

Technical Services and Scientific EquipmentScreening Facility SF@DSF

Spark (Tecan)

Short Usage Notes

➤ Before to start:

- The use of the instrument is permitted **only after having obtained a specific training**. Contact the Facility Staff for more information.
- This document does not replace the manual. The user is invited to look carefully at the manual available on the facility website.
- The instrument should be used only for its intended usage. Any other usage is forbidden. In particular, **it is strictly forbidden to alter in any way the instrumentation** (e.g. by removing or adding components, etc.).
- It is forbidden to install any software, unless authorised by the Staff.
- The instrumentation is sensitive to vibrations: do not shake the instrument or the table. **Do not move or displace the instrument.**
- Care must be taken in defining the right plate type in order to avoid damages of the optics.
- In case of doubts and for any issues **always contact the Staff** before taking any initiative.
- The instrument is accessible with the **Single Sign On system (SSO)**.
- The use of any external device (e.g. USB-key) is not allowed.

➤ Turning on.

- Turn on the computer.
- Turn on the instrument (button on the rear, see Figure 1).
- Launch the Spark Control or Spark Magellan software. **Caution:** the plate carrier automatically opens when opening Spark Magellan.
- The instrument status is indicated by a led on the front of the instrument (see Figure 2).

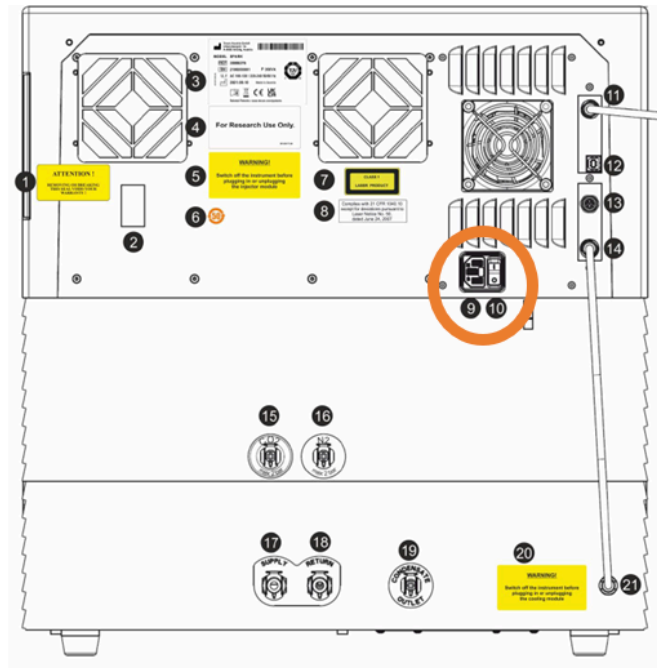


Figure 1. Rear of the instrument. ON/OFF marked by number 10.

| Led Status | Instrument State | Onboard Control Buttons | | |
|------------------|--------------------------------------|-------------------------|--------------|-------------------|
| | | Retract/ Eject | Eject Filter | Onboard- Start |
| - | OFF | O | O | O |
| - | STANDBY (5V) | O | O | O |
| BLUE | IDLE (not connected to SparkControl) | X | X | X |
| MAGENTA | IDLE (connected to SparkControl) | X | X | X |
| GREEN | RUN | O | O | X |
| RED BLINKING | ERROR | O | O | O |
| YELLOW BLINKING | USER INTERACTION | X | O | X |
| GREEN BLINKING | PAUSE | X | O | X |
| 5x CYAN BLINKING | ACTION NOT POSSIBLE | O | O | O |

Table of LED states and functionalities.

O = function not available.

X = function available.

Figure 2. Led status.

➤ Operation with SparkControl.

- After opening SparkControl the following window will appear (Figure 3). From here you can open and eventually edit an existing Method (File > Open) or create a new one, and control all the operations.

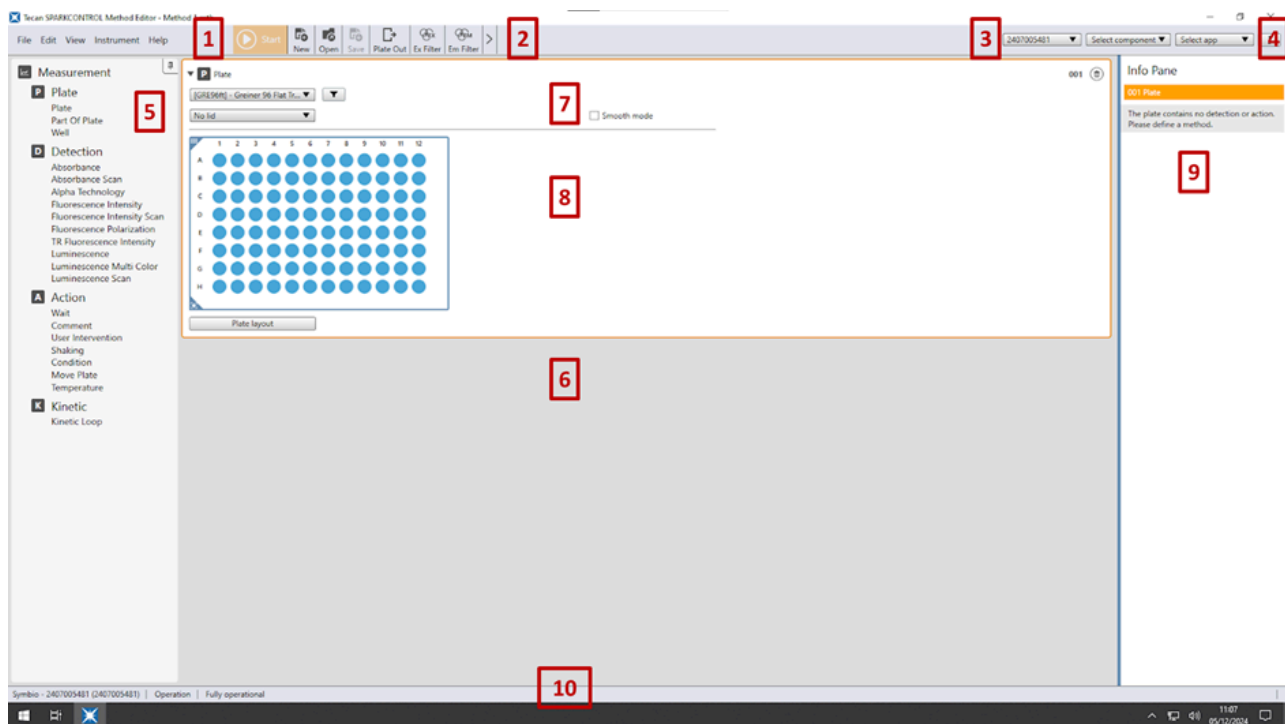


Figure 3. Opening window. 01 Menu bar; 02 Toolbar; 03 Drop-down list; 04 Button for opening the Info pane; 05 Control bar; 06 Workflow pane; 07 Collapsed strip; 08 Expanded strip; 09 Info pane; 10 Status bar

- The main window is divided into different parts with different functions (Figure 3).

| | | |
|-----------------|----|---|
| Menu bar | 01 | Contains a drop-down menu of editor and reader functions (e.g. File, Edit, Settings) |
| Toolbar | 02 | Contains icons for commonly used editor functions (e.g. New, Save) |
| Drop-down lists | 03 | Select and start functions related to the respective software application or instrument connected (e.g. Select app) |
| Control bar | 05 | Contains strips for defining workflows |
| Workflow pane | 06 | Insert strips into this pane to define the workflow. Default settings can also be adjusted here |

| | | |
|------------|----|--|
| Info pane | 09 | Displays additional information about the workflow |
| Status bar | 10 | Displays information about the connected instrument (e.g. name, temperature) |

➤ Plate control

- To insert the plate:
 - Click on Plate Out in the Toolbar. The plate carrier opens.
 - Put the plate into the carrier. **Check that the plate bottom is clean! Clean with paper and/or ethanol 70% in order to avoid any contamination and malfunctioning of the carrier. In case of any spill over/contamination gently clean the plate carrier in the same way.**
 - The A1 corner must be onto the upper left corner (see Figure 4). Align the plate on the left.
 - **Care must be taken in order to place the plate correctly. Any misalignment can seriously damage the instrument. Do not push onto the carrier, as it can break.**
 - Click on Plate In.
- To remove the plate:
 - Click on Plate Out.
 - Remove the plate.
 - Click on Plate In.
 - Clean the plate carrier gently if needed.
- To define the plate:
 - Select the plate format and type from the Plate Strip. **Always define the right plate, otherwise the instrument can be seriously damaged. In case of any doubt, contact the Staff.**
 - Select the area you intend to measure by clicking on the desired wells/rows/columns. Click on the upper left corner of the plate image to select/deselect the entire plate.
- To define the plate layout (if needed):
 - Click on Plate Layout in the Plate Strip and define the desired identifiers.

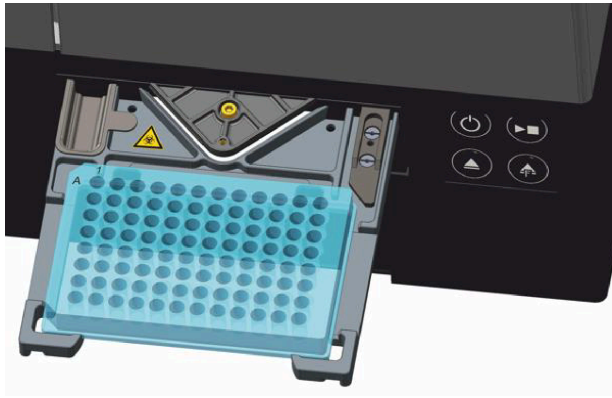


Figure 4. Correct position of the plate.

> Creating or Editing a Method

- Previously created methods can be opened and edited from File > Open. Otherwise you can directly create a new method from the main window (File > New).
- After the plate is defined, a method can be created by dragging the desired components from the Control Bar into the Workflow Pane (5 and 6 in Figure 3). An example of method is shown in Figure 5.
- The Info Pane (9 in in Figure 3) provides additional information during the method editing (e.g. inconsistency in the method, Figure 6). It is not possible to run a method until the Info Pane is “OK”.
- Indent or Outdent a strip in order to modify the workflow and perform some measurements in a different order or on a defined subset (Figure 7). In order to Outdent/Indent, Right click on a Strip to open the menu and select Outdent/Indent, if available.
- Use the Part Of Plate or Well strips to define a subset of the plate (Figure 7).
- Use the Detection Strips to measure. Each module provides some settings specific to that module.
 - Use Multiple Reads per Well (if available), to define the geometry of reading in each well (e.g. multiple points, circle, squared, etc.)
- Use the Action strips to perform defined action, including temperature settings or manual intervention.
 - **The instrument is not provided with a cooling system. If you set a temperature higher than RT, it may take several minutes for the instrument to cool down again after a measurement.**
- Use the Kinetic Loop to perform repeated measurements (kinetics or replicates).
- Save the method if needed (File > Save As or Save). **All the methods must be saved with the following format: [GROUP/COMPANY/FACILITY]_[USER SURNAME]_[DATE]_[DESCRIPTION]** (e.g. SF_Bertarello_250127_TestsAbs).

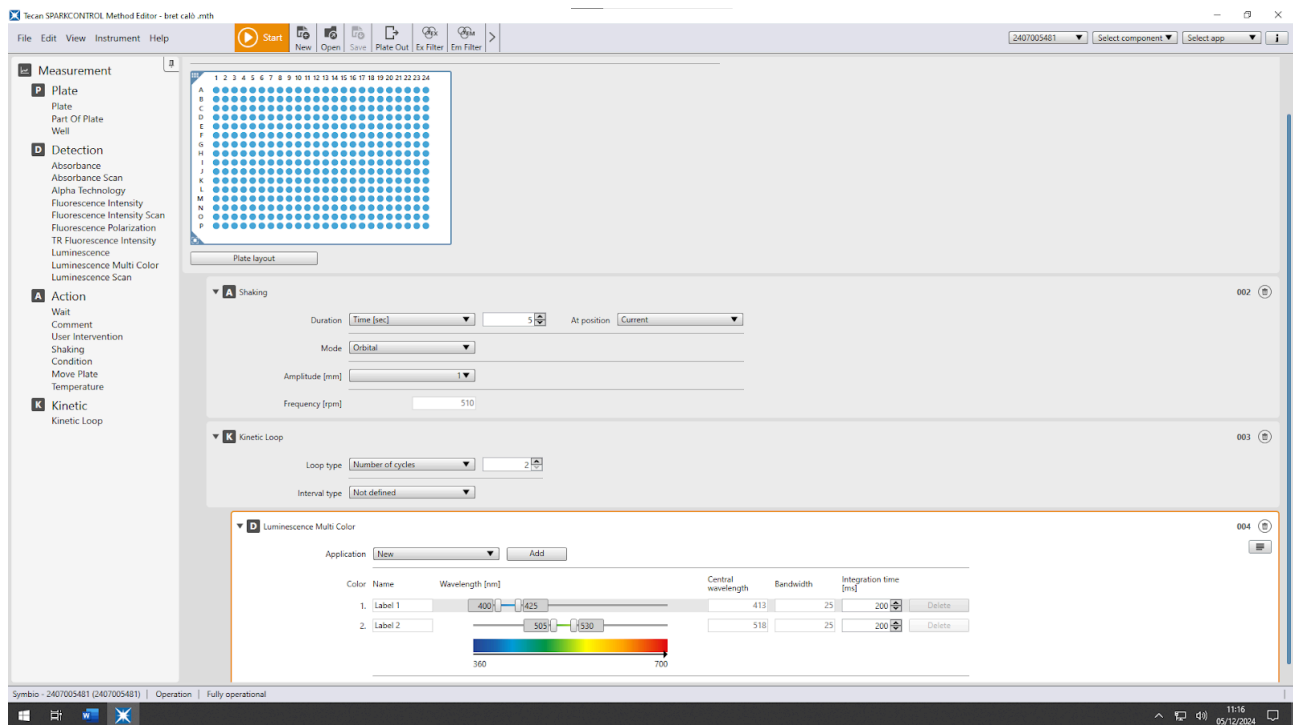


Figure 5. Example of method. In this example the method is performed on the entire plate. There is an initial shaking step, followed by two cycles kinetic. For each cycle, a luminescence measurement is performed, first on Label 1 (entire plate) then on Label (entire plate).

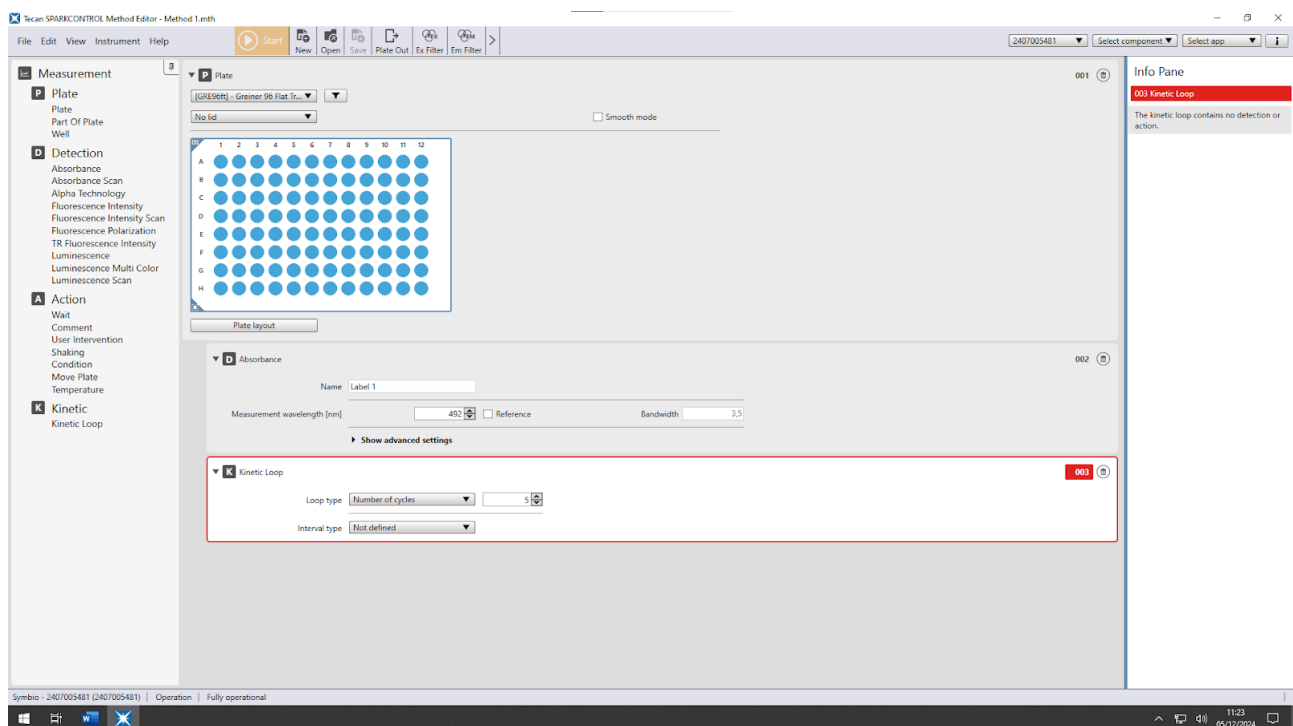


Figure 6. Error in the Info Pane.

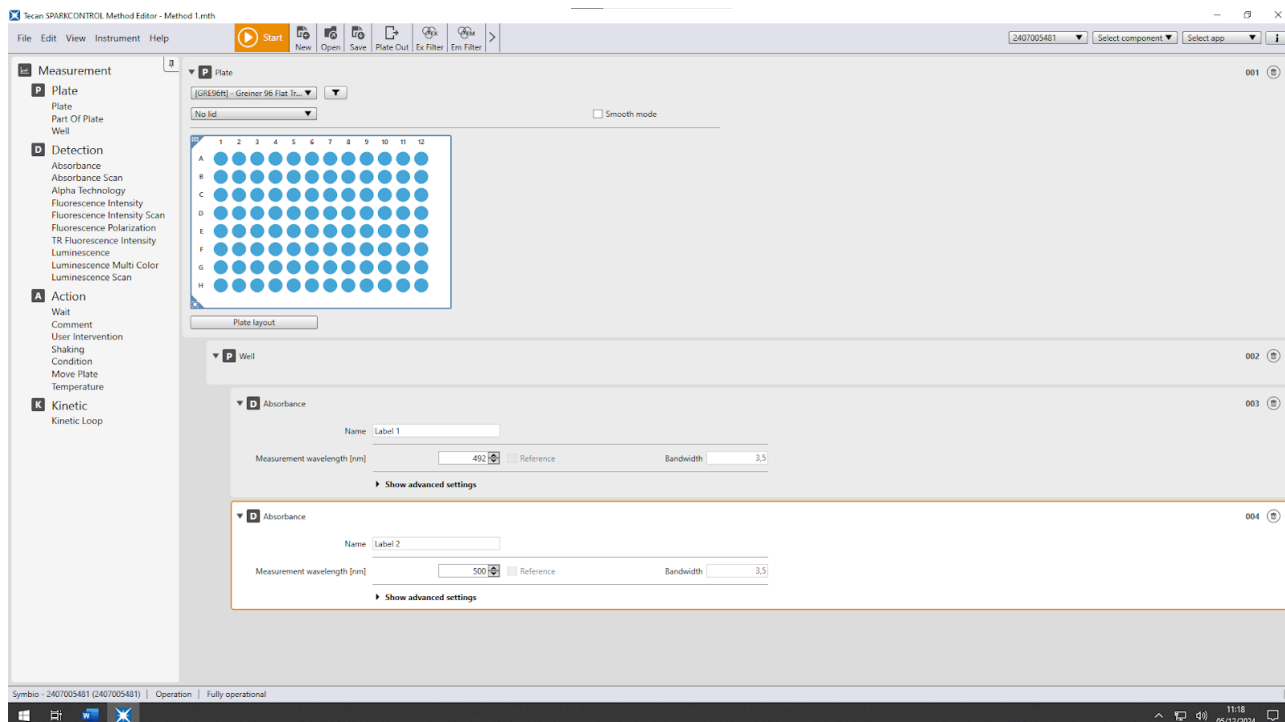


Figure 7. Use of Outdenting and Indenting, and Well Strips. In this example Absorbance of Label 1, followed by Label 2, is performed for each separate well. Without the Well option the instrument would measure Label 1 for the entire plate, and then Label 2.

➤ Running a Method

- Once the Method is ready and saved, click Start on the Toolbar.
- During the measurement a panel will open. From here you can, among others:
 - Monitor the incoming raw data in real time.
 - Stop the measurement. Data is saved.
 - Pause/Continue a method (only for kinetics, paused at the end of the current cycle).
- Note that the instrument performs measurements on rows with a serpentine pattern (e.g. from A1 to A12, then from B12 to B1, and so on). This cannot be modified.

➤ Viewing results

- The results are automatically saved into a folder with the following format: [Method Name]_aaaammdd_hhmmss. Data are in the xlsx subfolder.
- At the end of the run, an excel file with the results automatically opens (default settings, this can be changed if desired). The file contains all the measured data, as well as the settings of the experiment.
- The folder is saved into the following path: Documenti Pubblici/Tecan/SparkControl/Workspaces. A shortcut Spark_Results is available on the Desktop. **Note that this is a public folder, and the results are accessible to everyone. Do not modify or access other Users results. If you**

need to store the results into a different location (e.g. confidential data), please contact the Staff.

- The output settings of the measured results can be modified from the Dropdown lists (3 in Figure 3), by selecting Settings > Data Handling. Once modified, these settings apply to all methods run afterwards.

> Help

- Please refer to the complete manual ([here](#)), available also in the PC, for a complete description of the functions.
- For any issue, contact the [Staff](#) or Tecan Helpdesk (helpdesk-it@tecan.com Tel. 800 112 291), putting in cc the Staff.