Guide for Configuring Prizmatix LEDs in MetaMorph

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1 Prizmatix LED Control Software Options

The Prizmatix LED-Ctrl (Control) software and Multi-LED-Ctrl software were developed to facilitate convenient control of USB enabled Prizmatix LED products on Windows-based computers via a USB connection.

The USB enabled Prizmatix LED sources can be also operated by sending a simple text string via serial communication COM port from various software packages such as HyperTerminal, LabView, Matlab, and many other software packages. API and code examples available upon request.

The USB enabled Prizmatix LED sources can be also operated from MicroManager and MetaMorph. This User Manual describes how to install and use Prizmatix LED products with MetaMorph software.

2 Supported Prizmatix Products

All Prizmatix LEDs with USB produced after November 2020 are supported and can be used with MetaMorph software. Specifically:

Single-channels LEDs:

- UHP-T-LEDs with UHPTLCC-02-USB and UHPTLCC-02-USB-STBL controllers
- UHP-F-LEDs with CTRL-F-USB controllers

Multi-channel LEDs:

- UHP-M
- Combi-LED
- FC-LED-USB

3 Health and Safety

Prizmatix products are NOT authorized for use as components in life support devices or systems.

The Prizmatix LED CTRL is intended for use as laboratory equipment only.

It is not cleared or authorized for clinical use.

4 Setup of the Hardware

For setup of the hardware (LED head, LED controller etc.) please refer to the specific LED illuminator User-Manual. In this document only aspects related to MetaMorph software will be discussed. Please ensure that you have received appropriate USB cable to connect the LED controller to the computer.

5 Software Setup

Each Prizmatix LED system with a USB port has appropriate software for controlling the system from a computer.

To use MetaMorph to control the LED no software download is needed: just to setup the USB device drivers and proceed with the configuration of Prizmatix LED in MetaMorph software.

5.1 Setup of USB Device Drivers

The following description is for Windows 10 users.

Users of previous versions of Windows shall refer to Appendix A: Setup of USB Device Drivers for Win 7 and Win 8 at Multi-LED-Ctrl software User Manual.

Windows 10 users with updated and Internet connected PC system can experience a fully automatic setup of the USB drivers. Please follow these simple steps:

- a. Connect the Prizmatix hardware according the hardware user manual and switch the power switch to ON.
- b. Type in Search Field: "device manager" and click on it to run this application.
- c. Connect the hardware to the computer by the USB cable.





d. Immediately after connecting the USB cable, Windows will start the standard driver installation procedure. After few seconds "FT232R USB UART" device appear in the Device Manager list and a rectangular message "Setting up a device" will appear at lower right corner of the screen. After few additional seconds, this device will be replaced by USB Serial Port, and then

eventually USB Serial Port (COM3) will appear as shown at following picture. Please notice the COM port number (3 in this example). Please remember this COM port number for future use.



Once the driver installation is complete, please close the Device Manager. Now the Prizmatix LED can be used with MetaMorph. It remains only to configure it correctly inside the MetaMorph software.

6 Configuration of Prizmatix LED in MetaMorph

6.1 Setup of Prizmatix LED in MetaMorph

Open the "Meta Imaging Series Administrator":

| Neta Imaging Series Admi | nistrator: Single User Configuration | × |
|--|--|--------------------------|
| List of Groups | | |
| Group Name | Hardware Setting File Association | Select a Group and Press |
| MetaFluor | Default | a button to customize. |
| MetaFluor Offline | Offline | Assign Hardware |
| MetaMorph | Default | |
| MetaMorph Uffline | Uttline | Drop-ins/Toolbars |
| Melavue | Derauk | |
| | | Clear Settings |
| | | |
| < | > | Edit Defaults |
| Pressing Set File Association will be launched when .stk and .tif ir (marked by *) | I set the default group and the group to mages are double-clicked in Explorer | Set File Association |
| Enter Multi-User Mode | Configure Hardware | |
| Set Administrator Password | Create Icons | OK |

Click on the "Configure Hardware" button and then on the "Install System Devices" button within the "Configure Hardware" screen:

| ist of Group | Configure Hardware | × | |
|--|------------------------|-----------------------|---------------------------|
| Group Nan | Hardware Settings: | | oup and Pre Customize: |
| MetaFluor (MetaFluor (| Default | Configure Acquisition | Hardware |
| MetaMorph MetaVue | | Configure Devices | s/Toolbars |
| | | Rename Setting | Settings |
| < | | Delete Setting | Defaults |
| Pressing Set be launched marked by * | | Create New Setting | Association |
| Enter Multi- | Install System Devices | ОК | - |

This will bring up the "Install System Devices" Window. Click "Prizmatix LED" in the "Available Hardware" and click "Install >>" button:

| Nikon Remote Focus Accessory Nikon TE2000 (Serial) Nikon Ti Nikon Ti2 Nikon TIRF Shutters Objective Imaging DASIS | |
|---|----------------------------------|
| Olympus Microscope OptiGrid Physik Instrumente Controller Polychrome 3000/5000 Prior Controller Prizmatix LED RS-232 Illumination V | |
| - Status No device active. | << Remove Settings Remove All |

Normally MetaMorph recognizes the Prizmatix LED automatically. But at first connection MetaMorph searches for Prizmatix LED at a specific COM port, which is typically not the relevant port. Therefore, most probably "Device Installation Error" dialog will appear:

| Available Mardware | Installed Devices |
|---|--|
| Nikon Remote Focus Accessory Nikon TE2000 (Serial) Nikon Ti Nikon Ti | Prizmatix LED |
| Nikor Objec Objec Optig Optig There are no components ava Physii this may be that this system is Polycl components this device provid Polycl | X illable for this device. One reason for not configured to support any of the des. |
| | ОК |

Click on "OK" button to return to "Install System Devices" dialog and get the list of available hardware:



Click on 'Settings' button. A new dialog box with a list of available Prizmatix LEDs appears.

Click on "Connection Settings" tab: "Serial port settings" appears.

Select correct COM port (see above how to find the COM Port in Device Manager), Bound Rate: 57600, Parity: None, Data Bits: 8, Stop Bit:1. and press "OK"

| | Prizmatix LED Settings | × | | | Prizmatix LED Settings | | × |
|---|--|---|--------|---|---|--|----------|
| Install System Nikon Object Object Physik Pior C Prizmati Sigma Spectru Status Prizmatik LE | Prizmatic LED Settings Available components Add >> Operate device in emulation mode Parameter Group #1 Connection S COM Port : COM5 • Baud Rate : 57600 • Parity : None • | Included components Prizmatix LED UV Intensity Prizmatix LED UV Shutter Prizmatix LED white Intensity Prizmatix LED white Shutter | Cancel | Install System Nikon 1 Nikon 1 Nikon 1 Nikon 1 Nikon 1 Olympu Olympu Olympu Physik Polych Physik Polych RS-232 Status Prizmatix LE | Available components Available components Add>>> Operate device in emulation mode Parameter Group #1 Connection S COM Port : COM9 ▼ Baud Rate : 57600 ▼ Parity : None ▼ | Included components Prizmatix LED 405 Intensity Prizmatix LED 405 Shutter Prizmatix LED 475 Shutter Prizmatix LED 525 Intensity Prizmatix LED 525 Intensity Prizmatix LED 560 Shutter Intensity Prizmatix LED 560 Intensity Intens | Cancel |
| Example LED dual | of Prizmatix LEI White and UV I | ⊃ Settings for U⊢ _ED illuminator | IP-M- | Example Multi-LE | of Prizmatix LEI D illuminator | O Settings for | CombiLED |

After click on "OK" button following dialogue appears:

| Install System Devices | × | Install System Devices | × |
|---|--|---|---|
| Available Hardware | Installed Devices | Available Hardware | Installed Devices |
| 89 North Light Engine Acton SpectraPro Al Signatech Andor FRAPPA Andor Caser Combiner Andor Mosaic Andor Mosaic Andor Mosaic Andor Mosaic Andor Mosaic Andor Mosaic Ashi Spectra MAX301 Ashi Spectra MAX301 ASI MS-2000 Auto Focus Sensor ✓ | Prizmatik LED Prizmatik LED White Shutter Prizmatik LED UV Shutter Prizmatik LED UV Intensity Prizmatik LED UV Intensity | Nikon Remote Focus Accessory Nikon TE2000 (Serial) Nikon Ti Nikon Ti Nikon Ti2 Nikon Ti2 Dijective Imaging DASIS Olympus Microscope OptiGrid Physik Instrumente Controller Polychrome 3000/5000 Prior Controller Prizmatix LED RS-232 Illumination | Pizmatix LED Pizmatix LED 405 Shutter Pizmatix LED 405 Shutter Pizmatix LED 525 Shutter Pizmatix LED 560 Shutter Pizmatix LED 560 Shutter Pizmatix LED 405 Intensity Pizmatix LED 405 Intensity Pizmatix LED 475 Intensity Pizmatix LED 525 Intensity Pizmatix LED 550 Intensity Pizmatix LED 560 Intensity |
| Status No device active. | << Remove Settings Remove All | Status Prizmatix LED on COM9 | << Remove Settings Remove All |
| | Apply OK Cancel | | Apply OK Cancel |
| Example of Prizmatix LE LED dual White and UV | ED Settings for UHP-M- LED illuminator | Example of Prizmatix L Multi-LED illuminator | ED Settings for CombiLED |

If all LEDs appear correctly, click on "OK" button to close this dialog to return to "Configure Hardware" dialogue.

| List of Group | Configure Hardware | × | oup and Pre |
|---|------------------------|-----------------------|-------------|
| Group Nan MetaFluor | Hardware Settings: | | Customize: |
| MetaFluor (MetaMorph | Default | Configure Acquisition | Hardware |
| MetaMorph MetaVue | | Configure Devices | s/Toolbars |
| | | Rename Setting | Settings |
| < | | Delete Setting | Defaults |
| Pressing Set be launched (marked by * | | Create New Setting | Association |
| Enter Multi- | Install System Devices | OK | |

Click on "Configure Devices" button: "User Settings for 'Default' hardware configuration" dialogue appears:

| User Settings for 'Default' hardware configurati | on X |
|---|-------------------------------|
| Available Devices Prizmatix LED | Claimed Devices |
| Add All Add >> Status 1 devices available. 0 devices claimed. | << Remove Settings Remove All |
| Apply | OK Cancel |

The Prizmatix LED will be shown at in the "Available Devices" window. Click "Add>>" button to add the Prizmatix LED to the "Claimed Devices".

| | Claimed Devices | | Available Devices | Claimed Devices |
|---|---|----|---|---|
| | Prizmatik LED Prizmatik LED White Shutter Prizmatik LED UV Shutter Prizmatik LED White Intensity Prizmatik LED UV Intensity | | | Prizmatix LED Prizmatix LED 405 Shutter Prizmatix LED 475 Shutter Prizmatix LED 525 Shutter Prizmatix LED 560 Shutter Prizmatix LED 650 Shutter Prizmatix LED 405 Intensity Prizmatix LED 405 Intensity Prizmatix LED 525 Intensity Prizmatix LED 526 Intensity Prizmatix LED 550 Intensity Prizmatix LED 550 Intensity Prizmatix LED 650 Intensity |
| Add All Add >> Status 0 devices available. 1 devices claimed. | << Remove Settings Remove All | | Add All Add >> Status 0 devices available. 1 devices claimed. | Kernove Settings Remove All |
| Appl | y OK Cancel | | Apply | OK Cancel |
| ample for UHP-M-LED | dual White and UV LED | Ex | ample for CombiLED 5- | LED Multi-LED |

The Prizmatix LED is now installed. Click "OK" to close this dialog box and others, and to exit the "Meta Imaging Series Administrator". The set-up is now complete, and MetaMorph software can be used to control the device.

6.2 Usage of Prizmatix Illuminator in MetaMorph

Open the MetaMorph software.

At MetaMorph menu go to "Devices" and then "Device Control". Choose "Configure" tab and click on "Configure Illumination..." button.

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Assuming you need to configure UHP-M-LED product. This product has UV and White LED illumination. You can name the new configuration "White and UV".

| Name: White And UV Wavelength: 0 🖨 🛞 Resync | | | | Defined Settings: | | | | |
|--|------------|--------|--------|-------------------|---------------|--------------|--|--|
| Select on Condition [No Components] (No Positions) | | | | | | White And UV | | |
| Prizmatix LED White Intensity | < | > | 30 | | | | | |
| Prizmatix LED UV Intensity | < | > | 70 | - | | | | |
| Prizmatix LED White Shutter | ○Closed ● | Active | () Ope | n | | | | |
| Prizmatix LED UV Shutter | O Closed 💿 | Active | ⊖ Ope | n | | | | |
| Run journal when changing illumination setting | | | | | Add / Replace | | | |
| Select <none selected=""></none> | | | | Remove | | | | |
| Run journal when toggling active | shutter(s) | | | | Backup | Restore. | | |
| Select <none selected=""></none> | | | Close | | | | | |

The following example shows a configuration for 5-LED system, when just the 405nm LED is active:

| Name: LED 405 | Wavelength: | Wavelength: 0 😫 🛞 Res | | Resync | Defined Settings: | |
|----------------------------------|----------------|-----------------------|--------|--------|-------------------|--------------------|
| Select on Condition [No Compon | ents] 🗸 🗸 | [No Pr | sition | a] ~ | LED 405 | |
| Device Positions: | | | | | | |
| Prizmatix LED 405 Intensity | < | > | 50 | - | | |
| Prizmatix LED 475 Intensity | < | > | 0 | | | |
| Prizmatix LED 525 Intensity | < | > | 0 | • | | |
| Prizmatix LED 560 Intensity | < | > | 0 | | | |
| Prizmatix LED 650 Intensity | < | > | 0 | • | | |
| Prizmatix LED 405 Shutter | ○Closed ● | Active (| | m | | |
| Prizmatix LED 475 Shutter | ● Closed ○ | Active (| | m | | |
| Prizmatix LED 525 Shutter | ● Closed ○ | Active (| | en 🛛 | | |
| Prizmatix LED 560 Shutter | ● Closed ○ | Active (| | m | | |
| Prizmatix LED 650 Shutter | ● Closed ○ | Active (|) Ope | en | | B ool and a |
| Run journal when changing illumi | nation setting | | | | Add / H | Replace |
| Select <none selected=""></none> | | | | | Ren | nove |
| | 1 | | | | Backup | Restore |

The check boxes on the left enable the user to define for each LED channel what type of control will be available and it's settings.

MetaMorph software enables many control options, for farther information please see MetaMorph user manual.