NT1003-1 VfW Capture Driver User Interface
User Guide

Introduction for Developers

The *NT1003-1 VfW Capture Driver User Interface* (UI) allows the user to control a USB camera based on *NOGATECH* NT1003-1 USB Vision chip and select operational features. *NOGATECH* provides a UI, with a complete set of controls. However, not all of these controls are implemented on each particular camera (for example Long Exposure or video system) and are grayed (disabled). *NOGATECH* provides the source code for the Graphical User Interface to enable you to modify it, remove unsupported camera functions, and implement your own appearance.

This document will help you understand the features provided by the UI, and can serve as a basis for the documentation of your own developed USB camera.

The GUI is launched whenever you select Video Settings (Video Format and Video Source) in any VfW capture application.

***General* Tab**

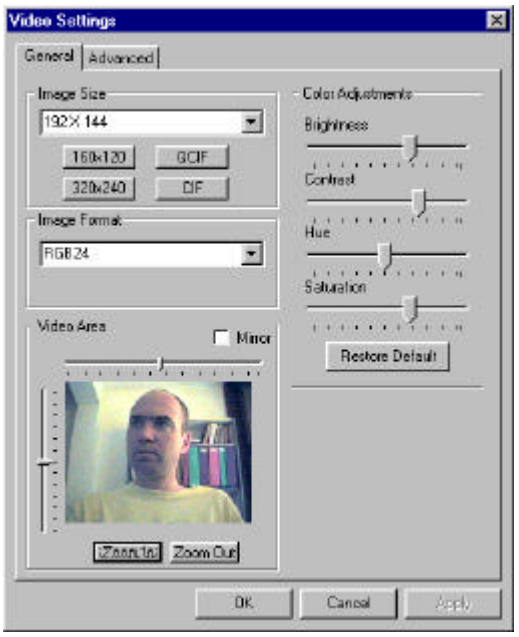


Image Size:

The Driver User Interface enables setting the image size.

It is enabled only if you select the Video Format option in the VfW capture application. If you select the Video Source option, it is disabled.

You can select an image size out of a list of 18 discrete options: from 80×60 to 352×288 pixels, including the standard CIF and QCIF sizes.

Notes:

- The image **aspect ratio** is the standard 4:3 for all sizes, except for CIF and QCIF.
- A smaller image results in a lower USB bandwidth utilization.
- Image viewing angle is not affected by image size (i.e. all sizes show the same picture, only on a different screen area).

Image Format:

The image format refers to the output of the driver.

It is enabled only if you select the Video Format option in the VfW capture application. If you select Video Source option it is disabled.

You can select a format from a list of 4 discrete options:

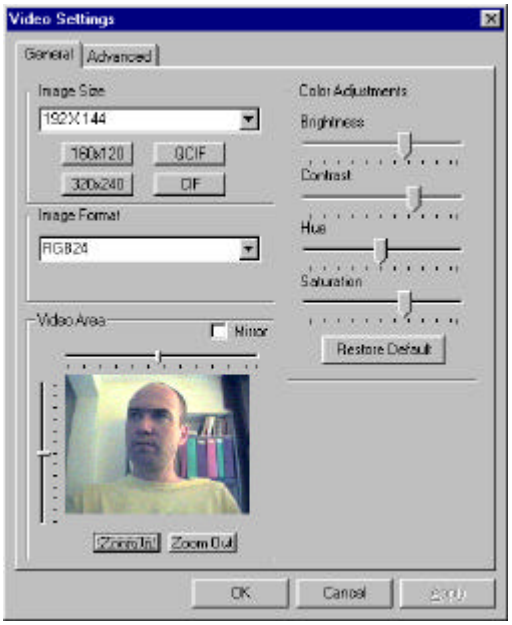
RGB16	16 bit, (Red: 5, Green: 5, Blue: 5)
RGB24	24 bit, 16M colors. (Red: 8, Green: 8, Blue: 8)
YUV422	16 bit - a typical video-conference format
YUV12	12 bit - a typical video-conference format

Notes:

- The data sent over the USB channel by the NT1003-1, is in *compressed* mode. The driver decompresses the data, and converts it to one of the color space formats (RGB16, RGB24, YUV422, YUV12).
- Select the type of format according to the application. For video-conferencing YUV is usually selected.
- Higher bit per pixel will result in a more accurate color, but will consume more computer resources.

Color Adjustment:

There are four sliders with which to adjust the quality of the image:



Brightness: Lighter to the right, darker to the left.

Contrast: More contrastive to the right.

Hue: If you feel that the color you get is not the right one, correct using this slider.
If the red is bluish, the blue is greenish and the green is yellowish, slide slightly to the left.
If the blue is reddish, the red is yellowish and the green is bluish, slide slightly to the right.

Saturation: To get a more colorful image, slide to the right. The image is colorless (B&W) when the slider is on the left of the scale.

Restore Default: To override any adjustments made on Brightness, Contrast, Hue and Saturation, by restoring to default settings.

Video Area:

Mirror
Pan Slider
Preview Image

Tilt Slider
Zoom In/Out

The **Video Area** consists of a *preview image* and controls that enable you to manipulate how the image is displayed on the monitor screen:
Mirror: Check the checkbox to create a mirror image.
Zoom In: To have a detailed view of a smaller part of the full picture.

Zoom Out: To have more general view of a larger part of the full picture.

When zoomed in, you may *pan and tilt*, by using the *sliders* that appear above and to the left of the preview image.

Notes:

- Zooming in and out does not affect the image size.
- Zoom in is only operational on image sizes less than 288X216. On larger sizes it is disabled (grayed). The number of zoom in steps depends on the image size and it increases as the image size decreases.
- Zooming in improves resolution at the expense of the viewing angle.
- Panning and tilting enables you to select which part of the original image will be displayed after zooming in.
- Zooming, Panning and tilting do not affect USB utilization.

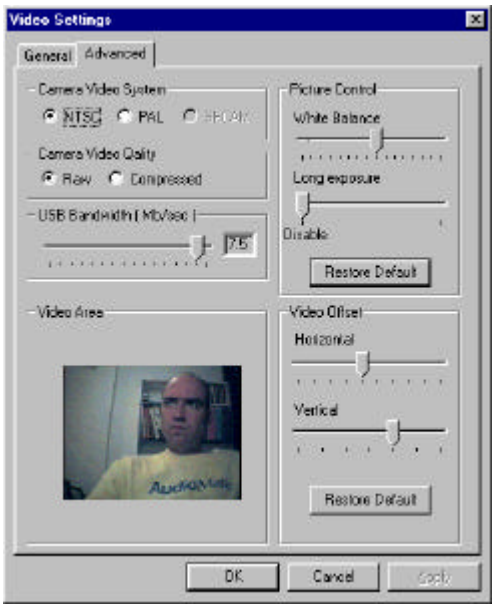
Advanced Tab

Camera Video System:

According to the camera type of system , select one of the video standards:

NTSC (America / Japan)
PAL (Europe)
SECAM (France and others)

If the camera supports only one video system, then the selection options are disabled (grayed).



USB Bandwidth (Mb / Sec):

Selects the rate at which the NT1003-1 sends video data to the computer over the USB.
Range: 0.5 Mbps - 7.5 Mbps in 0.5 Mbps steps.
The selected value appears to the right of the slider scale.
The apply button is enabled when you move the slider. Click the Apply button to apply the USB Bandwidth setting. If the new USB Bandwidth setting is available, it will appear in the box after the Apply button is pressed.

Please note that the PC operating system automatically assigns the available USB bandwidth to the USB camera, if it is inserted. The USB Bandwidth enables you to allocate more USB bandwidth in case other USB devices are removed.

It is recommended that you assign the highest USB Bandwidth for better performance.

Video Offset:

Horizontal and **Vertical** sliders shift the image inside the viewing area.
Restore Default button overrides these settings.

It is not operational while in Zoom In operation (it appears grayed).

Notes:

- The NT1003-1 hardware **compression** drastically reduces USB utilization. This enables you to improve frame rate and display larger images. Working with **raw** video data ensures a slightly better color fidelity, at the expense of a higher USB utilization, and lower frame rate when working with large image size.
- You may set an upper limit to the **USB bandwidth** allocated for transfer of video data from the NT1003-1 to the computer. Setting a high limit improves the frame rate, but reduces the USB bandwidth allocated for other USB devices. Compressing the video data enables more efficient use the USB bandwidth .
- Estimation of the frame rate for **raw** video data is done as follows:
  Bandwidth / (Number of pixels per image) / (bits per pixel)

e.g.:	Bandwidth:	7.5Mbps
	Image Size:	QCIF (176×144)
	Image Format:	YUV422 (16Bit)
	Frame Rate:	18.5 fps

Picture Control:

This group of controls is seldom used. They refer to the few cases where the camera lacks the *auto white balance* feature, or when special consideration should be given due to poor lighting conditions, or varying lighting conditions.

White balance: Set a white surface in front of the camera (e.g. a white wall); if the image is not white, move the slider to the position that gives the best, whitest image.

Long Exposure: Controls the amount of time the camera is exposed to light. It should normally be disabled. When enabled (the slider is at the right hand side of the scale), it forces a longer exposure time. This will result in a brighter image and a lower frame rate.

Restore Default: Overrides adjustments made by the two sliders.