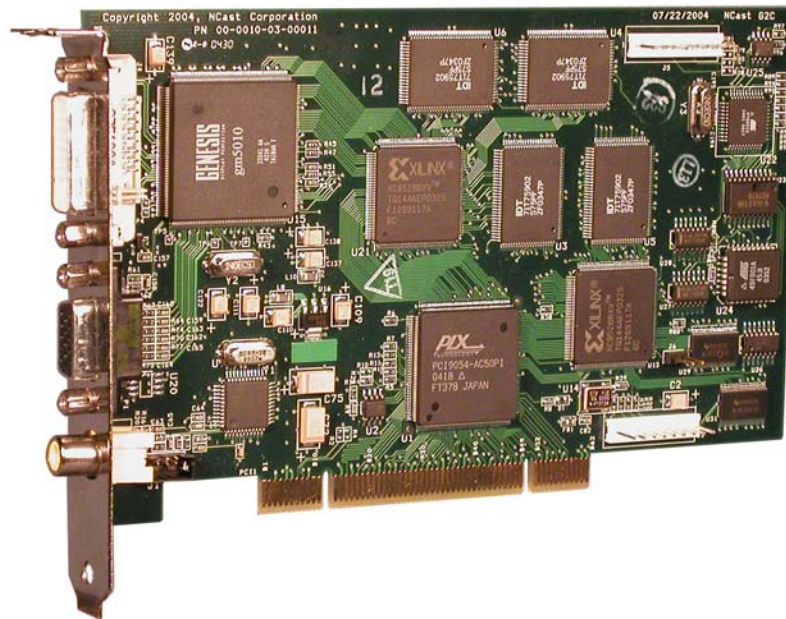


# Digitizer Capture Card - PCI RGB

## User Manual





## Table of Contents

<b>1. Introduction .....</b>	<b>3</b>
<b>2. Hardware Overview.....</b>	<b>3</b>
Resolutions.....	3
Framerate .....	4
Video Capture .....	4
<b>3. Specification.....</b>	<b>5</b>
<b>4. Software Overview.....</b>	<b>5</b>
Windows Driver.....	5
Functionality .....	6
Windows Driver API & Other Software .....	7
<b>5. Installation .....</b>	<b>7</b>
Files copied to your system .....	8
<b>6. Quick Start.....</b>	<b>9</b>
Windows Movie Maker .....	9
Ncast Screen Snatcher .....	9
<b>7. Technical Support.....</b>	<b>10</b>



## **1. Introduction**

The NCast Digitizer Capture Card functions as an analog RGB and video capture device. The Digitizer card is primarily designed for applications requiring high resolution and high frame rates. Example applications include webcasting over IP, local capture, remote viewing, and replacing dedicated monitors.

The Digitizer Capture Card is a PCI plug in card, and is compatible with Windows 2000/XP and Linux operating systems. The card is designed to work with software such as Windows Media Encoder for real time streaming and archiving of high resolution/frame rate graphics and video.

## **2. Hardware Overview**

The Digitizer Capture Card is designed to capture high resolution and framerate graphics. The card accepts inputs from DVI and HD15 RGB inputs, and also S-Video and Composite. The RGB data is transferred using the PCI bus master DMA.

### ***Resolutions***

The card supports resolutions up to 1600x1200 (UXGA) from an RGB source. All resolutions greater than 1024x768 are scaled down to 1024x768, as this is the highest resolution supported on output. However, a smaller resolution, such as 800x600 can be sent at either the original resolution, or scaled to a different resolution. For instance, the Digitizer card can accept an 800x600 input and scale that lower resolution to 1024x768. Ultimately, based upon user settings, the resolution from the input signal will be scaled up/down to the selected resolution.



Please reference the table below for a list of supported input resolutions:

<b>Resolution</b>	<b>Frequency</b>
640x350	70Hz
640x400	56Hz
640x480	66Hz (MAC)
<b>640x480</b>	<b>60, 72, 70, 75, 85Hz</b>
720x400	70, 85Hz, (text modes)
<b>800x600,</b>	<b>56, 60, 72, 75, 85Hz</b>
832x624	75Hz
<b>1024x768</b>	<b>60, 70, 75, 85Hz</b>
<b>All following resolutions are scaled down to 1024x768</b>	
1152x864	70, 75Hz
1152x870	75Hz,
1280x720	60Hz
1280x960	60, 85Hz
1280x1024,	60, 75, 85Hz
1600x1200	60, 75, 85Hz
<b>Video Signals</b>	
720x480	60Hz NTSC (30FPS)
720x576	50Hz PAL (25FPS)

### ***Framerate***

The Digitizer Capture Card is designed to capture a maximum of 24 fps. of 1024x768 graphics, and a full 30 fps. of 800x600. However, the highest possible framerate is dependent upon the signal frequency and PCI bridge.

### ***Video Capture***

The Digitizer Capture Card provides full framerate signals from S-Video and Composite inputs, at both PAL and NTSC resolutions. Odd and even frames are combined during capture, and deinterlacing is implemented in the driver code.



### 3. Specification

<b>Physical</b>	Half-Size PCI Card One female DVI-analog connector One female High Density 15 pin VGA connector One Composite Video connector Optional S-Video connector (different bracket)
<b>Pixel Rate</b>	165 MHz
<b>Graphics Sampling</b>	24 bits per pixel/8-8-8 format
<b>Input Resolutions Supported</b>	640x350 up to 1600x1200
<b>Output Resolutions (supported by hardware)</b>	640x350 up to 1024x768
<b>Output Resolutions (supported by Windows Driver)</b>	512x384, 640x480, 720x400, 800x600, 832x624, 720x480 (NTSC), 720x576 (PAL), 1024x768
<b>Frame Rate</b>	Up to 24 fps. XGA, 30 fps <= SVGA
<b>Operating Systems</b>	Windows 2000/XP, Linux
<b>Horizontal Frequency</b>	105 kHz
<b>Storage Memory</b>	2x1 megapixels in double buffered acquisition mode
<b>Temperature</b>	0 to 35 deg C.
<b>Humidity</b>	5% to 90% non-condensing
<b>Application Software</b>	Windows Media Encoder, Real Producer, Windows Movie Maker. Installer, Windows Driver, API, software development kit, and sample applications

### 4. Software Overview

#### *Windows Driver*

The Digitizer can be installed by downloading the Windows driver from the NCast website. Once the driver has been downloaded, double click on the .zip icon and follow the installation instructions as prompted later in this section.

The windows driver offers the most important functionality to the user applications. The driver enables the card to be compatible with the Windows



2000 Kernel Streaming Model, and therefore the Digitizer Capture Card can be used with all Windows video capture programs.

The Digitizer Capture Card and driver has been tested with the following capture programs:

- Windows Media Encoder
- Real Producer
- Windows Movie Maker

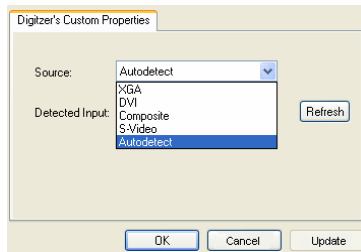
### ***Functionality***

As the Driver captures graphics and video requires constant output resolution, some of the operations like deinterlacing and scaling must be turned on or off before capture begins. As the Digitizer Card can switch from interlaced to non-interlaced modes and modes with different resolutions, the following functionality was placed in the driver:

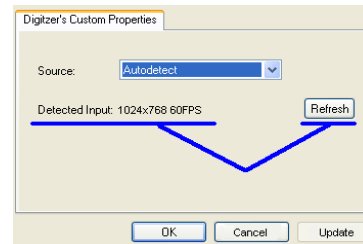
- The Digitizer card tries to capture 30 fps. but most programs (like Windows Media Encoder) are able to drop frames if the user wishes to capture less than 30 fps.
- If there is no signal detected, the Digitizer Driver will output 30 fps. of black screen.
- The Digitizer Driver is able to switch selected inputs on the fly. While changing input signal or detecting a new resolution, a black screen will be generated.
- To change the selected input or get information about the current resolution, the user can reference the Digitizer Card's property page in Windows, or use the application properties such as in Windows Media Encoder.
- The Driver is designed to output one of proposed resolutions: 1024x768, 640x480, 720x480 (NTSC), 720x576 (PAL), 832x624, 800x600, 720x400, 640x480, 512x384. Certain graphics programs may force the driver to output one of those resolutions. By default driver outputs resolution of 1024x768.



See the below screen shots of the Digitizer's Custom Property Page. (a) Available inputs, (b) Click on the refresh button to read currently detected input resolutions.



(a)



(b)

## ***Windows Driver API & Other Software***

The Digitizer Capture Card API allows users to:

- Change selected input
- Display currently selected input
- Display currently connected resolution

The description of access to the API is outlined in “ncastwd1.idl” file, which compiles with Microsoft IDL Compiler (MIDL). Two files are used to access this functionality: “ncastwd1\_i.c” and “ncastwd1\_h.h” using Direct X.

Two sample programs are also available for download, the NCast Screen Snatcher and the NCast Digitizer Control.

The NCast Screen Snatcher program displays a loopback picture from the card.

The NCast Digitizer Control program is an application that demonstrates how to switch and check input from the outside of a running video capture program.

## **5. Installation**

The Digitizer package should contain the following items:

- The Digitizer Capture Card
- Installation and Application Instruction Sheet
- RGB HD15 Cable



The Digitizer Capture Card is packed in anti-static material, and should be kept in this material until the user is ready to install it.

Follow the instructions below for installing the Digitizer PCI Card:

- Verify that all power is off to the PC and disconnect all cables.
- Remove the PC cover.
- Find an empty PCI slot and remove the backing slot.
- Remove the Digitizer Capture Card from the anti-static bag, and insert it securely within the empty PCI slot.
- Fasten the Digitizer Capture Card securely with a screw, and replace the PC cover.
- The Digitizer Capture Card can be connected to your input device through the DVI, HD15, S-Video, or Composite connectors.
- Attach the applicable cable(s) (DVI, HD15, S-Video, Composite) to the appropriate connector on the input device, and attach the other end to your Digitizer Capture Card.
- After power up, wait for the "Found New Hardware" wizard to install digitizer driver card.
- If no 'Found new Hardware' wizard appears or it had to be canceled earlier, go to Start / Control Panel / Add new hardware and 'Found new Hardware' wizard will appear.
- Proceed with 'Found new Hardware' wizard: Point at the "ncastwd1.inf" file, which will contain installation instruction for the driver. If "Found new Hardware" wizard asks you to connect to Windows Update to download new software, select: "No, not this time". Installation **wizard will warn you, that the driver for "Ncast Digitizer" does not have windows certificate. Choose "Continue anyway" and proceed with the installation.**

### ***Files copied to your system***

Windows during installation will copy the following files to your system:

1. ncastwd1.inf that will be renamed to "oemXXX.inf" and copied into "\Windows\inf" directory.
2. ncastwd1.sys that will be copied into "\windows\system32\drivers" directory
3. ncastwd1.ax that will be copied into "\windows\system32" directory

Windows will create a few additional windows registry entries as well.





## 6. Quick Start

### ***Windows Movie Maker***

1. Launch "Windows Movie Maker", which is a standard windows program.
2. Choose "File / Capture from device".
3. Then choose "Ncast Capture" as capturing device .
4. Do not continue with capturing, choose "Configure"
5. Choose configure 'camera settings', to see "Digitizer's Custom Properties."
6. Choose 'Video Settings' to setup framerate of captured video, and output resolution.
7. Click "Continue" until you will see a preview of captured video.
8. Click on "Start / Stop capturing" to capture video from selected input.

Use the external control program " to switch the currently selected signal input.

### ***Ncast Screen Snatcher***

If you have already downloaded the Screen Snatcher application, go to the directory where driver files were extracted, and launch the NcastScreenSnatcher.exe file to run digitizer loopback program.

1. Use "Source" from program's Menu to switch currently selected input;
2. Use "View" to switch to full screen mode;
3. Use "Detected Input" to get information about currently selected input;



## 7. Technical Support

Customers can access support documentation at [www.ncast.com](http://www.ncast.com). Also, users can send an e-mail to [info@ncast.com](mailto:info@ncast.com) with as much information as your reference system as possible. Also, feel free to contact us appropriately below:

N\*Cast Corporation  
155A Moffett Park Drive  
Suite 103  
Sunnyvale, CA 94089  
Tel: 408-541-9230  
Fax: 408-541-9231  
E-mail: [chrisz@ncast.com](mailto:chrisz@ncast.com)  
Web: [www.ncast.com](http://www.ncast.com)