

Advanced Functions for FluorCam Software

The **Advanced Functions** in FluorCam10 software are extensions designed for automating the execution of measurement protocols. These functions are delivered in three licensing tiers, each supporting an increasing number of measurement phases:

- **Advanced Multiple Function**
This feature enables automated, repeated execution of a single measurement protocol. It's the simplest automation option and ideal for standardized, repetitive data acquisition workflows.
- **Advanced Circadian Function**
Tailored for circadian rhythm studies, this feature allows automation of two distinct protocols in two phases—one for the daytime, another for the nighttime. This dual-mode setup supports precise, time-specific measurements for diurnal research, while also supporting repetitive use of a single protocol if needed.
- **Advanced Multi-phase Function**
The most versatile extension, it supports automation of up to ten distinct phases, each with its own protocol. It is ideal for experiments with complex time courses or varying conditions. This function encompasses the capabilities of both the previous functions.

Activation requires an Automation License, which is specific to each FluorCam unit. This license is stored on a USB flash drive and/or the control laptop.

Activating Advanced Functions

1. Open **FluorCam10**.
2. Navigate to: **Setup > General > Advanced** (Fig. 1-1).
3. Click **Select File**, then locate your license file (.falicense) (Fig. 1-2):
 - On USB: FCXXX-XXX\User Keys\FC10_Automation_License
 - On laptop: C:\PSI\User Keys\FC10_Automation_License
4. Once activated, the ► **Start Auto** option becomes available in the main menu (Fig. 1-3).



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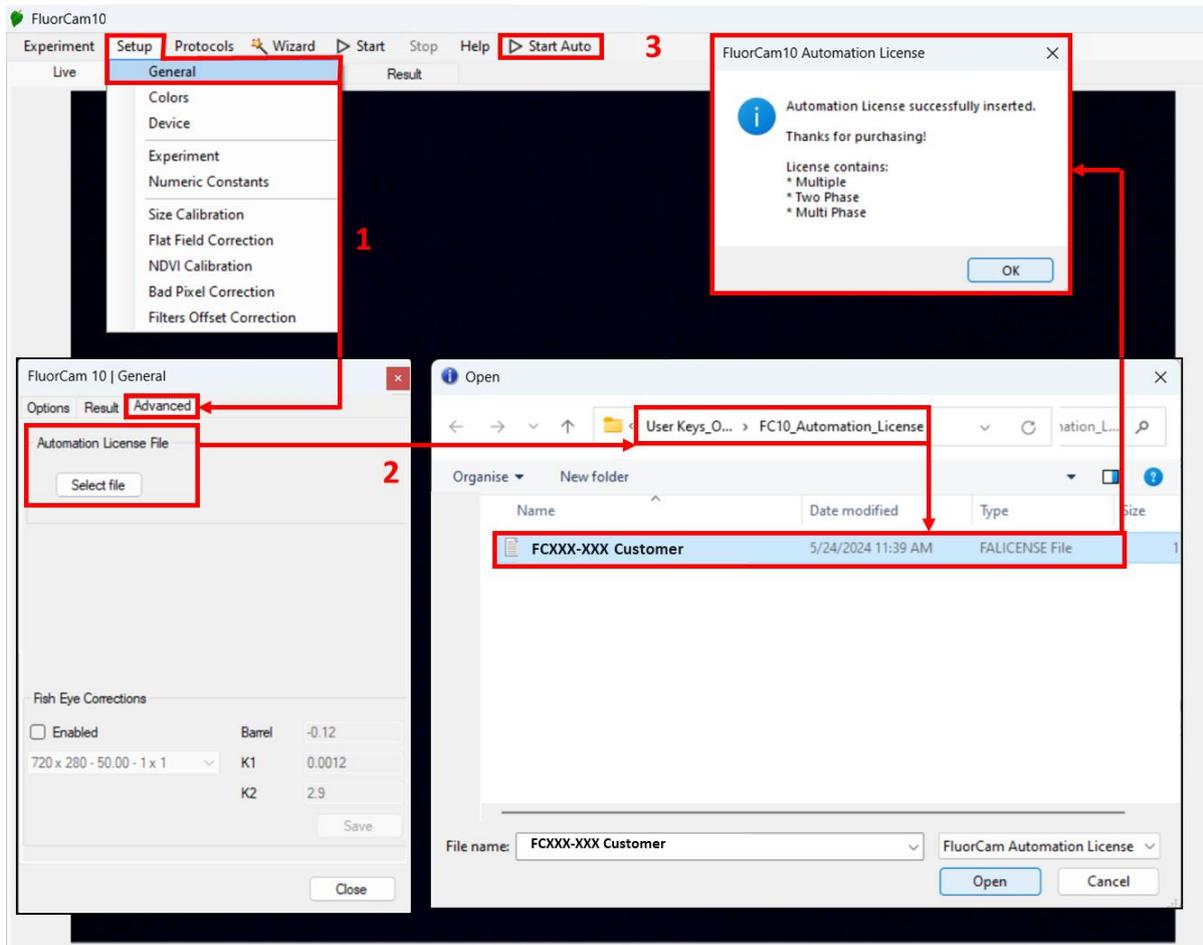


Fig. 1 Activation of Advanced Function extensions.

Setting Up Automated Measurements

Computer Power Settings

Ensure the control computer is always plugged in and set to prevent sleep/hibernate (Fig. 2):

- Plugged in > Sleep: Never
- Plugged in > Hibernate: Never

Hibernation pauses ongoing automated measurements.



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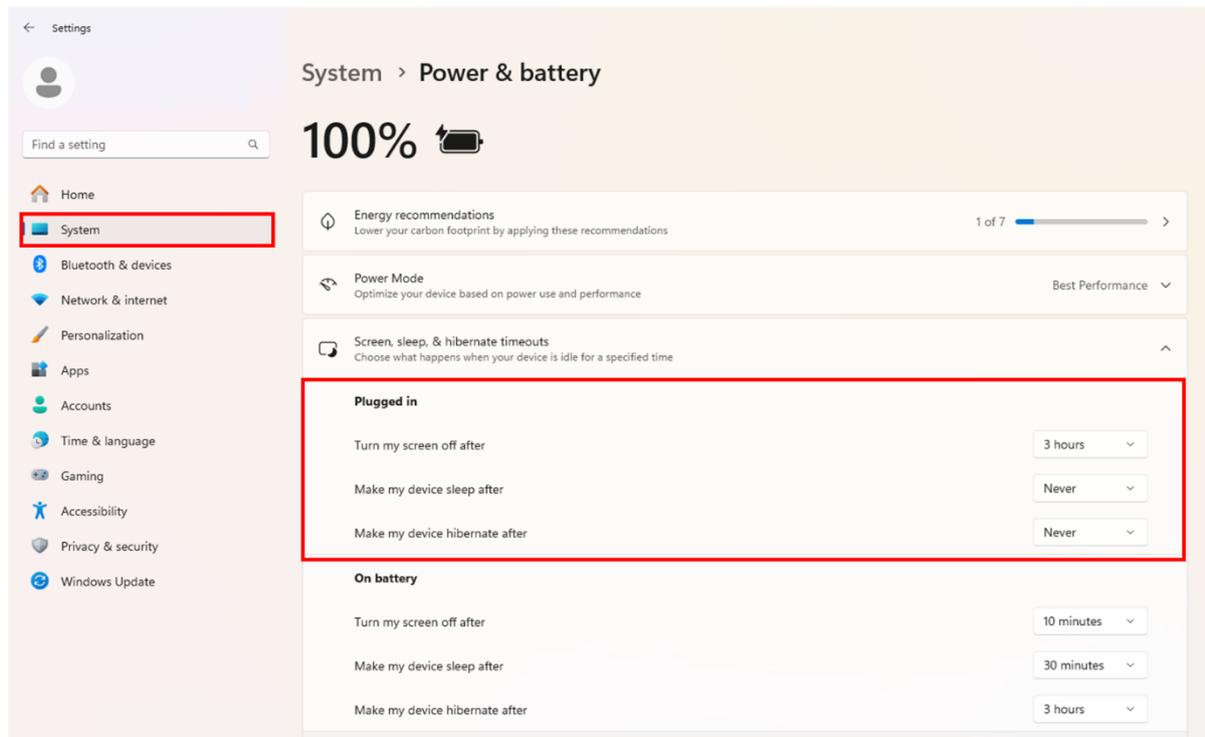


Fig. 2 Activation of Advanced Function extensions.

Using the Automated Function

1. Start Automation

- Click ► **Start Auto** in the main menu.
- Choose one of the following (Fig. 3):
 - **One Phase:** Advanced Multiple Function
 - **Two Phases:** Advanced Circadian Function
 - **Up to Ten Phases:** Advanced Multi-Phase Function

One phase:

One or two phases:

Up to ten phases:

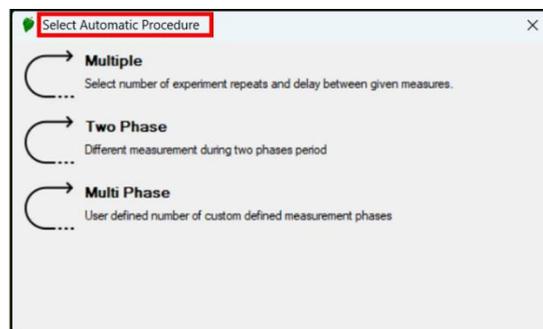


Fig. 3 Activation of Advanced Function extensions.



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2. Set Phase Count (if applicable)

- For Circadian and Multi-Phase options, define the number of measurement phases (Fig. 4).

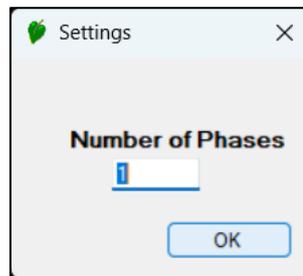


Fig. 4 Definition of the selected number of phases (in Advanced Circadian Function and Advanced Multi-phase Function only)

3. Select Measurement Protocol

You can:

- Use the currently open protocol in FluorCam10 (Fig. 5-1).
- Or click **Wizard** to choose a different protocol (Fig. 5-2).

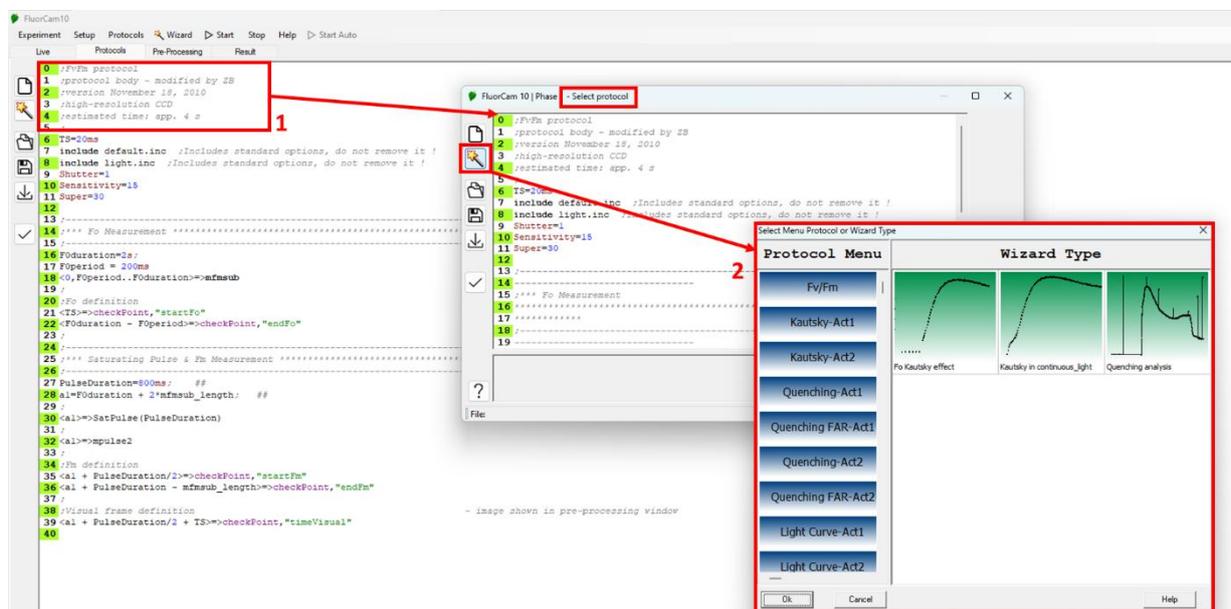


Fig. 5 Selection of protocol: 1 – the protocol open in FluorCam10 software is offered, 2 – different protocol can be selected via Wizard.



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4. Define Measurement Settings for Each Phase

- **Output Folder:** Choose or create a folder (Fig. 6-1).
- **Repeat Count:** Number of repetitions (Fig. 6-2).
- **Delay Time:** Time interval between repetitions.
- **Cultivation Light (optional):** Set light type and intensity if needed.

Tip: Click **OK** after dark adaptation is complete to trigger the first measurement (Fig. 6-3). If only one phase is defined, clicking **OK** starts the measurement immediately.

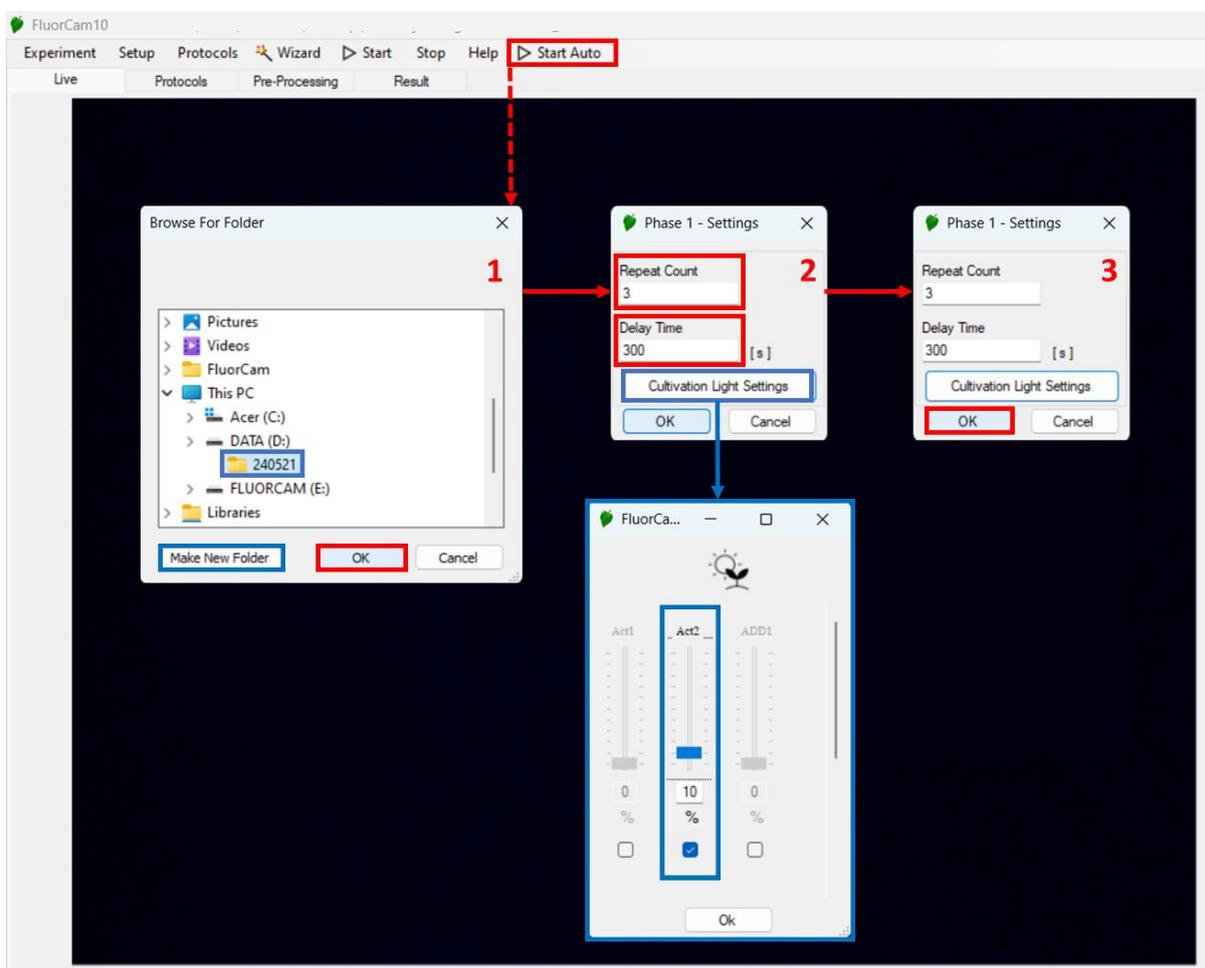


Fig. 6 Settings of the phase: 1 – the output pathway, 2 – repeat count & delay time, 3 – triggering of measurement.



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5. Data Output

- Each measurement is saved as a .tar file with a timestamp in the defined output folder (Fig. 7).
- Files can be loaded individually into FluorCam10 for analysis.

Name	Date modified	Type	Size
 Exp-21-05-2024-04-51-08	5/21/2024 4:51 AM	Compressed Archi...	12,303 KB
 Exp-21-05-2024-04-56-14	5/21/2024 4:56 AM	Compressed Archi...	12,303 KB
 Exp-21-05-2024-05-01-20	5/21/2024 5:01 AM	Compressed Archi...	12,303 KB

Fig. 7 Files measured via Automated function extensions are saved with the time stamps.

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