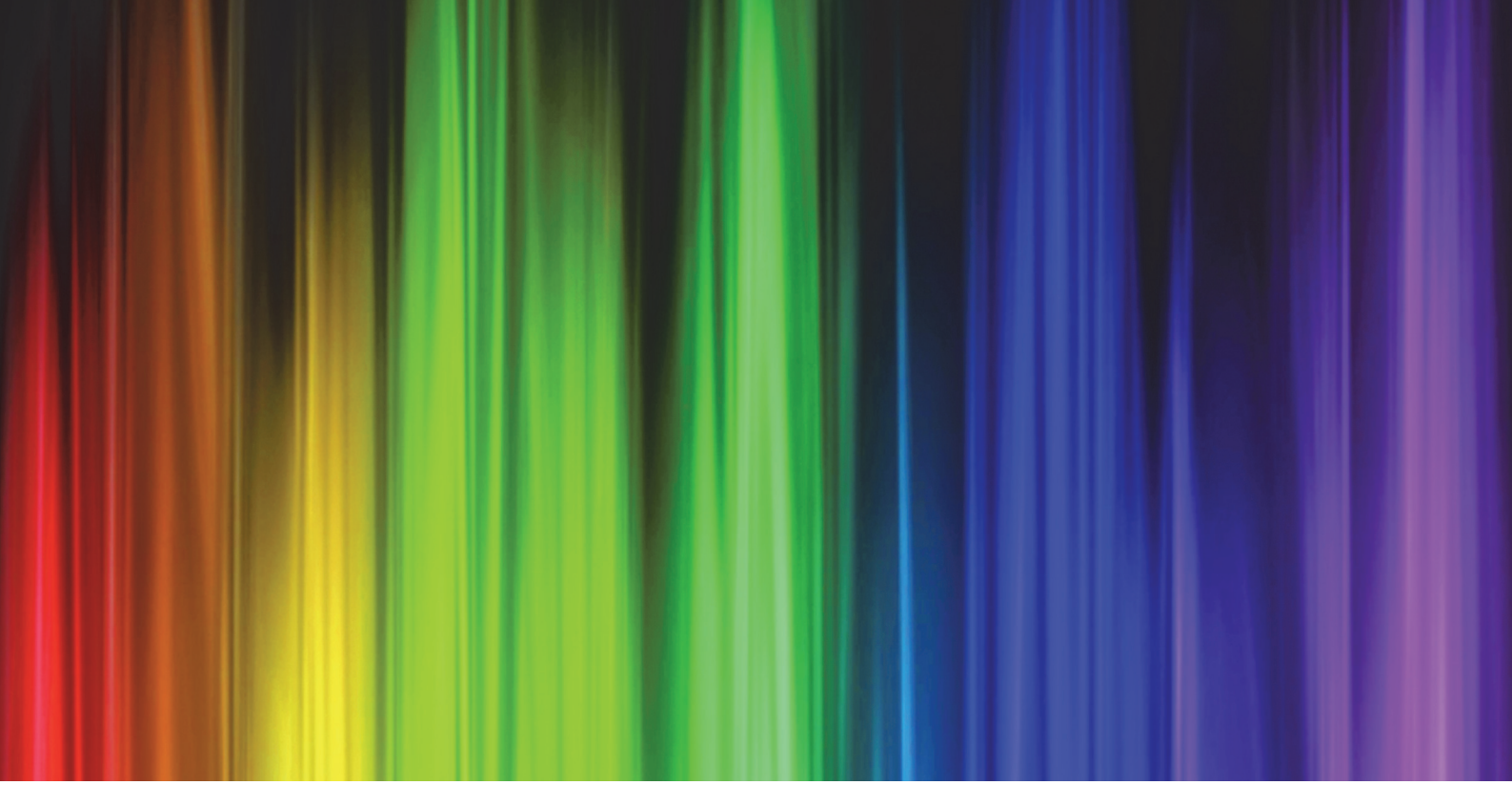

Thermo Scientific

SkanIt™ Software for Microplate Readers

User Manual

Software Version 6.1

Cat. No. N16243 Rev. 3.0 2020

thermo scientific

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Preface

About This Guide

Thermo Scientific SkanIt™ Software for Microplate readers is used to control microplate readers. This guide gives an overview of the software installation procedures and operating instructions.

Related Documentation

In addition to this guide, Thermo Fisher Scientific provides the following electronic documents for SkanIt Software:

- *Thermo Scientific™ SkanIt™ Software for Microplate Readers Technical Manual* (Cat. No. N16046)

The software also has a Help.

Safety and Special Notices

Make sure you follow the precautionary statements presented in this guide. The safety and other special notices appear in boxes.

Safety and special notices include the following:

CAUTION Highlights hazards to humans, property, or the environment. Each CAUTION notice is accompanied by an appropriate CAUTION symbol.

IMPORTANT Highlights information necessary to prevent damage to software, loss of data, or invalid test results; or may contain information that is critical for optimal performance of the system.

Note Highlights information of general interest.

Tip Highlights helpful information that can make a task easier.

Contacting Us

For the latest information on products and services, visit our website at:

www.thermofisher.com/platereaders

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1

Install SkanIt Software

This chapter gives an overview of the software installation process and introduces the main elements in the user interface. For more information about the software, see the *Thermo Scientific™ SkanIt™ Software for Microplate Readers Technical Manual*.

The software automatically detects how the instrument is configured and shows only those features that are available.

Note Your instrument may not have all of the features presented in this guide.

SkanIt Software

With SkanIt Software you can:

- Control instrument actions.
- Create measurement sessions and start measurements.
- View measurement results and perform data analysis.
- Create comprehensive result reports.
- Print or export result reports in different file formats (e.g., Microsoft™ Excel™).

All measurement and calculation data is stored in a file system.

Installation Overview

To install SkanIt Software you need:

- Administrator rights for the PC.
- The installation software on a USB stick (or access to Internet for installation from the company website).
- To make sure your PC meets the recommended requirements.

Table 1. PC recommended requirements.

System	Recommended requirements
Supported operating systems	64-bit edition of Microsoft™ Windows™ 10 (Pro or Enterprise edition)
Disk space	14 GB disk space
Processor	Quad-core (or dual-core with four logical processors), 2 GHz or faster
Memory	8 GB RAM
USB port available	1 (one)
Monitor	Full HD with 1920 x 1080 resolution

Note We strongly recommend using a computer that exceeds the recommended PC requirements (especially for the RAM memory) if you process sessions with more than a total of 150,000 individual measurements or with complex calculations.

Installation Process

1. Insert the installation USB stick into the USB port. (Optionally, go to the installation website.)

   If the installation window does not open automatically, open the Setup file from the USB stick.
2. Follow the installation instructions.
3. The installation ends with an 'Application installed successfully!' message.
4. To open the software, click the SkanIt Software shortcut on the desktop.

For detailed installation steps, see the *Thermo Scientific SkanIt Software for Microplate Readers Technical Manual*.

Main Elements

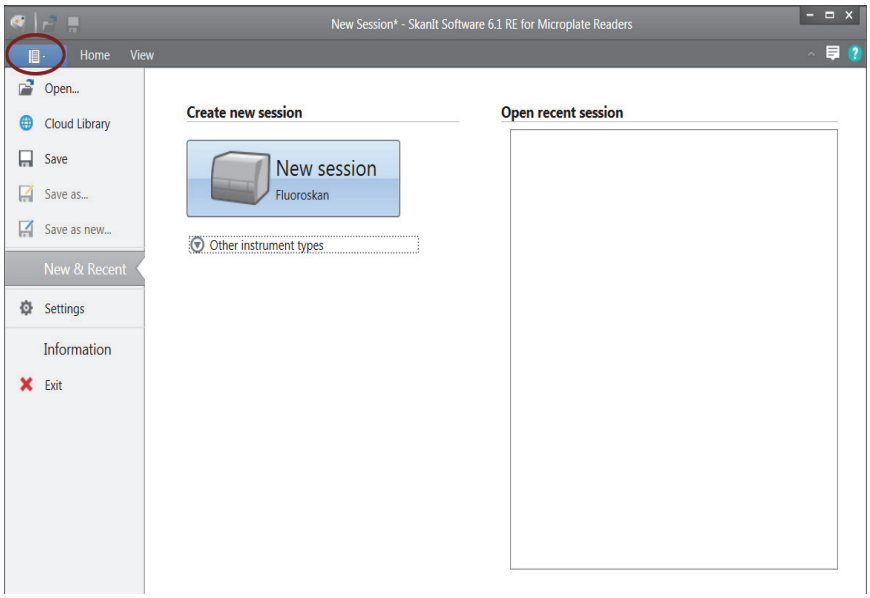
The main elements in the software are the application menu, the **Session tree** and the task ribbon. When you open the software, the application menu opens.

Application Menu

The application menu is for general tasks. This is where you create new sessions, open saved sessions and access instrument settings.

From the application menu, you can also access the SkanIt Cloud Library, where you can find ready-made sessions for commonly used assays. For more information, see the *Thermo Scientific SkanIt Software for Microplate Readers Technical Manual*.

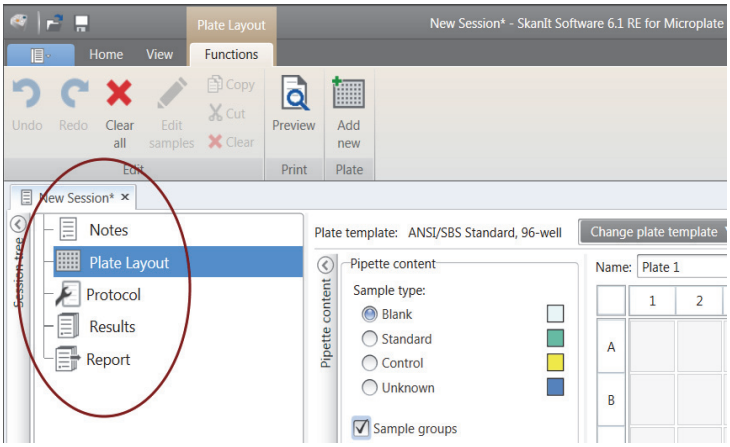
Figure 1. The application menu.



Session Tree

The **Session tree** is visible when you have created or opened a session. This is the main area where you navigate to define what wells to measure, to select the protocol, view the measurement results, perform calculations and to create a result report.

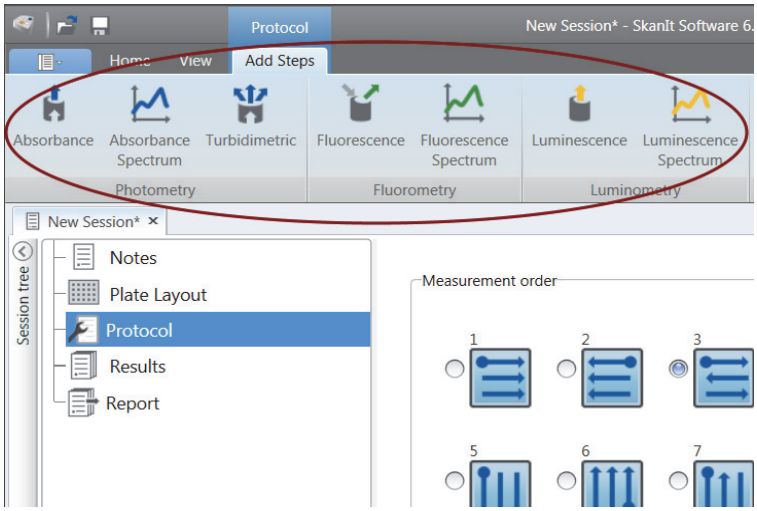
Figure 2. The Session tree with Plate Layout selected.



Task Ribbon

The actions in the task ribbon are linked to the section you have selected in the **Session tree**. When you select **Plate Layout**, **Protocol**, **Results** or **Report** in the **Session tree**, the relevant task ribbon opens. The task ribbon shows the actions you can select.

Figure 3. The Protocol task ribbon.



Select the Software Language

The default language is English. You can change the language to French, German, Italian, Japanese, Portuguese, Russian, Simplified Chinese or Spanish.

To change the language:

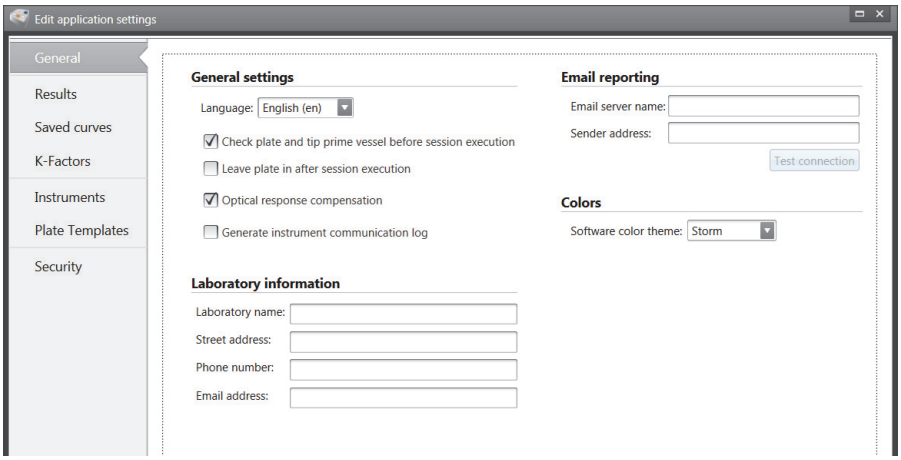
1. Click **Settings** in the **Application menu**.

   The **Settings** window opens.

2. Select the language from the drop-down list under **General settings**.

3. Restart the software to set the new language.

Figure 4. The Settings window.



2

Using SkanIt Software

This chapter describes the Session tree which is the main part of the software user interface. You will find information on how to create sessions, view and export measurement results, perform calculations, and create data reports.

The general outline for using the software is:

1. Create a new session or open an existing one.
2. Define the plate layout and protocol.
3. Start the session.
4. View the results and perform calculations.
5. Create result report and export data.

Sessions

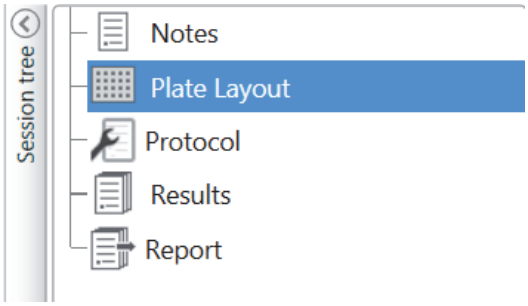
The information that is needed to define and run an assay is saved in a *session*. With SkanIt Software you can build sessions for your own assays and run or modify ready-made sessions.

Session Structure

The **Session tree** is the main use area in the software. The **Session tree** has five main sections:

1. **Notes -** write notes about a session.
2. **Plate Layout** - define which microplate format or type is used, and which wells of the microplate you want to measure.
3. **Protocol** - define what you want the instrument to do (e.g., measure, shake).
4. **Results** - view the measurement results and choose your calculation methods.
5. **Report** - create a report of the measurement and calculation results.

Figure 5. The Session tree.



Create and Save a Session

1. Click the application menu tab.
2. Click the **New session** button under **New & Recent**.
3. Click **Save** in the **Home** ribbon to save the session.
4. In the **Save as session** window, select the folder where you want to save the session.
5. Give the session a name and click **Save**.

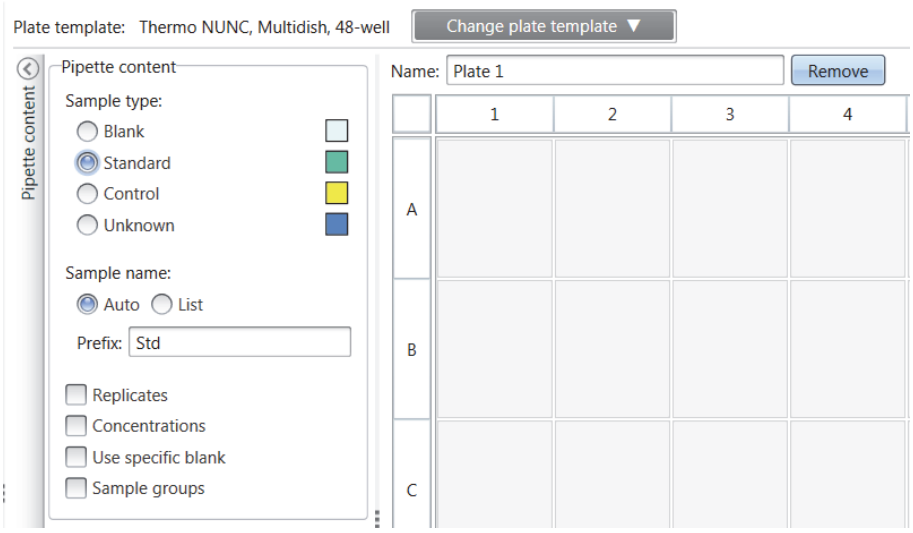
After the initial save, you can select **Save As** to save all protocols and measurement data with a new name. Select **Save As New** to save the protocols but not the measurement data.

Plate Layout

This is where you tell the software which wells to measure (or dispense) and what kind of samples you have in the microplate. The **Pipette content** section is where you define the sample properties. The virtual pipetting section is where you add the samples to the plate.

You can leave the Plate Layout empty. The instrument then measures the whole plate automatically.

Figure 6. The Pipette content section (left.) and virtual pipetting section (right.) in the Plate Layout.



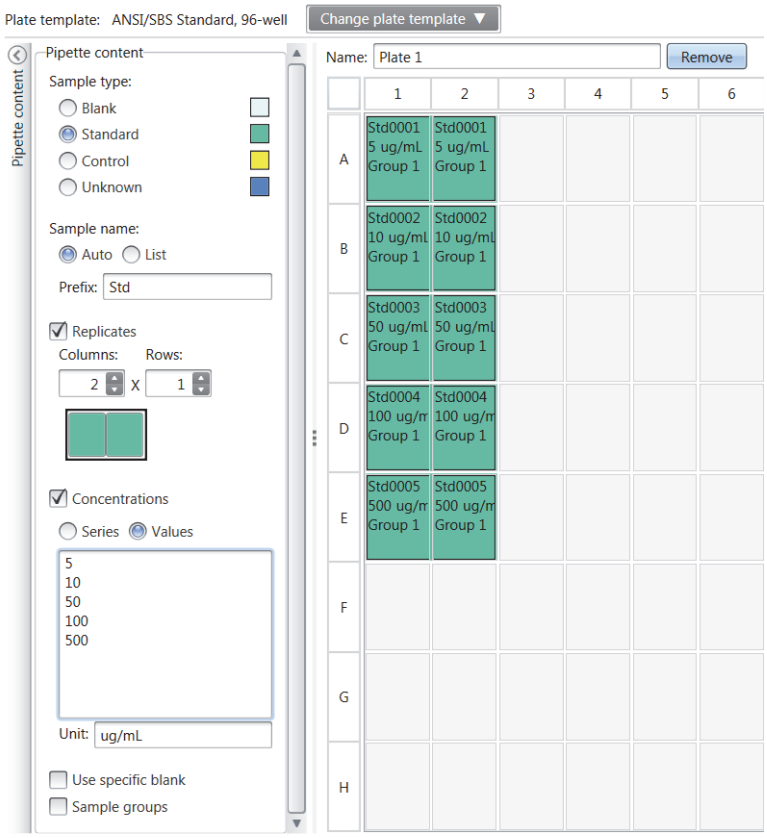
Define the Samples for the Plate

1. Click **Plate Layout** in the **Session tree**.
2. Select the plate template from the drop-down list.
3. Select the **Sample type** and sample properties.
4. Click the plate wells with the virtual pipette (your cursor) to add the samples.

> **Tip** You can add multiple samples at a time by dragging the pipette across the wells.

To clear or edit a well, right-click on the well.

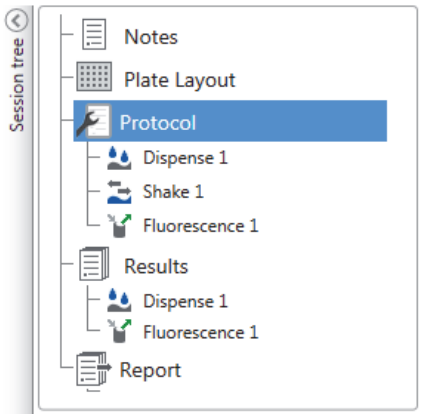
Figure 7. Example: To add a series of standard samples (concentrations 5,10, 50, 100 and 500 µl/ml)), with two replicates side by side, select the pipette content parameters as shown below, and add samples to the plate by painting the wells with the virtual pipette:



Protocol

This is where you define which actions the instrument performs. The instrument runs the actions in the order as listed under the protocol.

Figure 8. In this example the instrument first dispenses liquid to the wells, then shakes the plate, and then measures the fluorescense.

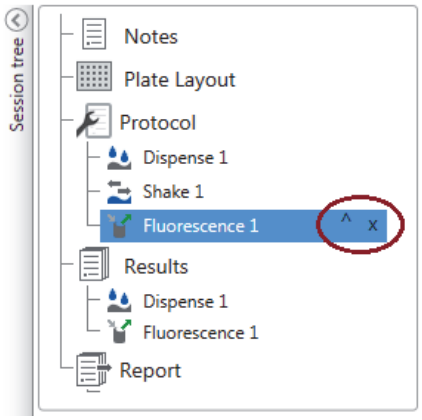


Define a Protocol

1. Click **Protocol** in the **Session tree**.
2. Select the action from the **Protocol** ribbon. The action appears in the **Session tree**.
3. Define the action parameters, such as the measurement wavelength.

   To change the order of the actions, click the action you want to move, then click the small arrowhead to move it up or down.

Figure 9. To move the action up or down, click the arrowhead icon. To remove the action, click the x-mark.



Protocol Actions

Select the protocol actions from the **Protocol** ribbon.

Note The software automatically detects the instrument configuration and shows only those actions that are available.

Figure 10. The Protocol ribbon for adding actions.

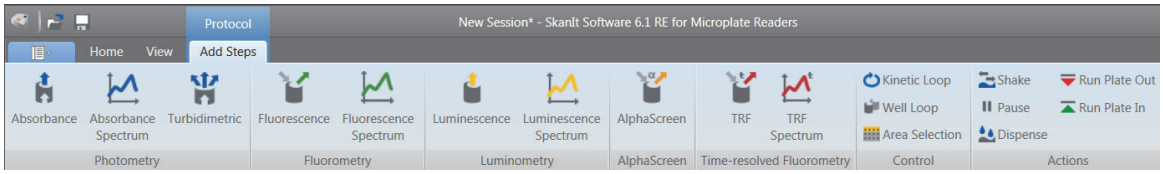
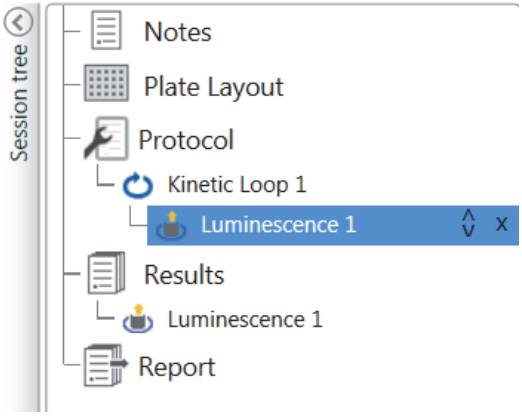


Table 2. Protocol actions and descriptions.

Action	Description
Absorbance	Measures the absorbance of light by the sample.
Absorbance Spectrum	Measures the absorbance spectrum for a wavelength range.
Turbidimetric	Measures the scattering of light by particles or other components on the sample.
Fluorescence	Measures fluorescence intensity.
Fluorescence Spectrum	Measures the fluorescence spectrum for a wavelength range.
Luminescence	Measures luminescence.
Luminescence Spectrum	Measures the luminescence spectrum for a wavelength range.
AlphaScreen®	Measures the AlphaScreen®/AlphaLISA®/AlphaPlex® signal.
TRF	Measures time-resolved fluorescence.
TRF Spectrum	Measures time-resolved fluorescence spectrum for a wavelength range.
Kinetic Loop	Executes sub-steps several times in defined time intervals in a kinetic measurement.
Well Loop	Executes sub-steps for as many wells at a time as you have selected as a well count.
Area Selection	Executes sub-steps for only part of the defined wells in the plate layout. Area definition is not necessary when all of the defined wells in the plate layout are measured.
Shake	Shakes the microplate to mix the liquid in the wells.
Dispense	Dispenses a given volume of liquid into wells.
Pause	Pauses the protocol.
Run Plate Out / In	Runs the plate in or out of the instrument.

Tip To perform a kinetic measurement, add the measurement step as a sub-step of the kinetic loop.

Figure 11. An example of a kinetic luminescence measurement.

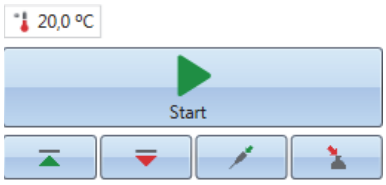


Start a Measurement

1. Click the **Start** button.

   Click the temperature, if you want to set the incubation temperature.

   Figure 12. The temperature and Start button.

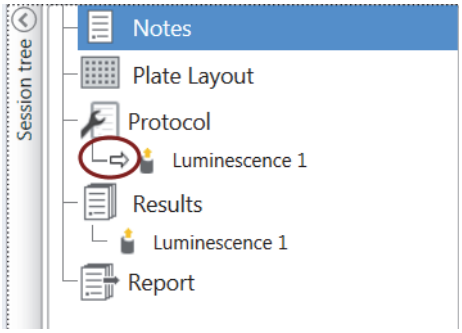


2. Write a name for the session in the **File Name** field.

   This step is skipped if you have already saved the session from the **Home** ribbon.

3. Click **Save** to start the measurement. The software indicates the action it is running.

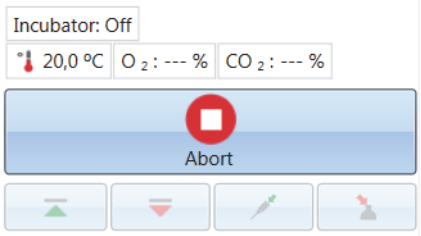
   Figure 13. Ongoing measurement, the software indicates the action it is running.



4. Click the action under **Results** to watch the measurement results during the run.

   If you need to stop the run, click **Abort**. The results measured up to that point are saved.

   Figure 14. The Abort button.



IMPORTANT Do not open the measurement chamber door during a measurement.

Results

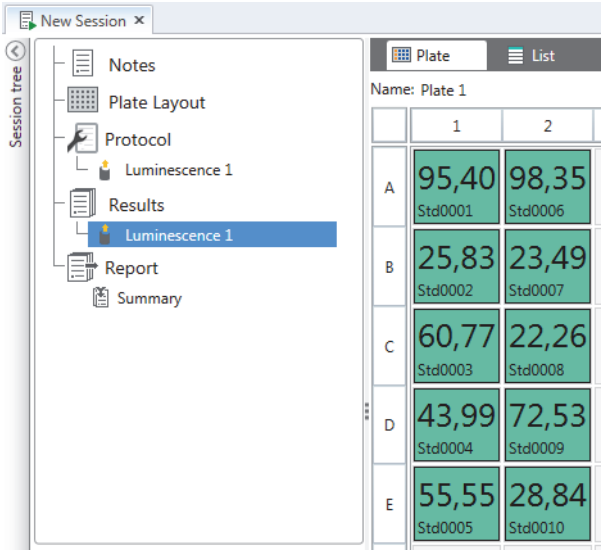
This is where you can view the measurement results and perform calculations. You can also export measurement and calculation data to use outside SkanIt Software.

View the Results

1. Click the measurement step under **Results** in the **Session tree**.

2. Click the **Plate** or **List** tab to view the results.

Figure 15. The results of a luminescence measurement with the Plate view open.



Export Results to Excel

1. In the **Results** view click on the **Export to Excel** tab.
2. Save the data.

Tip You can export the data of several steps into the same file by creating a report. You can create result reports in Excel, PDF, XML and TXT formats.

Calculations

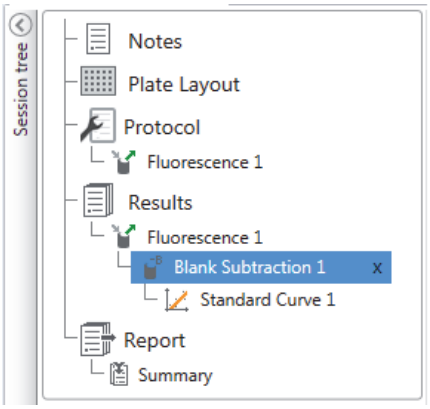
The software has built-in calculations that you can use to process data. You can add calculations either before or after a measurement. You can add several calculations to a measurement and also nest calculations.

The calculation uses the result data that is directly above it in the **Session tree**.

Add a Calculation

1. Select the results step in the **Session tree** that you want to use as the source data for the calculation.
2. Click the calculation action on the **Results** ribbon. The action appears in the **Session tree**.
3. Define the calculation parameters (if needed).
4. Click the **Plate** or **List** tab to view the calculation results.
5. Click **Save**.

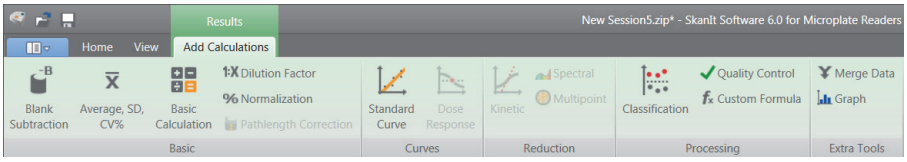
Figure 16. In this example the Fluorescence Measurement data is the source data for the Blank Subtraction calculation, and Blank Subtraction is the data source for Standard Curve.



Calculation Actions

Select the calculation actions from the **Results** ribbon.

Figure 17. The Results ribbon for adding calculations.



Note Some actions in the Results ribbon are grayed out. The active actions depend on the performed measurement and the defined samples.

Table 3. Calculation actions and descriptions.

Action	Description
Blank Subtraction	Subtracts the average blank value from all of the samples.
Average, SD, CV%	Calculates the average, standard deviation (SD) and the coefficient of variation (CV%) of sample replicates.
Basic Calculation	Performs simple calculations, such as subtractions, multiplications and divisions.
Dilution Factor	Multiplies the results of the unknown samples by dilution factors defined in the plate layout.
Normalization	Normalizes the data of a sample group to a B_0 reference sample. The results are shown in percentages.
Pathlength Correction	Normalizes absorbance measurement data to correspond to a 10 mm pathlength (= standard cuvette).
Standard Curve	Calculates the concentrations of samples based on a standard curve generated from a standard sample series.
Dose Response	Calculates the concentration at which, e.g., 50% of a measured sample activity is achieved (= ED50).

Table 3. Calculation actions and descriptions.

Action	Description
Kinetic	Offers different kinds of calculations for kinetic data.
Spectral	Offers different kinds of calculations for spectral data.
Multipoint	Offers different kinds of calculations to reduce multipoint measurement results in each well to one result per well.
Classification	Divides samples into separate categories based on user-defined limit values.
Quality Control	Checks the validity of the assay, e.g., against known control samples.
Custom Formula	Lets you create custom calculations.
Merge Data	Lets you merge several kinetic and/or endpoint measurements into a single kinetic data set.
Graph	Creates graphs from the result data.

Report

You can create a result report including both measurement and calculation data. You can export the result report to Excel, PDF, XML and TXT formats.

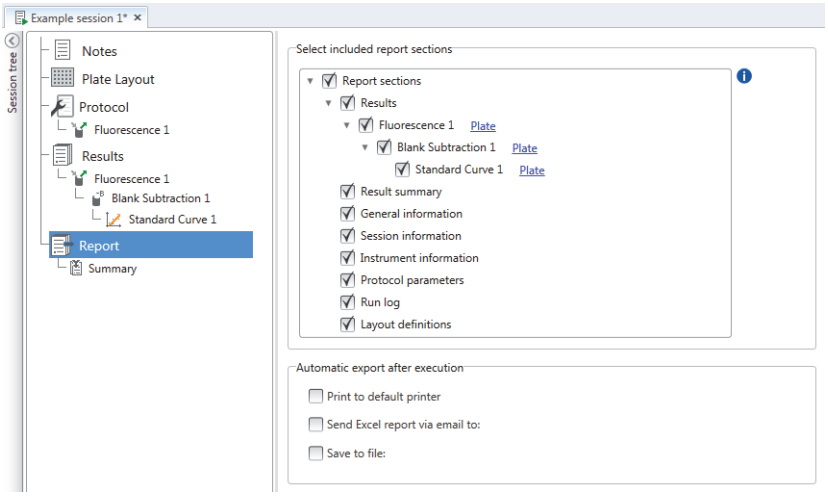
A summary table is automatically created under Report. The summary table shows only the measurement and calculation results of end-point measurements. Kinetic, spectral or multipoint results are not included in the result summary.

You can export any data by selecting the individual result sections to the report.

Create a Data Report

1. Click **Report** in the **Session tree**.
2. Check the sections you want to include in the report from the **Report sections** list.

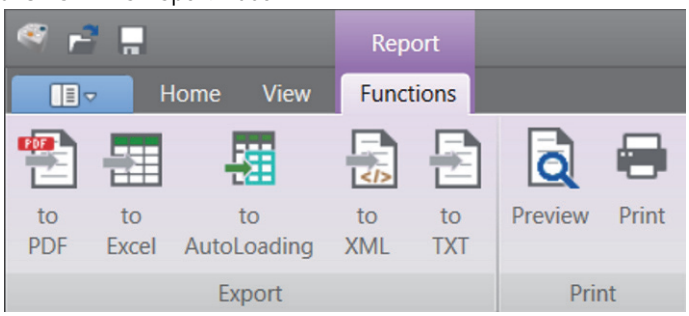
Figure 18. The Report pane open with Report sections checked.



Export a Result Report Manually

1. Click the PDF, Excel, XML, or TXT format on the **Report** ribbon to export the report.

Figure 19. The Report ribbon.



2. Save the report.

   The report automatically opens in the format you choose.

Export a Result Report Automatically

You can set the software to export the report automatically after the run to a specific destination.

Before you run a session, you need to select the report content and where to export the report.

1. Click **Report** in the **Session tree**.
2. Check the **Save to file** box in the **Automatic export after execution** pane.
3. Name the file and click **Browse** to select the destination folder and the file format.
4. Save the session.

   The next time you start the session, a report is automatically saved in the destination folder you selected.

Saved Sessions

There are two different kinds of saved sessions:

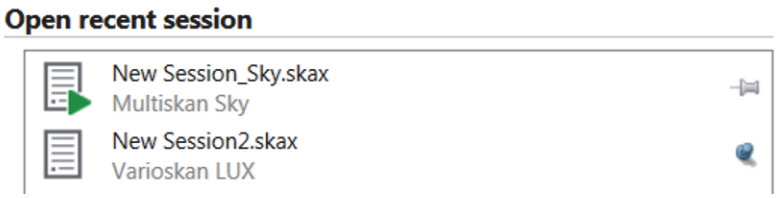
a. A session that is saved before you have run it.

   A session that you have saved but have not run does not have measurement data. You can edit all of the content.

b. A session that has been run.

   A session that has been run is automatically saved. You cannot edit the protocol, but you can edit all other content. A green arrowhead icon indicates a saved session with measurement data.

Figure 20. A session with measurement data (green icon) and without measurement data (no icon).



Open an Existing Session

You can open a recent session, or an older session.

Open a Recent Session

1. Click **New & Recent** on the application menu.
2. Select a recent session from the **Open recent session** list.

   The session opens in the **Session tree**.

Open an Older Session

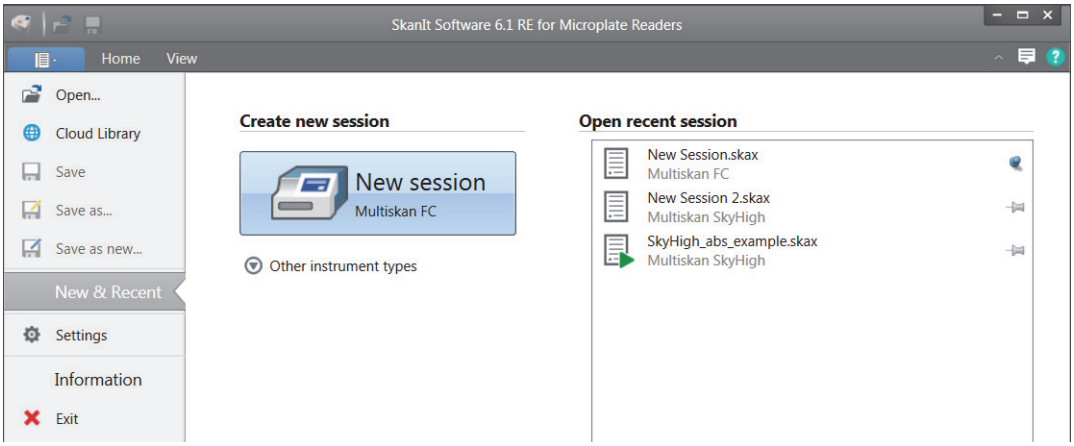
1. Click **Open** on the application menu.
2. Select the session from the pop-up window.

   You can use **Search** to find a specific session quickly.

Pin Your Favorite Session

Click the recent session to pin it as a favorite session. The favorite session then stays on the recent session list.

Figure 21. In this example the first session under Open recent session is marked as favorite.



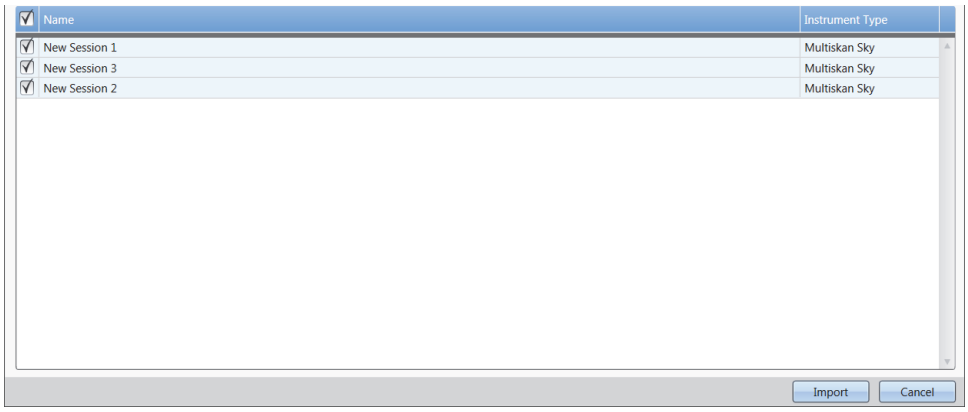
Import a Session

You can import a session, or multiple sessions, that have been created with older SkanIt Software. Files that can be imported have an *.ska extension.

1. Click **Open** in the application menu or **Home** tab.
2. Select the file type (.ska) from the drop-down list.
3. Select the session and click **Open**.

   The **Import sessions** window opens.
4. Select the session(s) you want to import and click **Import**.

Figure 22. The session selection in the Import sessions window.



The software opens the imported session(s).

Note The *.ska file can contain several sessions. Opening all the files at the same time could cause that the SkanIt Software goes in a non-responsive state.

5. Select **Save** to save the session(s) with a new name. Each session will be saved as a separate *.skax file.