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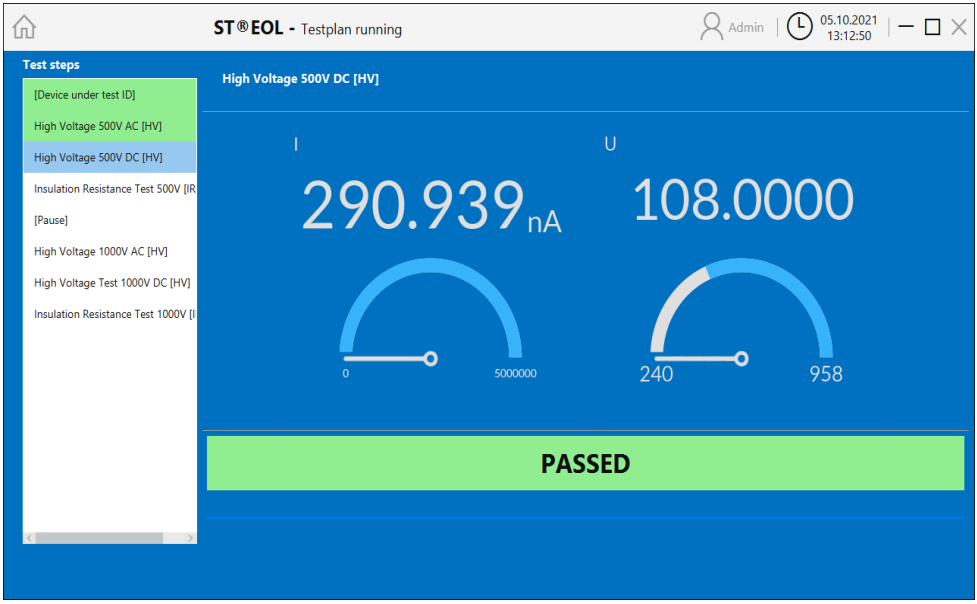
User Manual

ST®EOL



Contents

1 Introduction

This user manual describes the functions of ST®EOL.

The manual is aimed at various roles of ST®EOL users, differentiating between the roles of administration, test plan editing, inspector and report creation.

Furthermore, the manual contains a reference of the tests performed by ST®EOL.

Note Regarding the State of the Document	
⚠	This manual is *in progress*. All details are correct to the best of the publisher's knowledge, but may yet be incomplete. The information given in this manual supplements the existing documentation.

1.1 Personnel Qualification

Specialized Personnel Only!

The work described in the associated product documentation may **only** be carried out by persons who have the appropriate technical qualifications or have been trained accordingly by the operator.

1.2 Basic Safety Notes

- Use of this hardware and software is **only** permitted in compliance with the relevant regulations and observance of mandatory protective measures.
- Additionally, be sure to observe all safety notes specified in this document and the other associated documents! Pass on the safety notes to other users.

1.3 Responsibility and Warranty

Sourcetronic assumes no responsibility or warranty if the operator or third parties...

- ...disregard this document or other associated product documentation.
- ...do not use the product as described.
- ...carry out interventions of any kind (conversions, modifications, etc.) on any part of the product unless explicitly instructed to do so by Sourcetronic.
- ...operate the product with accessories that are not listed in the associated product documentation.

Responsibility regarding the process media used lies with the operator.

1.4 Shipping Damage

Caution!	
	**Avoid Transport Damage:** The devices are to be packed shock- and drop-proof according to the specifications of the shipping company. Devices or device combinations with a total weight of more than 30kg must be shipped by freight forwarding on a pallet.

2 Administration

This part of the manual is aimed at system administrators. It describes the information needed to set up and operate ST®EOL and contains the necessary instructions to install ST®EOL for system administrators.

2.1 System Setup

This chapter describes tasks that must be done by a Windows system administrator.

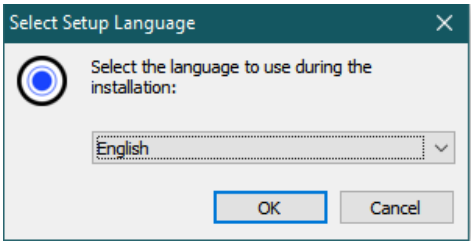
2.1.1 Installing ST®EOL

For the installation of ST®EOL into the programs folder, the following conditions must be met:

- You must have local administration rights to be able to install the software for all users.
- You must have the ST®EOL installation file.

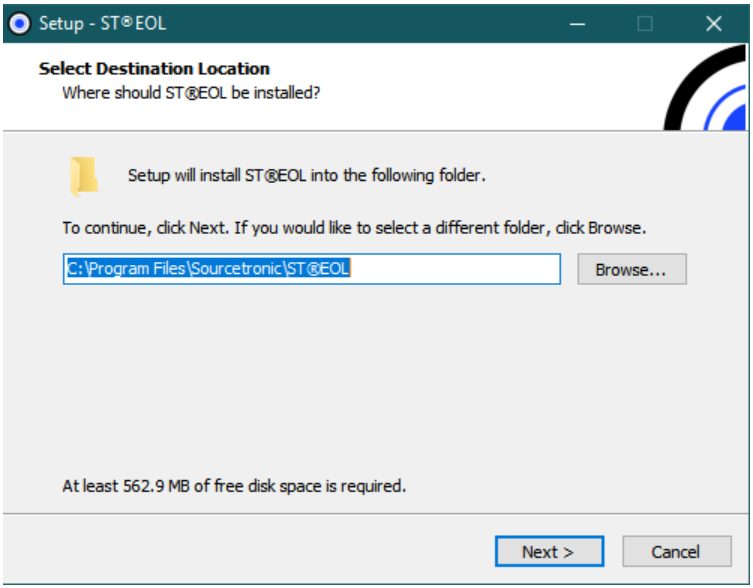
Depending on the settings of User Account Control, additional confirmation dialogue windows may pop up which are not mentioned in the following instructions. Additionally, some buttons may be overlayed by the administrator symbol.

Begin the installation process:

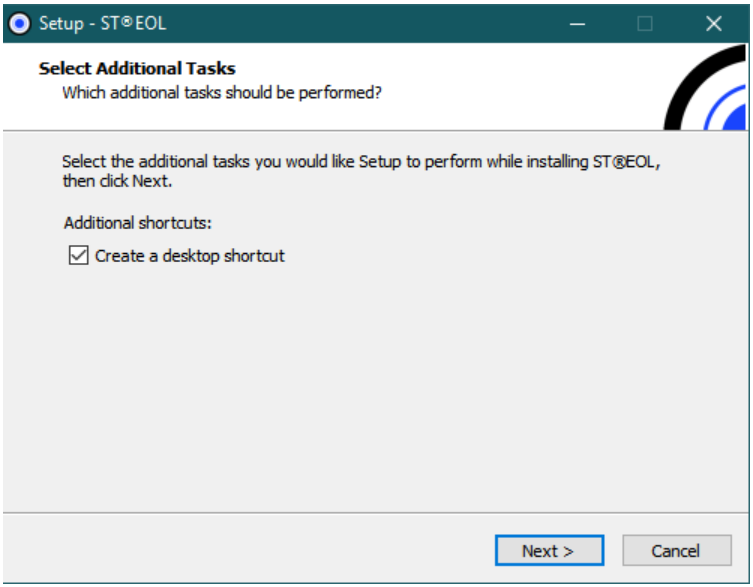


- Open the st_eol_setup.exe file.
- Select the preferred language.

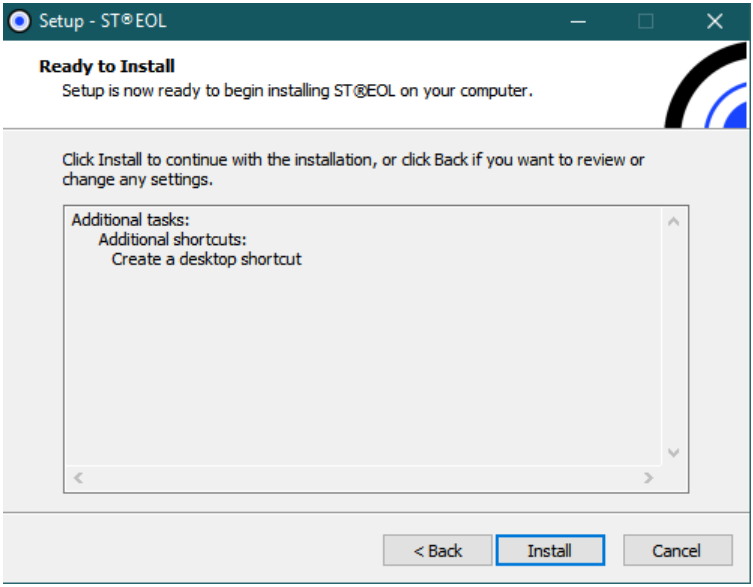
You will be prompted to confirm the install location.



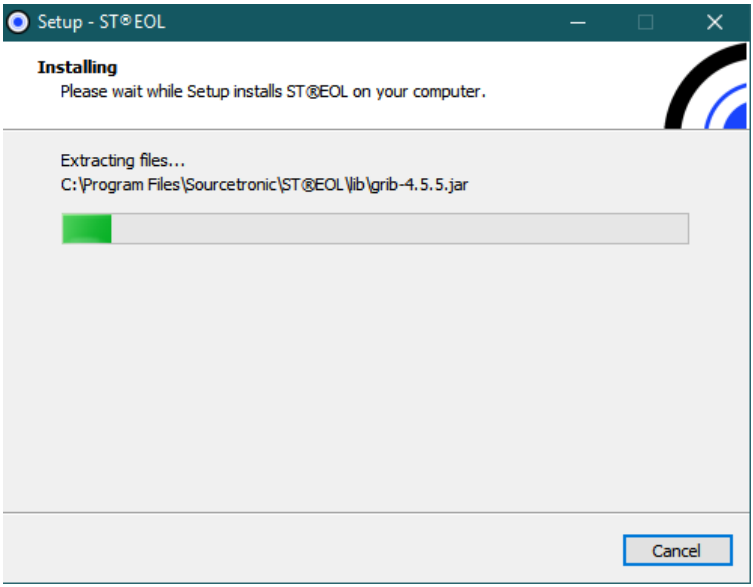
If you do not want the Setup wizard to add a direct link to the program to your desktop, be sure to uncheck the **Create a desktop shortcut** box.



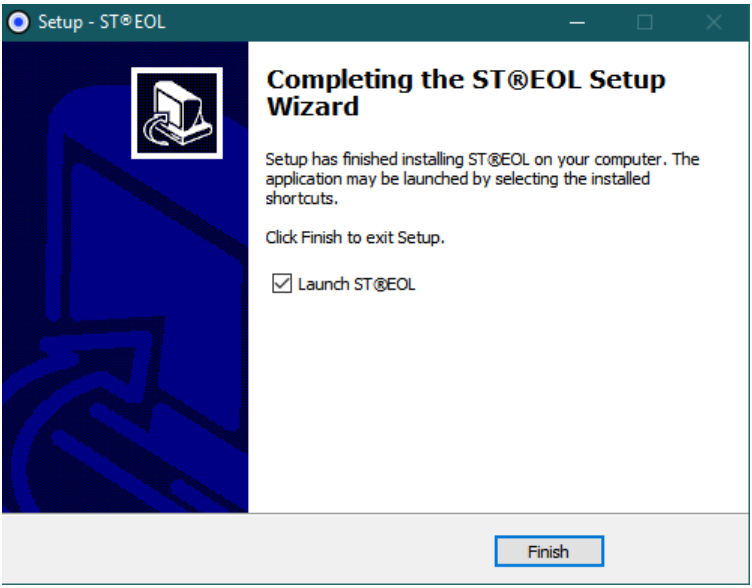
Confirm the installation.



The installation will now proceed.

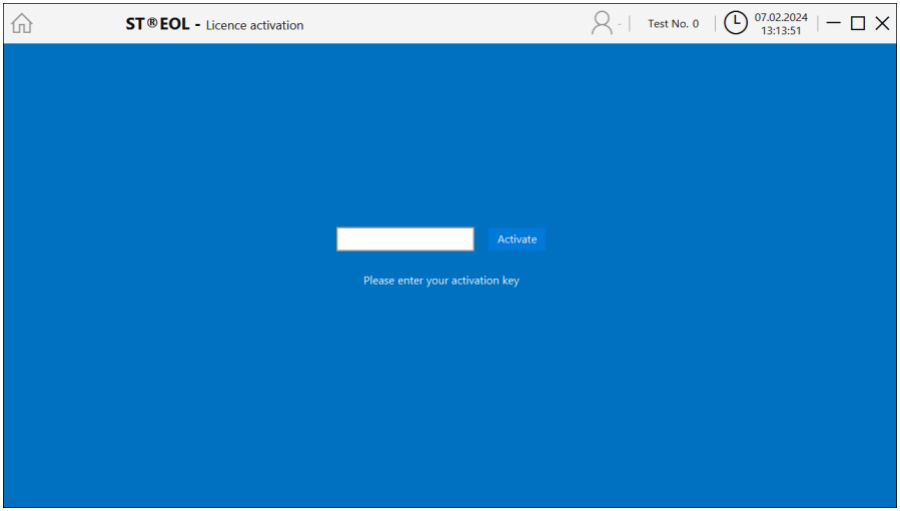


After installation is complete, click **Finish**.

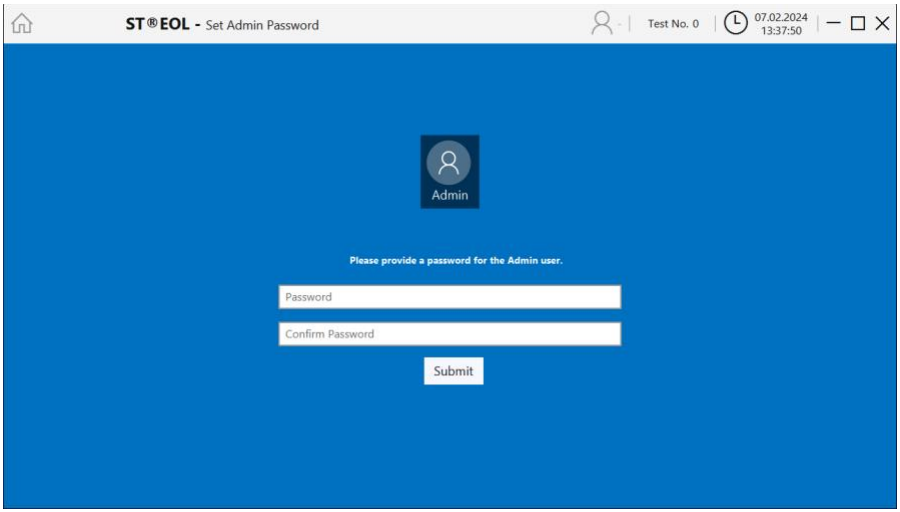


You can now launch ST®EOL from the start menu.

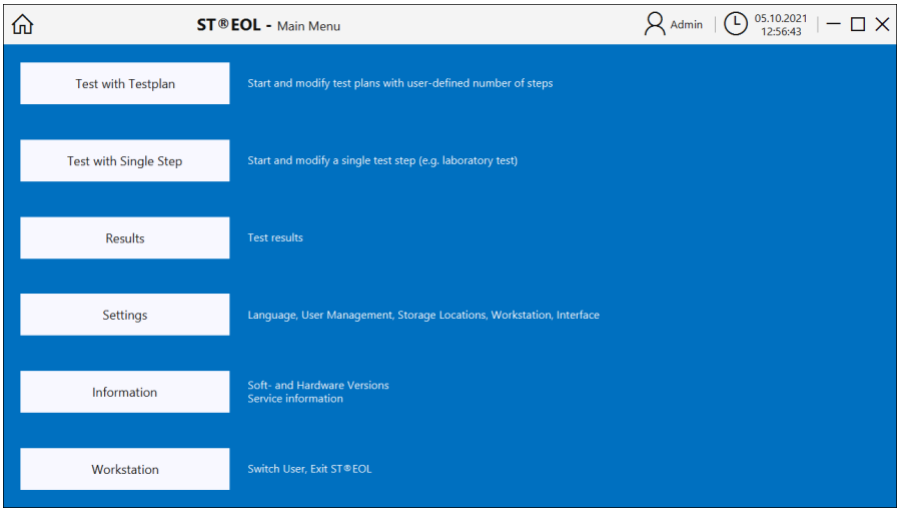
Upon first startup, ST®EOL will ask for your activation key. Mind upper and lower case letters when entering the key.



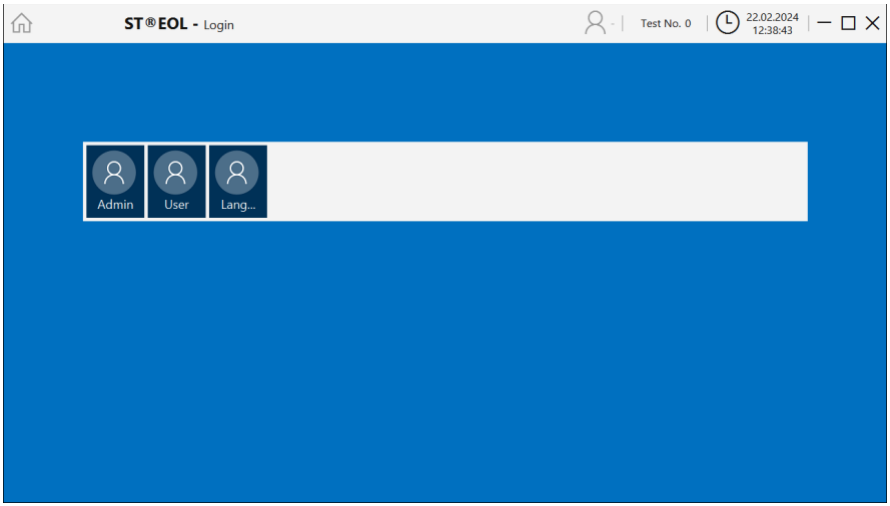
After activation, you will be prompted to enter a password for the Admin user.



After creation of the Admin user profile, the main menu opens.



If the software is relaunched, the login interface will appear. Select the user profile you want to log into.

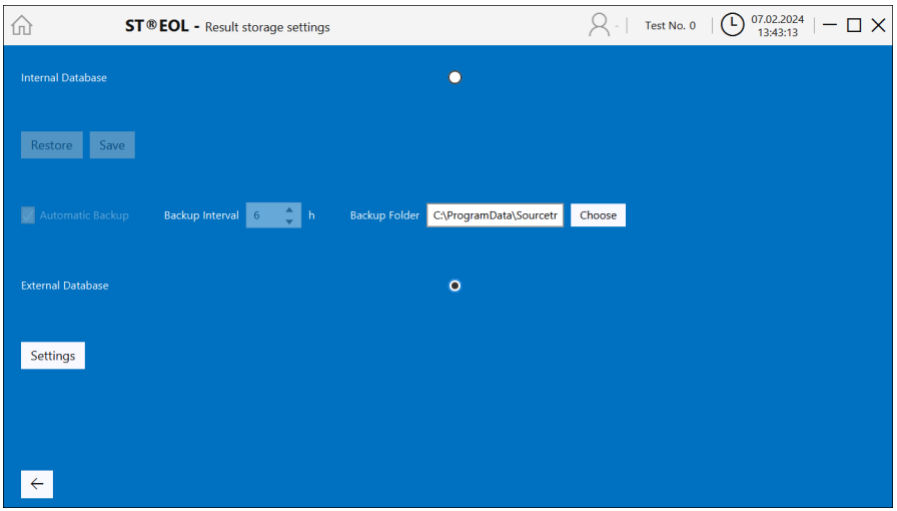


2.1.2 Configuring a Database Connection (Optional)

You can skip this section if you do not want to use your own SQL database.

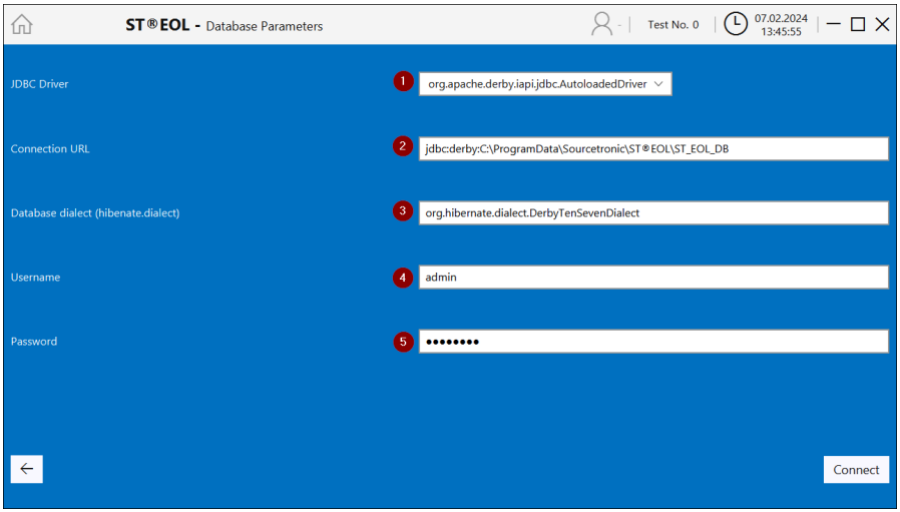
Otherwise, click on **Settings → Result Storage Settings** to open the configuration.

ST®EOL stores test plans and result data on a mapped SQL database. An external database is recommended for production use—you can use any external SQL database that offers a JDBC driver. The JDBC driver file must be placed in the application directory in the folder **lib/**. The JDBC should be selectable as long as the driver was in the folder during application startup.



You can configure an external database via **Settings** → **Database Settings**. Select **External Database** and enter the SQL database settings.

Here you can set all required database parameters.

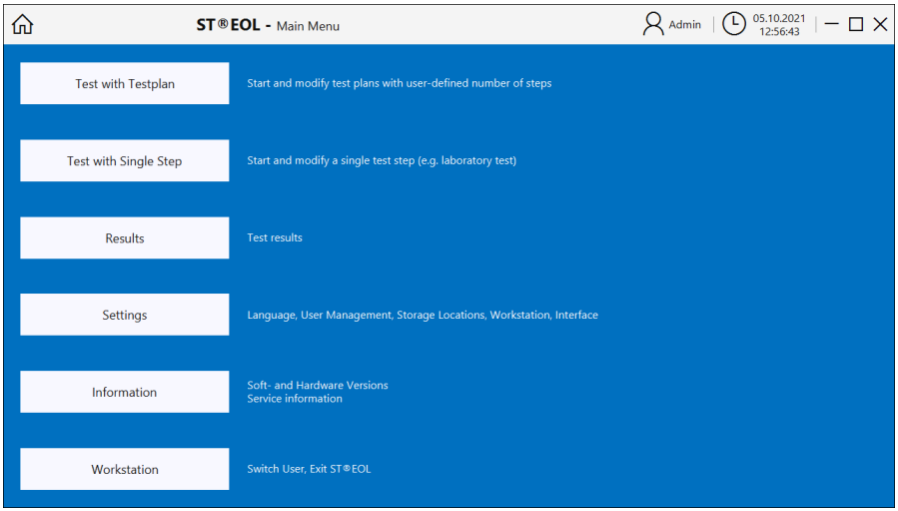


No.	Parameter	Description
1	JDBC Driver	Select a JDBC driver from the drop-down list of drivers found in the lib/ folder on startup.
2	Connection URL	Usually the database URL starts with "jdbc:" followed by the database type name. The rest of the URL must be actual path of the database. **Example:** "jdbc:mysql://127.0.0.1/testdatabase"
3	Database Dialect	Bridge between Java JDBC types and SQL types. Select this to match your database.
4	Username	Username for the database connection.
5	Password	Password for the database connection.

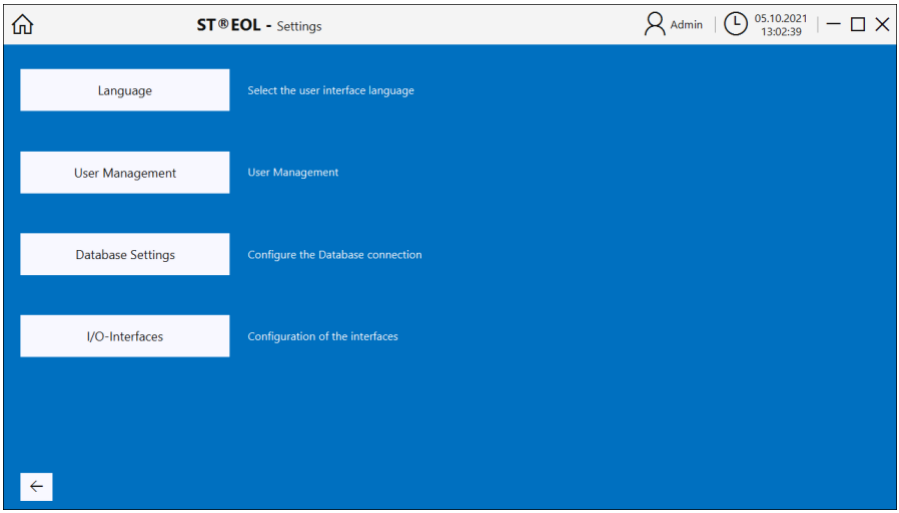
2.2 General Configuration

This chapter covers the necessary tasks for configuring ST®EOL.

After installing and starting the software, setting a password for the admin account and logging in using the password, the main menu is displayed:

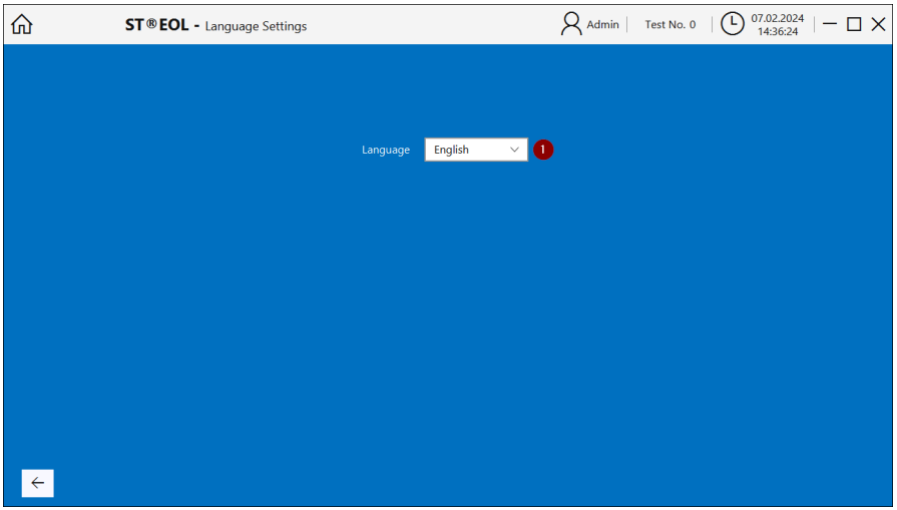


Most configuration tasks are initiated from this main menu using the button **Settings**. The window settings will be displayed, where you can reach more specific areas of configuration.



2.2.1 Language Settings

Open the Language Settings dialogue window by choosing **Settings** → **Language**.



Choose the desired system language from the drop-down list. The change will be active after a restart of the software.

You will see a message pop up that a restart is required, and if you confirm, the software will shut down. When started again the new display language will be loaded.

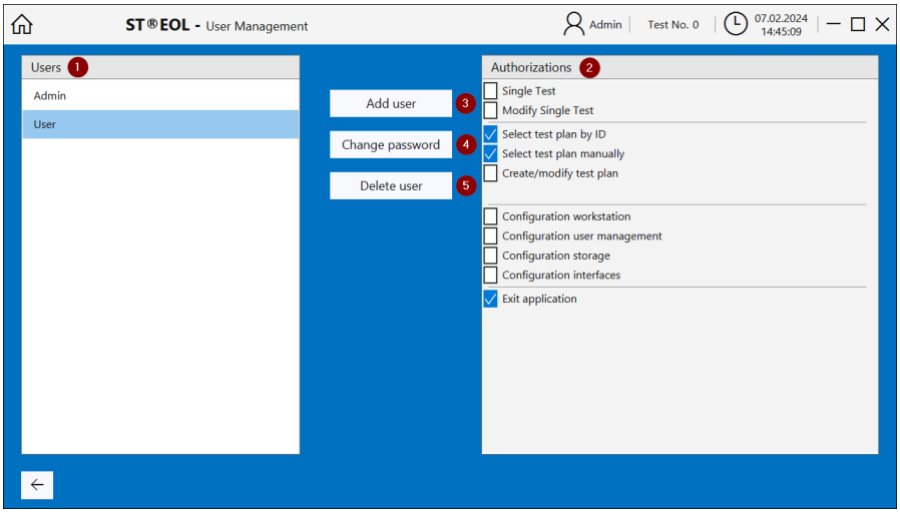
At the moment of writing this user manual, only English and German are available to choose from.

No.	Parameter	Description
1	Language	The changes will be stored on selection and the selected language will be set on restart of the software.

2.2.2 User Management

User Management allows you to edit the permissions of individual users of the ST®EOL software.

Open the dialogue by choosing **Settings → User Management**.



The settings will be stored in the database.

The user profile **Admin** holds all rights by default and cannot be deleted.

This user is permitted full access to the system without any additional help from Sourcetronic. The **Admin** profile is created upon first start-up of the software, where the operator will be asked to set an initial password.

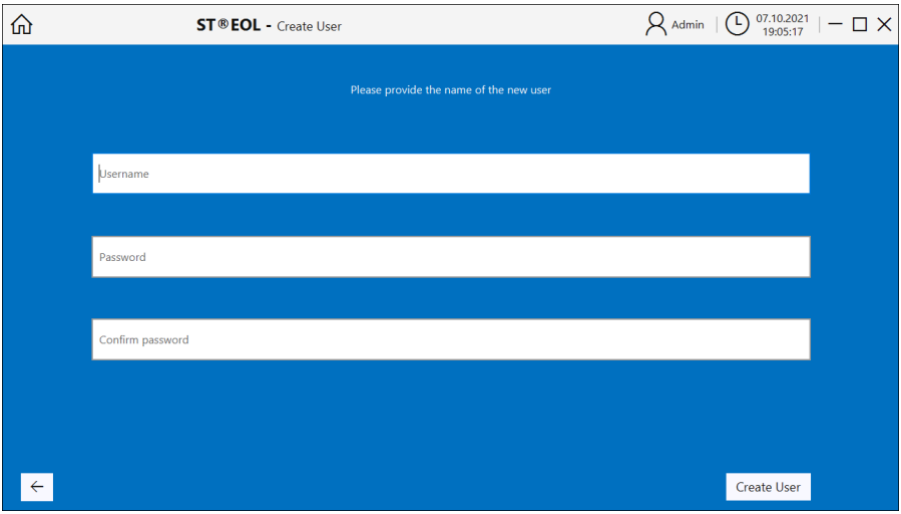
No.	Parameter	Description
1	List of Users	A list of all existing user profiles.
2	Authorizations	In the list of rights, you can specify the permissions for the selected user.
3	Add User	A new user profile will be created.
4	Change Password	The password of the selected profile will be changed.
5	Delete User	The selected user profile will be deleted.

2.2.2.1 Adding a New User

Click on the button **Add New** to create a new user profile.

A new window opens to prompt you to enter the username and password. Upon confirmation via **Create User**, the profile will be created and added to the list.

Both the username and password are case sensitive, so be mindful of upper and lower case letters.



2.2.2.2 Enter New Password

Select a user from the list and click **Change Password** to change the associated password or add a new one if none has been set.

Both the username and password are case sensitive.

The password is encrypted and cannot be recovered, but it can be changed by the admin user via this function.

2.2.2.3 Delete User

Select a user from the list and click **Delete** to remove this user profile immediately.

2.2.2.4 Assign Permissions

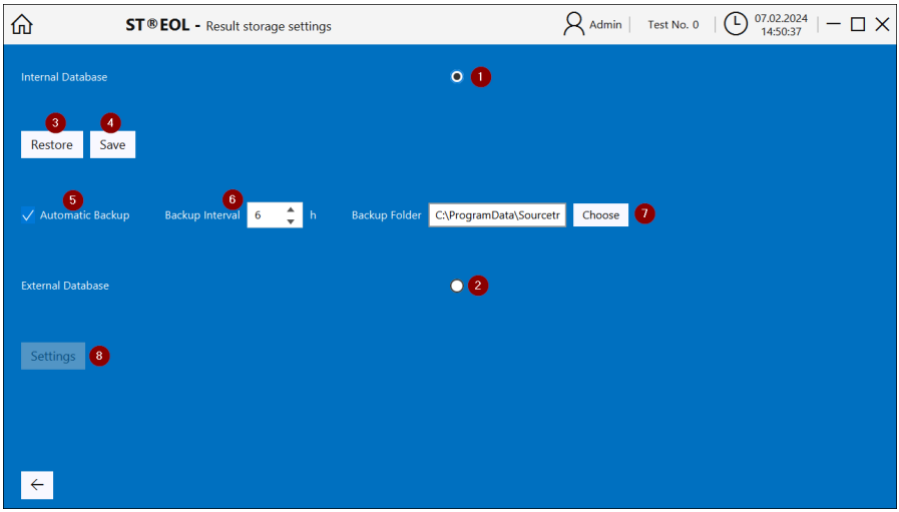
Select a user from the list.

For each of the user permissions, check or uncheck the box on the right side to grant or deny the selected user this permission.

Parameter	Description
Single Test	The user is allowed to run a single step test.
Modify Single Test	The user is allowed to change the parameters of an individual test.
Select Testplan by ID	The user is allowed to use automatic test plan selection by entering the plan ID.
Select Testplan Manually	The user is allowed to use manual test plan selection.
Create / Modify Testplan	The user is allowed to create and edit test plans.
Dummy Test	The user is allowed to run a dummy test.
Configuration Workstation	The user is allowed to change the settings of the workstation.
Configuration User Management	The user is allowed to change the user permissions.
Configuration Storage	The user is allowed to change the settings for file storage.
Configuration Interfaces	The user is allowed to change the settings in the I/O-Interface. For further information on those settings, please see the respective base device manual.
Exit Application	The user is allowed to exit the software and return to the Windows desktop.

2.2.3 Database Settings

With the ST®EOL software, you can use either an internal embedded SQL database or an external SQL database to store test plans, users and test results.



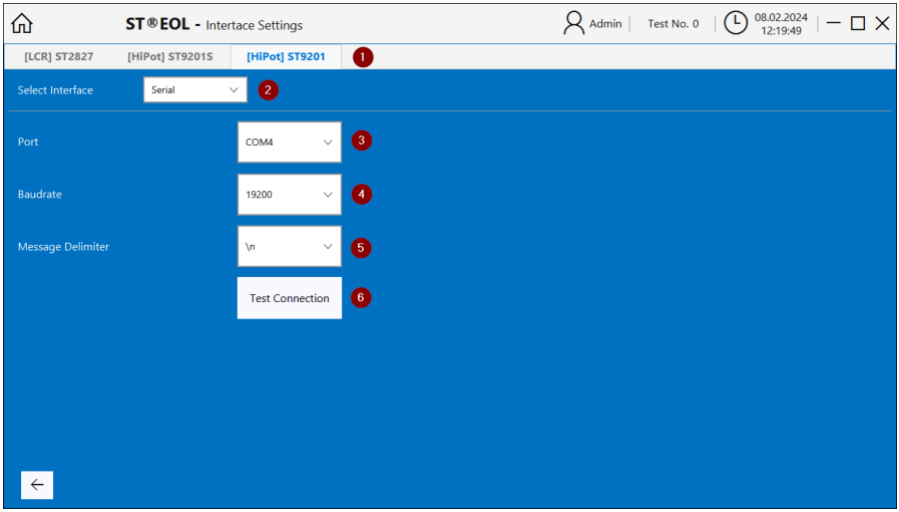
No.	Parameter	Description
1	Internal/External SQL Database	The internal DB will be used by default, but you can also select an external SQL database to use instead (see section 2.1.2).
2		
3	Restore Backup	A dialogue window will open that will allow you to restore a previous database backup. If this fails, the current database will not be replaced.
4	Save Backup	A dialogue window will open that will allow you to save a backup of the current database.
5	Switch On/Off Automatic Backup	If checked, the software will create database backups at the defined interval.
6	Interval Of Automatic Backup	Set the interval of the automatic backup function. If the software is not running, the backup will be saved upon the next start-up.
7	Select Path For Automatic Backup	The folder path the automatic backups will be saved.
8	Settings For External Database	(see section 2.1.2).

2.2.4 I/O-Interfaces

ST®EOL allows you to connect and control several devices simultaneously. To establish the connection to each device, the respective interface must be configured. The connection must be restarted each time the software is launched. Any changes to the settings will be saved immediately.

Open the dialogue window by choosing **Settings → I/O Interfaces**.

2.2.4.1 Serial Interface



No.	Parameter	Description
1	Select Device	Choose a supported instrument.
2	Select Interface	All available interfaces of the device will be selectable.
3	Port	The serial port that is connected to the device.
4	Baudrate	The baudrate used for the serial connection.
5	Message Delimiter	The delimiter that is used for messages sent to and received from the device.
6	Test Connection	The serial interface will open, and an attempt to connect to the device will be made. When the connection to the device is established, the button's color changes to green; if no connection could be established, the button's color instead changes to red.

2.2.4.2 USB Interface

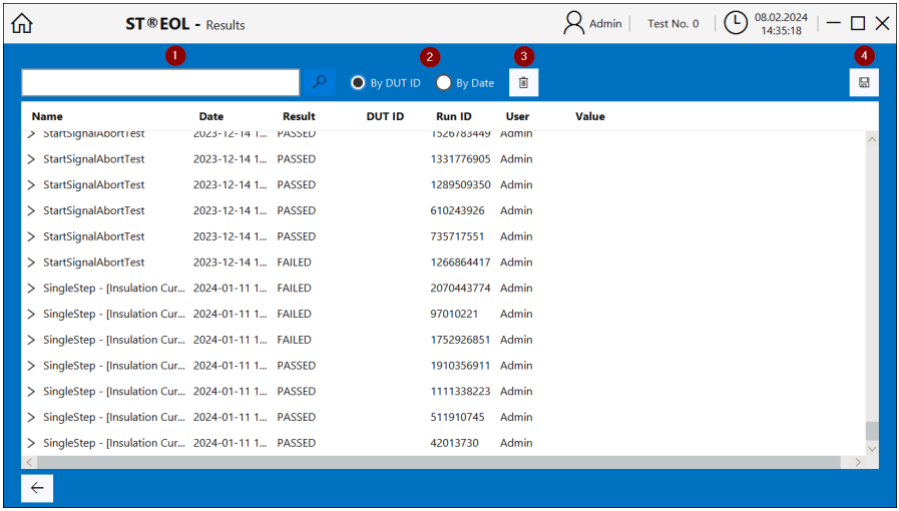
The USB interface does not require configuration.

2.3 Result Storage

In this menu, you can set up additional storage locations for test result files.

This page logs the results of the tests via **Test Plan** and **Single Test**. Essentially, the results are stored in the database. The measured values of the selected result can also be saved as a .CSV file via the **Save** button in the upper right hand corner. An extra window opens where you can select the file path and give the file a name.

To delete the selected results, use the button with the bin icon.



No.	Parameter	Description
1	Search Bar	Enter a search term or a date.
2	Search Attribute	Select DUT ID or date as a the search attrbute.
3	Delete Result	Delete the selected results.
4	Export Results	A dialogue window opens where the results can be exported as either a .CSV or a .XLSX (excel) file.

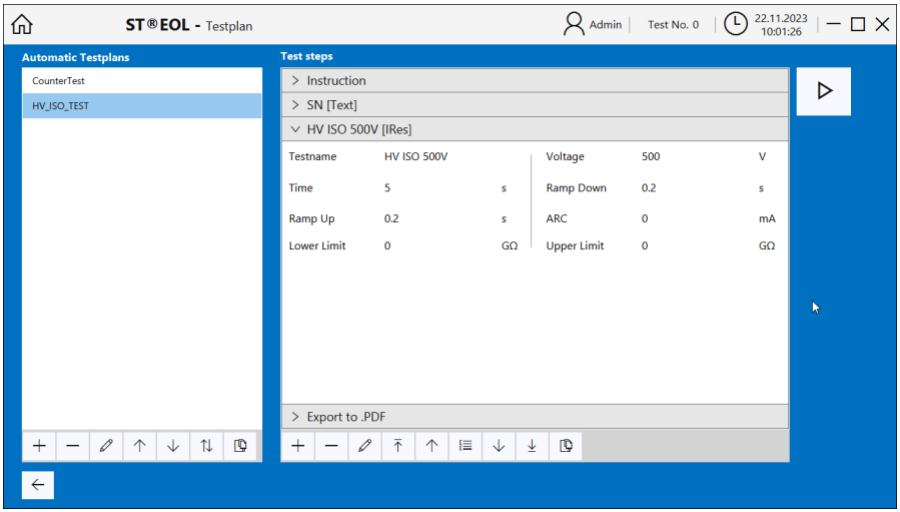
3 Test Plan Editing

This part of the manual is aimed at any user who wishes to create and/or edit test plans.

It contains all information necessary to create test plans in accordance with the requirements for the test and the existing test types.

3.1 Administering Test Plans

Open the dialogue by choosing **Test with Testplan → Edit Testplan**.



On the left side of the page, the currently available test plans are listed.

In the mid-upper area, the test steps of the selected test plan are displayed.

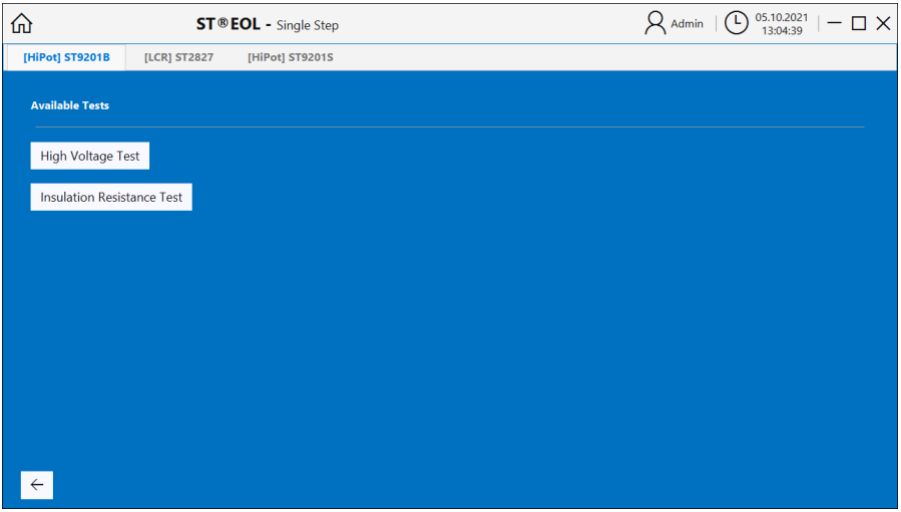
Button	Description
	A new page opens for creating a new test plan (left side) or a new test step (right side).
	The selected test plan or currently opened test step is deleted.
	The selected test plan or currently opened test step will be displayed in a new window where you can change the parameters.
	The selected test plan or currently opened test step is moved up one step.

	The selected test plan or currently opened test step is moved down one step.
	Go back to the previous page.
	Sort the test plans alphabetically
	Copy/duplicate a test plan (left side) or a test step (right side).
	The selected test plan or currently opened test step is moved down to the bottom of the list.
	The selected test plan or currently opened test step is moved up to the top of the list.
	The currently opened test step is moved to the middle of the list.

3.2 Adding Test Steps

Whenever a new test is created, the program will automatically proceed to a prompt for the first test step. Alternatively, select a test plan from the list in the left pane and click on the **+** icon below the **Test Steps** pane to get here.

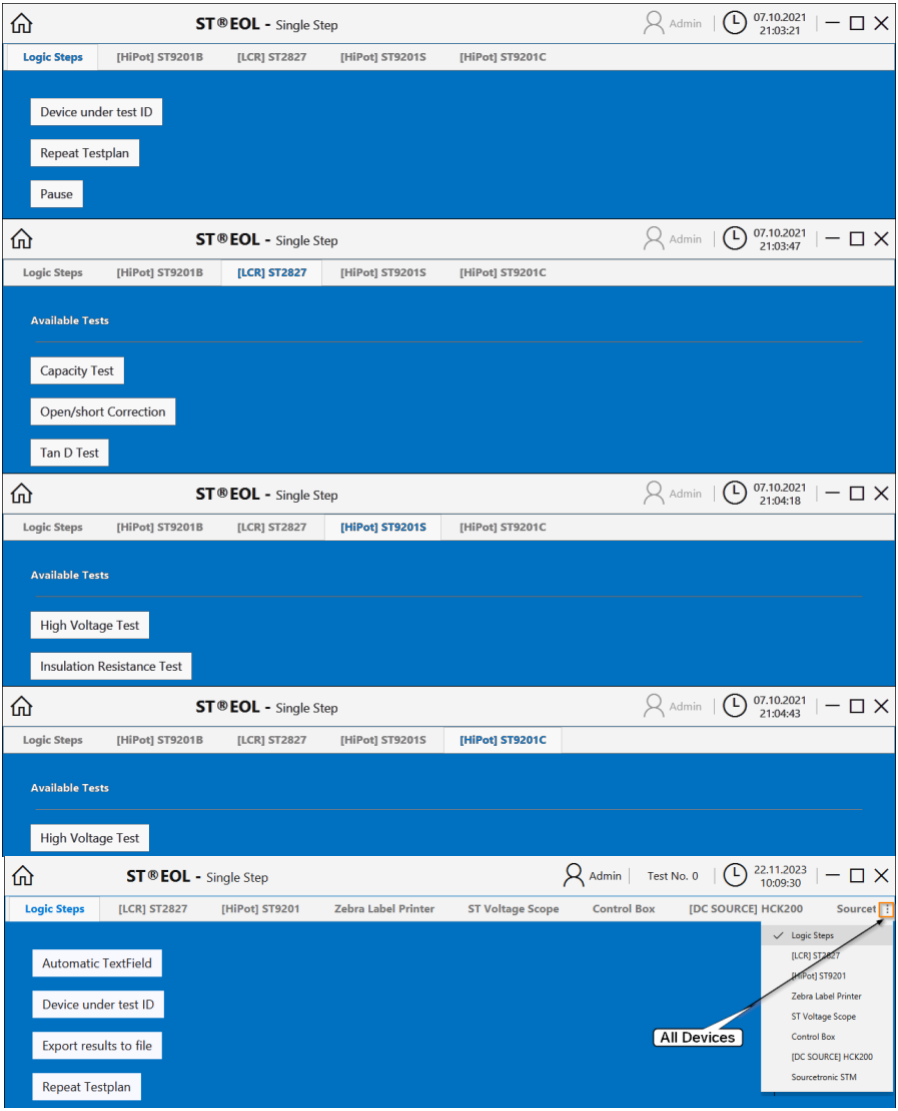
This will open the **Single Step** screen where you can select the device and choose from the tests the selected device has to offer. By default, the program will display the option buttons for ST9201B:



Clicking any one of those buttons will open the respective configuration page, which are described in the remainder of this chapter.

After setting the parameters on the configuration page, click the **+** button to add the step to the test plan, or the ← button to go back to the previous screen.

The other devices' option buttons are shown below. Choose a device by clicking its name.

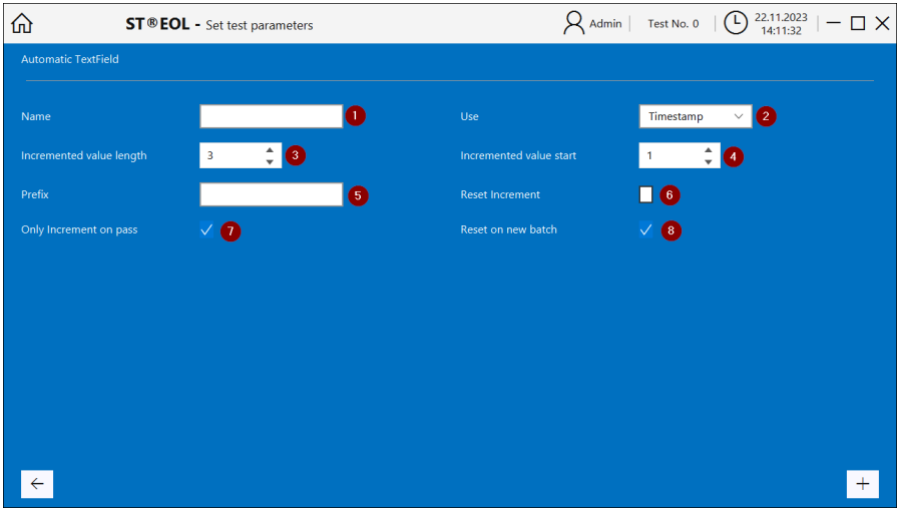


As with the previous example, clicking any one of those buttons will open the respective configuration page. After setting the parameters, click **+** to add the step to the test plan, or ← to return to the previous screen.

3.2.1 Automatic TextField (Logic Steps)

The **Automatic TextField** step is configured using the following dialogue. After setting the parameters, click the **+** button to add the step to the test plan.

This step generates various values as attributes to the executed test plan.



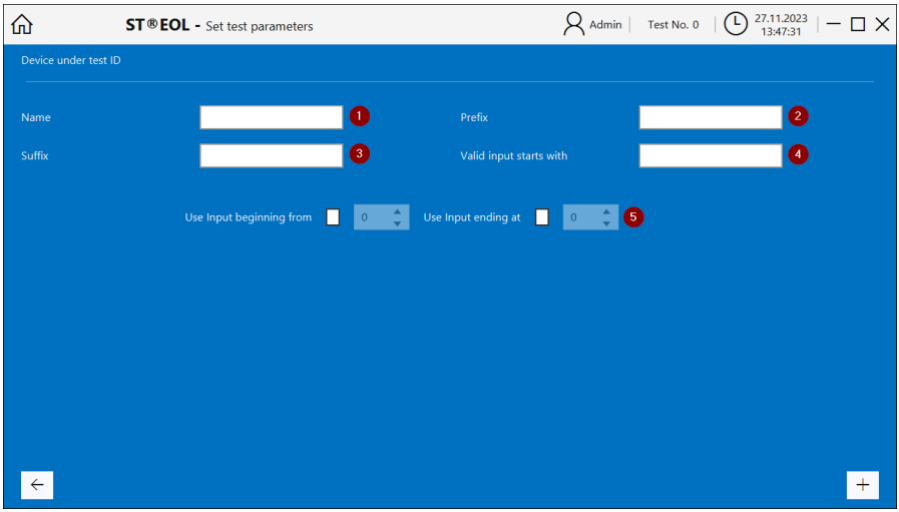
No.	Parameter	Description
1	Name	Name of the test step.
2	Use	The source of the generated value. (Timestamp, Year-Month-Day, Calendar Week/Year, incremented value only)
3	Incremented Value Length	Used for "incremented value" only. Determines the length of the incremented value. The generated value is filled with leading "0"s to match the set length. **Example for Length 1:1**: 001.
4	Incremented Value Start	Used for "incremented value" only. The initial value for the incremented value. **Example for 100:** Next value is 101.
5	Prefix	A prefix that is put at the start of the generated value. **Example for Prefix "No.":** Value = 1 → Generated Value = No. 001.
6	Reset Increment	This resets the incremented value to the set "incremented value start". When checked the test plan is stopped after this step and the value is reset.

7	Only Increment on Pass	Used for "incremented value" only. The value is only increased when all device steps are evaluated as passed.
8	Reset on New Batch	When **Repeat Testplan** is set to "batch testing", the incremented value is reset whenever a new batch is started.

3.2.2 Device Under Test ID (Logic Steps)

The **Device Under Test ID** step is configured using the following dialogue. After setting the parameters, click the **+** button to add the step to the test plan.

All the test steps in a testplan will have the value of this step saved as a reference.

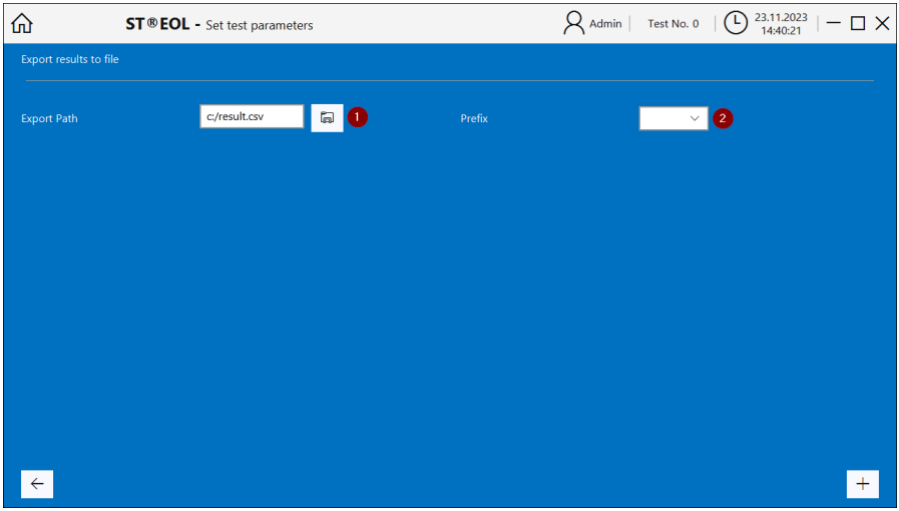


No.	Parameter	Description
1	Name	Name of the test step.
2	Prefix	A prefix that is put at the start of the DUT ID.
3	Suffix	A suffix that is put at the end of the DUT ID.
4	Valid Input Starts With	After confirmation, the software checks the entered value to ensure it begins with this input.
5	Input Indexes	The first *n* or the last *m* characters of the input will be irgnored.

3.2.3 Export Results to File (Logic Steps)

The **Export Results to File** step is configured using the following dialogue. After setting the parameters, click the **+** button to add the step to the test plan.

This step creates a CSV or .XLSX export of all device-related and textfield steps.

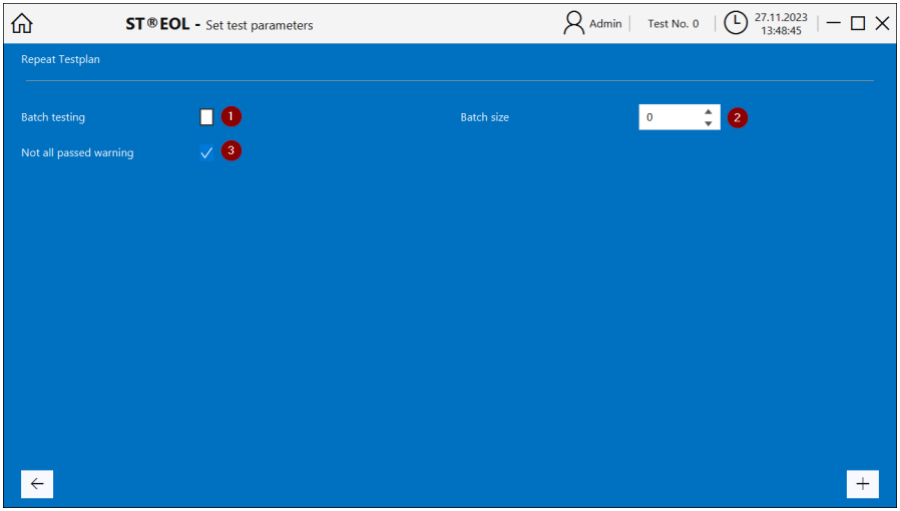


No.	Parameter	Description
1	Export Path	The path on the computer that the file will be saved to. Possible output formats include .CSV and .XLSX files.
2	Prefix	The value of the prefix step will be put in front of the file name. Any **TextField** or **Automatic TextField** step can be selected. **Example:** Export Path = "C:_results.csv", Prefix = Automatic TextField (Time stamp) Actual Export Path = "C:\2009-10-31T01:48:52Z_results.csv",

3.2.4 Repeat Testplan (Logic Steps)

The **Repeat Testplan** step is configured using the following dialogue. After setting the parameters, click the **+** button to add the step to the test plan.

If this test step is added to a test plan, the plan will restart after the last step concludes.

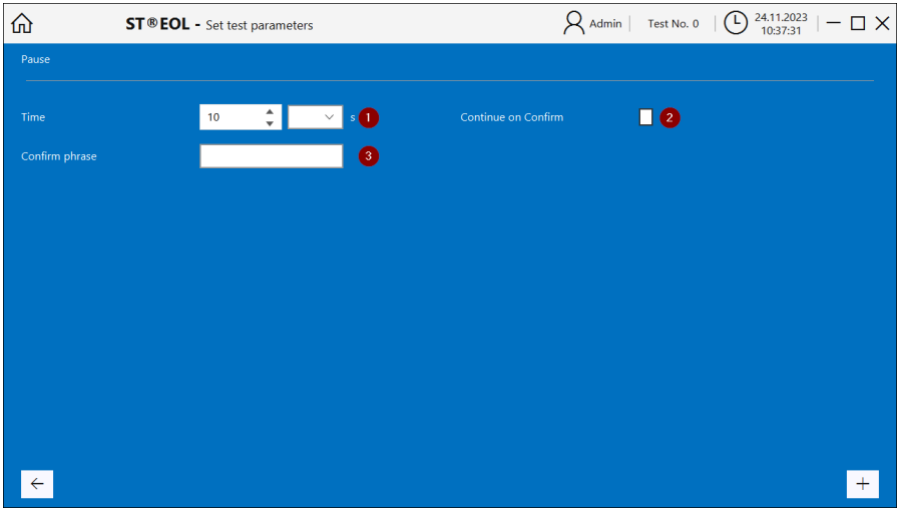


No.	Parameter	Description
1	Batch Testing	Sets the test plan in batch testing mode. This means that, for example, every time the test plan is started, auto incremented values are reset.
2	Batch Size	A batch size can be defined. The test plan will then only be repeated this set number of times.
3	Not All Passed Warning	If one or more test steps fail, a warning will pop up that requires confirmation of acknowledgement by the user.

3.2.5 Pause (Logic Steps)

The **Pause** step is configured using the following dialogue. After setting the parameters, click the **+** button to add the step to the test plan.

This step will pause the test plan for a defined period of time.

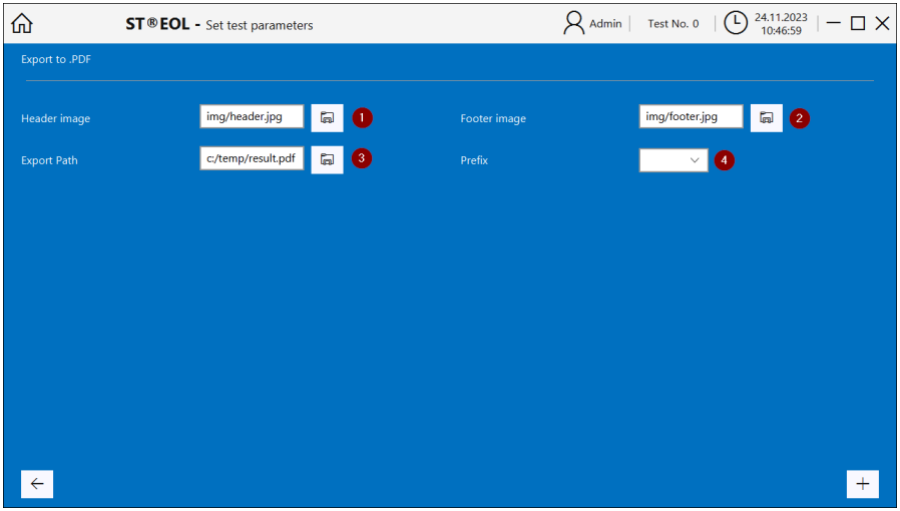


No.	Parameter	Description
1	Time	Pause duration.
2	Continue on Confirm	If checked, the test resumes only when the user presses the given button (or, alternatively, the return key on the keyboard).
3	Confirm Phrase	If a confirm phrase is set, this phrase must be typed or scanned into the appearing text box before the test can resume.

3.2.6 Export to .PDF (Logic Steps)

The **Export to .PDF** step is configured using the following dialogue. After setting the parameters, click the **+** button to add the step to the test plan.

This step creates a .PDF file export of all device-related and textfield steps.

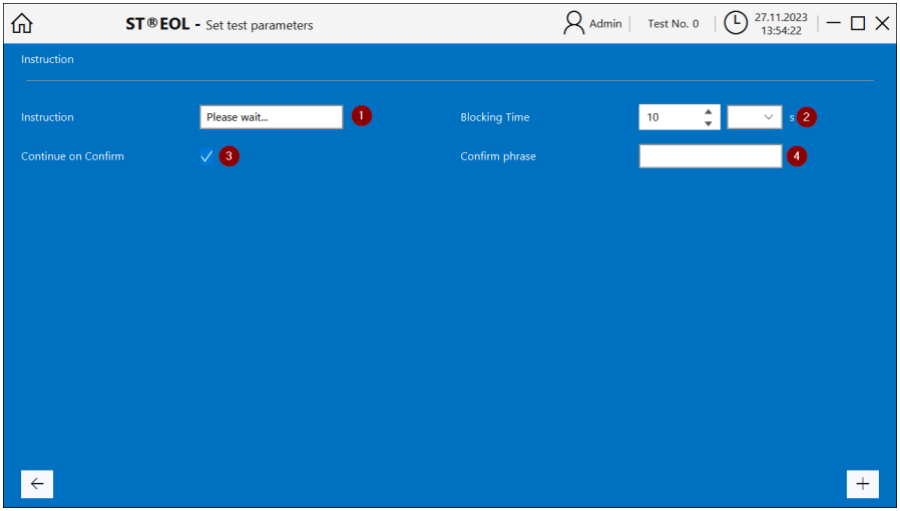


No.	Parameter	Description
1	Header Image	The header image of the output .PDF file.
2	Footer Image	The footer image of the output .PDF file.
3	Export Path	The path on the computer that the file will be exported to.
4	Prefix	The prefix for the file name.

3.2.7 Instruction (Logic Steps)

The **Instruction** step is configured using the following dialogue. After setting the parameters, click the **+** button to add the step to the test plan.

This step is there to give any text instruction to the user.

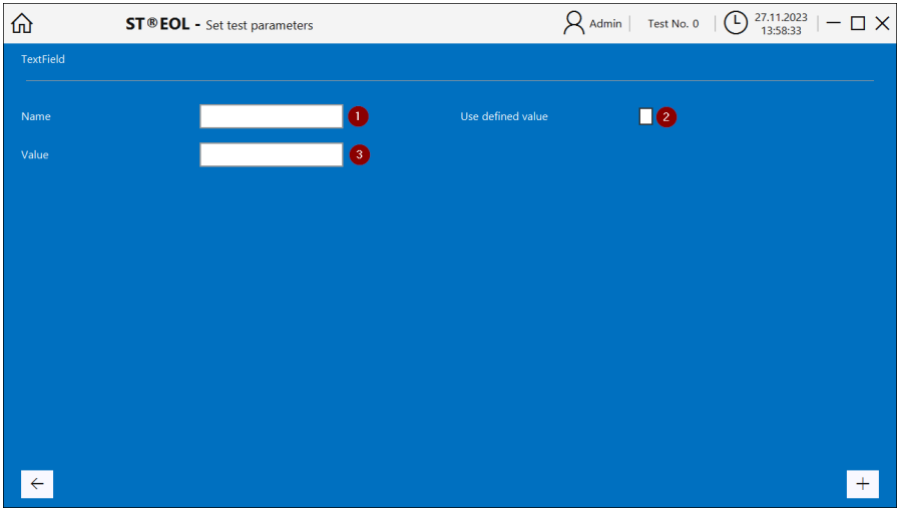


No.	Parameter	Description
1	Instruction	The instruction that will be seen by the user.
2	Blocking Time	The required minimum time before the instruction can be confirmed.
3	Continue on Confirm	If checked, the test resumes only when the user presses the given button (or, alternatively, the return key on the keyboard).
4	Confirm Phrase	If a confirm phrase is set, this phrase must be typed or scanned into the appearing text box before the test can resume.

3.2.8 TextField (Logic Steps)

The **TextField** step is configured using the following dialogue. After setting the parameters, click the **+** button to add the step to the test plan.

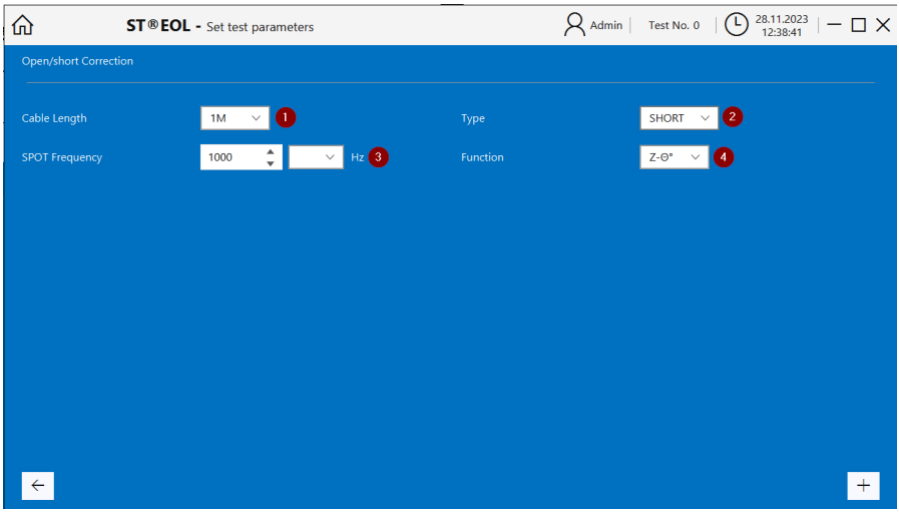
This step will use either a defined value for a text attribute, or the user will be asked to enter a text value during the process.



No.	Parameter	Description
1	Name	The name of the text field. This name will also be shown on protocol or any file export.
2	Use Defined Value	If checked, the text field will have this value (for example, a fixed category or any other fixed attribute).
3	Value	This value will be used if "use defined value" is checked.

3.2.9 Open/Short Correction (ST2827)

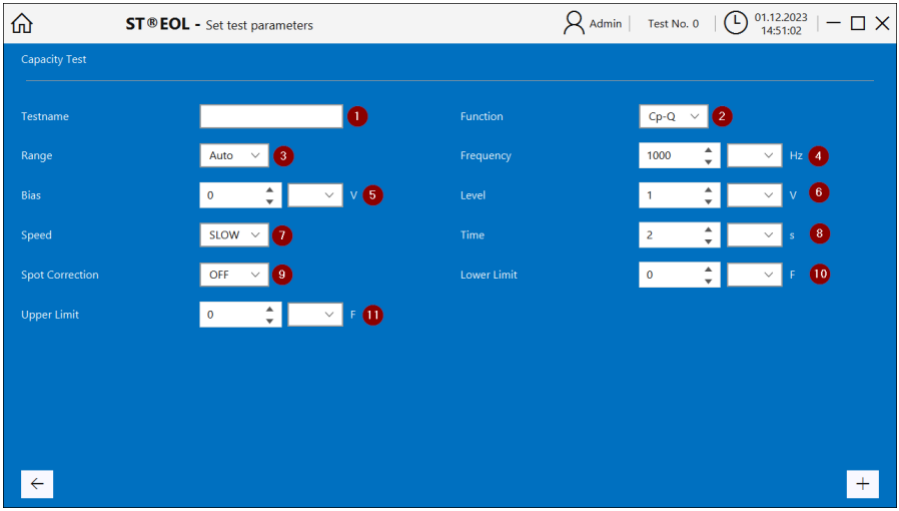
The **Open/Short Correction Test** is configured using the following dialogue. After setting the parameters, click the **+** button to add the step to the test plan.



No.	Parameter	Description
1	Cable Length	Cable length in meters. Can be selected from 0m–4m.
2	Type	General open-circuit / short-circuit correction or open-circuit / short-circuit correction for SPOT1–3 can be selected.
3	SPOT Frequency	The frequency used for a SPOT correction.
4	Function	The function used for the SPOT correction.

3.2.10 Capacity Test (ST2827, ST2829, ST2830)

The **Capacity Test** is configured using the following dialogue. After setting the parameters, click the **+** button to add the step to the test plan.

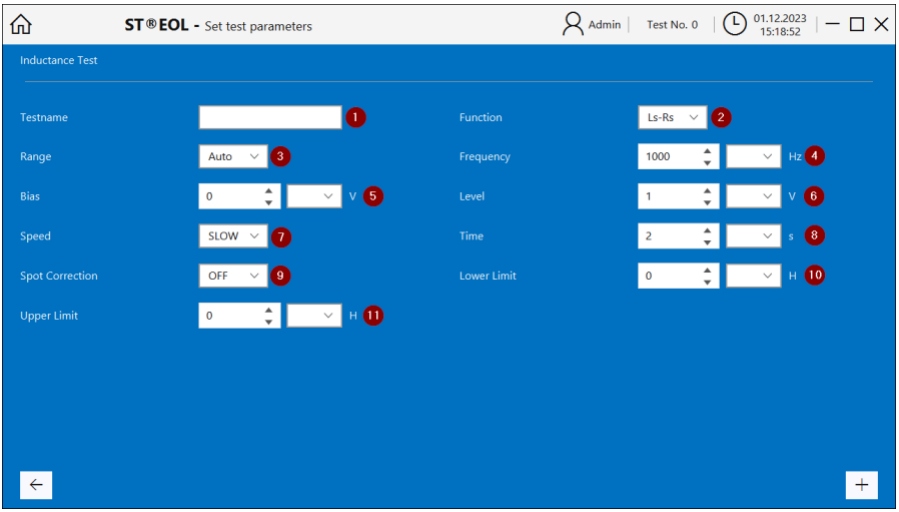


No.	Parameter	Description
1	Testname	Name of the test step.
2	Function	For each measurement point, ST2827 can test two parameters of an impedance component: one primary parameter and one secondary parameter. Use the primary parameter Cp for large capacitors or Cs for small capacitors. For further information see the device manual.
3	Range	Selection of the measurement range. You can choose either a specific range or auto-ranging.
4	Frequency	Frequency in Hertz. The measurement range of ST2827C spans from 20Hz to 1MHz with an increase or decrease of 0.01Hz.
5	Bias	Bias voltage in Volt. Provides internal DC bias voltage from -10V to +10V.
6	Level	The measurement level of ST2827 can be set as an RMS voltage value of the measuring sine wave signal.
7	Speed	You can choose a test speed of FAST, MED or SLOW. Generally, the test results will be most stable and accurate in SLOW mode.

8	Time	Test time in seconds.
9	Spot Correction	If SPOT 1, 2 or 3 is selected, the step will use the correction values of this spot.
10	Lower Limit	Minimum allowed measurement value for PASS/FAIL evaluation.
11	Upper Limit	Maximum allowed measurement value for PASS/FAIL evaluation.

3.2.11 Inductance Test (ST2827, ST2829, ST2830)

The **Inductance Test** is configured using the following dialogue. After setting the parameters, click the **+** button to add the step to the test plan.

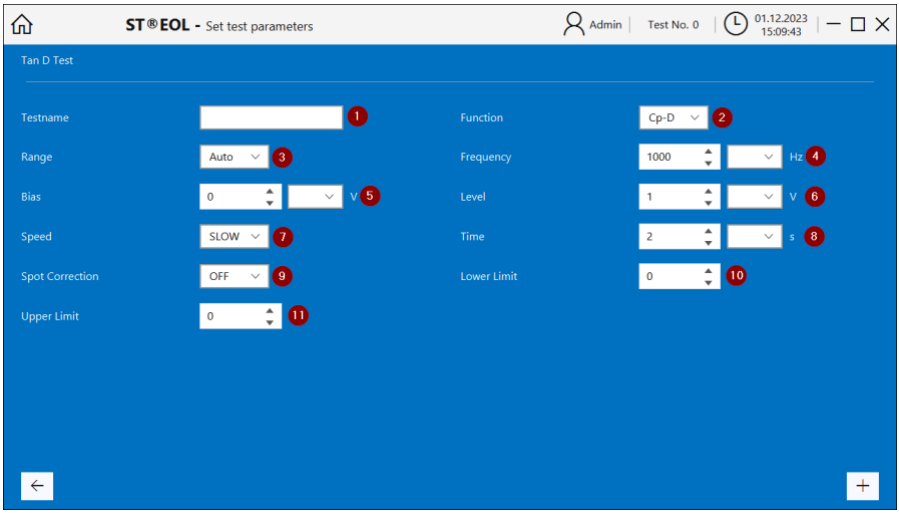


No.	Parameter	Description
1	Testname	Name of the test step.
2	Function	For each measurement point, ST2827 can test two parameters of an inductance component: one primary parameter and one secondary parameter. Use the primary parameter Lp for large coils or Ls for small coils. For further information see the device manual.
3	Range	Selection of the measurement range. You can choose either a specific range or auto-ranging.
4	Frequency	Frequency in Hertz. The measurement range of ST2827C spans from 20Hz to 1MHz with an increase or decrease of 0.01Hz.

5	Bias	Bias voltage in Volt. Provides internal DC bias voltage from -10V to +10V.
6	Level	The measurement level of ST2827 can be set as an RMS voltage value of the measuring sine wave signal.
7	Speed	You can choose a test speed of FAST, MED or SLOW. Generally, the test results will be most stable and accurate in SLOW mode.
8	Time	Test time in seconds.
9	Spot Correction	If SPOT 1, 2 or 3 is selected, the step will use the correction values of this spot.
10	Lower Limit	Minimum allowed measurement value for PASS/FAIL evaluation.
11	Upper Limit	Maximum allowed measurement value for PASS/FAIL evaluation.

3.2.12 Tan Delta Test (ST2827, ST2829, ST2830)

The **Tan Delta Test** is configured using the following dialogue. After setting the parameters, click the **+** button to add the step to the test plan.

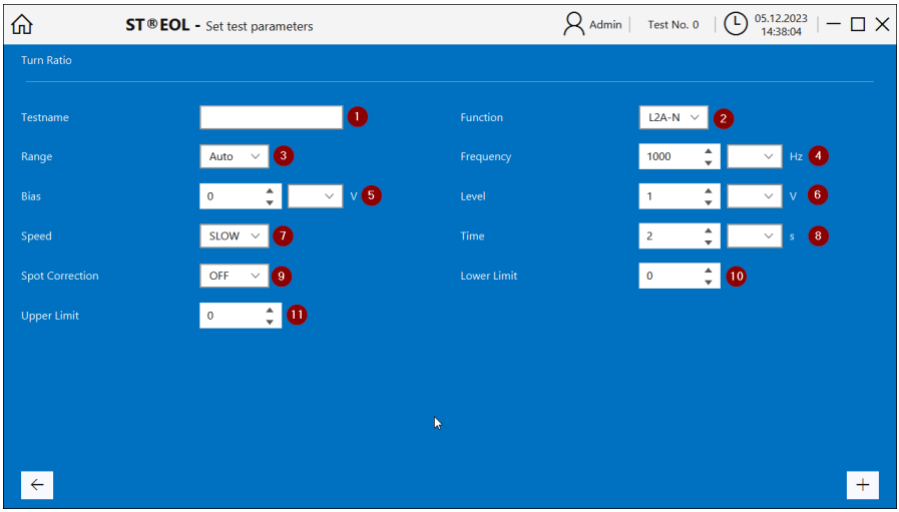


No.	Parameter	Description
1	Testname	Name of the test step.
2	Function	For each measurement point, ST2827 can test two parameters for an impedance component: one primary parameter and one secondary parameter.

		Choose a function that uses the dissipation factor D, which is tan δ, as secondary parameter. It is recommended to use the same settings as in the capacity test so the values correspond to each other.
3	Range	Selection of the measurement range. You can choose either a specific range or auto-ranging.
4	Frequency	Frequency in Hertz. The measurement range of ST2827C spans from 20Hz to 1MHz with an increase or decrease of 0.01Hz.
5	Bias	Bias voltage in Volt. Provides internal DC bias voltage from -10V to +10V.
6	Level	The measurement level of ST2827 can be set as an RMS voltage value of the measuring sine wave signal.
7	Speed	You can choose a test speed of FAST, MED or SLOW. Generally, the test results will be most stable and accurate in SLOW mode.
8	Time	Test time in seconds.
9	Spot Correction	If SPOT 1, 2 or 3 is selected, the step will use the correction values of this spot.
10	Lower Limit	Minimum allowed measurement value for PASS/FAIL evaluation.
11	Upper Limit	Maximum allowed measurement value for PASS/FAIL evaluation.

3.2.13 Turn Ratio Test (ST2827, ST2829, ST2830)

The **Turn Ratio Test** is configured using the following dialogue. After setting the parameters, click the **+** button to add the step to the test plan.

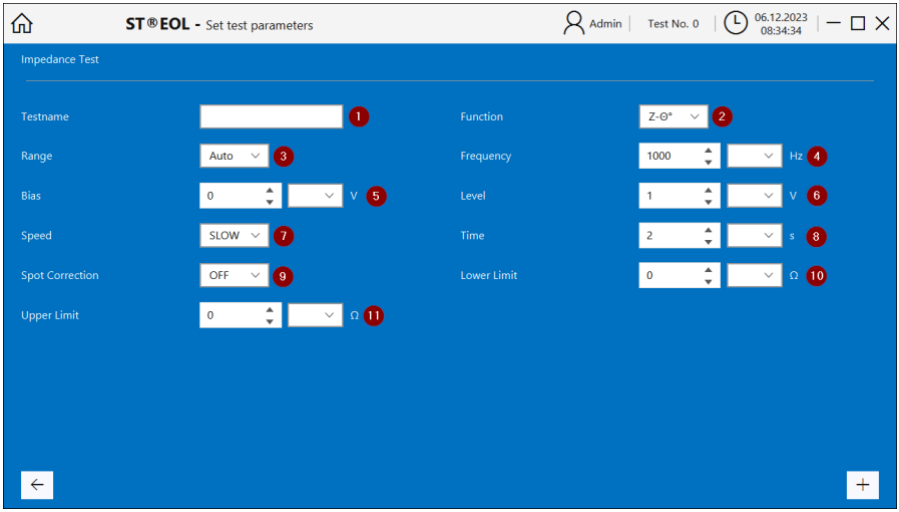


No.	Parameter	Description
1	Testname	Name of the test step.
2	Function	The two functions of the Turn Ratio test. For further information see the device manual.
3	Range	Selection of the measurement range. You can choose either a specific range or auto-ranging.
4	Frequency	Frequency in Hertz. The measurement range of ST2827C spans from 20Hz to 1MHz with an increase or decrease of 0.01Hz.
5	Bias	Bias voltage in Volt. Provides internal DC bias voltage from -10V to +10V.
6	Level	The measurement level of ST2827 can be set as an RMS voltage value of the measuring sine wave signal.
7	Speed	You can choose a test speed of FAST, MED or SLOW. Generally, the test results will be most stable and accurate in SLOW mode.
8	Time	Test time in seconds.

9	Spot Correction	If SPOT 1, 2 or 3 is selected, the step will use the correction values of this spot.
10	Lower Limit	Minimum allowed measurement value for PASS/FAIL evaluation.
11	Upper Limit	Maximum allowed measurement value for PASS/FAIL evaluation.

3.2.14 Impedance Test (ST2827, ST2829, ST2830)

The **Impedance Test** is configured using the following dialogue. After setting the parameters, click the **+** button to add the step to the test plan.

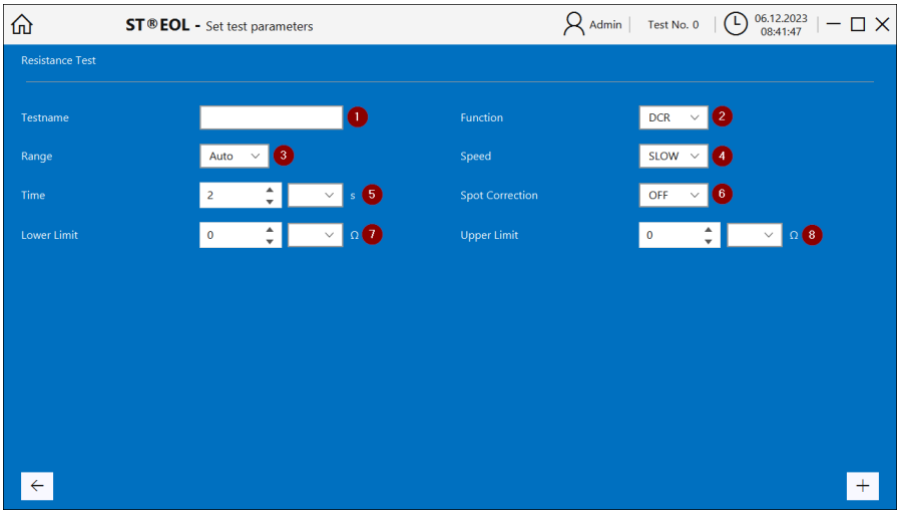


No.	Parameter	Description
1	Testname	Name of the test step.
2	Function	The functions of the Impedance test. For further information see the device manual.
3	Range	Selection of the measurement range. You can choose either a specific range or auto-ranging.
4	Frequency	Frequency in Hertz. The measurement range of ST2827C spans from 20Hz to 1MHz with an increase or decrease of 0.01Hz.
5	Bias	Bias voltage in Volt. Provides internal DC bias voltage from -10V to +10V.

6	Level	The measurement level of ST2827 can be set as an RMS voltage value of the measuring sine wave signal.
7	Speed	You can choose a test speed of FAST, MED or SLOW. Generally, the test results will be most stable and accurate in SLOW mode.
8	Time	Test time in seconds.
9	Spot Correction	If SPOT 1, 2 or 3 is selected, the step will use the correction values of this spot.
10	Lower Limit	Minimum allowed measurement value for PASS/FAIL evaluation.
11	Upper Limit	Maximum allowed measurement value for PASS/FAIL evaluation.

3.2.15 Resistance Test (ST2827, ST2829, ST2830)

The **Resistance Test** is configured using the following dialogue. After setting the parameters, click the **+** button to add the step to the test plan.

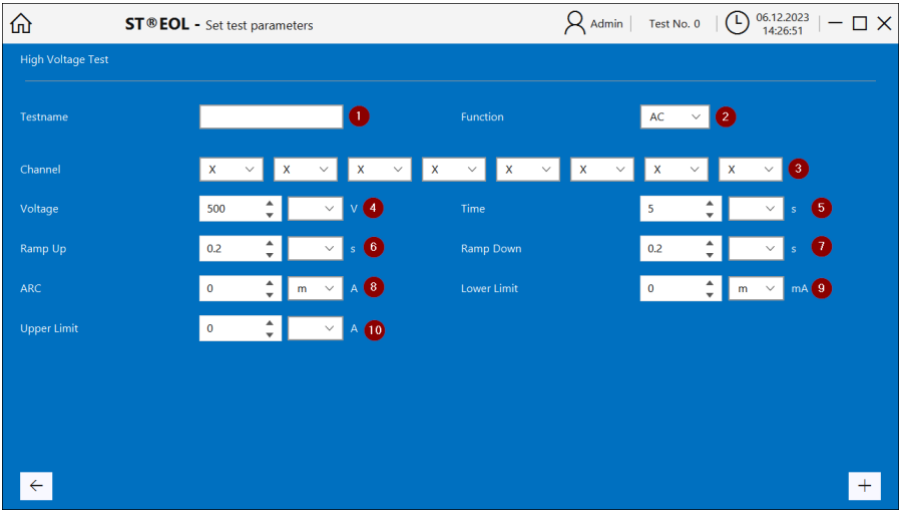


No.	Parameter	Description
1	Testname	Name of the test step.
2	Function	Only the DCR function can be used.
3	Range	Selection of the measurement range. You can choose either a specific range or auto-ranging.

4	Speed	You can choose a test speed of FAST, MED or SLOW. Generally, the test results will be most stable and accurate in SLOW mode.
5	Time	Test time in seconds.
6	Spot Correction	If SPOT 1, 2 or 3 is selected, the step will use the correction values of this spot.
7	Lower Limit	Minimum allowed measurement value for PASS/FAIL evaluation.
8	Upper Limit	Maximum allowed measurement value for PASS/FAIL evaluation.

3.2.16 Voltage Test (All ST9201 Models)

The **High Voltage Withstanding Test** is configured using the following dialogue. After setting the parameters, click the **+** button to add the step to the test plan.

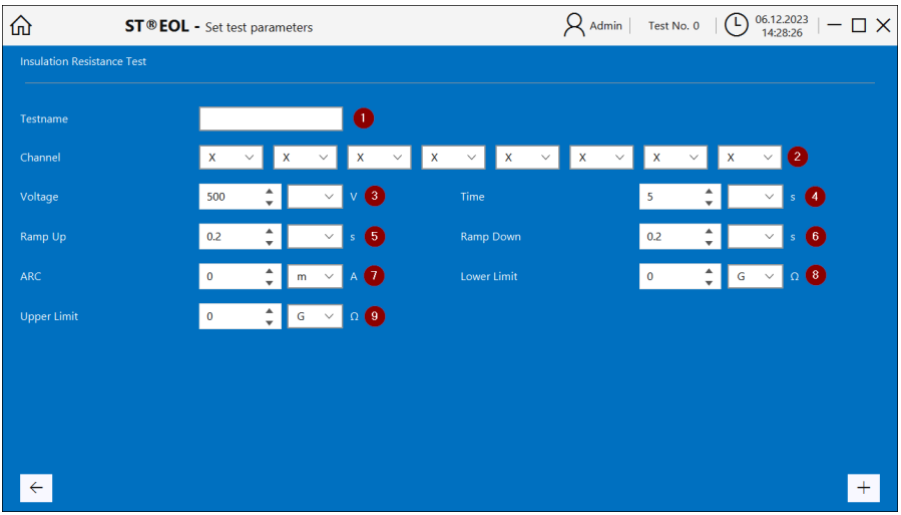


No.	Parameter	Description
1	Testname	Name of the test step.
2	Function	Select either AC test or DC test. (ST9201C: AC only)
3	Channel (only ST9201S)	Select which channels are active. Channels set to ■ are connected to high voltage, channels set to ☐ to low voltage, and channels set to X are disconnected in this step.
4	Voltage	Test voltage.

5	Time	Test holding time in seconds after the set voltage is reached.
6	Ramp Up	Time the voltage needs to increase to the test voltage; this will be divided into steps of 0.1s each.
7	Ramp Down	Time the voltage needs to decrease to 0V; this will be divided into steps of 0.1s each.
8	ARC	ARC detection limit.
9	Lower Limit	Minimum current required for the DUT to pass (too low of a current can be a sign of bad connections).
10	Upper Limit	Maximum current allowed for the DUT to pass.

3.2.17 Insulation Resistance Test (ST9201B, ST9201S)

The **Insulation Resistance Test** is configured using the following dialogue. After setting the parameters, click the **+** button to add the step to the test plan.



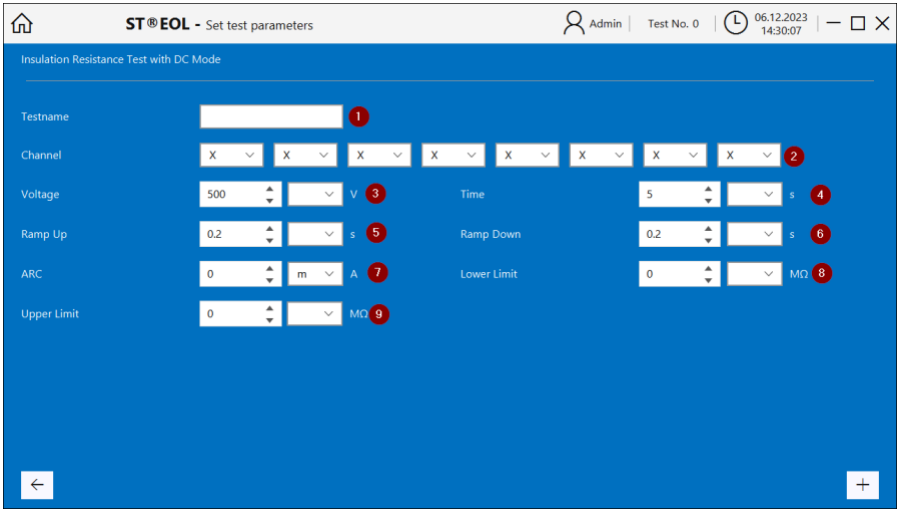
No.	Parameter	Description
1	Testname	Name of the test step.
2	Channel (only ST9201S)	Select which channels are active. Channels set to ■ are connected to high voltage, channels set to ☐ to low voltage, and channels set to X are disconnected in this step.

3	Voltage	Test voltage.
4	Time	Test holding time in seconds after the set voltage is reached.
5	Ramp Up	Time the voltage needs to increase to the test voltage; this will be divided into steps of 0.1s each.
6	Ramp Down	Time the voltage needs to decrease to 0V; this will be divided into steps of 0.1s each.
7	ARC	ARC detection limit.
8	Lower Limit	Minimum resistance required for the DUT to pass.
9	Upper Limit	Maximum resistance allowed for the DUT to pass (too high of a resistance can be a sign of bad connections).

3.2.18 Insulation Resistance Test With DC Mode (ST9201B, ST9201S)

The **Insulation Resistance Test With DC Mode** is configured using the following dialogue. After setting the parameters, click the **+** button to add the step to the test plan.

This test is used whenever an insulation resistance test requires a voltage higher than 500V.

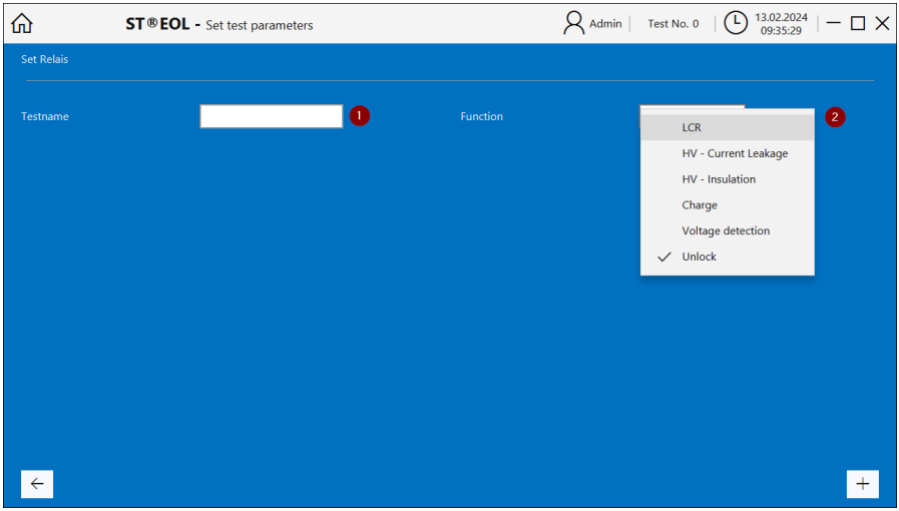


No.	Parameter	Description
1	Testname	Name of the test step.
2	Channel (only ST9201S)	Select which channels are active. Channels set to ■ are connected to high voltage, channels set to □ to low voltage, and channels set to X are disconnected in this step.
3	Voltage	Test voltage.
4	Time	Test holding time in seconds after the set voltage is reached.
5	Ramp Up	Time the voltage needs to increase to the test voltage; this will be divided into steps of 0.1s each.
6	Ramp Down	Time the voltage needs to decrease to 0V; this will be divided into steps of 0.1s each.
7	ARC	ARC detection limit.
8	Lower Limit	Minimum resistance required for the DUT to pass.
9	Upper Limit	Maximum resistance allowed for the DUT to pass (too high of a resistance can be a sign of bad connections).

3.2.19 Set Relais (STM Relay Matrix)

The **Insulation With Set Relais** step is configured using the following dialogue. After setting the parameters, click the **+** button to add the step to the test plan.

This test is used to set the Sourcetronic STM to a specific state. The available states differ between STM versions.

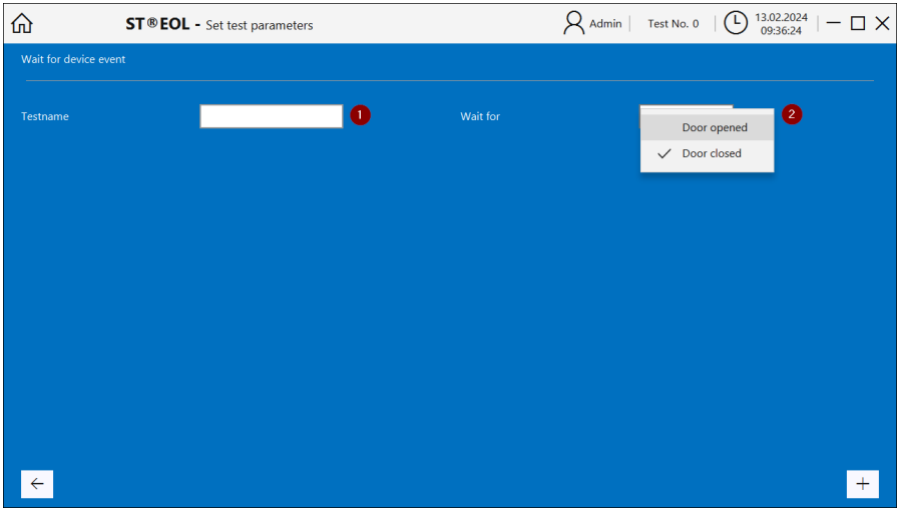


No.	Parameter	Description
1	Testname	Name of the test step.
2	Function	Select the needed relay configurations of the STM.

3.2.20 Wait for Device Event (STM Relay Matrix)

The **Insulation With Wait for Device Event** step is configured using the following dialogue. After setting the parameters, click the **+** button to add the step to the test plan.

This test is used to get events from the Sourcetronic STM, such as closing or opening of the test cage. The step is concluded as soon as the awaited event has occurred.



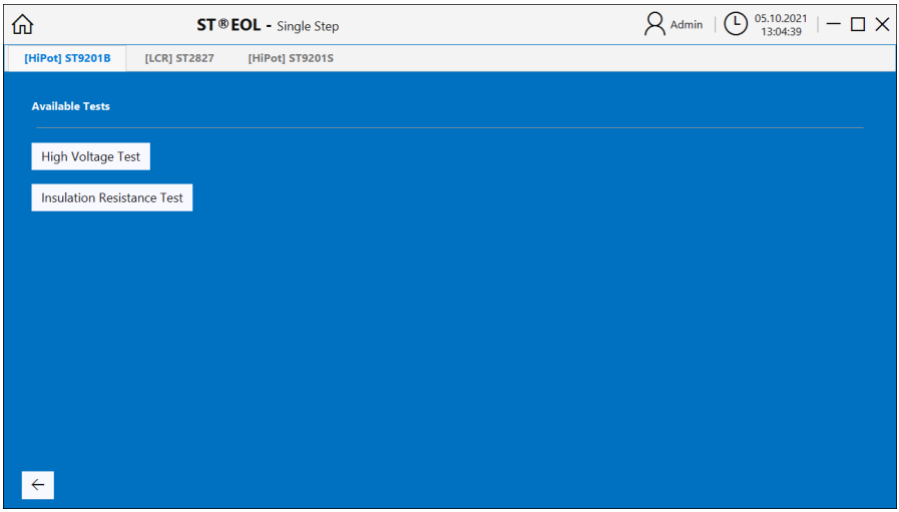
No.	Parameter	Description
1	Testname	Name of the test step.
2	Wait for	Choose an event for the test to wait for.

4 Testing

This part of the manual is aimed at anyone using the program for testing and describes the general procedures for operation. Please note that due to the wide variety of circumstances applicable to different use cases, this manual cannot hope to fully encompass all details of each situation and thus only provides a guideline.

4.1 Individual Test

Open the individual test dialogue by choosing **Test With Single Step**.

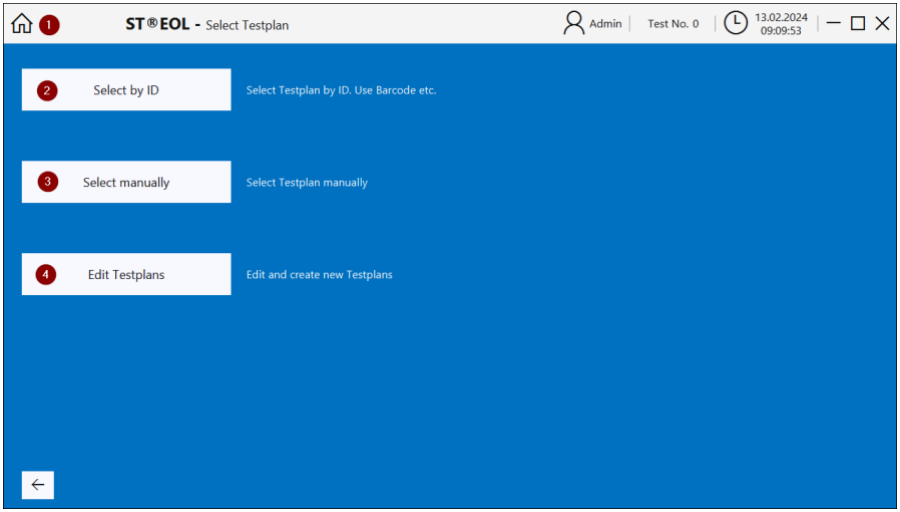


There is a button for each device and test type.

The dialogue windows for each device and for setting the test parameters are identical to those for creating the test plan described in the previous chapter.

4.2 Test Plan

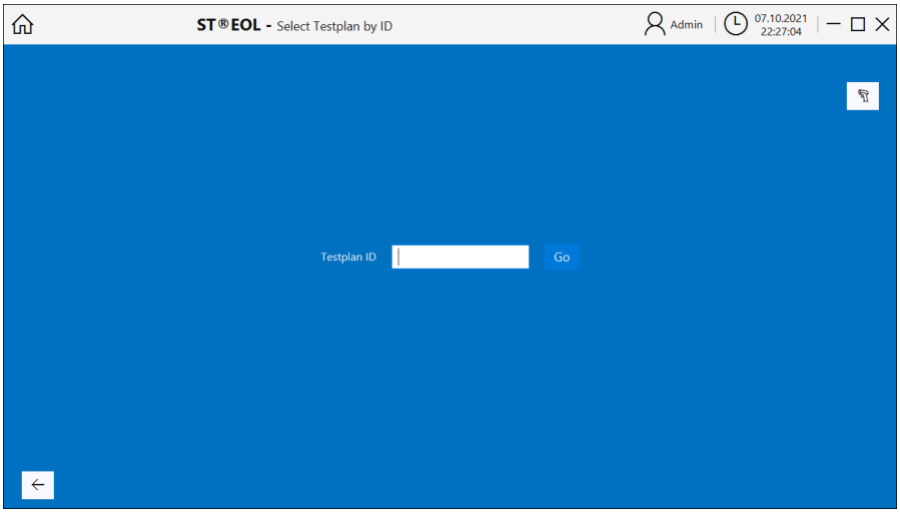
Open this dialogue by choosing **Test with Testplan**.



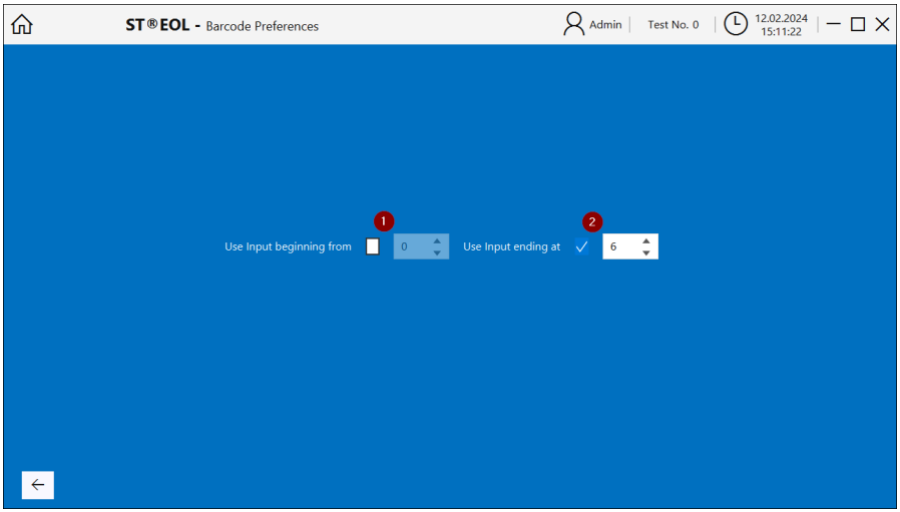
No.	Parameter	Description
1	Menu (Home Symbol or Left Arrow)	The main menu will be displayed.
2	Select by ID	Opens the window for automatic test plan selection by test plan ID. Using this selection, the test plan will be closed after testing of a single DUT is completed.
3	Select Manually	Opens the window for manual test plan selection.
4	Edit Testplans	Opens the window for test plan administering.

4.2.1 Automatic Test Plan Selection by Test Plan ID

Open this dialogue by choosing **Select by ID**.

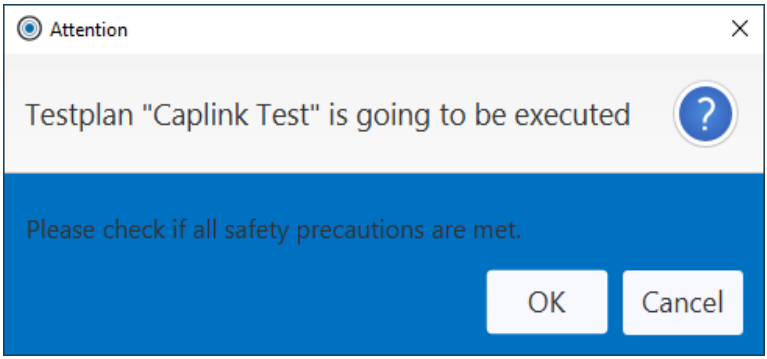


You can set up how the entered ID input is used as a test plan ID. This may be necessary if, for example, you are using a barcode scanner.



No.	Parameter	Description
1	Use Input Beginning From	If checked and a beginning is defined, any input before the set beginning will be ignored.
2	Use Input Ending at	If checked and an ending is defined, any input after the set ending will be ignored.

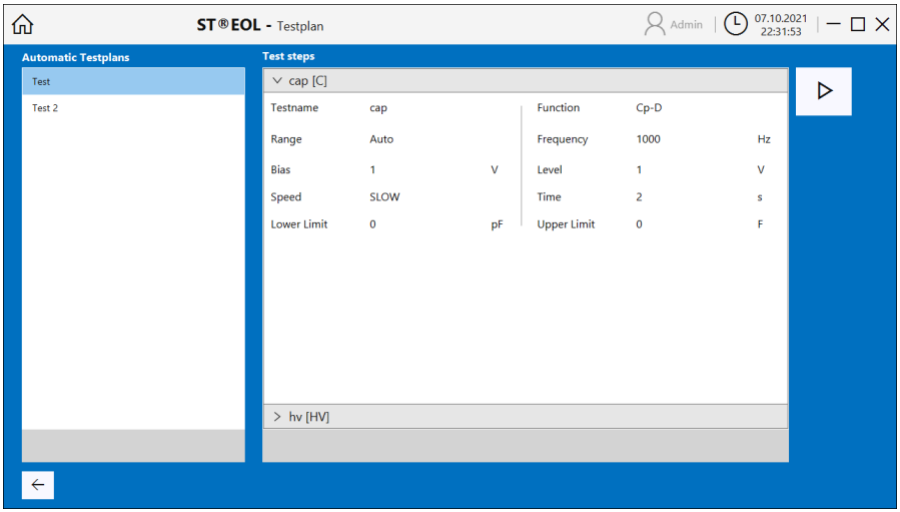
After entering the test plan ID, the following window will open, displaying the name of the test plan:



Upon confirming the dialogue with **OK**, the test will begin.

4.2.2 Manual Test Plan Selection

Open this dialogue by choosing **Select Manually**.



The manual test plan selection is similar to the test plan editing window described in chapter 4, however lacking any options to directly edit the test plans.

Select a test plan from the list in the left pane and start the selected test by clicking the ▷ button in the upper right-hand side corner of the window.

5 Instructions for Safe Operation

5.1 General Safety Instructions

- Every day before operation, a visual inspection must be carried out to ensure that the mains supply cable and the test sample connection cables are in perfect condition.
- Defective parts must be replaced or taken out of service.
- No commissioning in case of obvious defects!
- The device may only be opened and repaired by workshops authorized by Sourcetronic. There are no user-replaceable parts inside the device.
- The relay matrix STM is a protection class I device.
- The protective conductor connection of the mains cable and the mains socket used must be faultless. Any interruption of the protective earth conductor can cause the appliance to become hazardous. It is therefore not permitted to interrupt the protective earth conductor.
- The ambient humidity must not exceed 70% (non-condensing), otherwise leakage currents and flash-overs may occur throughout the test setup.
- After transportation, the appliance must not be used until it has acclimatized, otherwise condensation may occur inside the appliance, which in turn can lead to leakage currents and flashovers.

5.2 Special Safety Instructions for High-Voltage Testing and Other Hazardous Use Cases

5.2.1 Testing With High-Voltage Test Pistols

5.2.1.1 Secure Your Workplace

When using two high-voltage test pistols, the test station must be set up in accordance with EN 50191 (DIN VDE 0104) (Electrical test stations), section "4.3 Test stations without automatic protection against direct contact".

5.2.1.2 Protection of Outsiders

DANGER!	
	**Outsiders are to be protected from accidental contact with the test object (and thus from contact with the high voltage) by:** • Closing off the test area • Use of warning signs WS1 and ZS1 "High voltage, danger to life!" • Use of warning lights, red-green combination

	• Distances to high voltage according to EN 50191 • Briefings

5.2.1.3 Protection of the User

DANGER!	
	**The user is protected by:** • Use of two test pistols, one in each hand (It is not permitted to work with only one test pistol or to hold both test pistols in one hand!) • GFI protective circuit (residual current circuit breaker principle); the test object must therefore be isolated from earth potential, otherwise false tripping will occur and this function must be deactivated! • Emergency stop, mounted outside the barrier • Design of the test devices and accessories • Briefings

5.2.2 Testing With Safety Test Cage

5.2.2.1 Secure Your Workplace

If a safety test cage (e.g. SICAB or DOCAB) is used, it comprises a "test station with automatic protection against direct contact".

The test setup is significantly simplified. Please also observe EN 50191 here!

DANGER!	
	For test stations with positive contact protection (test cage), no dummy plug or jumper plug that bridges the safety circuit inadmissibly may be used! The correct function of the safety circuit should therefore always be checked before starting the test: • **Green Warning Light:** Safety cage open • **Red Warning Light:** Safety cage closed • Route the control and test cables of the test cage in such a way that damage and earth faults can be ruled out! The safety instructions for the test cage (see its own documentation) must also be observed.

DANGER!	
	Capacitances within the test object are charged with life-threatening levels of high voltage during the test procedure. The test setup must therefore always ensure that these are **safely discharged.** All capacitors that can store a dangerous amount of energy must be safely connected to **both** poles of the test voltage (and thus to the discharge circuit) or, if they are not involved in the test, short-circuited. If a contact comes loose **during** the test procedure and this prevents the regular discharge of the test object, the test cage may only be opened after an appropriate decay time or with protective equipment!

SOURCETRONIC GMBH
Fahrenheitstrasse 1
28359 Bremen
Germany

T +49 421 2 77 99 99
F +49 421 2 77 99 98
info@sourcetronic.com
www.sourcetronic.com
skype: sourcetronic

CE