Epiphan DVI2USB 3.0

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Product feedback

Your feedback is important! We regularly contact our customers to ensure our products meet your performance and reliability requirements. We strive to continually enhance our products to accommodate your needs. Please let us know how you think we can improve our products by emailing your suggestions to info@epiphan.com.

Specifications

Go to the DVI2USB 3.0 product page on the Epiphan website to get the most recent product specifications and additional information about DVI2USB 3.0.

Warranty

All Epiphan Systems products are provided with a 100% return to depot warranty for one year from the date of purchase.

Technical support

Epiphan's products are backed by our professional support team. If you are having issues with your product, please gather details about your system and contact our team by:

- Emailing support@epiphan.com
- Live chat via the link on our support site https://www.epiphan.com/support/
- Phone toll free at 1-877-599-6581 or call +1-613-599-6581

Be sure to include as much information about your problem as possible. Including:

- Problem description
- Details of the video or audio source (type, connection, resolution, refresh rate, etc.)
- Product serial number
- Product firmware version (if applicable, from web admin interface)
- Product LED lights

DVI2USB 3.0 Release notes

Firmware update 3.30.7.8 for DVI2USB 3.0 is a maintenance release that contains stability and performance enhancements. Update your device to take advantage of the improvements offered in this latest firmware update.

IMPORTANT NOTE: This firmware update 3.30.7.8 is the final update to include a windows 32-bit driver version for DVI2USB 3.0.

Removed the Web broadcasting demo feature

The Web broadcasting demo feature has been removed from the Epiphan Capture Tool and the icon no longer appears in the tool bar.

Table of contents

Start here

Use the topics in this section of the user guide to get started quickly with your DVI2USB 3.0.

Review What's in the box?, get a system overview in What is DVI2USB 3.0?, ensure your system meets the System requirements and get your video grabber installed and working right away using the Quick start

What is DVI2USB 3.0?

DVI2USB 3.0™ is Epiphan's professional-series external DVI-I video grabber. It captures images and video from VGA, HDMI and DVI-I video sources and digitizes them on your laptop or workstation via connection to a USB 3.0 port.

The video capture workstation can record and/or stream the resulting uncompressed diagnostic-quality images and videos. On Windows, both audio and video capture is supported for HDMI sources. Thanks to Epiphan Video capture technology, this small, portable product connects directly to your computer's USB 3.0 port - no need for a large workstation with a free peripheral component interface (PCI) slot.

DVI2USB 3.0 captures video and audio from any single link DVI, unencrypted HDMI, or VGA source. Meeting greater demands for transferring larger files at faster speeds, this external video grabber supports USB 3.0 technology, capable of transferring uncompressed data with speeds of up to 5.0 (Gbits/s) - about ten times faster than USB 2.0.

> In practice transfer speeds are dependent on factors such as USB load and hardware configuration.

DVI2USB 3.0 is versatile and can be used with multiple workstation configurations. It is backward compatible with USB 2.0 connections, however it transfers video at a reduced frame rate when using USB 2.0.

Using the included Epiphan Capture Tool, DVI2USB 3.0 captures full 1080p HD at 30 frames per seconds and supports resolutions up to 1920×1200. When working with third-party software, such as Windows Media Encoder with YUV 4:2:0 chroma sub-sampling, 1080p video is captured and recorded 60 frames per second.

For more information about maximizing the frame rate when capturing, recording and streaming video using third-party applications, refer to the How to Record Video using Window Media Encoder tutorial on Epiphan's website.

The DVI2USB 3.0 video grabber is fully compatible with DirectShow in Windows and Video4Linux in Linux. This means you can use it with a number of different third party applications for capturing, recording and streaming video.

DVI2USB 3.0 is part of Epiphan's complete line of video and audio signal capture products. For more information about all Epiphan's video signal capture products, refer to the USB Video Grabbers page on the Epiphan Video website.

What's in the box?

The DVI2USB 3.0 package includes the following

1. DVI2USB 3.0 video grabber (read more, Physical attributes)

2. One DVI-I cable

3. One VGA to DVI cable

4. One HDMI to DVI adapter

5. One USB 3.0 cable

Table 1 *Description of included cables (images for identification only, color and appearance may vary)*

Image	Name	Description
	DVI-I cable	Connects DVI sources to the video grabber.
	VGA to DVI cable	Connects VGA (or Component, if used with a converter) signals to the video grabber.
	HDMI to DVI adapter	Connects HDMI sources to the DVI-I cable for connection to the video grabber.

Image	Name	Description
	USB 3.0 cable	High speed transfer cable that connects the video grabber to your capture workstation or laptop computer.

System requirements

System requirements are the technical essentials your computer needs to work with your Epiphan video grabber. System requirements to use DVI2USB 3.0 are:

Video source	Any VESA-compatible VGA, DVI or HDMI source. (DVI2USB 3.0 cannot capture from HDCP encrypted sources)
Video capture workstation	A computer (laptop/desktop/other format) with: • a compatible USB 3.0 host controller for SuperSpeed operation (recommended Intel ® USB 3.0 eXtensible Host Controller); or, • a USB 2.0 controller
Video capture workstation operating system	Windows 7, Windows 8.1, Windows 10 A list of precompiled linux drivers (kernel 3.5 or later) is available on the Support page under Software.
RAM	Minimum recommended value: 4 GB
Available hard disk space	16 GB (32-bit OS) or 20 GB (64-bit OS)

Quick start

Use this quick start to get up and running quickly with your DVI2USB 3.0 on Windows capture workstations. You can also use these procedures to install firmware updates. For Linux systems, see DVI2USB 3.0 on Linux.

Before you get started:

- Have all required cables, components, and adapters (if needed), see What's in the box?.

- Ensure your capture workstation meets the System requirements.

- Have a video source, such as a camera, computer, tablet, or phone and ensure that the content isn't HDCP protected. For Windows systems, ensure there's audio and video on the same source cable.

- Internet access to download drivers from the Epiphan website.

- Administrator privileges for your capture workstation.

Install the video grabber drivers

This step must be completed before connecting the video grabber to your video capture workstation.

1. (Optional) Disconnect the video grabber from your capture workstation if it is currently connected.

2. Log into your capture workstation using an account with administrator privileges. If you're workstation is on a domain, ensure that you log into the local administrator account on the workstation and not an account on the domain.

3. Using a web browser on your capture workstation, go to your video grabber's Support page under Software and download the appropriate driver for your system's operating system.

> For Windows operating systems, choose either the 64-bit or 32-bit driver as required for your particular operating system. Ensure that you select the proper Windows package (i.e. Windows 7 or Windows 8-10) when choosing a driver. If you don't know which driver version you need, see this Microsoft knowledge base article for help **https://support.microsoft.com/en-us/kb/827218**.

4. When the download is complete, open the download destination folder.

5. (Optional) Close any unnecessary windows and shut down programs that are running on the workstation. Note that overly restrictive security software can block the installation of device drivers. In that case, consult your system administrator for the procedures to allow the driver update on the capture workstation.

6. Extract all driver files and install the drivers and the Epiphan Capture Tool on your Windows workstation.

a. Right-click on the .zip file and **Extract All**.

b. From the extracted files folder, right-click on **setup.exe** and select **Run as administrator**.

c. Click **Install** and follow the prompts to install the drivers. The Epiphan Capture Tool is installed at the same time as the drivers.

> Installation may fail for computers inheriting security permissions from a Windows domain, even when the installer is run as administrator. In that case, contact your local IT team for assistance with installation.
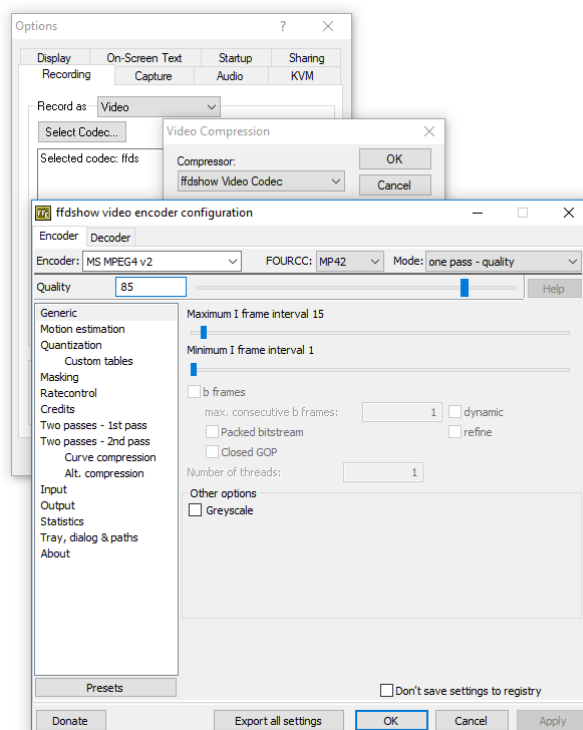
7. Restart the capture workstation after the installation completes and reconnect the video grabber.

Install the video codec for Windows and set video compression options

For Windows operating systems, we recommend installing the ffvfw video codec pack. This codec adds video compression options for recording video using the Epiphan Capture Tool. Recording video without compression consumes a large amount of disk space, especially when recording at higher resolutions and isn't recommended.

To install the ffvfw video codec pack on your Windows capture workstation:

1. Log into your capture workstation using an account with administrator privileges and launch the Epiphan Capture Tool.

2. From the **Tools** menu, select **Options...** and ensure that **Display format** on the Display tab is set to **RGB 24 bits per pixel** (default).

3. Using a web browser on your capture workstation, download the appropriate ffvfw codec pack file for your workstation's operating system from one of the following links:

   - 32-bit version
   - 64-bit version

4. Locate the executable file that was downloaded, then double-click the file and follow the prompts to install the ffvfw codec pack.

5. From the **Tools** menu in the Epiphan Capture Tool, select **Options...** and click the **Recording tab**.

6. From the **Recording tab**, set the **Record as** field to **Video** and click **Select Codec**.

7. In the Compressor drop down, select **ffdshow Video Codec** and click **Configure**.

8. Configure the following parameters:

Parameter	Setting
Encoder	MS MPEG4 v2
FOURCC	MP42
Mode	one pass - quality
Quality	Set to a value between 1 and 100. **Note**: Selecting a higher quality may reduce the frame rate and increase the size of the video files produced by the codec. You may want to experiment with the quality setting to achieve optimum results.
Maximum I frame interval	15

> For most common situations, you should only need to modify the parameters that are listed.

9. Click **Apply** to save your changes. Click **OK** until you've exited all the configuration menus.

Connect the video grabber and the video source

Now that the drivers and video codec are installed, you're ready to begin capturing! Although the steps below ask you to connect the video source to the grabber, then the grabber to the workstation, you can connect the video source and video grabber in any order.

1. Connect the video source to the DVI-I port on the video grabber. (If necessary, use an adapter or appropriate converter cable.)

2. Connect the provided USB 3.0 cable to the bottom of the video grabber.

3. Connect the other end of the USB cable to an available USB port on your video capture workstation (use a USB 3.0 port for best performance).

> If using a splitter cable for your video source, use a high-quality HDMI or DVI splitter to split the signal between an other devices and the video grabber. For VGA signals, use an active VGA splitter rather than a passive VGA splitter (also called a Y-Adapter). This will help maintain a cleaner video signal.

Capture video using the Epiphan Capture Tool

If needed, read Epiphan Capture Tool for information on how to launch the capture tool.

> You can also use third-party capture applications to capture video from DVI2USB 3.0. Consult the documentation that came with the third-party capture application to select the device.

1. Start the Epiphan Capture Tool; your video source is immediately detected (if you see a No Signal message, disconnect and reconnect the cables to make sure they are all seated correctly).
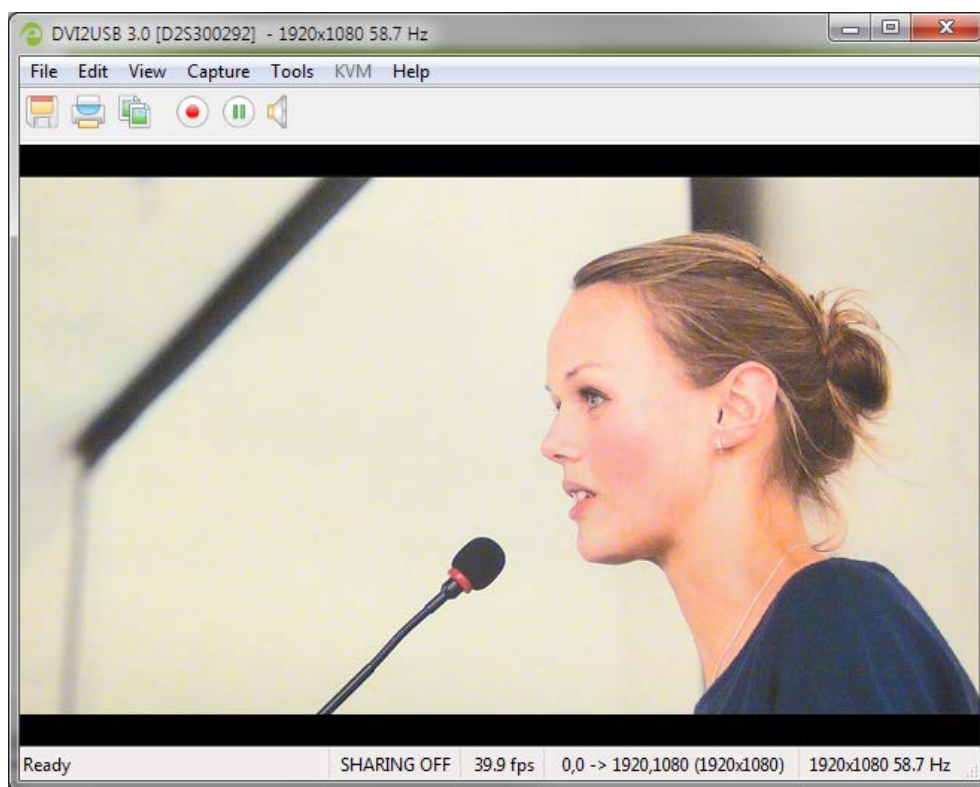
2. (Windows only) If you want to capture audio from the video grabber, click the Enable Audio button in the toolbar; it's style changes to show audio is enabled. (If your source doesn't have audio or if you want to use a different audio input method, select **Capture** » **Audio Input Device** to select your audio source.)

3. Use the red record button to start recording. On Windows, the **Save** dialog opens. Specify the filename and folder to save your file.

4. When you are done capturing, use the pause (Windows only) or stop buttons to pause or stop recording.

5. Use your operating system's file browser (Windows Explorer or Finder) to find your saved capture file.

> Windows only: If you're having trouble capturing embedded audio, make sure you have the video grabber connected to a USB 3.0 port. Because of the extra volume of data that needs to be captured, embedded audio capture is only supported when connected via USB 3.0.

> Windows only: HDMI audio capture may fail if your device has an old or incorrect EDID loaded. See **Update device EDID**.

What's next?

Now that you have done a basic recording, you might like to know more about the following topics:

- Configure your device
- DirectShow video adjustments
- Epiphan Capture Tool

Refer to the table of contents for a complete list of the topics covered.

DVI2USB 3.0 on Linux

Epiphan provides drivers and an API for linux, but does not provide a capture application. The video grabber is compatible with Video4Linux, so you can use any Video4Linux application for capture. You can also use the Epiphan Linux SDK to write your own application. For more information see the Epiphan product downloads page for your DVI2USB 3.0. You'll find the **Software Development Tools** section which contains C and C++ api and a java interface and example.

> If your capture workstation uses UEFI Secure Boot, your workstation won't be able to discover DVI2USB 3.0. You must disable Secure Boot on your Linux workstation.

USB device driver (linux)

The Epiphan USB device driver for linux come as a set of pre-compiled binaries and additional source files that you may need to compile before installing on your computer.

To download the drivers for your product, go to www.epiphan.com/support and find the support page for DVI2USB 3.0. From the **Downloads** tab, select the **Linux** download link; the linux download page appears.

Choose **vga2usb** from the first dropdown box, and specify your linux distribution specifics in the other boxes. Once you've drilled into the version of linux for which you want the drivers, click the file links to download a compressed file with everything you'll need to compile and install the driver. Unzip the file and read the README for further instructions.

The driver works with Video4Linux compatible applications (including gStreamer, VLC and the Video4Linux application), and with the Epiphan API.

Epiphan capture API

The Epiphan capture API receives captured images from the USB device driver. To record or stream these images you can use a compatible Video4Linux application (such as VLC or gStreamer) or you can use the API to write your own capture application.

The API is optimized for capturing high resolution images from your DVI2USB 3.0. It analyzes individual images, performs on-device cropping and handles video mode changes.

See the product support page to download the Software Development kit, which includes the Epiphan capture API.

Sample applications

Epiphan provides some sample applications including a sample capture application, a sample settings application and a sample utility for reading and writing EDIDs. Source for some of the samples (such as the capture application) is included in the SDK.

You can download the samples from the same downloads page as the driver.

Physical attributes

The DVI2USB 3.0 device measures 90mm x 60mm x 23mm (3.54" x 2.36" x 0.91"). It features a single DVI-I type connector, a USB 3.0 connector and an LED indicator. This small, portable product easily fits in the palm of your hand.

Table 2 *Connectors and indicators*

Number	Interface	Description
1	DVI Input	Connects a DVI, VGA or HDMI source to the video grabber.
2	USB 3.0 Output	Connects the video grabber to the capture workstation and enables data transfer from the video source to the workstation. The video grabber works best when connected to a USB 3.0 port on the capture workstation, but is also backward compatible with USB 2.0.
3	LED	LED indicator light indicates the current status of the video grabber. See Indicator LED details for the meaning of different light colors.

Epiphan always recommends using a USB 3.0 port for best performance. If a USB 2.0 port is used instead, DVI2USB 3.0 transfers video at a lower frame rate and is unable to capture embedded audio.

Indicator LED details

The color and action of the indicator LED depends on whether you are connected by USB 3.0 or USB 2.0. For maximum performance, always use a USB 3.0 port and the included USB 3.0 cable. Note that frame capture rate will be reduced when connected via USB 2.0.

If you're not sure if your controller is USB 3.0 or USB 2.0, plug DVI2USB 3.0 into the capture computer and look at the indicator LED (note that test this assumes there is no video source plugged into the video grabber):

A flashing blue LED means USB 3.0   A flashing green LED means USB 2.0

| LED color	USB 3.0 connection	USB 2.0 connection
Solid red	The video grabber is powered on but is not functional. The driver is not installed or failed to load. If you installed the Epiphan Capture Tool and drivers, disconnect and reconnect the USB cable.	
Blinking red	The video grabber's security validation has failed. Contact Epiphan support with the product serial number and details of your system.	
Solid yellow	Image/video capture or data transfer is in progress.	
Flashing blue	The firmware is loaded successfully, the device is idle.	-
Flashing green	Video mode detection is in progress.	The firmware is loaded successfully, the device is idle.
Solid green	-	Video mode detection is in progress.

Troubleshoot

If you're experiencing problems with your DVI2USB 3.0, use the following tips to attempt to rectify the problem.

> If using splitters, be sure to always use high quality splitters. For VGA splitters, use an active VGA splitter rather than a passive or Y-Adapter splitter.

Capture device not found

If the Epiphan Capture Tool does not find the video grabber, the message **Capture device not found** is displayed in the capture application.
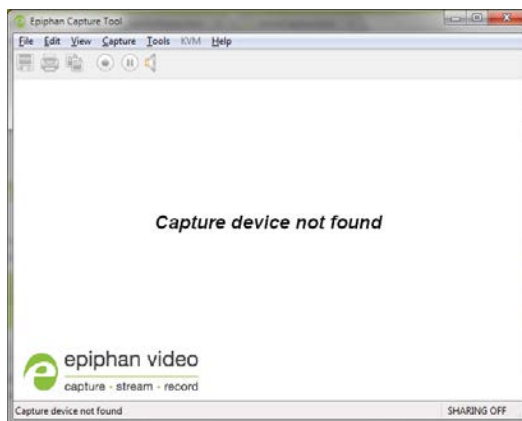
Try the following troubleshooting tips:

- Confirm that the video grabber is connected to the capture workstation's USB port. The device's LED is lit when it is connected.

- Disconnect and reconnect the video grabber from the USB port. This allows the operating system to load drivers for the video grabber, if they haven't already been loaded.

- Check the indicator LED colors and compare to the list described in Indicator LED details.

- On Windows, check the Windows Device Manager to verify that you can see the video grabber in the list of devices.

- If trying the above suggestions does not resolve the issue, close all applications and restart your video capture workstation.

No signal detected

If the Epiphan Capture Tool finds the video grabber but does not see a connected video source, the message **No signal detected** is displayed in the capture application.
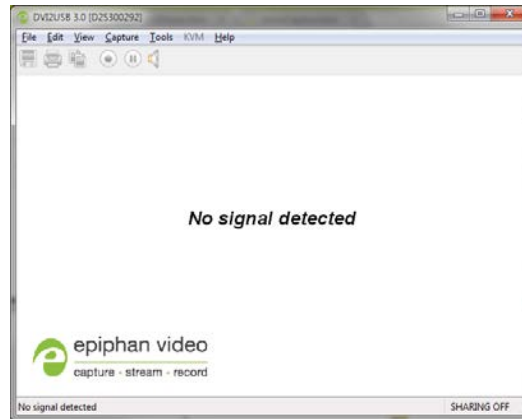
Try the following troubleshooting tips:

- Confirm that the video grabber used by the application is the correct one. Compare the serial number in the window frame (300292 in the example above) with the serial number sticker on the back of your device. If they do not match, use the **Capture** » **Select device...** (Windows) item to select a different video grabber.

- Confirm that your video source is on and is outputting data to the video cable connected to the video grabber (this may be a hardware or software setting in your video source).

- Disconnect and reconnect the video source from the video grabber.

- Check the indicator LED colors and compare to the list described in Indicator LED details.

No button to apply configuration changes

On Windows, if you don't see the button to apply your configuration changes in the Epiphan Capture Tool, the application was opened without administrative privileges. Close the application and then re-open with administrative privileges.

When I power on my Windows workstation, the connected video grabber isn't detected

Try disabling the Fastboot settings on your workstation. You can disable fast start up from **Control Panel > Power Options > Choose what the power buttons do** and deselect **Turn on fast startup** under **Change settings that are currently unavailable**.

If the problem on your Windows capture workstation persists...

Try modifying the power settings. From **Control Panel > Power Options > Change plan settings**, ensure that the power options are set to **High performance**. If you're workstation is a laptop, ensure that the AC adapter is plugged in.

Also under **Change plan settings**, modify these advanced power settings:

- **USB settings**: Change the USB selective suspend setting to **Disabled**.
- **PCI Express**: Set the Link Stat Power Management setting to **Off**.

While you're at it, open the **Device Manager** and under **Universal Serial Bus controllers**, ensure that any USB 3.0 Hubs that are listed here have the **Allow the computer to turn off this device to save power** setting **Disabled** under **Properties > Power Management**.

My Linux workstation doesn't discover the video grabber

If your Linux workstation uses UEFI Secure Boot, your workstation won't be able to discover DVI2USB 3.0. You must disable Secure Boot on your Linux workstation.

Configure your device

Epiphan lets you fine tune image adjustments and select a VGA mode (for analog sources) and control how your video grabber works with DirectShow-compatible applications.

The menu options that appear in the Configure dialog vary depending on the kind of source you have connected to the video grabber. Some menu items are only applicable to VGA sources and therefore only appear when a VGA source is connected.

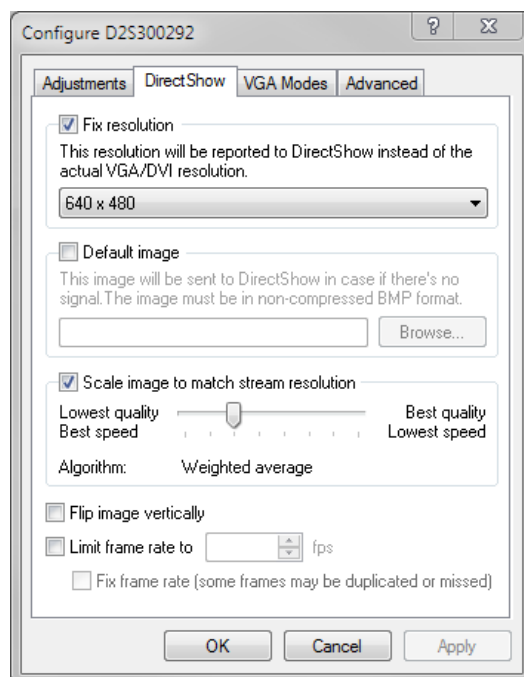To access the configuration screen, do one of the following:

1. From the Epiphan Capture, choose **Capture** » **Configure Device...** or

2. Open the **Windows Control Panel.**

    a. Click the Epiphan Frame Grabbers applet; the Epiphan Frame Grabber Configuration window appears.

    b. Select the grabber you wish to configure.

    c. Click **Edit Configuration**; the edit configuration window opens.

DirectShow video adjustments

In the Epiphan Capture Tool, the **Capture** » **Configure Device** » **DirectShow** page lets you configure how the device interacts with DirectShow compatible applications. From the resolution to whether or not the image is flipped, there are a variety of options available. See the table below for an explanation of each option.

You can also access this screen using the Epiphan applet in the Control Panel by selecting the video grabber you'd like to configure and clicking **Configure Device** or **Default Configuration**.

The adjustments made here are stored in the device driver and are used until you change them again. Once applied, you do not need to keep the Epiphan Capture Tool open to use the values you set. Be aware that third party DirectShow compatible applications can also have settings that may make it appear your settings are not being honored. If you're having difficulty seeing your changes, check the third party application's advanced settings.

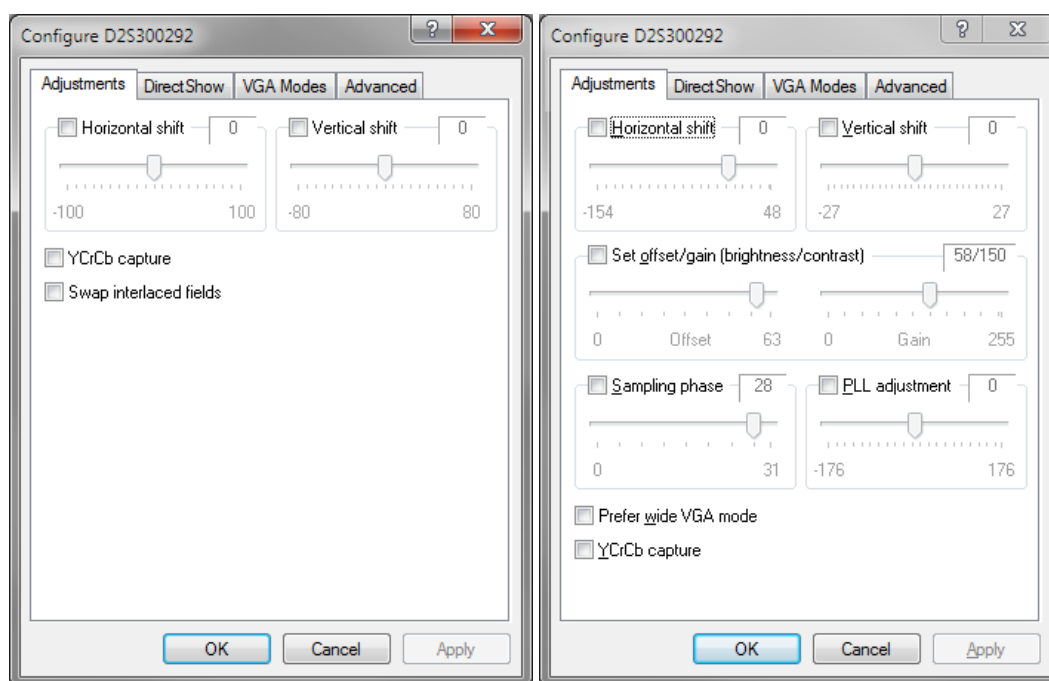| Item	Description
Fix resolution	Use this checkbox to force the resolution your video grabber reports to DirectShow compatible applications.When checked, the drop down box has a list of resolutions from which you pick your desired resolution. If you choose a resolution that is smaller or larger than the source video, the Epiphan drivers will scale the image for you (unless you uncheck

Item	Description
	Scale image to match stream resolution, in which case the image will be cropped to match your chosen resolution).
Default image	Select an image to display when there is no signal captured from your video grabber. The uncompressed BMP image must be located on your video capture workstation.
Scale image to match stream resolution	If you are using a fixed resolution and choose not to scale the image, the captured image will appear cropped to your specified resolution when capturing with a DirectShow compatible utility. Generally the cropping happens at the top left corner of the video, but test first to be sure you see the same results. Normally, when choosing to use a fixed resolution with DirectShow, you'll want the Epiphan drivers to scale the image for you. Use the slider to determine the type of scaling you'd like. Scaling performance is a tradeoff between quality and CPU cycles on the capture computer. Lower quality (left side of the slider) is faster and takes fewer CPU cycles, where higher quality (right side of the slider) is slower and takes more CPU time. Try different values out to find the one that works for your specific use case.
Flip image vertically	Use this check box to flip your captured image vertically when sending over DirectShow.
Limit frame rate to	Use this to limit (or fix) the frame rate for the data you send to DirectShow. For example, if you're using a DirectShow-compatible application like WebEx and you're sharing something relatively static (like a PowerPoint presentation), you could limit the frame rate to 5 fps, which would be plenty for people watching at the other end, and would avoid filling your data pipe with identical images.

Visual video adjustments

The **Adjustments** page lets you configure the device to manage slight shifts in the data and the color mode you're capturing from. If you have a VGA signal connected, options for configuring VGA-specific tuning parameters are also available.

You can access this screen by selecting **Capture** » **Configure Device** » **Adjustments** or using the Epiphan applet in the Control Panel by selecting the video grabber you'd like to configure and clicking **Configure Device** or **Default Configuration**.

The main adjustments screen has the following appearance, depending on the source connected (HDMI or DVI source shown on the left, VGA source shown on the right).

| Item	Description
Horizontal shift	Configure horizontal shift to offset the captured image position. For example, a captured image shifted slightly to the right (horizontally) can be corrected with minor adjustments to the horizontal shift settings. Increasing the value entered in the Horizontal Shift field shifts the image to the right, decreasing it shifts the images to the left.
Vertical shift	Configure vertical shift to offset the captured image position. For example, a captured image shifted slightly downward (vertically) can be corrected with minor adjustments to the vertical shift settings.

Item	Description
	Increasing the value entered in the Vertical Shift field shifts the image up, decreasing it shifts the images down.
Set offset/gain (brightness/contrast) *VGA sources only*	The offset and gain settings control the image brightness and contrast respectively. Increasing the offset control causes the image to become darker. Increasing the Gain control gives the image more contrast.
Sampling phase *VGA sources only*	This setting adjusts the vertical synchronization properties of the image. You may need to change it when there is a repetitive distortion or blurriness on the horizontal axis of the image. Adjust the setting in small steps until a sharper image is displayed.
PLL adjustment *VGA sources only*	This setting is used to squeeze or stretch the image horizontally.
Prefer wide VGA mode *VGA sources only*	This checkbox allows Wide Aspect Ratio VGA modes to be displayed by the video capture application window. The Epiphan USB device driver may not be able to determine whether the video source is sending a wide video mode signal. You can select this option if your video source uses a wide video mode to make sure that the Epiphan USB device driver selects a wide video mode.
YCrCb capture	Generally your DVI2USB 3.0 auto-detects input type, but in case of an issue where the input type isn't detected, you can select this checkbox to capture analog component video with YCrCb encoding.
Swap interlaced fields	When capturing from some sources, the video grabber cannot correctly determine the order to place interlaced lines. Use this checkbox to resolve the issue.

Set VGA modes

The **VGA Modes** page lets you configure the VGA modes used for analog video capture.

You can access this screen by selecting **Capture** » **Configure Device** » **VGA Modes** or using the Epiphan applet in the Control Panel by selecting the video grabber you'd like to configure and clicking **Configure Device** or **Default Configuration**.

The video grabber supports many common VGA modes out of the box. If however you wish to capture from a custom VGA source (i.e. custom resolution or timing) you can add that here. You can also uncheck any VGA modes you'd prefer the video grabber doesn't try to use when tuning the capture parameters for your source.
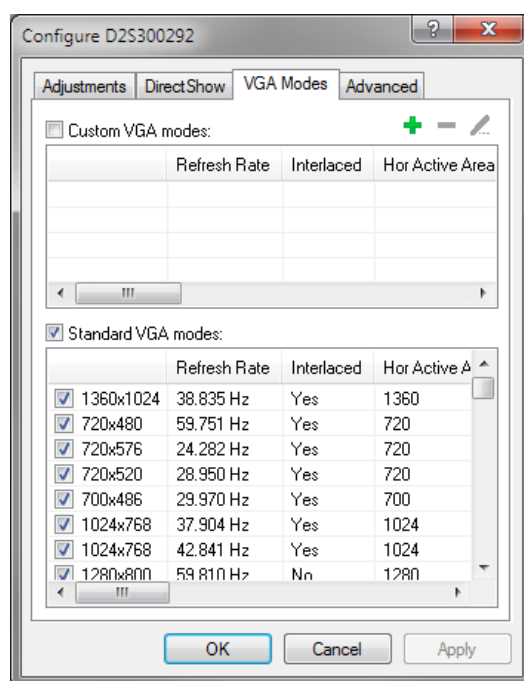
To add a custom VGA video mode:

1. Launch the Epiphan Capture Tool.

2. Select the **Capture** » **Configure Device** menu item; the configure dialog appears.

3. Select the **VGA Modes** tab.

4. Click the **plus** button to add a custom mode; the custom mode dialog opens.
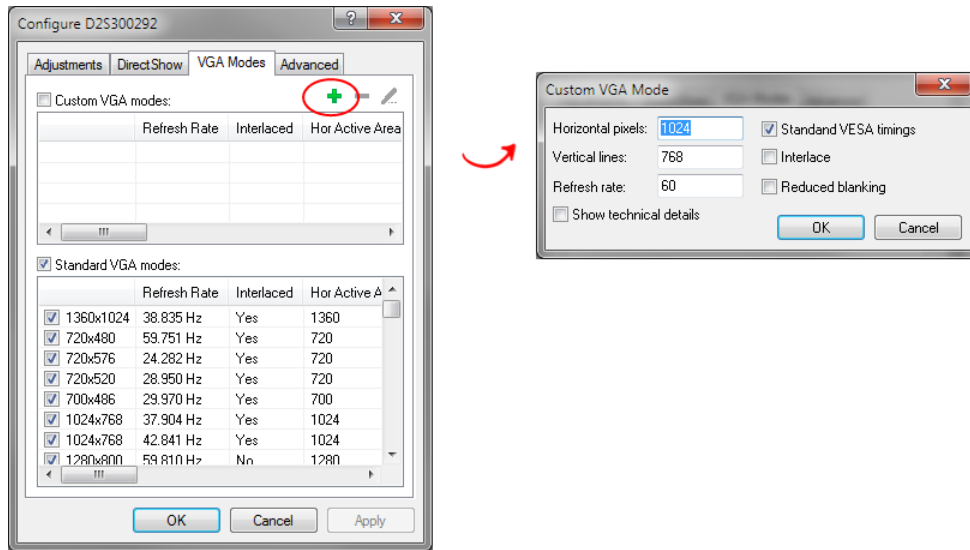
5. Specify your custom frame size in the **Horizontal pixels** and **Vertical lines** fields.

6. Specify the **Refresh rate** for your source and indicate whether it is interlaced or needs reduced
    blanking.

7. If your source uses non-customary timing, uncheck **Standard VESA timings**; a set of technical timing
    details appears. Fill in your custom timing values. (If you don't know the timing values for your source,
    use the standard VESA timings and make minor image tweaks using the Adjustments tab of the
    Configure Device dialog.)

Advanced adjustments

The **Advanced** page lets you configure the device's auto-adjustment and detection mechanisms.

You can access this screen by selecting **Capture** » **Configure Device** » **Advanced** or using the Epiphan applet in the Control Panel by selecting the video grabber you'd like to configure and clicking **Configure Device** or **Default Configuration**.

The advanced adjustment dialog looks like this:
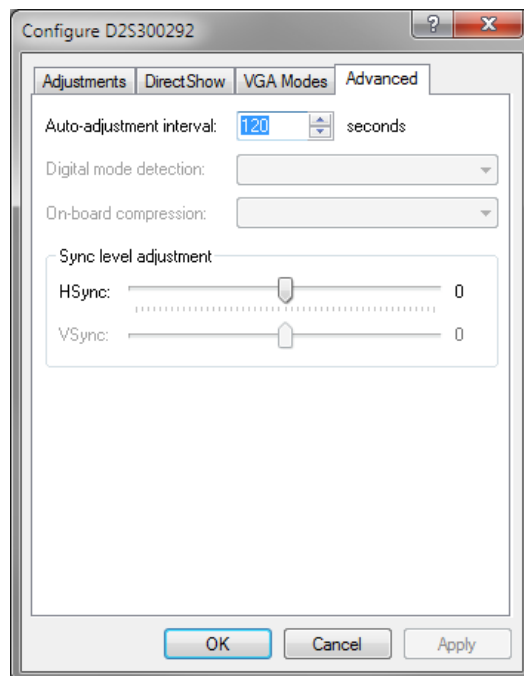
Item	Description
Auto-adjustment interval	Specify an interval, in seconds that the video grabber should use between auto-adjustments. There is generally no need to change this value, however if you will be changing your source frequently during capture, you may want to reduce the interval.
On-board compression	This option only appears when connected to a USB 2.0 port. Select this option to enable on-board compression of the incoming signal when connected to a USB 2.0 port.
Sync level adjustment HSync and VSync	Adjust horizontal and vertical sync levels.

The DVI2USB 3.0 auto-detects the input type; however, if the input type isn't detected, you can manually select to capture analog component video using the YCrCb encoding from the main Adjustments tab. You can also swap interlaced fields from the main Adjustments tab if the video grabber can't correctly determine the order to place interlaced lines.

Epiphan Capture Tool

The Epiphan Capture Tool is a free software application available for Windows. You can use this tool for capturing and recording video or images from your source, and you can also use it to configure your video grabber for use with third party DirectShow-compatible applications.

The same Epiphan Capture Tool is used by all Epiphan video grabber models that use Epiphan-supplied drivers (e.g. DVI2USB 3.0, SDI2USB 3.0, VGA2USB, DVI2PCIe Duo and more) as well as Epiphan's portable USB-based KVM, KVM2USB. As a result, some of the functionality in the software isn't applicable to your DVI2USB 3.0 video grabber. This guide outlines which functions are relevant and explains how to use each one.

Epiphan Capture Tool

To start the application, from the **Windows Start menu** select **Start** » **Epiphan Capture Tool**, or double-click on the installed desktop icon.

The application starts up and looks for the DVI2USB 3.0 video grabber connected to your PC.

If the video grabber is connected and operating, the capture application finds it and the image being captured appears on the application display.
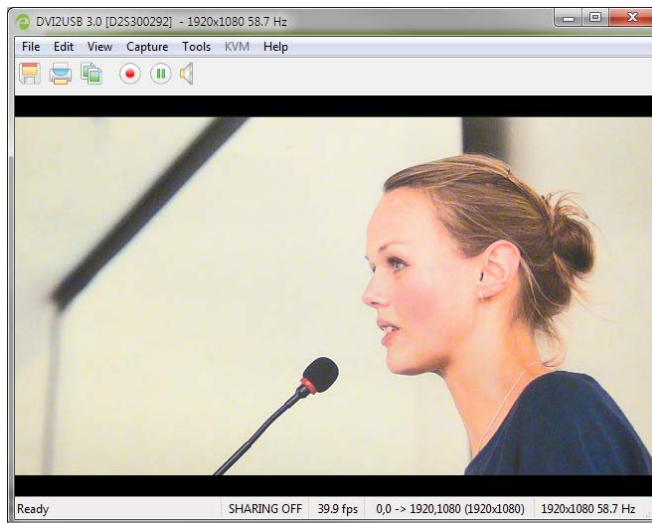

As the application starts, the following messages may appear:

- **Capture device not found** as the application attempts to connect with the video grabber.
- **Detecting Video Mode** as the application connects to a device and then determines the video mode of the device.
- **Tuning Capture Parameters** as the application synchronizes and tunes capture settings and image adjustments.
- **No Signal Detected** if the application connects to a video grabber that is not connected to an active video source.

If the video grabber device is not capturing images when you have a video source connected, follow the troubleshooting tips here: Troubleshoot.

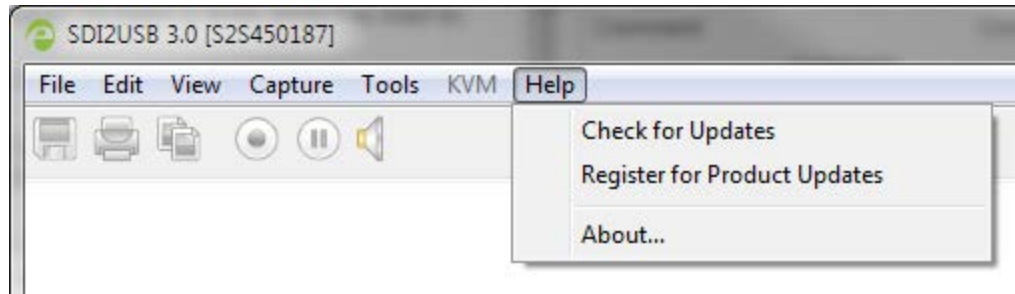The capture tool has the following sections:
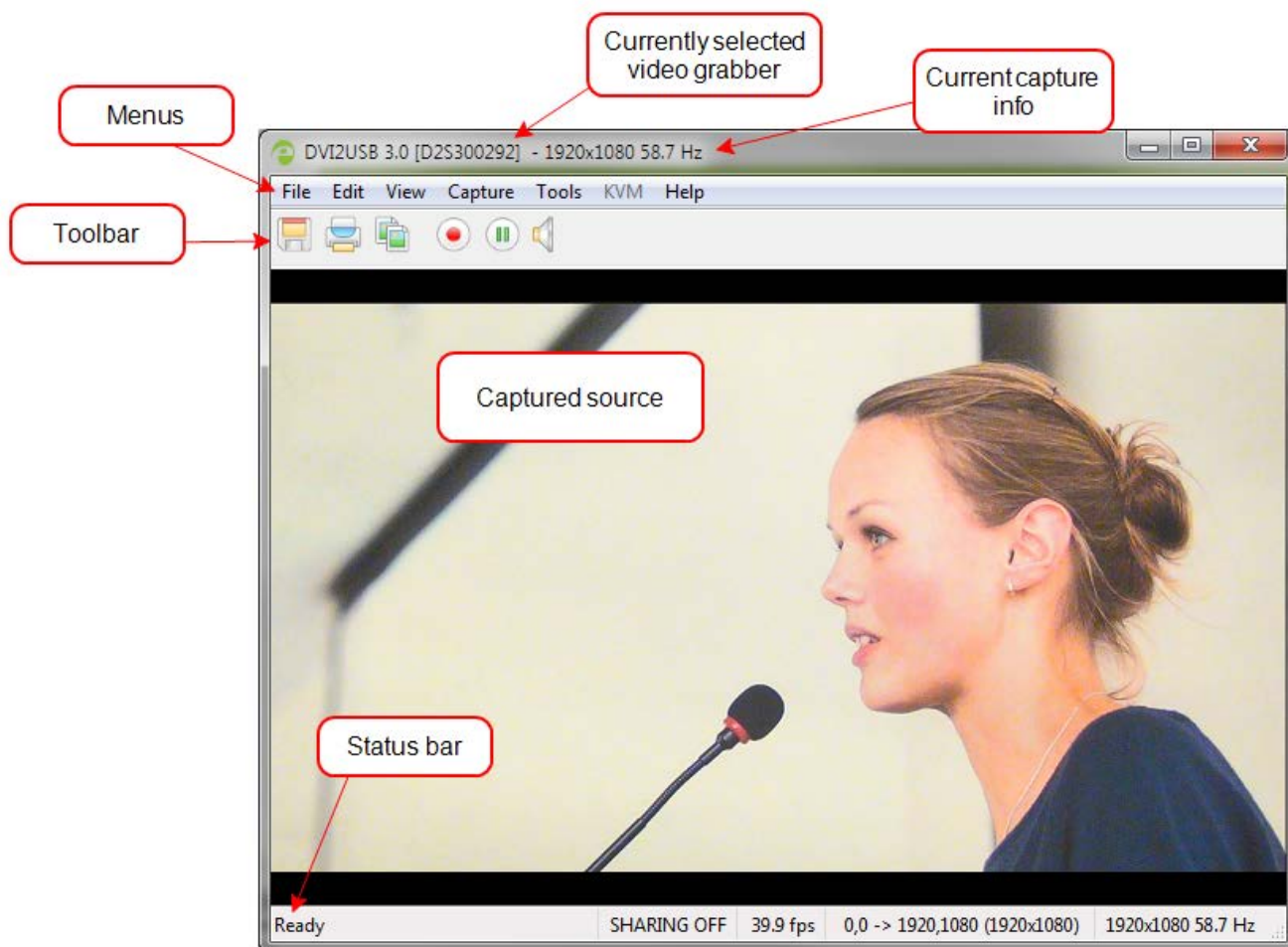
Read more about the menus in these topics: File menu, Edit menu (Windows), View menu, Capture menu, Tools menuHelp menu. You can also read more about the Toolbar and Status bar.

Menus

These topics cover the menus found in the Epiphan Capture Tool.

File menu

The following is a breakdown of the **File** menu in the Epiphan Capture Tool.
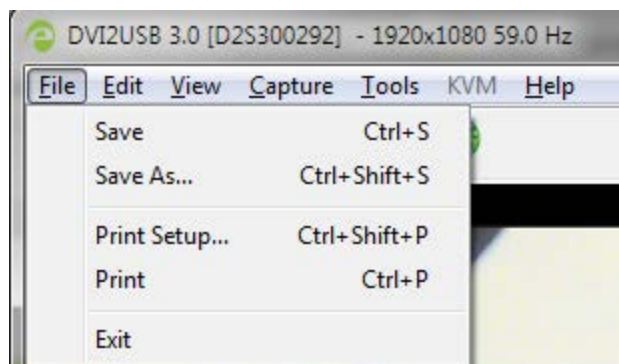
The **File** menu has these options:

Menu item	Shortcut	Description
Save	Ctrl+S	Save a snapshot of the current image to a file on the video capture workstation. See To save a snapshot.
Save As...	Ctrl+Shift+S	Save a snapshot of the current image to a file, using a new name or format. See To save a snapshot.
Print Setup...	Ctrl+Shift+P	Opens the printer configuration dialog, allowing you to select a printer or set printer options.
Print	Ctrl+P	Prints a snapshot of the current image. See To print a snapshot.
Exit		Closes the application, terminating all capture and recording done

Menu item	Shortcut	Description
		through this instance of the Epiphan Capture Tool.

Edit menu (Windows)

The following is a breakdown of the **Edit** menu in the Epiphan Capture Tool.
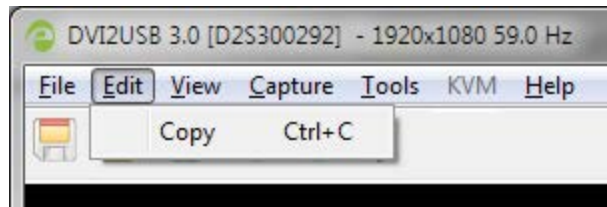
The **Edit** menu has these options:

Menu item	Shortcut	Description
Copy	Ctrl+C	Copy a snapshot of the current image to the clipboard. See To copy a snapshot.

View menu

The following is a breakdown of the **View** menu in the Epiphan Capture Tool.
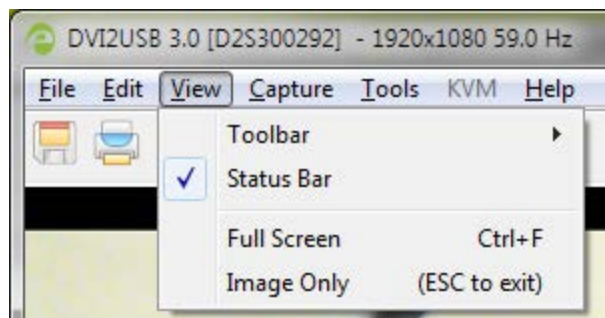
The **View** menu has these options:

Menu item	Shortcut	Description
Toolbar		Change the size of the toolbar icons or hide/show the toolbar. (When the toolbar is hidden, choose a size to restore it.)

Menu item	Shortcut	Description
Status Bar		View or hide the status bar at the bottom of the application window.
Full Screen	Ctrl+F	Enable full screen mode. Press ESC (the escape key) to return to window mode.
Image Only	(ESC to exit)	Put the Epiphan Capture Tool into a mode where the window borders, toolbar, status bar and menu bar are not displayed (scroll bars may still be displayed). The image only mode can be useful for integrating the Epiphan Capture Tool into a custom system UI. You can still use the existing shortcut keys. Press ESC (the escape key) to return to the normal operating mode.

Capture menu

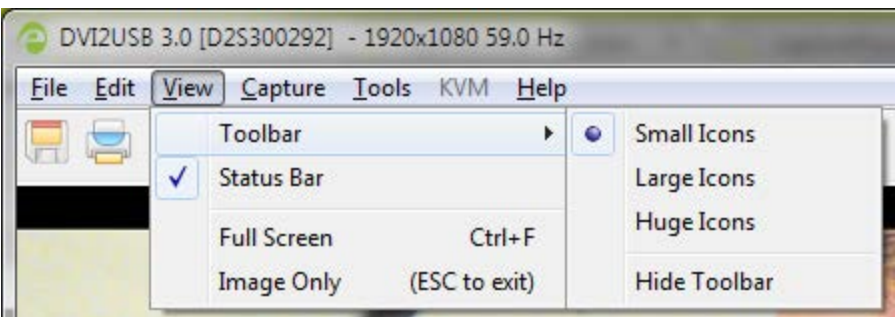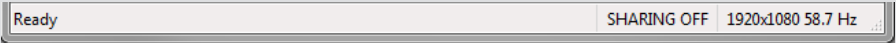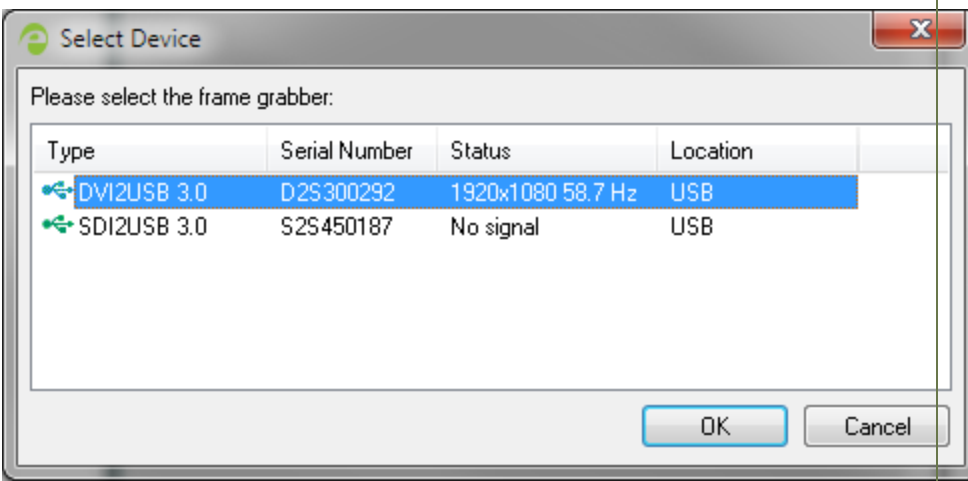The following is a breakdown of the **Capture** menu in the Epiphan Capture Tool.

The Capture menu lets you start, stop and pause capturing/recording. It also lets you select the DVI2USB 3.0 device that this instance of the application works with, when you have more than one Epiphan video grabber attached to your video capture workstation.
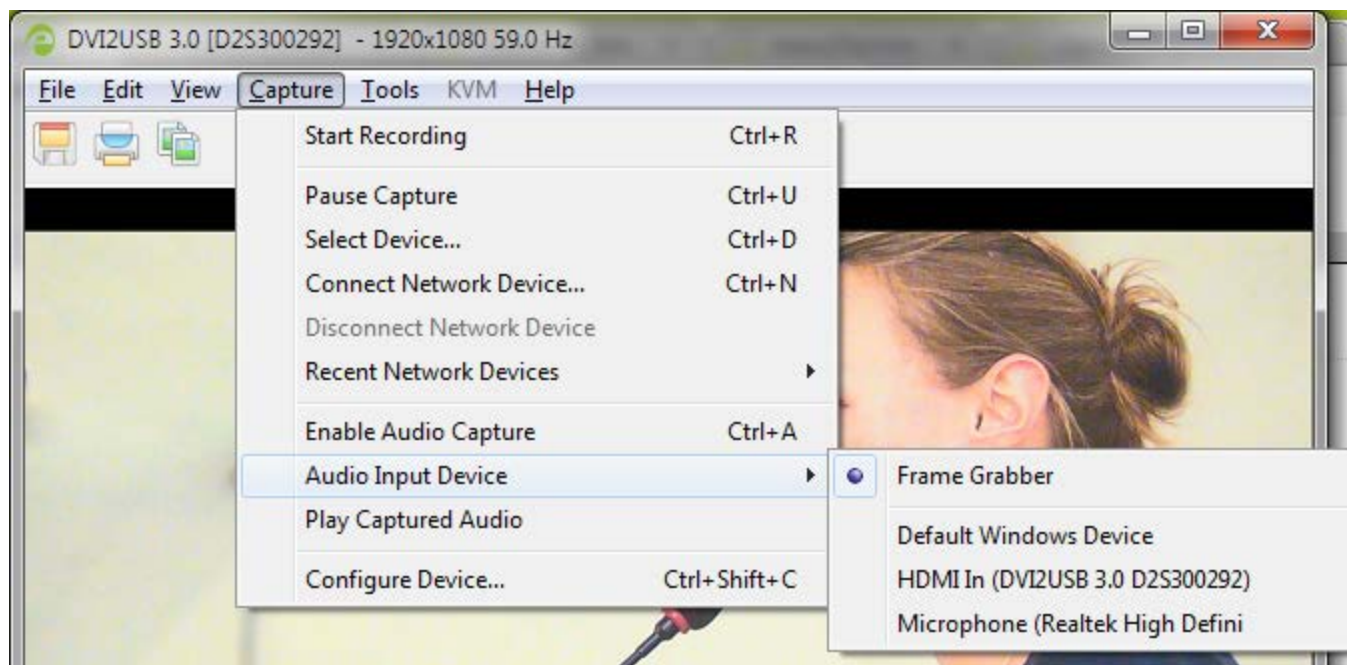
The **Capture** menu has these options:

Menu item	Shortcut	Description
Start Recording *(Stop Recording)*	Ctrl+R	Start or stop recording your captured stream as a video or a series of captured images. See Record a video and Record as a series of images.
Pause Capture *(Resume Capture)*	Ctrl+U	Pause or unpause capture and recording (the last frame will stay visible on the screen). See Pause video capture.
Select Device...	Ctrl+N	Use when you have more than one Epiphan Pro Series Video Grabber connected to your video capture workstation.

Menu item	Shortcut	Description
		Choose the device you want to use in this instance of the Epiphan Capture Tool and click **OK**.
Connect Network Device…		Used with Epiphan's legacy VGA2Ethernet device, outside the scope of this product documentation.
Disconnect Network Device		
Recent Network Devices		
Enable Audio Capture *(Disable Audio Capture)*	Ctrl+A	When enabled, audio captured by the device, or by the configured external audio source is included in the recording. See Configure audio.
Audio Input Device		Opens a sub-menu to let you choose the input device used for audio capture. See Configure audio for more details.
Play Captured Audio		When enabled, captured audio is played on the video capture workstation (e.g. through the workstation's speakers or attached headphones). Use as a confidence monitor to check the audio you're recording, or to share the audio you're capturing with local viewers. Enable Audio Capture must be enabled for the Play Captured Audio settings

Menu item	Shortcut	Description
		to work.
Configure Device...	Ctrl+Shift+C	Opens a dialog to let you configure specific capture adjustments for the video grabber. See Configure your device.

Tools menu

The Tools menu in the Epiphan Capture Tool lets you upload custom EDIDs and set application options.
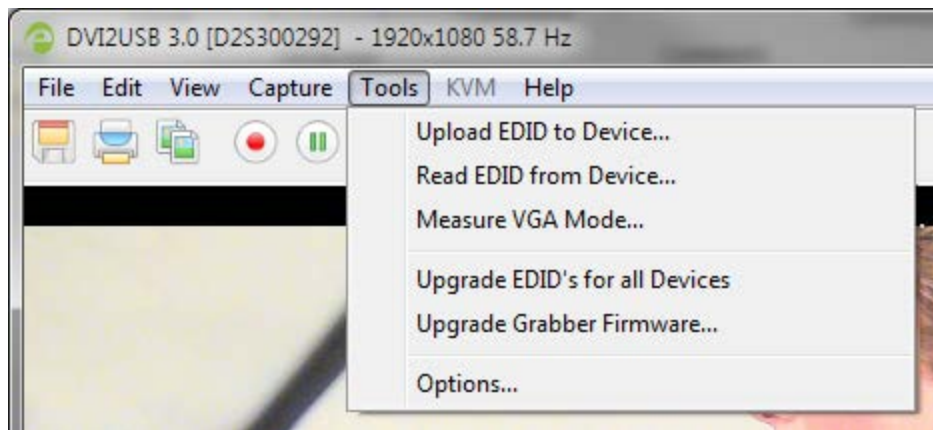
The **Tools** menu has these options:

Menu item	Shortcut	Description
Upload EDID to Device...		Use this command to upload a custom EDID to the video grabber. See Update device EDID.
Read EDID from Device...		Use this command to upload a custom EDID to the video grabber. See Update device EDID.
Measure VGA Mode...		When requested by Epiphan technical support, you can use this command to display low-level information they can use to help diagnose problems. Copy this information into an email or chat with Epiphan technical support.
Upgrade EDIDs for all Devices		From time to time, Epiphan releases updated general-purpose EDIDs for video grabbers. Use this tool to check for updates and apply them.
Options		Lets you configure a number of options related to

Menu item	Shortcut	Description
		capturing video, recording video and more. See Application options for a detailed explanation of the available options.

Application options

The Epiphan Capture Tool has a number of available configuration options, accessible from the **Tools** » **Options** menu.

The following categories of options are available: Recording, On-Screen Text, KVM, Sharing, Display, Capture, Audio and Startup.
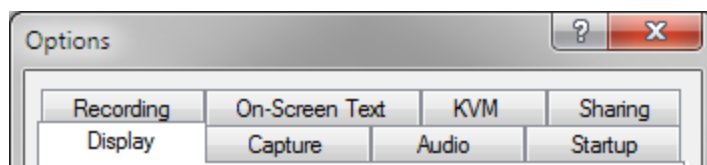

The **Options** dialog has these tabs:

Menu item	Description
Display	Lets you control how the capture tool displays the captured images and what information is displayed in the status bar. See Configure display options for more information on the display format and Status bar for a description and examples of the optional status bar indicators.
Capture	Allows you to configure cropping (to capture only a specific part of the video frame). See Crop the captured image for details. From this tab you can also change the interval between **video mode detection** attempts. Making the number smaller means the grabber will check more often for a different video mode, but it also means the grabber will work harder and could reduce frame rate. Lastly, from this tab you can also **limit the frame** rate of your capture. This could be necessary if you are streaming (or recording) and know you have a small amount of bandwidth (or disk space) and don't want to overwhelm it with too much data.
Audio	Lets you configure the audio format for the recording, the audio source used, and whether or not the Epiphan Capture Tool should play the captured audio on the capture workstation's audio output device (i.e.

Menu item	Description
	local speakers or headphones, which are useful for monitoring the audio captured). See Configure audio for information on configuring audio capture.
Startup	Allows you to choose whether or not the Epiphan Capture Tool should start up in full screen mode. The other option on this tab is used for legacy Epiphan products (network-attached video grabbers like VGA2Ethernet).
Recording	Lets you configure the capture application's record feature to save either as video or as images. See Record a video, Configure optional recording settingsRecord as a series of images for more details.
On-Screen Text	Using the Epiphan Capture Tool you can add a watermark to your captured frames; this tab lets you configure that watermark. See Add a watermark.
KVM	This feature is not used by DVI2USB 3.0. It is for Epiphan's KVM2USB.
Sharing	The Epiphan Capture Tool comes with a sample sharing application, VGA2Web, a **demo**. See Sharing / streaming demo tool. This Options tab allows you to override the default compression settings used with that application.

Help menu

The **Help** menu in the Epiphan Capture Tool lets you check for software updates, register your product, and see information about your current software installation.
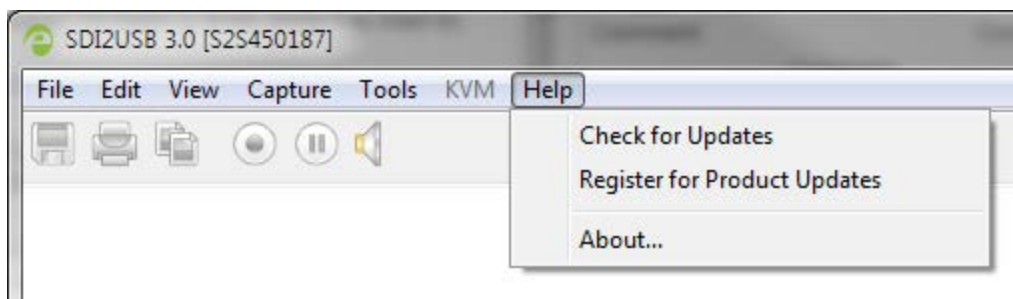
Use the **Help** » **Check for Updates** menu to check for updates to the Epiphan Capture Tool and drivers. Note that sometimes there can be an updated version of the software, but it doesn't add any new features or have any updates for the model of video grabber you are using. In those cases the software update check will

not recommend an update, however you can still update your software using the method described in
Upgrade your drivers and software.

Toolbar

The Epiphan Capture Tool toolbar provides a set of quick-access buttons for actions that are used frequently such as starting, stopping and pausing capture and saving snapshots.

Toolbar:

You can change the size of icons on the toolbar using the menu command **View** » **Toolbar** » **(size) Icons**.

You can hide the toolbar using **View** » **Toolbar** » **Hide Toolbar**. To show the toolbar again when it is hidden, select any of the toolbar icon sizes.

The toolbar items:

Icon (Windows)	Description
	Saves a snapshot of the currently captured frame. You may wish to pause capture first. See Copy, save, or print a snapshot for more details.
	Prints the currently captured frame. You may wish to pause capture first. See Copy, save, or print a snapshot for more details.
	Copies the currently captured frame to the clipboard. You may wish to pause capture first. See Copy, save, or print a snapshot for more details.
	Starts (or stops) recording of the captured frames (in image or video format). See Record a video and Record as a series of images.
	Pauses capture and recording, if applicable. (Also closes out the recording file.)
	Enables or disables audio capture. See Configure audio for more details on configuring audio capture.

Copy, save, or print a snapshot

You can also use the Epiphan Capture Tool to copy, save, or print a snapshot from the stream.

To save a snapshot

Save a .bmp, .jpg, or .png of the stream you are capturing using any of the following methods. You can optionally Pause video capture prior to saving the image.

- Select **File** » **Save**
- Press **Ctrl+S**
- Use the Save icon on the toolbar

The first time you save a snapshot, the **Save As** dialog will open to ask for a file location and file type. Subsequent images will **automatically overwrite** this file unless you use **File** » **Save As...** or **Ctrl+Shift+S**.

To print a snapshot

You can directly print a snapshot from the stream using any of the following methods. You can optionally Pause video capture prior to saving the image.

- Select **File** » **Print**
- Press **Ctrl+P**
- Use the Print icon on the toolbar

Use the menu option **File** » **Print Setup...** or the keyboard shortcut **Ctrl+Shift+P** to select the printer and configure printer settings.

Optionally, you can choose to have colors inverted for printing (black will appear as white, yellow as blue, red as cyan, etc). To invert the colors for printing:

1. Select **Tools** » **Options**; the options dialog appears.
2. Select the **Display** tab.
3. Check the **Invert colors for printing** checkbox.
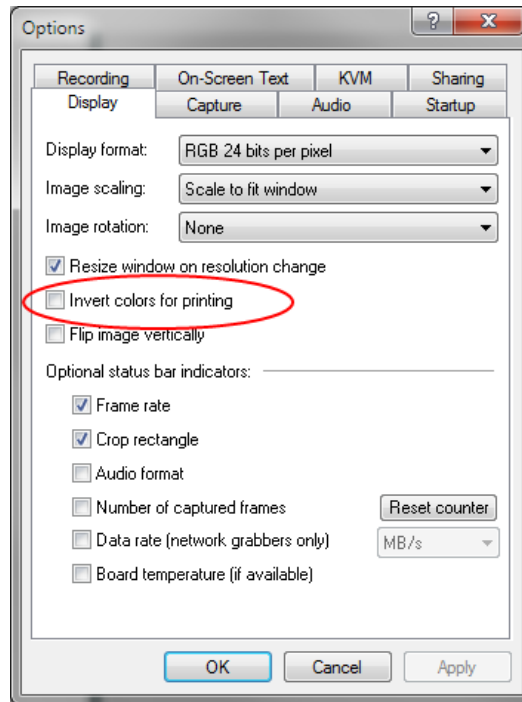
4. Click **OK**.

To copy a snapshot

You can easily copy a snapshot of your stream to the clipboard using any of the following methods. You can optionally Pause video capture prior to copying the image.

- Select **Edit** » **Copy**
- Press **Ctrl+C**
- Use the Copy icon on the toolbar

Open another application on your workstation and use clipboard paste methods (like **Edit** » **Paste** or **Ctrl+V**) to paste the copied image.

Record a video

The Epiphan Capture Tool can record the images captured from your DVI2USB 3.0 as a video.

You can choose to capture audio (see Configure audio) and can also alternatively choose to save individual image files instead of a video, see Record as a series of images.

To record a video of your captured video source:

Step 1: Set the codec

Take this opportunity to select your encoding codec. Codecs are the software that take the uncompressed video frames from the DVI2USB 3.0 and combine/compress these into a digital video file that you can view with a player, share with a colleague or upload to a video sharing site, like YouTube.

By default, your operating system comes with some default codecs installed, no additional codecs come with the Epiphan Capture Tool. You can choose to install third party codecs such as x264. Picking the best codec for your use case is beyond the scope of this document, but you can find many resources (and debates) about this topic on the Internet.

To configure the codec:

1. Connect your video source to the video grabber.

2. Connect the video grabber to a USB port on your capture workstation (use USB 3.0 for best performance or if you plan to capture embedded audio).

3. Launch the Epiphan Capture Tool using the installed desktop shortcut. See or Epiphan Capture Tool.

4. Select the **Tools** » **Options** menu item; a dialog box opens.

    a. Select the **Recording** tab.
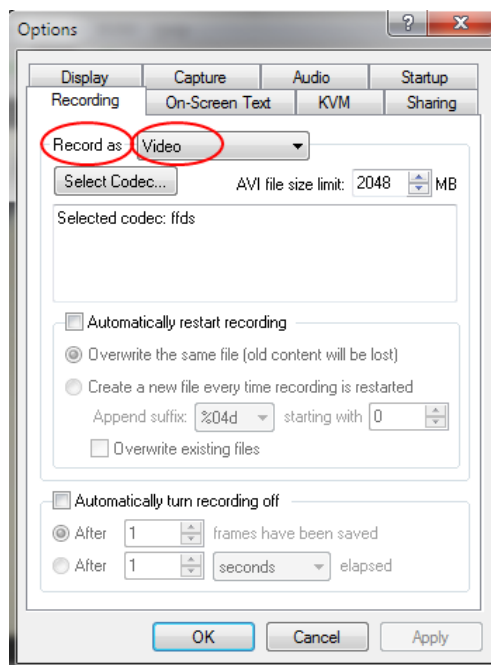
b. Ensure the **Record as** drop down has **Video** selected.

c. Use the **Select Codec...** button to open the **Video Compression** dialog. Choose from codecs installed on your system and click **OK** to close the Video Compression dialog.
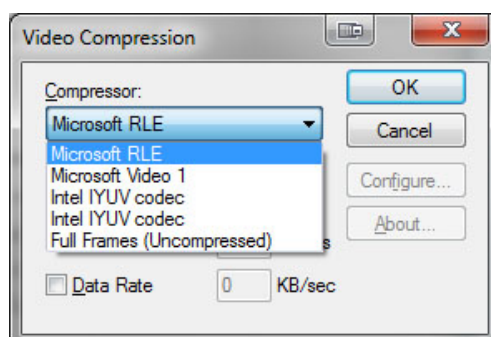
d. If desired, modify the **AVI file size limit**. Recording will automatically be stopped when this limit is reached.

e. From this page you can also Configure optional recording settings such as file names and recording period.

f. Click OK to save your **Recording** settings.

Step 2: Record

With the Epiphan Capture Tool properly configured, all there is to do is record your video!

As images/frames are captured by the video grabber they are recorded to the video file. The status bar displays the name and location of the video file, the elapsed recording time and the number of frames (or images) recorded.

To record your video:

1. The Epiphan Capture Tool should already be capturing and previewing your video source (if you see a No Signal message, disconnect and reconnect the cables to make sure they are all seated correctly).
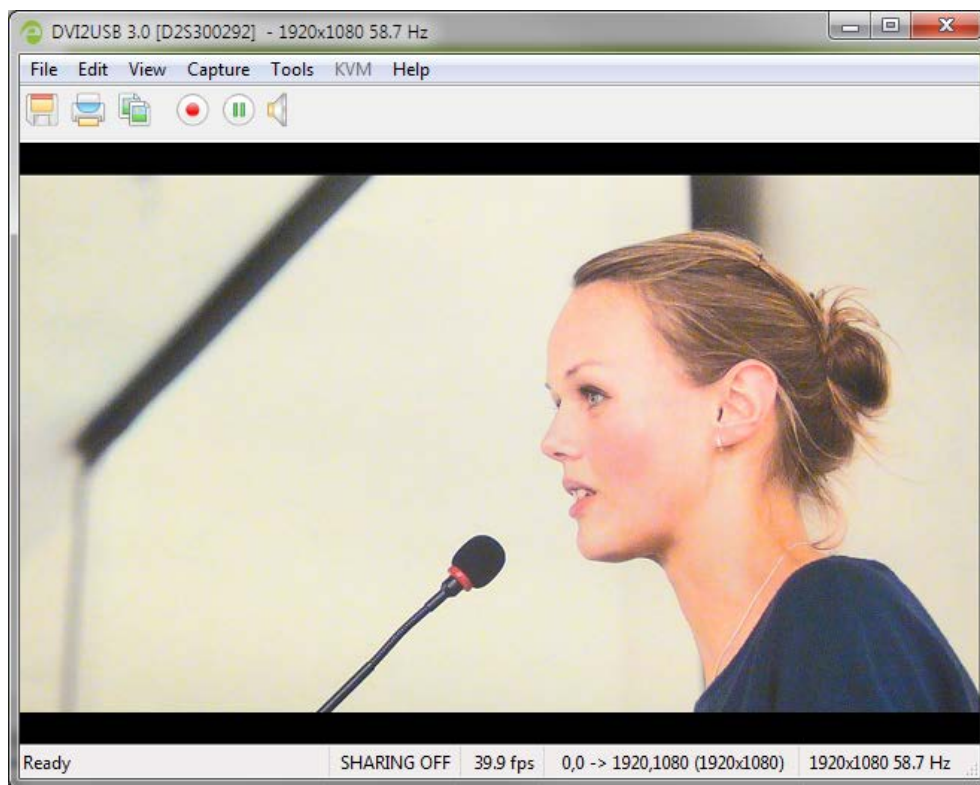
2. Optionally, configure audio capture and enable audio capture. See Configure audio.

3. Select **Capture** » **Start Recording**, use the red record button or keyboard shortcut **Ctrl-R** to start recording; a Save dialog opens.

(Windows)

4. Specify the filename and folder to save your file. (See Configure optional recording settings for pre-configuring recording file names.)

5. When you are done capturing, use the **pause** or **stop** buttons to pause or stop recording. (You can also use the keyboard shortcut Ctrl-U for pause and can use the menu items **Capture** » **Pause** or **Capture** » **Stop Recording** to control recording.)

6. Use your operating system's file browser (Windows Explorer or Finder) to find your saved capture file. If the status bar is visible, the filename and path of the last saved file is found in the status bar at the bottom of the Epiphan Capture Tool.

> If you're having trouble capturing embedded audio, make sure you have the video grabber connected to a USB 3.0 port. Due to the extra volume of data that needs to be captured, embedded audio capture is only supported when connected via USB 3.0.

> HDMI audio capture may fail if your device has an old or incorrect EDID loaded. See **Update device EDID**.

When the video file reaches the AVI file size limit, one of the following occurs based on recording configuration settings:

- recording stops;
- recording continues and a new video file is created; or
- recording continues and the original video file is overwritten.

To set recording options refer to Configure optional recording settings.

Crop the captured image

In most video capture situations, you'd like to record everything that is captured by the DVI2USB 3.0. Sometimes, however, there's a need to remove some information (e.g. confidential or personal information) or to crop out black bars or unwanted areas of a scene. For these purposes, the Epiphan Capture Tool lets you crop the captured source prior to recording.

For example, using cropping you can change your capture from what you see on the left side, below, to the cropped image on the right. The status bar displays the cropped coordinates.
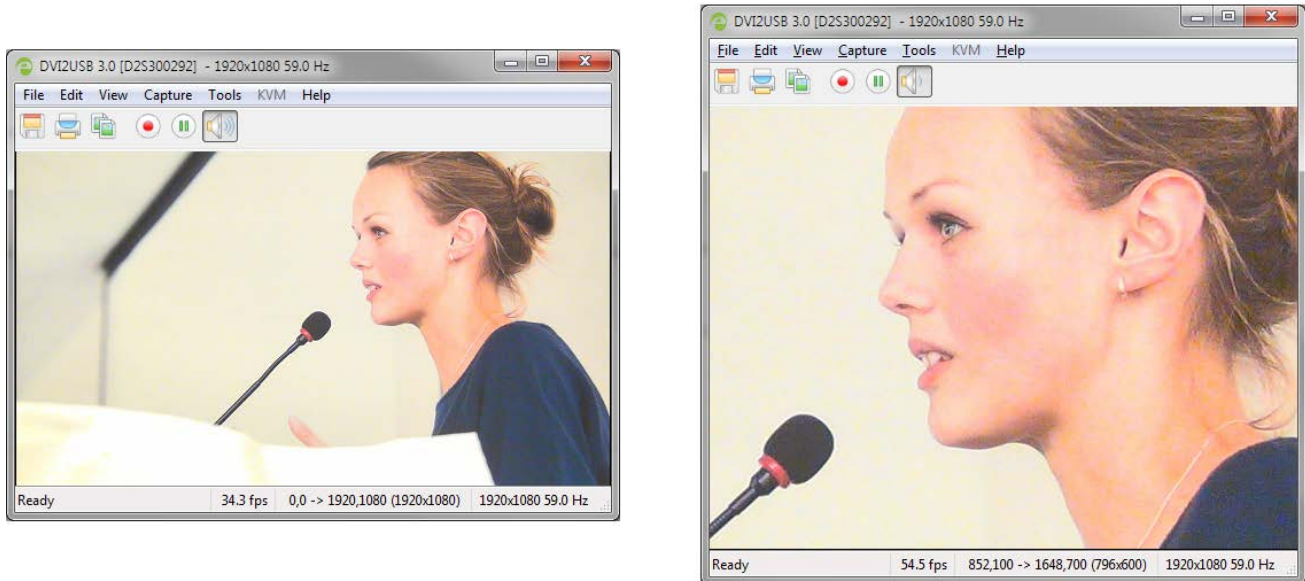
To set capture cropping, start by Record a video

To specify your cropping parameters:

1. From the **Tools** » **Options** dialog, select the **Capture** tab.
2. Check the **Enable hardware cropping** checkbox.
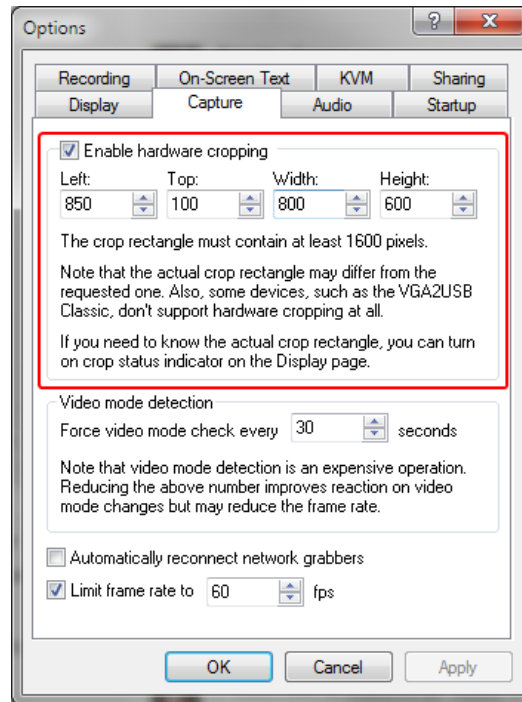
3. In the **Width** and **Height** fields, specify in pixels the size of the cropped area that you want to capture.

4. Using the **Left** and **Top** fields, specify in pixels the top left corner where to start capturing. As you change these values, you can see the visible portion of the image change in the cropped area.

5. Click **Apply** to see the changes immediately and keep fine-tuning, or click **OK** to save your changes.

Update device EDID

Extended display identification data (EDID) is data provided by a video display device (usually a monitor) to describe its capabilities to a video source (usually a graphics or video output card in a PC or another device). The video source uses the EDID to determine the capabilities of the monitor to determine the resolution, color depth and other settings that the monitor can support.

In the case of your DVI2USB 3.0, it's acting as the monitor for your video source. Epiphan factory-loads your video grabber with a comprehensive EDID that describes all the video modes it can support. When you connect a video source (such as a laptop or video camera), this source interprets your DVI2USB 3.0 as a monitor and uses its EDID to negotiate which video signal to send.

> EDID is crucial for DVI sources but mostly ignored by VGA sources.

Generally, the factory loaded EDID correctly emulates a monitor that supports your video source. However sometimes, particularly if your source uses a custom set of display properties, you need to help the video grabber by uploading a custom EDID to force the capture card to report that it emulates a resolution, color depth, etc needed by your laptop, camera or other video source.

> For example, you can upload a custom EDID file to your DVI2USB 3.0 that reports that it only operates at 1040x768. When the video source reads the EDID from the video grabber, the video source will reset to operate at 1024x768 as set in the EDID.

In addition to needing to load a specific EDID, you may from time to time, want to upgrade your capture device with the latest factory EDID from Epiphan.

Upload a new EDID

In most circumstances the factory installed default EDID, is sufficient. However, there may be some cases where a video source uses resolutions that you do not want to use. In that case you can choose an EDID that forces the video grabber to use a specific set of attributes.

> EDID changes are permanent until you replace them with another EDID.

1. First, download a new EDID file, by going to the Epiphan support web page.

2. Select the support page for DVI2USB 3.0.

3. Scroll to the **EDID** section.

4. Click an EDID from the list; the file is saved to your downloads folder on your hard drive.

> To return to the factory default EDID, select the "default configuration" EDID from the download list.

5. Connect your video grabber to the capture computer.

6. Disconnect your video source from the video grabber.

7. Launch the Epiphan Capture Tool.

8. Select the **Tools** » **Upload EDID to device...** menu option; a file selection dialog opens.
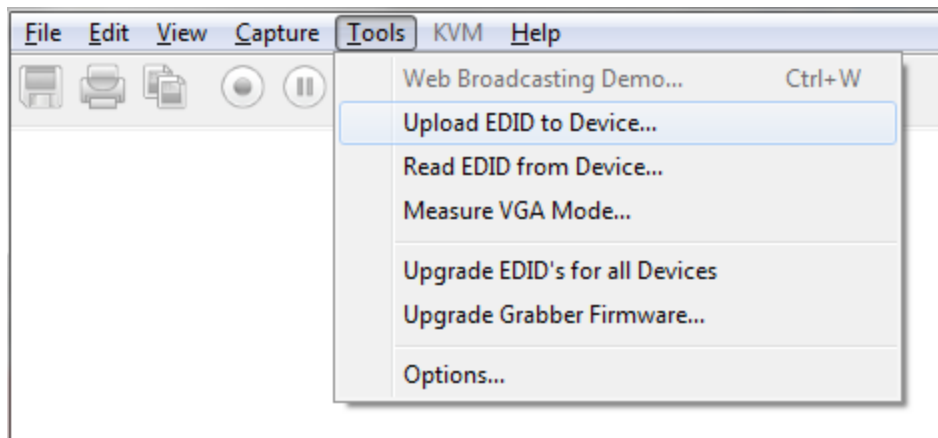
9. From the Open dialog, find the downloaded EDID file and select it.

10. A warning dialog reminds you to disconnect your source. Make sure no source is connected to the video grabber and click OK.
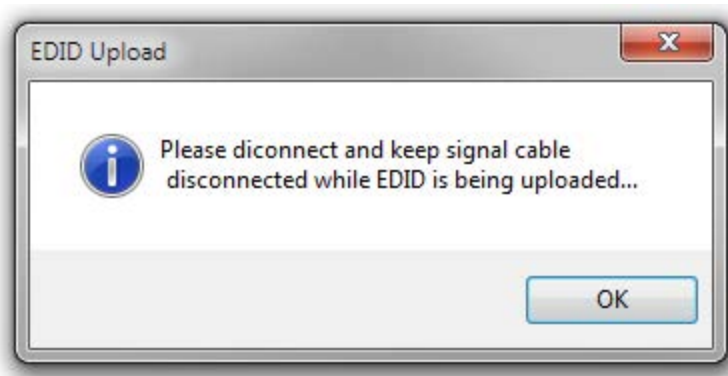
11. In a few short moments, the EDID upload is complete.
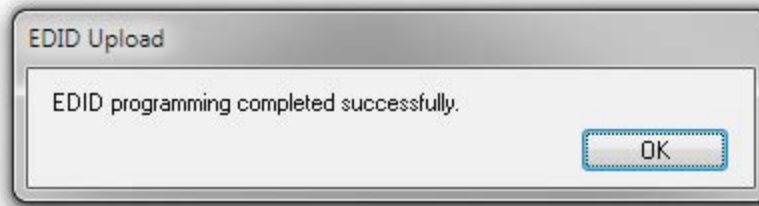
Practical EDID example

Here's an example of how a custom EDID can resolve a capture issue.

Let's say you have a flat panel monitor connected as your video output device that has a fixed screen resolution of 640×480. Then you replace that flat panel monitor with a DVI2USB 3.0 and the source system changes its video output resolution to 720×400.

Why did the resolution of the system change? That's because the video source prefers 720×400. Originally, the video source. was forced to operate at 640×480 because the flat panel monitor didn't support 720×400. But since the DVI2USB 3.0 supports 720×400, the system automatically changed to its preferred resolution.

But what if you want a screen resolution of 640×480 and you can't force the video source to operate at that resolution?,A custom EDID is what you need. Epiphan creates custom EDIDs for the DVI2USB 3.0. For example, a custom EDID that excludes support for 720×400 would resolve this situation. Now when you upload the custom EDID to the video grabber, the video source no longer finds support for 720×400 and it returns to operating at 640×480.

Configure display options

The Epiphan Capture Tools gives you the ability to configure some aspects of how your captured frames are displayed. For example, you can choose whether or not the image is scaled if the window is made larger or smaller, or whether or not it is rotated on the screen.
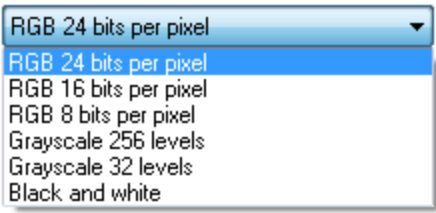
Display options

To access these options, select **Tools** » **Options** from the Epiphan Capture Tool's menu, then select the **Display** tab.
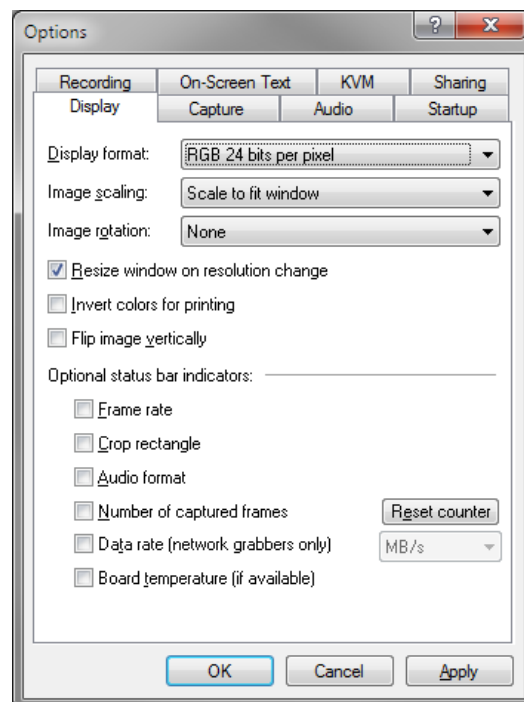
The available display configuration items are described below. Note the Optional status bar indicator options from this tab are described separately, see Status bar.

Menu item	Description
Display format	You can change the color space used for capture. Color space affects the appearance of your captured video and the maximum frame rate at which data can be captured. **Changes in color space affect what you see on the screen and what is saved in your recordings via the Epiphan Capture Tool.** The Epiphan Capture Tool supports a variety of RGB and grayscale color formats, but your DVI2USB 3.0 can also capture in the YUV 4:2:0 color

Menu item	Description
	space, if using a third party tool that supports this color space.
	For 1080p video capture at 60 fps, you need to use a third party capture application that supports YUV 4:2:0.
Image scaling	Use this option to choose whether you'd like to have the captured image automatically downscaled to the size of your capture window. If deselected, scroll bars appear when the image is larger than the application window. This setting is for display only and the recorded image or video frame size is not affected.
Image rotation	If needed, the Epiphan Capture tool lets you rotate your captured source. For example, if your camera or source needs to be flipped 90 degrees to the left or right, or 180 degrees for proper viewing. Select the desired rotation from the dropdown list and click **Apply** or **OK** to see the results. **This setting affects both the display and recorded images/video.**
Resize window on resoultion change	Check this checkbox if you'd like the application window to resize when the source's resolution changes.
Invert colors for printing	Lets you choose to have colors inverted for printing. Black appears as white, yellow as blue, red as cyan, etc.
Flip image vertically	Select this checkbox to have your image flipped vertically. The effect is as though a mirror is placed along the top edge of the captured frame. To flip the image horizontally, select both this option and add a 180 degree image rotation. **This setting affects both the display and recorded images/video.**

Additional features

This section describes additional features that help you get the most of out of capture experience.

Status bar

The Epiphan Capture Tool has a status bar that displays information about your DVI2USB 3.0 or the currently selected video grabber. See below for a review of different things added to the status bar depending on configuration settings and your current actions with the utility.

No grabbers

If the software doesn't detect any attached video grabbers, the status bar indicates there are no capture devices found:
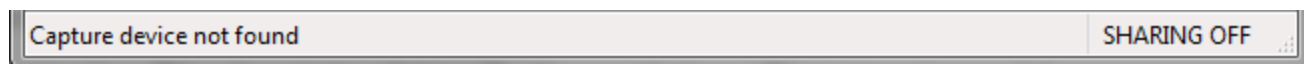
No signal on selected grabber

If there is no signal to the currently selected video grabber, the status bar indicates this with a no signal message:
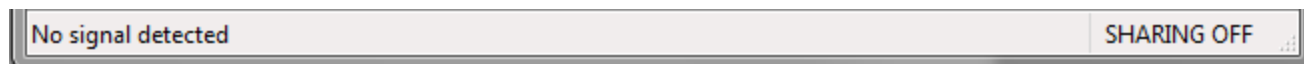
Ready but not recording

Otherwise, the status bar shows a wealth of information. When not actively recording, the status bar indicates that it is Ready to start recording, and shows the VGA Mode of the source signal at the right side of the bar.

Recording a video

In the default configuration, when actively recording a video, it looks like this (RECORDING tag, file location, duration and frame count are added to the status):
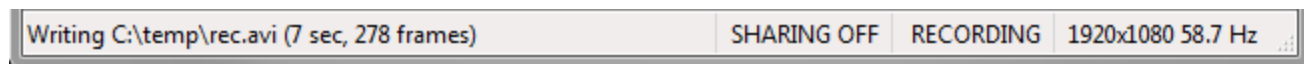
Video recording complete

When video recording is complete, the status bar updates to show the final file location and duration. This stays int he status bar until the application is closed or recording is restarted.

Wrote C:\temp\rec.avi (16 sec, 649 frames)   SHARING OFF   1920x1080 58.7 Hz
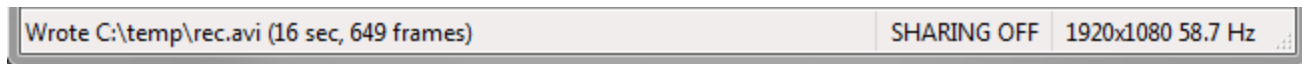
Recording images

When recording your source as a series of images, the status bar shows the RECORDING tag and name of the current file.

Wrote C:\temp\cap_0035.png   SHARING OFF   RECORDING   1920x1080 58.7 Hz
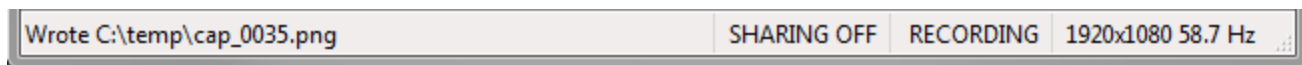
Recording images complete

When image recording is complete, the status bar indicates the number of image frames that were saved.

Wrote 20 files.   SHARING OFF   1920x1080 58.7 Hz
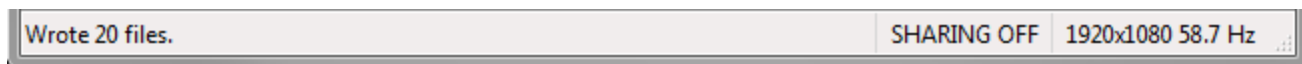
Optional information

Other information can be displayed on the status bar, depending on the the configuration items set in the **Tools** » **Options** » **Display** menu. They are shown (mostly) separately below, but you can turn any number of these optional status bar items on at the same time - you may simply need to make sure your capture window is wide enough to see all the data!

- The current capture frame rate.

Wrote C:\temp\rec.avi (16 sec, 649 frames)   SHARING OFF   38.1 fps   1920x1080 58.7 Hz
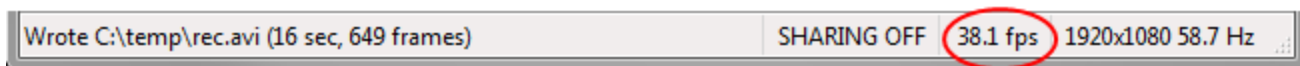
- The crop rectangle showing the top left corner (0,0 in the example), the bottom right corner and the resulting frame size.

Wrote C:\temp\rec.avi (16 sec, 649 fra   SHARING OFF   39.9 fps   0,0 -> 1920,1080 (1920x1080)   1920x1080 58.7 Hz
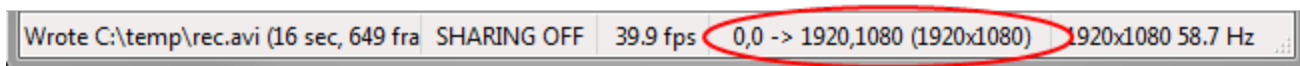
- Audio encoding information.

Wrote C:\temp\rec.avi (16 sec, 649 frames)   SHARING OFF   44100 Hz, Stereo, 16-bit   1920x1080 58.7 Hz
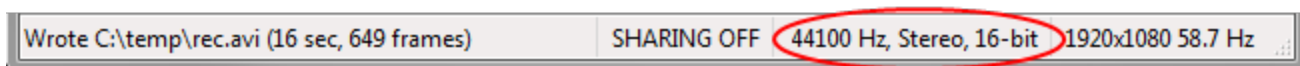
- The number of frames or images the video grabber has captured since the application started.

Wrote C:\temp\rec.avi (16 sec, 649 frames)		SHARING OFF	77181	1920x1080 58.7 Hz
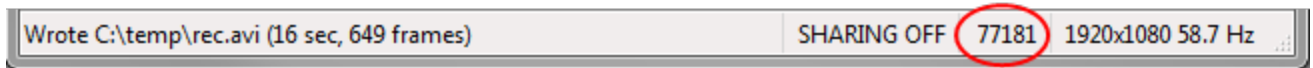
Pause video capture

You can use the pause button on the toolbar, access pause from the capture menu or use the keyboard shortcut Ctrl-U to pause capture. When you pause capture, the following things happen:

- The last captured frame remains open in the Epiphan Capture Tool (no new frames are grabbed). This image can be saved, copied or printed. See Copy, save, or print a snapshot.

- If you are recording video:

    - Your current video recording (if applicable) is closed.

    - If Automatically restart capture (from the **Tools** » **Options** dialog) is unchecked, video capture is stopped and the video file finalized.

    - If Automatically restart capture is checked, pressing pause again or selecting **Capture** » **Resume Capture** will unpause and will either overwrite the existing video file or start a new one, depending on the configuration you set. See Configure optional recording settings.

- If you are recording images:

    - No further images (if applicable) are saved.

    - When you press pause again, image capture starts again immediately

Pausing capture is particularly useful when you're also streaming live - this way you can prepare something different or type in a password without having sensitive information captured.

Record as a series of images

There are two ways you can record using the Epiphan capture tool and your DVI2USB 3.0: capturing individual images or capturing video. To learn how to capture video, see Record a video.

It is not possible to capture audio when recording your source as a series of images.

To capture your video source as a series of images:

Step 1: Set the capture mode, file format and capture frequency

By default, the Epiphan Capture Tool captures in video format, so it's important to change the mode before starting your recording.

To configure the image capture mode and file format:

1. Connect your video source to the video grabber.

2. Connect the video grabber to a USB port on your capture workstation (use USB 3.0 for best performance).

3. Launch the Epiphan Capture Tool.

4. Select the **Tools** » **Options** menu item; a dialog box opens.

5. Select the **Recording** tab.
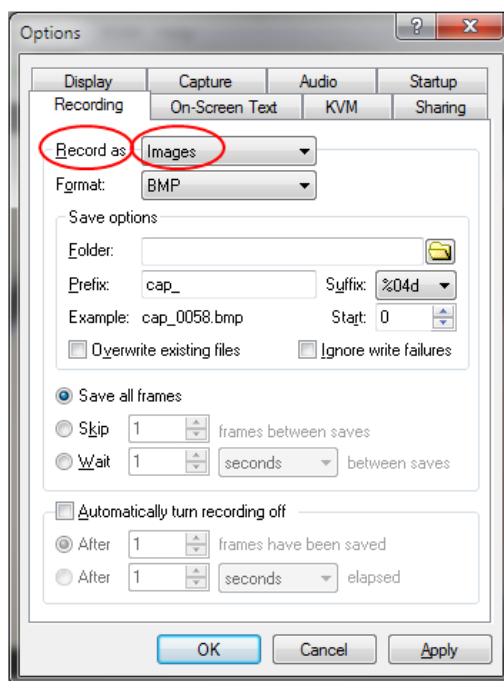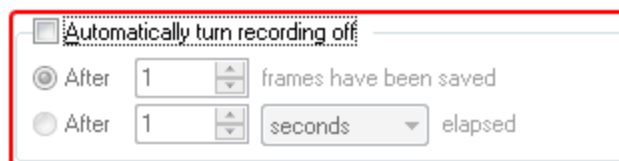
6. Ensure the **Record as** drop down has **Images** selected.

7. Use the **Format** drop down to select from BMP, PNG or JPEG (JPG).

8. In the **Save options** section:
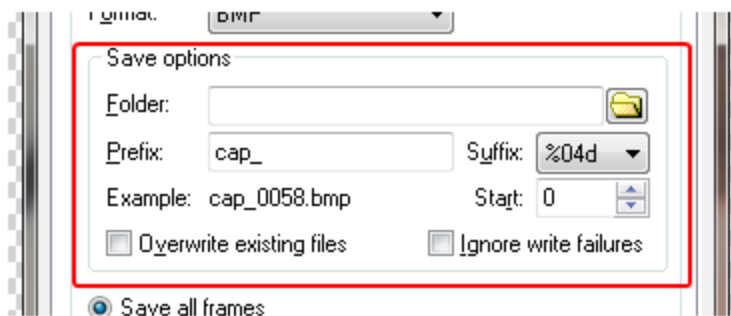
a. Specify a folder for saving the files. If you don't specify a folder, your images will be saved in the same folder as the Epiphan Capture Tool.

b. If desired, specify a custom **Prefix** for each file.

c. Use the **Suffix** drop down to determine whether you're using decimal (d) or hexidecimal (X) characters for the suffix, and the number of leading zeros in the filename (e.g. %04d means a decimal suffix with 4 digits, the first few will have three leading zeros (cap_0001.bmp)).

d. Set the **Start** value to the first number you want to use in your file name.

e. Use the **Example** section to see the result of your file name edits.

f. Check the **Overwite existing files** checkbox if you want new images to overwrite old ones.

g. Check the **Ignore write failures** checkbox if you want to proceed regardless of whether or not the images are still being saved. (e.g. with this box checked, you will not be warned when you run out of disk space or if there is a permissions issue preventing file writing).

9. Determine how often you want to save images. Saving all frames will save up to 30 images per second, which can quickly take a lot of space on your hard drive!

10. Select **Save all frames** to save each frame as an image.

11. Select **Skip** and set a value to save an image every X frames (e.g. set Skip to 10 and you'll save an image every 10 frames).

12. Select **Wait** and set a time intervale between image saves. Use this to collect a frame every few seconds or minutes (choose from milliseconds, seconds, minutes and hours).

13. Lastly, decide if you want to save only a certain number of images or if you want to continue saving images until request the application to stop recording.

14. To use the record button/control to stop saving images, leave **Automatically turn recording off** unchecked; otherwise, check the checkbox and specify your limit in frames or seconds.

15. Click OK to save your **Recording** settings.

Step 2: Record

With the Epiphan Capture Tool properly configured, all there is to do is record your series of images!

As images/frames are captured by the video grabber they are saved as individual image files. While capturing, the status bar displays the name and location of the last saved image. The total number of images saved is displayed when recording stops.

To record your images:

1. The Epiphan Capture Tool should already be capturing and previewing your video source. If you see a No Signal message, disconnect and reconnect the cables to make sure they are all seated correctly.
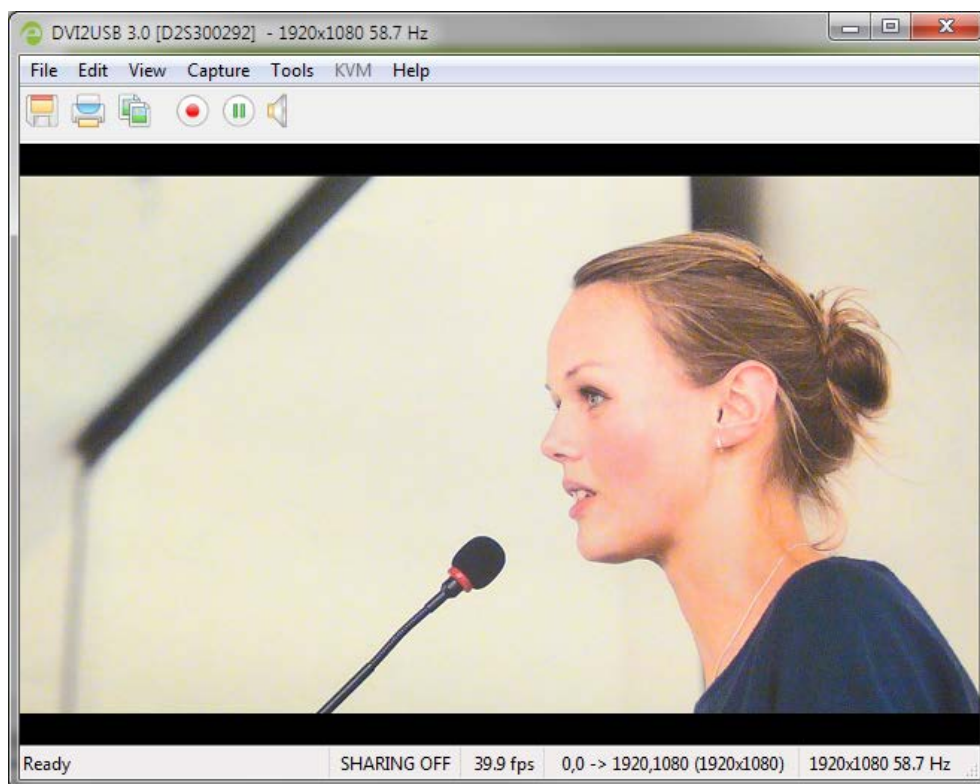
2. Select **Capture** » **Start Recording**, use the red record button or keyboard shortcut **Ctrl-R** to start recording; the **Save** dialog opens.

3. When you are done capturing, use the pause or stop buttons to pause or stop recording. You can also use the keyboard shortcut Ctrl-U for pause and can use the menu items **Capture** » **Pause** or **Capture** » **Stop Recording** to control recording.

(Windows)

4. Use your operating system's file browser (Windows Explorer or Finder) to find your saved image file(s).

Configure audio

Your DVI2USB 3.0 can capture audio directly from non-encrypted HDMI sources. The Epiphan Capture Tool can also capture audio from other audio devices plugged into your capture workstation (e.g. embedded laptop microphone or external microphone plugged in via USB or audio in jack).

By default, the Epiphan Capture Tool doesn't capture audio, but configuring it is simple!

Step 1: Select your audio source

Start by picking the audio source you want to capture. You can do this from either the **Tools** » **Options** menu, or directly from the **Capture** menu.

To select your audio source:

1. Configure your external audio source with your operating system (generally no configuration is needed for embedded microphones).

2. Or, connect your HDMI source to the video grabber.

3. Connect the video grabber to a **USB 3.0** port on your capture workstation (you can use USB 2.0 if you're planning to use an external audio source instead of embedded audio).

> Due to the extra volume of data that needs to be captured, embedded audio capture is only supported when connected via USB 3.0.

4. Launch the Epiphan Capture Tool.

5. Select the **Tools** » **Options** menu item, the **Options** dialog appears.

   a. Select the **Audio** tab.
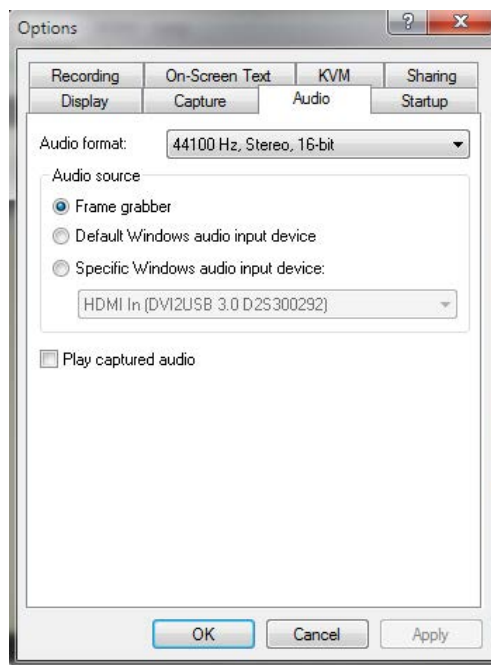
a. If capturing embedded HDMI audio, select **Frame Grabber**.

b. If using an external audio source, click **Specific Windows audio input device** and select your audio device from the list.

c. If desired, use the **Audio format** drop down to specify the audio bit rate you want saved (or streamed), Stereo/mono and bit-depth. (If this value is different than the incoming audio bitrate, DVI2USB 3.0 resamples the audio to your specified bitrate.)

d. If desired, check the **Play captured audio** checkbox to have the audio played over the capture workstation's audio output device (e.g. speakers or headphones connected to the capture workstation).

e. Click **OK** or **Apply**.

6. Alternatively, select **Capture** » **Audio Input Device** and select your audio source from the list.
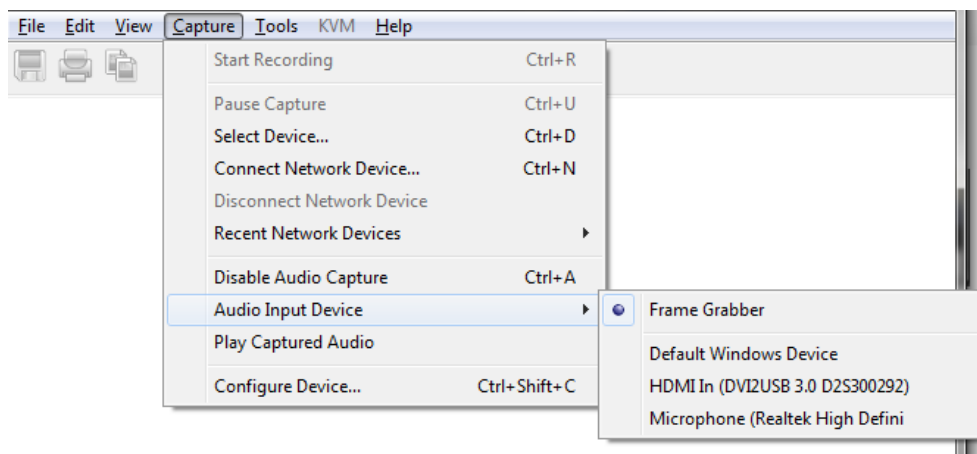
Step 2: Enable audio capture

You can tell whether audio capture is enabled by looking at the toolbar. If the speaker icon is still (no sound waves depicted coming out from it), audio is not enabled. See the examples below.

Audio enabled   Audio disabled

To enable audio capture:

1. Launch the Epiphan Capture Tool.

2. Click the **Capture Audio** button (speaker icon) on the toolbar; when audio capture is enabled, the icon is animated with sound waves.

To disable audio capture:

1. Click the Capture Audio button; the icon has a static image.

Step 3: Capture!

Use the record button on the toolbar to capture your audio/video stream!

HDMI audio capture may fail if your device has an old or incorrect EDID loaded. See **Update device EDID**.

Configure optional recording settings

When recording your captured frames as a video, as described in Record a video, you can set some optional configuration settings.

Configure an automatic file name (Automatic restart)

You can avoid needing to enter a file name each time you want to record by using a combination of record and pause along with setting the Epiphan Capture Tool to either overwrite the previous file or create a file name suffix that is added to the base file name you specify the first time you start recording.

Start by connecting your video grabber to the capture workstation and your source to the video grabber. Launch the capture tool and configure it for recording video following the instructions in Record a video, if needed.

To overwrite the same file each time you record:

1. From the **Tools** » **Options** » **Recording** tab, check the **Automatically restart recording** checkbox.
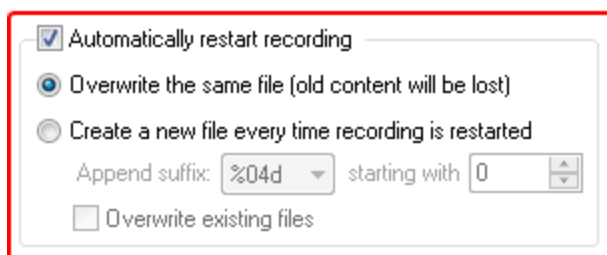
2. Click the **Overwrite the same file (old content will be lost)** radio button.

3. Click **OK**.

4. Start recording and provide location and name for your video file.

5. Use the **pause** button on the toolbar (keyboard shortcut Ctrl+U or **Capture** » **Pause**) between recordings and click either pause again to restart, automatically overwriting the previous file name.

To record a sequence of video files (each with a different suffix):

1. From the **Tools** » **Options** » **Recording** tab, check the **Automatically restart recording** checkbox.
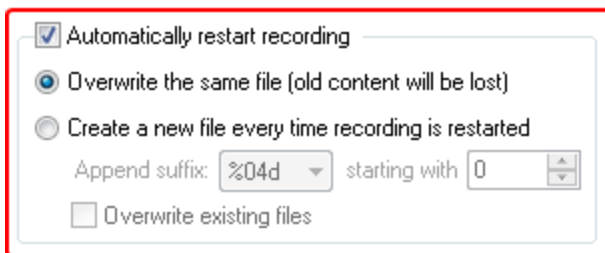
2. Click the **Create a new file every time recording is restarted** radio button.

3. Use the **Suffix** drop down to determine whether you're using decimal (d) or hexadecimal (X) characters for the suffix, and the number of leading zeros in the filename (e.g. %04d means a decimal suffix with 4 digits, the first few will have three leading zeros (cap_0001.bmp).

4. Optionally, choose a starting digit for your sequence.

5. Optionally, check the **Overwrite existing files** checkbox if you'd like to automatically overwrite files if you already have files with the same name.

6. Click **OK**.

7. Start recording and specify a location and root name for your video files.

8. When recording, use the **pause** button on the toolbar (keyboard shortcut Ctrl+U or **Capture** » **Pause**) between recordings and click either pause again to restart, automatically creating a new video file with the name in the sequence.

Configure recording period

If desired, you can configure the Epiphan Capture Tool to stop recording after a specified time period has elapsed or a specified number of frames have been saved. For example, if you know you always need a 1 minute video when capturing from an ultrasound.

Start by connecting your video grabber to the capture workstation and your source to the video grabber. Launch the capture tool and configure it for recording video following the instructions in Record a video, if needed.

To overwrite the same file each time you record:

1. From the **Tools** » **Options** » **Recording** tab, check the **Automatically turn recording off** checkbox.
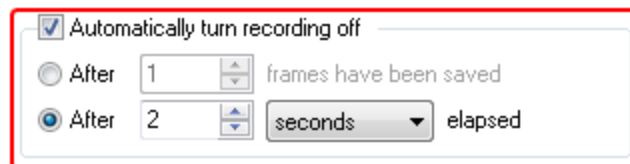
2. Select the appropriate radio button to specify stopping after a **number of frames have been saved** or after a specified amount of time has **elapsed**.

3. Enter your limit: number of frames or time in milliseconds, seconds, minutes or hours.

4. Click **OK**.

5. Start recording as usual, the recording will automatically stop when the stop criteria is met.

Add a watermark

Using the Epiphan Capture Tool, you can add a watermark in the form of a time-stamp or other static on-screen text to your captured video or images.
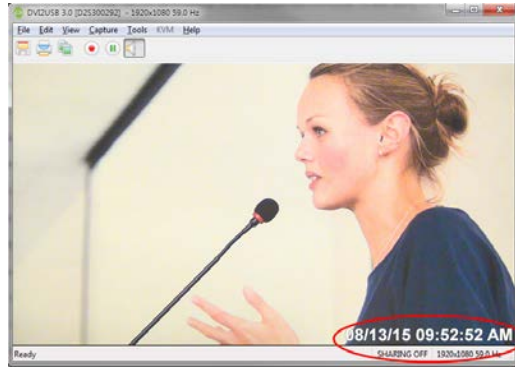
Add a timestamp

You can add a timestamp to your captured video by choosing from one of the pre-created formats and selecting the font, size, location and color.

Start by connecting your video grabber to the capture workstation and your source to the video grabber. Launch the capture tool and configure it for recording video following the instructions in Record a video, if needed.

To configure a timestamp watermark:

1. From the **Tools** » **Options** dialog, select the **On-Screen Text** tab.

2. Check the **Timestamp** checkbox.
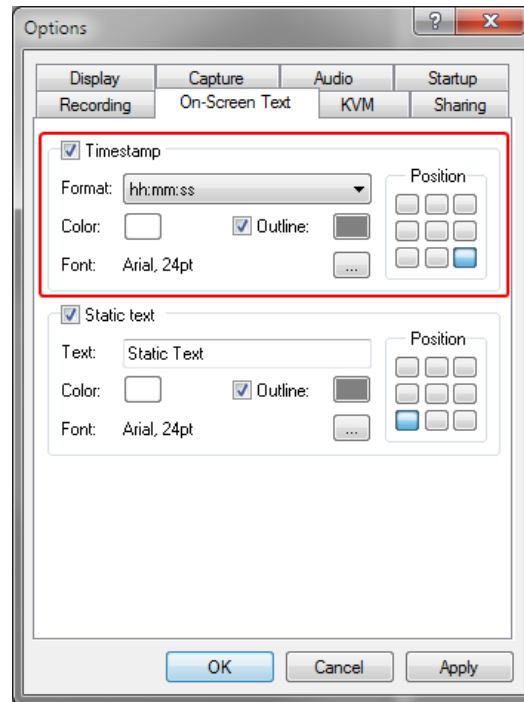
3. Choose a timestamp format from the **Format** drop down box.

4. If desired, change the **color** and **outline** color from the default white and gray values.

5. Click on a location in the Position grid to specify the location of the timestamp.

6. Change the Font type and size by clicking the **elipsis (...)** next to the Font description; a font selection dialog opens.

7. When you are done configuring, click **Apply** to see the changes while keeping the dialog open for futher tweaks, or click **OK** to apply your changes and close the dialog.

Note that you can include both a timestamp and a static text watermark.

Add a static text watermark

You can add static text to your captured video by adding your text and selecting the font, size, location and color.

Start by connecting your video grabber to the capture workstation and your source to the video grabber. Launch the capture tool and configure it for recording video following the instructions in Record a video, if needed.

To configure a static text watermark:

1. From the **Tools** » **Options** dialog, select the **On-Screen Text** tab.

2. Check the **Static text** checkbox.
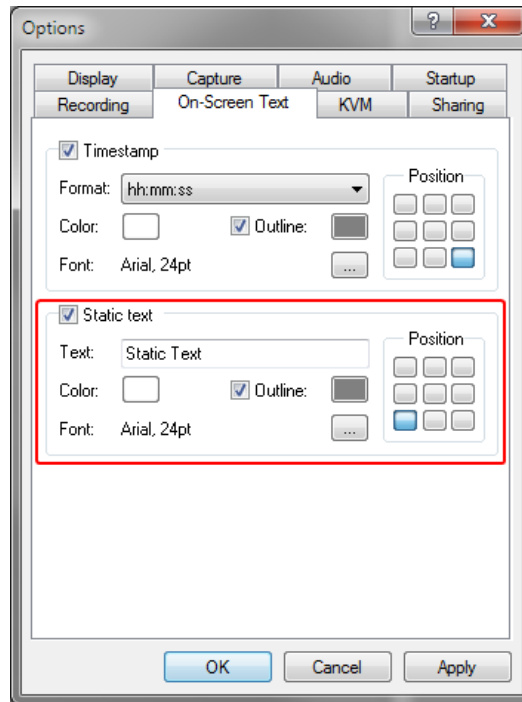
3. In the **Text** field, enter your text string.

4. If desired, change the **color** and **outline** color from the default white and gray values.

5. Click on a location in the Position grid to specify the location of your static text watermark.

6. Change the Font type and size by clicking the **elipsis (...)** next to the Font description; a font selection dialog opens.

7. When you are done configuring, click **Apply** to see the changes while keeping the dialog open for futher tweaks, or click **OK** to apply your changes and close the dialog.

You can have both a text watermark and a timestamp mark on your captured video or images. Give them both a try to see what you like best.

> **Tip**: You can use a custom font generator to generate a font that has a monotone version of your company logo or other graphic to overlay as "text" on the image. Using this trick, it will appear like you have a graphical watermark.

Command line options

You can use command line options to control how the Epiphan Capture Tool starts up. Add as many command line options as needed, in any order. Each command line option starts with two dashes and is separated from other options with a space.

The following command line options are supported:

Option	Description
--borderless	Start the capture application in image only mode. Press the Escape key to exit from image only mode.
--sn <serial number>	Specify which video grabber to use (when more than one is connected to the video capture workstation). <serial number> is the serial number of the desired video grabber.
--hs <value>	Set the horizontal shift value.*
--vs <value>	Set the vertical shift value.*
--phase <value>	Set the sampling phase value.* Range is 0 to 31.
--pll	Set the PLL adjustment.*
--offset <value>	Set the offset (brightness).* Range is 0 to 63.
--gain <value>	Set the gain (contrast).* Range is 0 to 63.
--topmost	Keep the capture application window as the topmost window on your screen.
--fullscreen	Start the Epiphan Capture Tool in full-screen mode.
"*" - Refer to the Configure your device section for more details	

Example

You can create a desktop shortcut that includes one or more command line options. For the purposes of this example, the Epiphan Capture Tool's executible file name is v2ugui2.exe and is installed in C:\Program Files\Epiphan\Frame Grabber Software.

1. Open Windows Explorer and navigate the following path: C:\Program Files\Epiphan\Frame Grabber Software

2. Right click on the file **v2ugui2.exe** and select **Create Shortcut**; Windows creates a shortcut file that, depending on your Windows settings, may be named "Shortcut to v2ugui2.exe.lnk". The ".lnk" may not appear if Windows does not display file extensions.

3. If desired, change the name of this file and copy it to another location if required. Don't change the file extension.

4. Right click the shortcut file and select **Properties**.

5. Edit the **Target** field and add command line options after the closing quote.

For example, to add the --topmost command line option, change the Target line to:
"C:\Program Files\Epiphan\Frame Grabber Software\v2ugui2.exe" –topmost

Or to add --topmost, --borderless, set the horizontal shift to -67, and the vertical shift to 10:
"C:\Program Files\Epiphan\Frame Grabber Software\v2ugui2.exe" –topmost --borderless --hs -67 --vs 10

6. Select **OK** to save your changes to the shortcut.

7. Double-click the shortcut to start the video capture application with your specified command line options.

Appendices

- Upgrade your drivers and software

- Limitations and Known Issues

- Software license

Upgrade your drivers and software

The drivers and the latest version of the Epiphan Capture Tool are bundled together in a single package, which you can download from the Epiphan Video support website for your product. If you register your DVI2USB 3.0, you can choose to be notified when driver updates are available.

Typically, you can download and install the new Epiphan Capture Tool and drivers without uninstalling older versions. Simply follow the driver installation instructions in the Quick start to update your device drivers and install the latest Epiphan Capture Tool.

Be sure to update the drivers and Epiphan software on each capture workstation where you use your DVI2USB 3.0. The device reloads the firmware from the capture computer time each time you connect the device.

Limitations and Known Issues

This section includes known issues or limitations that affect functionality or usability for the current release and offers workarounds these them.

- Video grabber may not be recognized by the system after reboot.
Workaround: Physically disconnect the video grabber from the computer's USB port and reconnect it. If this workaround poses a problem for your specific use case, consider purchasing a new DVI2USB 3.0; a hardware update resolved this problem permanently for devices with serial number 358800 and higher.

- Capturing HDMI sources with Adobe RGB 32 color space (argb32) can cause image corruption.
Workaround: If you see image corruption with this color space, switch to another color space.

- Opening the video signal in multiple applications at the same time on your video workstation affects signal performance. For the best performance during live streaming and recording, we recommend that you close any unnecessary applications that access the video signal. For example, if you aren't using the Epiphan Capture Tool for live streaming or to record, close the tool after you finish configuring the video grabber.

- DVI2USB 3.0 doesn't capture on Ubuntu 18.04 and 16.04 systems with AMD Ryzen5 (1600) AMD USB 3.0 controllers when audio is enabled.
Workaround: In the Epiphan Capture Tool, disable **Enable Audio Capture** under **Capture** or update your USB 3.0 controllers to AMD Ryzen5 (2600).

- DVI2USB 3.0 doesn't capture on Windows 10 (64-bit) 1709 systems with AMD Ryzen5 (1600) AMD USB 3.0 controllers when audio is enabled and captures at a very slow frame rate when audio is disabled using the Epiphan Capture Tool.
Workaround: Update your USB 3.0 controllers to AMD Ryzen5 (2600).

- The Epiphan Capture Tool labels VGA input signals that are 1400x1050 @ 60fps as 1680x1050 in the window title, even though the actual signal is 1400x1050. The input signal is not impacted and you can either disregard the text in the title or add a custom video mode that is 1400x1050 @ 60fps.

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