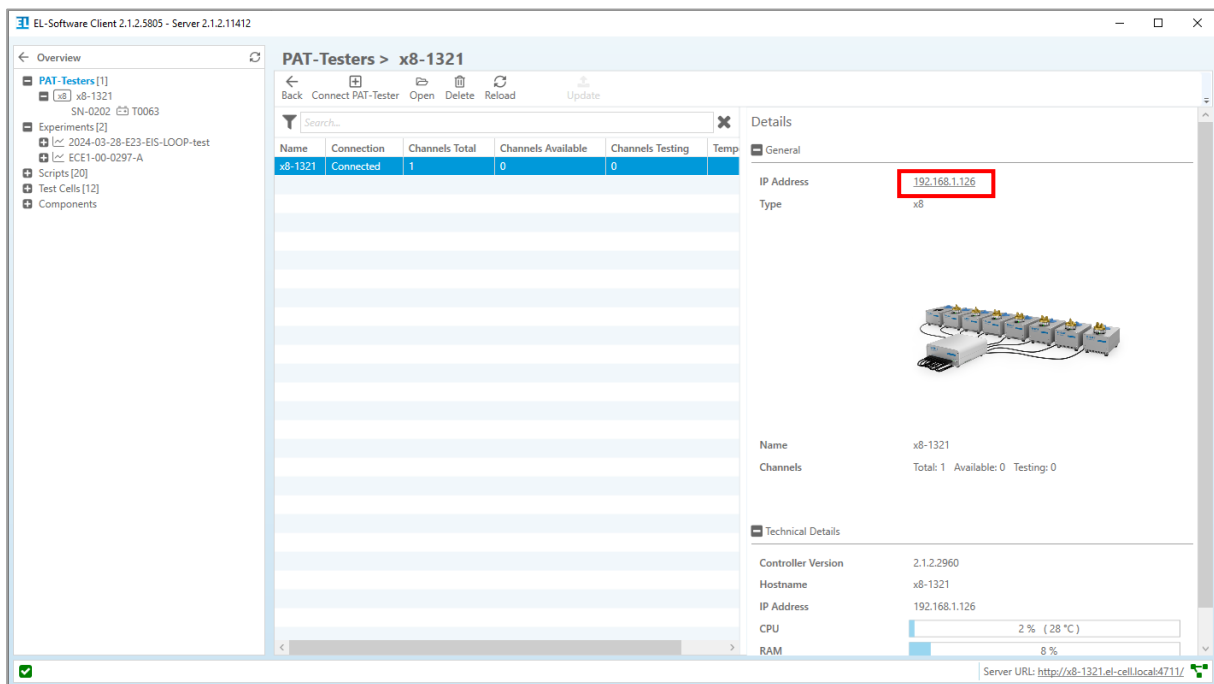
8.1 Access the PAT-Tester Administration Page

Access via web browser:

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

Access via EL-Software Client

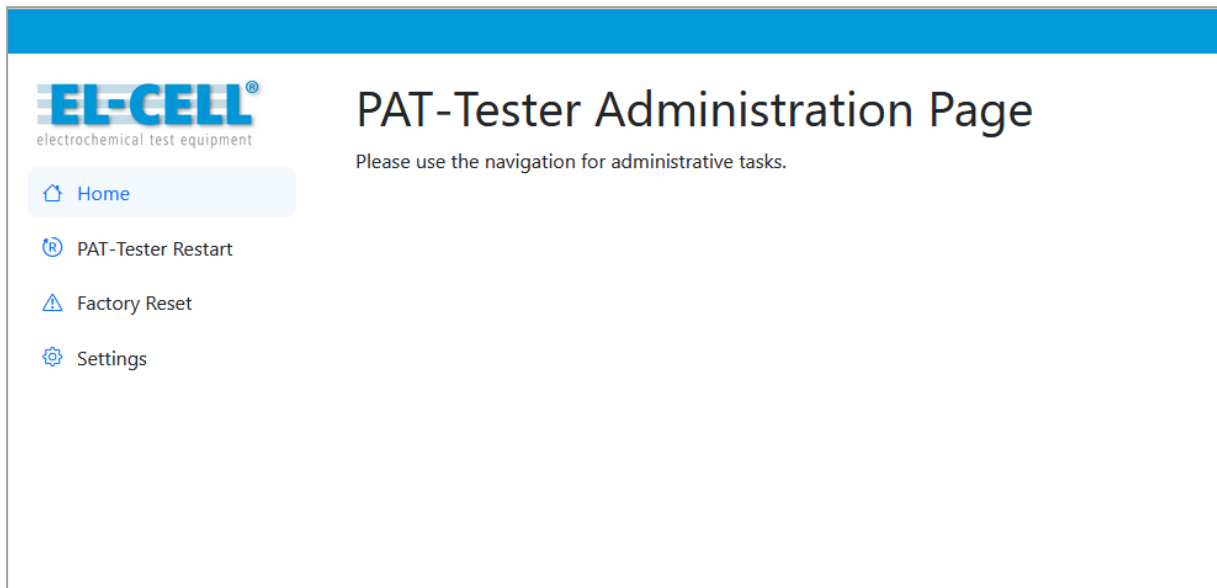
To access the PAT-Tester administration page, go to *PAT-Testers* and select a device from the list. Click on the link on the right side to open it in a web browser:



The screenshot displays the EL-Software Client interface. The main window is titled "PAT-Testers > x8-1321". On the left, there is a navigation pane with a tree view containing "PAT-Testers [1]" (with sub-item "x8-1321"), "Experiments [2]", "Scripts [20]", "Test Cells [12]", and "Components". The main area shows a table of PAT-Tester devices:

Name	Connection	Channels Total	Channels Available	Channels Testing	Temp
x8-1321	Connected	1	0	0	

Below the table, there are several empty rows. On the right side, there is a "Details" panel for the selected device "x8-1321". The "General" section shows the IP Address as "192.168.1.126" (highlighted with a red box) and the Type as "x8". Below this is an illustration of the device. The "Technical Details" section shows the Controller Version as "2.1.2.2960", Hostname as "x8-1321", IP Address as "192.168.1.126", CPU usage as "2% (28 °C)", and RAM usage as "8%". At the bottom right, the Server URL is "http://x8-1321.el-cell.local:4712/".



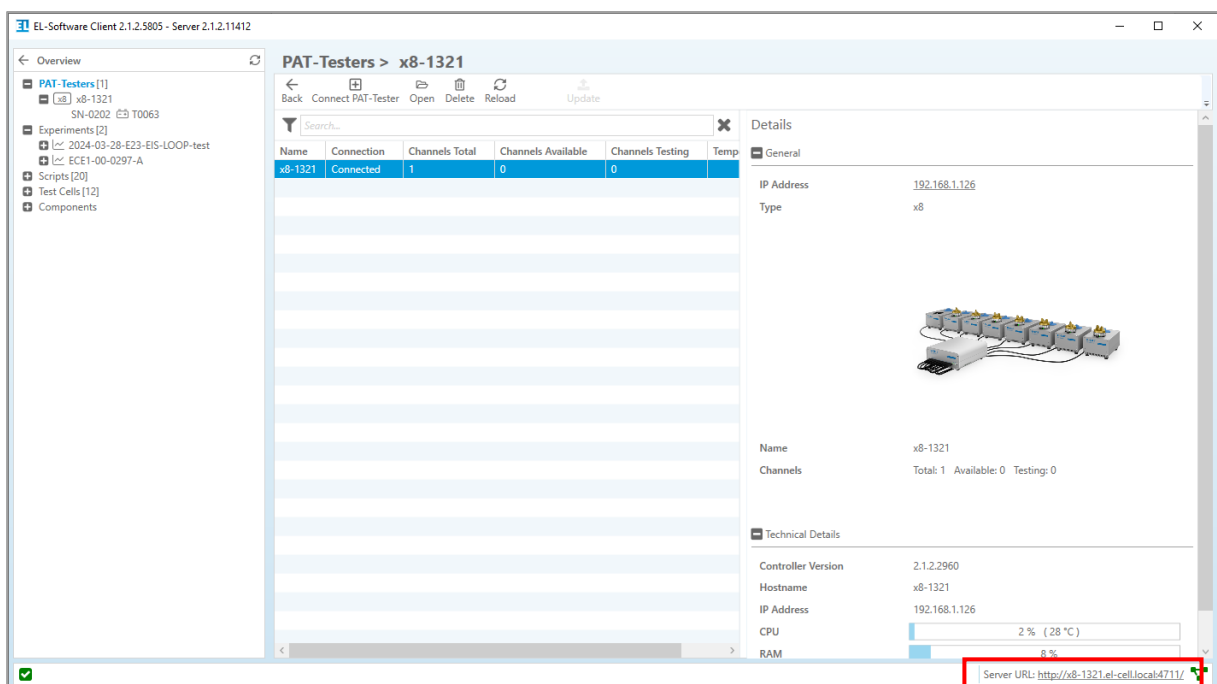
8.2 Access the EL-Software Server Administration Page

Access via web browser:

[http://\[Server-IP\]:4711](http://[Server-IP]:4711) (Example: <http://192.168.1.126:4711>)

Access via EL-Software Client

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





EL-Server Administration Page

Please use the navigation for administrative tasks.

- [Home](#)
- [Download Client](#)
- [Update](#)
- [Server Restart](#)
- [Factory Reset](#)
- [Settings](#)