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34. TWAIN / DirectX interface



User Guide for TWAIN / DirectX interface for JENOPTIK GRYPHAX® USB 3.0 cameras

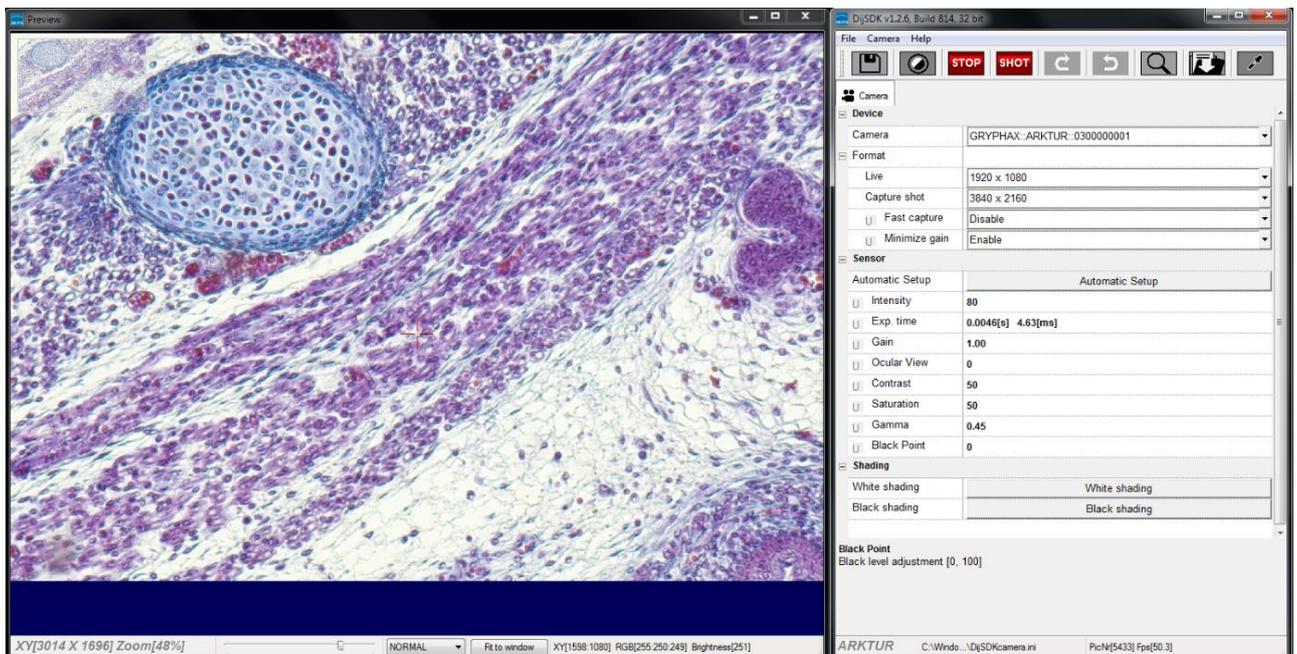
The “[TWAIN & DirectX driver](#)” for JENOPTIK GRYPHAX® USB 3.0 cameras enables user to operate with TWAIN and DirectX supported 3rd party software solutions. The driver delivers basic functionalities of JENOPTIK GRYPHAX® cameras. Drivers are supported under Windows operating systems.

General description:

The TWAIN & DirectX driver is part of JENOPTIK GRYPHAX® software installation (as of version 1.1.10 or newer). The driver will be automatically installed and can be used without separate configuration out of the box running a TWAIN or DirectX interface supporting application.

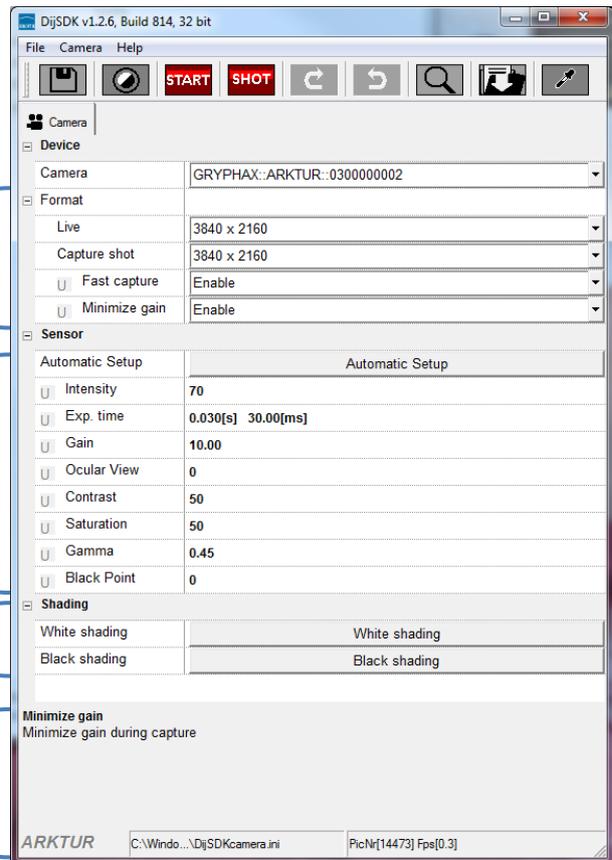
The driver consists of two separate windows. The *preview window* to display the live stream getting from camera and the *settings window*, which contains all essential camera parameters.

The *settings window* is permanently visible, the *preview window* can be deactivated.



34.1 Overview of settings window:

1. Toolbar – contains most important tools
2. Select active camera
3. Format - change image settings for:
 - Live and Capture shot resolution
 - Fast capture mode
 - Option – Minimize gain during capture
4. Image parameter settings*
5. Create / delete Shadings
6. Information field for help text & status



Note: All settings are saved (under folder: C:\Users\\AppData\Roaming\DijSDK\...) for each camera type and will be reused after open of driver again. Settings are not connected to individual camera serial numbers.

34.2 Toolbar:



The Toolbar of TWAIN driver contains the following functions:

-  Save camera settings manually to currently used settings file.
-  Change between color mode and black / white mode for color cameras.*
-  Start / Stop **Live** image preview at the preview window.
-  Shot button to **start transfer single capture shot** image via TWAIN interface.
-  Magnifier tool to activate / deactivate magnifier glass at preview window.
-  Save image option to save last displayed live image from preview window to hard drive.
-  White balance pipette to set manually white balance at preview window.*

*functions available for color cameras only



Select camera:

To **activate** or **change** camera, select the appropriate camera from dropdown list of TWAIN driver.

| | |
|--------|-----------------------------|
| Camera | GRYPHAX::ARKTUR::0300000002 |
|--------|-----------------------------|

After activation of camera from dropdown list, the according settings to the camera type will be loaded from settings file and used.

| |
|------------------------------|
| GRYPHAX::ARKTUR::0300000001 |
| GRYPHAX::SUBRA::0100000105 |
| GRYPHAX::NAOS::0200000003 |
| GRYPHAX::ARKTUR::0300000001 |
| GRYPHAX::ARKTUR::0300000002 |
| GRYPHAX::PROKYON::0600000004 |

Note: In case of first camera start, the “Automatic setup” process will be proceed.

Format:

Under format section user can set-up different image resolution for live preview and capture shot.

| | |
|--------------|-------------|
| Live | 3840 x 2160 |
| Capture shot | 3840 x 2160 |

“Fast capture mode” reduces processing time and transfer time for image transfer via TWAIN.

By **activation** of “Fast capture mode” the TWAIN driver will use the selected live resolution for single shot (image transfer) instead of the selected capture shot resolution.

| | |
|---------------|---------|
| Fast capture | Disable |
| Minimize gain | Enable |

By **activation** of option “Minimize gain during capture” the gain value will be minimized for capturing and adjusting the exposure time accordingly. This option is recommended and will reduce noise level and enhance image quality.



34.3 Camera image parameter:

Important: All *camera image parameter* are saved during close TWAIN driver for each camera type and will be reused after open of TWAIN driver again.

The *Automatic Setup* option can be used at any time to set all camera image parameter to default values. The applied shading correction will be deactivated. Additionally, the automatic white balance and the color correction to the used light source will be applied and "Auto Exposure control" is enabled.



All *camera image parameter* can be adjusted by scroll slider or by enter of value.



The *Exposure control* option contains the following parameter: Intensity value, Exposure time and Gain value.

| | |
|-----------|--------------------|
| Intensity | 75 |
| Exp. time | 0.033[s] 33.00[ms] |
| Gain | 1.00 |

Set *Intensity* level to activate the *automatic exposure control* function. The selected value corresponds the mean intensity value in percent. Available range from 0 to 100%

Change *exposure time* value or *gain* value to *activate manual exposure control*.

Ocular View – to adapt the color impression from the eyepieces (microscope) to the image on screen.

Contrast – to enhance image contrast for live and captured images.

Saturation – to change color saturation for live and captured images.

Gamma – to change gamma value for live and captured images.

Black Point – to enhance noise level in dark image areas.

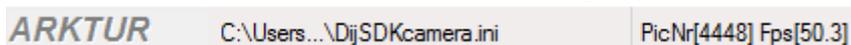
| | |
|-------------|------|
| Ocular View | 0 |
| Contrast | 50 |
| Saturation | 50 |
| Gamma | 0.45 |
| Black Point | 0 |

Reset settings separately:

All *camera image parameter* can be reset to default value separately by pressing reset icon .

Status bar information:

Status bar displays the connected camera, settings location, frame number and frame rate.



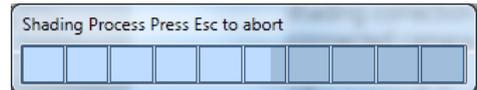


Create / delete white shading:

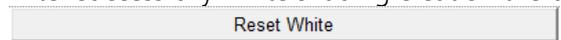
White shading function corrects intensity variation across the image, caused by the microscope or objectives.

Click on the button "White shading"  to create a white shading correction. The TWAIN driver will automatically create a white shading correction file for the connected camera type.

This will take up to some seconds; the progress indicator will be shown during creation. Press "Esc" will abort process.



After successfully white shading creation the button will change status to "Reset White"



The white shading correction is now available and used. To deactivate the white shading press "Reset White" and the white shading correction file will be deleted and cannot be reloaded again. After reset / delete of shading file, a new shading file has to be created to activate shading again.

The shading files will be saved on: "C:\Users\\AppData\Roaming\DijSDK\" and are reused after driver restart and appropriate camera type is connected.

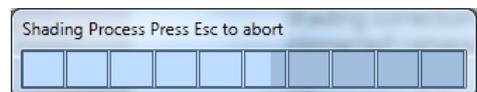
Note: Shading files are connected to the camera type, not to the individual serial number!

Create / delete black shading:

Black shading function enhance noise level for long time exposed image.

Click on the button "Black shading"  to create a black shading correction. The TWAIN driver will automatically create a black shading correction file for the connected camera type.

This will take up to some minutes; the progress indicator will be shown during creation. Press "Esc" will abort process.



After successfully black shading creation the button will change status to "Reset Black"



The black shading correction is now available and used. To deactivate the black shading press "Reset Black" and the black shading correction file will be deleted and cannot be reloaded again. After reset / delete of shading file, a new shading file has to be created to activate shading again.

The shading files will be saved on: "C:\Users\\AppData\Roaming\DijSDK\" and are reused after driver restart and appropriate camera type is connected.

Note: Shading files are connected to the camera type, not to the individual serial number!

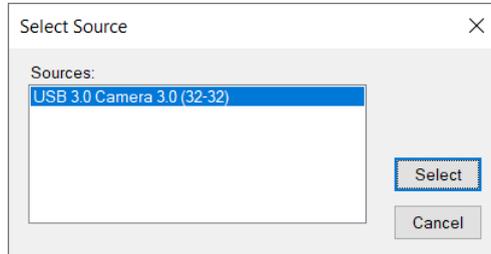


34.4 Select TWAIN source:

Select TWAIN source (JENOPTIK GRYPHAX TWAIN driver; called: "USB 3.0 camera") at TWAIN host application e.g. IrfanView, or any TWAIN supported 3rd party software solutions.

Navigate to the appropriate section and choose the driver from list.

Accept and leave dialog by "Select" button.



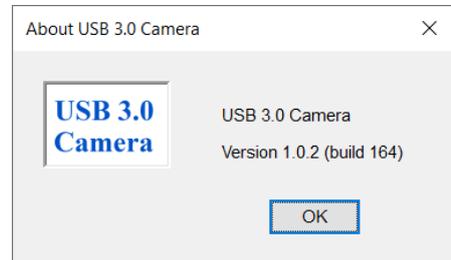
34.5 Capture / Transfer images:

To transfer images by TWAIN interface press the "Shot" button **SHOT** on the toolbar. The live preview image will be stopped and a single image will be transferred by TWAIN interface to the application.

Live image will be restarted automatically at preview windows after transfer of image via TWAIN.

34.6 About dialog:

Open "About" dialog by context menu "Help" section About to display installed version of driver.

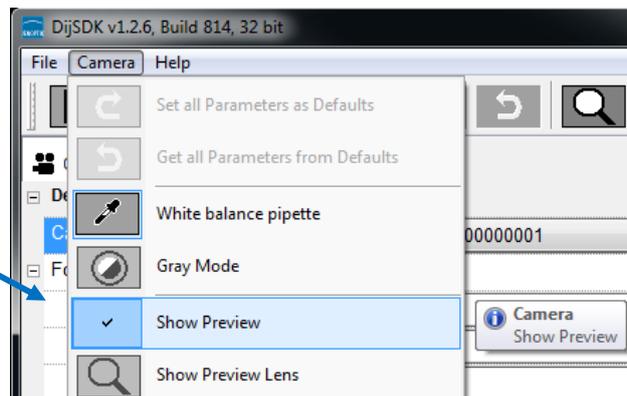


34.7 Start / Stop Live:

To stop or restart live preview at the preview window, press live control button **STOP** at the toolbar.

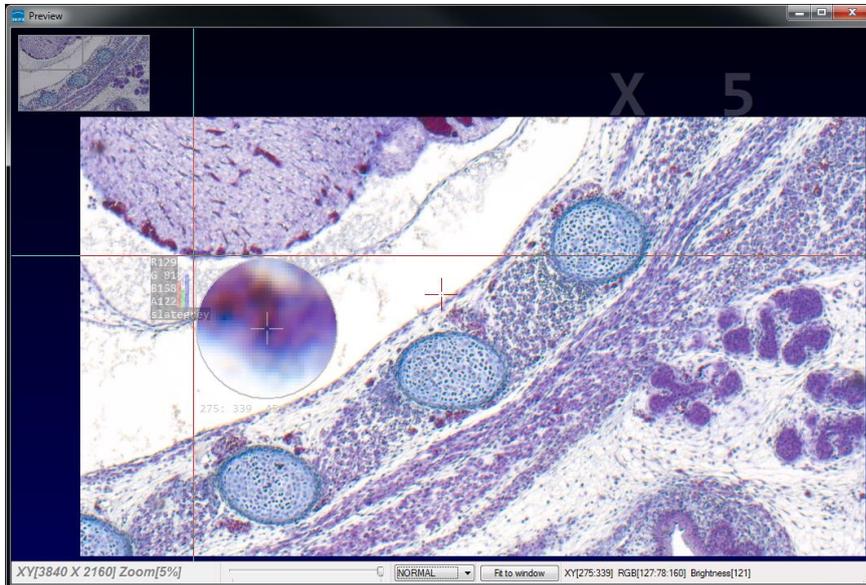
Open / close preview window:

To deactivate or activate the preview window of driver, navigate to the "camera" menu entry and choose "Show Preview".



34.8 Preview window:

The *preview window* displays the live stream preview from the camera as well as the capture shot images.



34.9 Preview window tools and options:

Preview window contains the following tools and information at the toolbar:

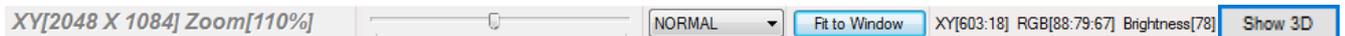


Image dimensions (X/Y) of current live preview **XY[3840 X 2160]**

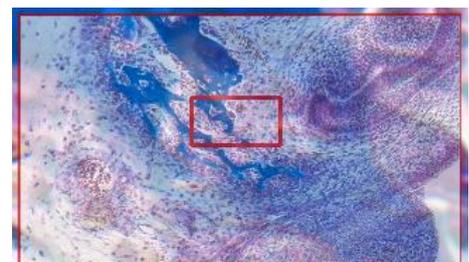
Display of current selected zoom level from preview window **Zoom[200%]**

Zoom slider or scroll wheel to change zoom level. Left position zoom out, right position zoom in.

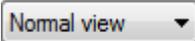


Image overview as overlay to display whole image in case of 1:1 view or image zoom over live preview.

Note: To change image section, use the rectangle from overview.





Display Mode drop down menu  to change between different view options:

“Normal view” – view image as color or b/w image without histogram

“Negative view” – invert image values to get negative image view

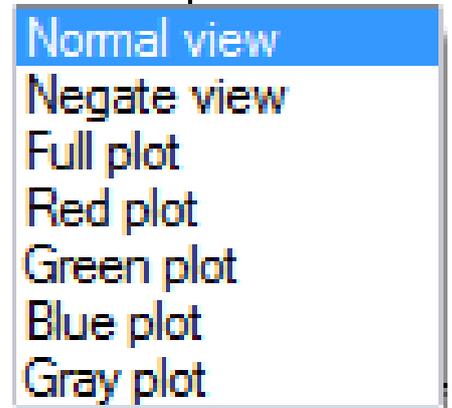
“Full plot” – to activate RGB and gray channel of histogram as overlay

“Red plot” – to activate red color channel of histogram as overlay

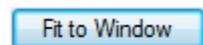
“Green plot” – to activate green color channel of histogram as overlay

“Blue plot” – to activate blue color channel of histogram as overlay

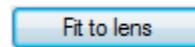
“Gray plot” – to activate gray channel of histogram as overlay



Fit to screen function activated by button or by left-hand mouse double click into the preview window.



Fit to lens function to change back to 1:1 view and enable zoom slider.



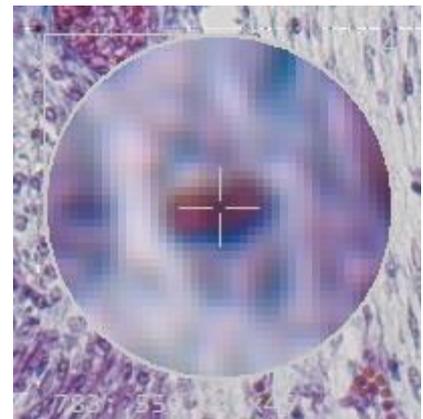
Display of RGB values and image coordinates of corresponding mouse pointer position.

XY[783:550] RGB[136:81:115] Brightness[110]

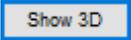
Presentation mode – to change between full screen and normal window by middle double click of mouse on preview window. Whole live preview will be displayed on the screen.

Magnifier glass activated by Magnifier button  to zoom in 4x times on live preview.

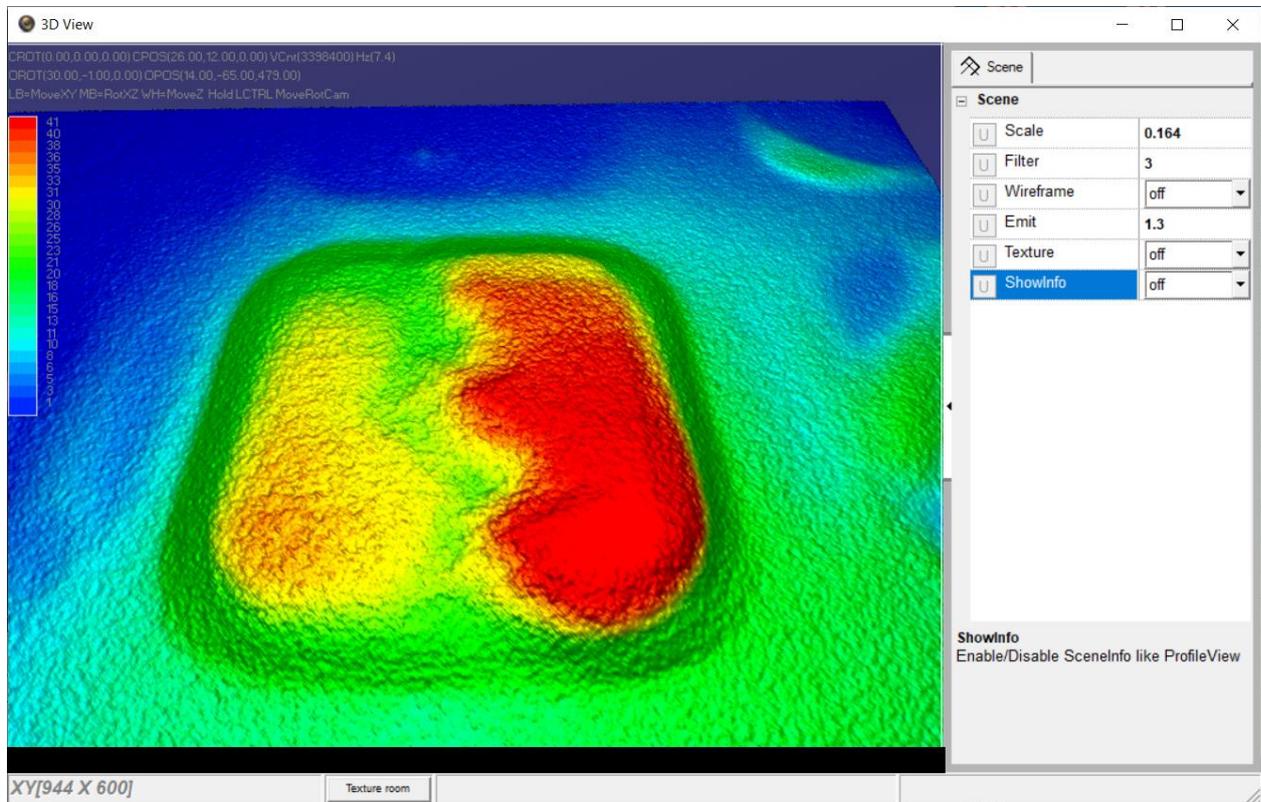
Note: By right-hand mouse click the magnifier changes between rectangle and circle glass.



Experimental pseudo 3D-View* – to display a 2D image as a virtual 3D image.

Press button “Show 3D”  to activate a separate preview window for pseudo 3D live preview.

The window shows a 3D color map image and display options to adjust the scenario.



*(Available as of JENOPTIK GRYPHAX version 2.2 or newer)

Adjust View:

Move the 3D image by mouse operation on preview window.

Zoom in / out by mouse wheel on preview window.

Open scene settings menu on the right-hand site. Click on the arrow and swipe left to open.

Scene settings:

Scale – to set the scaling factor for depth

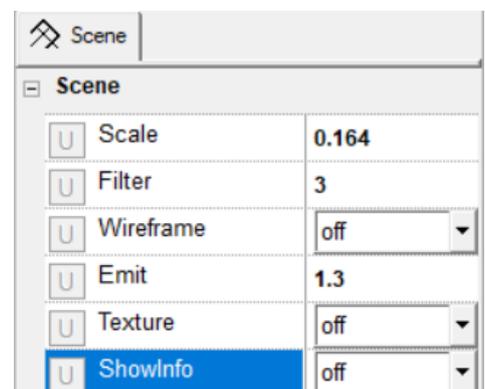
Filter – to change filter settings for details and smoothness

Wireframe – to enable / disable wireframe support of GPU card

Emit – to increase / decrease shining

Texture – to turn on / off “JetColorRoom” without textures

ShowInfo – to enable / disable scene information





Limitations:

- Performance and functionalities are limited due to used **Microsoft TWAIN & DirectX** interfaces.
- Only JENOPTIK GRYPHAX USB 3.0 cameras are support.
- Multi-camera support is not available.
- Windows OS 7 SP1 / 10 support only.