

Monarch Application User Guide

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1 Overview

1.1 SW

This software enables the user to evaluate Unispectral's MEMS technology. By using Unispectral's new EVK, the user will be able to set exposure and gain values, choose specific CWLs, and save the images for further analysis.



1.2 Computer Settings

Before starting to work with the software, the user should make sure the following settings are defined properly:

- **USB Connection** – make sure the camera is connected directly to a PC and not to a docking station.
- **Screen Display Zoom** – do not modify the display zoom setting while using the software.
- **Application Window** – do not resize the application window.

All of these may cause the application to crash mid-operation. these are safety precautions in order to prevent this.

2 Main Screen

2.1 Control Options

The left side bar includes four fields related to four control options:

The screenshot shows a software interface with a power button at the top, a 'Camera Control' section with exposure and gain settings, a list of center wavelengths (CWLs) with color swatches, and a 'Save' section with a file path, name field, and a 'Save spectral cube' button.

OFF ON

Camera Control

Exposure: 1/ [333 ms]

Gain:

	703
	740
	752
	790
	801
	850
	862
	870
	902
	930

Save

Path:

Name:

Save spectral cube

- o **Power Button**
- o **Camera Control** – exposure & gain configuration
- o **Bands** – supported center wavelengths (CWLs)
- o **Save** – save images to drive

2.2 Power Button

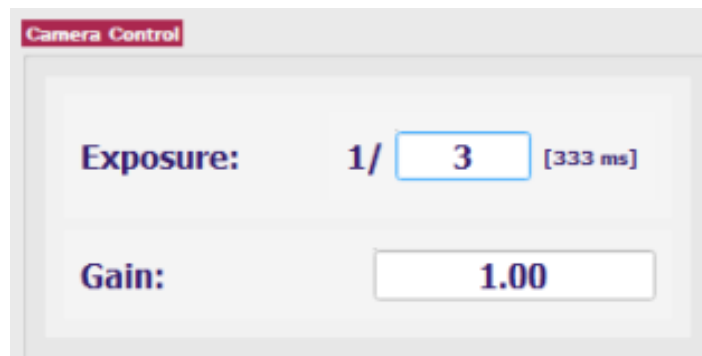
The power button is positioned at the top part of the control bar. When the camera is turned off, the power button's bar will appear red and the screen will be black. By pressing the square button, the camera will turn on and the bar will become green.



WARNING: the user must turn the camera off before disconnecting it from the power cable.

2.3 Camera Control

The Camera Control field allows the user to choose camera settings, i.e. the exposure and gain values of the camera.



2.3.1 Exposure

The user can choose the exposure value manually, by entering a frames-per-second (FPS) integer value between 4 and 1000 in the designated **Exposure** text field and pressing Enter.

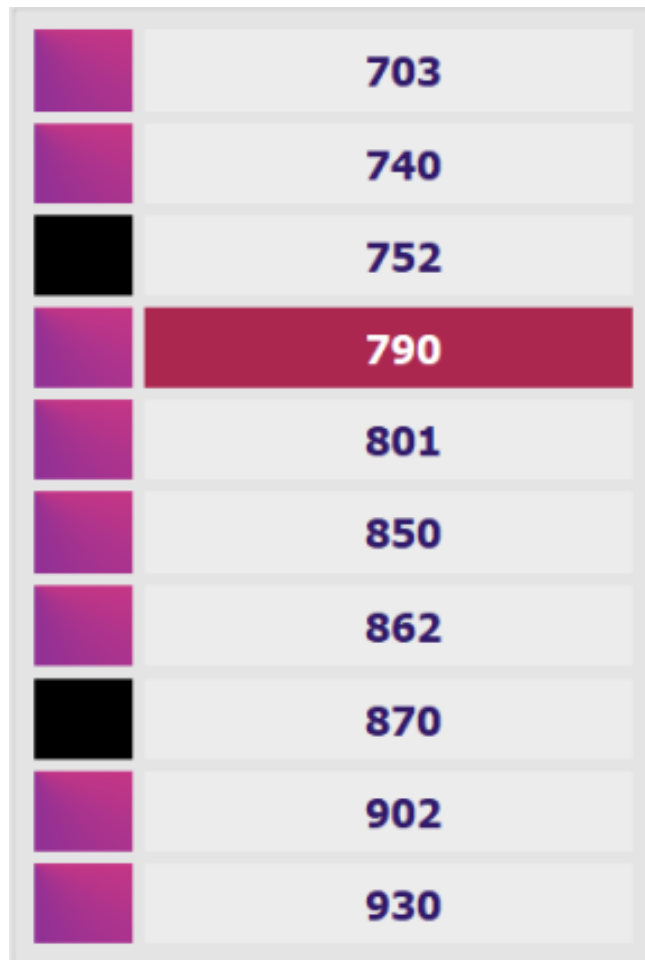
The exposure value is calculated by dividing 1[s] (or 1000[ms]) by the FPS value chosen by the user. The resulting exposure value is shown in the parentheses next to the text field.











2.3.2 Gain

The user can choose the gain value manually, by entering a value between 1 and 10 in the designated **Gain** text field and pressing Enter.

2.4 Bands

The Bands field allows the user to browse the camera's available CWLs and choose which of them to enable or disable within the spectral cube taken.

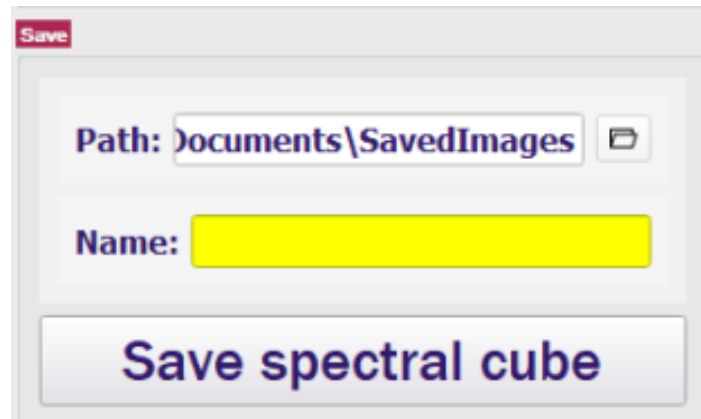


	703
	740
	752
	790
	801
	850
	862
	870
	902
	930

The user can browse the different CWLs by clicking on the desired band. The resulting image will be shown in the viewport. The user can enable or disable a specific CWL by clicking on the square to the left of its value. Once a CWL is disabled, its square will turn black. When enabled, the square will turn purple.

2.5 Save

The Save field allows the user to choose the name and location for saving the spectral cube.



- The user can choose the spectral cube file's location by either entering it manually in the **Path** text field, or by browsing using the folder button next to it. The default path is "MyDocuments\SavedImages". The folder must already exist, otherwise the app may freeze.
- The user can enter the spectral cube file's desired name manually in the Name text field. If no name is entered in the text field, the default file name will be "cube".
- Once the saving setting is determined, the user can save the file by pressing the **Save spectral cube** button. Notice that the cube's saving time depends on the user's hardware. Once the button is pressed, the folder symbol next to the **Path** text field will blink.
- Once saved, the chosen file name will appear as a folder in the format of "<Name text field>_yyyy/mm/dd_hh/mm/ss" in the designated path. Within this folder will be a cube folder containing PNG files, an HDR file, and an ENVI file of the saved spectral cube. If the user presses the folder symbol while it is blinking, the cube folder will open. If the user presses the folder symbol after it is done blinking, the path folder will open.