

Digitizer 3.0 Capture Card

User Manual





- 1. INTRODUCTION..... 3
- 2. HARDWARE OVERVIEW..... 3
 - RESOLUTIONS 3
 - FRAME-RATE 3
 - VIDEO CAPTURE..... 4
- 3. SPECIFICATION..... 4
- 4. SOFTWARE OVERVIEW 4
 - WINDOWS DRIVER 4
 - FUNCTIONALITY 5
 - DIGITIZER 3 APPLICATIONS 6
- 5. INSTALLATION..... 6
- 6. QUICK START..... 7
 - WINDOWS MEDIA ENCODER 7
 - Properties*..... 8
 - Sources*..... 8
 - Adjustments*..... 10
 - Custom* 11
 - Preview* 12
 - Video Size*..... 13
- 7. TECHNICAL SUPPORT..... 14
- APPENDIX A 15





1. Introduction

The NCast Digitizer Capture Card 3.0 functions as an RGB, DVI, and video capture device. The DCC-3 card also provides customizable Picture-in-Picture (PiP) capabilities for video within graphics display. The DCC-3 card supports up to UXGA resolution and delivers SXGA at 30 fps. The DCC-3 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 DCC-3 is a PCI plug-in card, and is compatible with Windows XP/2000 and Linux operating systems. Drivers for both operating systems are available at www.ncast.com/downloads. The card is designed to work with software such as Windows Media Encoder for real time streaming, presentation authoring, and archiving of high resolution/frame rate graphics and video.

2. Hardware Overview

The DCC-3 card is designed to capture high resolution and frame-rate graphics. The card accepts inputs from DVI and HD15 RGB inputs, and also S-Video and BNC Composite. The RGB data is transferred using the PCI bus master DMA.

Resolutions

The DCC-3 card supports resolutions up to UXGA (1600x1200) from the RGB and DVI sources. Scaling options also are available. For instance, a smaller resolution such as 1024x768 can be sent at either the original resolution, or scaled to a different resolution. For instance, the DCC-3 can accept a 1280x720 input and scale it up to a 1600x1200 resolution. Ultimately based upon user settings, the resolution from the input signal will be scaled up/down to the selected resolution. For a list of support resolutions by the DCC-3 card, please reference Appendix A.

Frame-rate

The DCC-3 card is designed to capture a maximum of 30 fps. of 1280x1024 and 18 fps. of 1600x1200. However, the highest possible frame-rate is dependant upon the signal frequency, PCI bridge and CPU of the host computer. For instance, the user can expect a higher frame rate by using an Intel P4 @ 2.0 GHz then a P4 @ 1.06 GHz.





Video Capture

The DCC-3 provides full frame-rate signals from S-Video, Composite and DVI inputs, at both PAL and NTSC resolutions. Odd and even frames are combined during capture, and de-interlacing is implemented in the driver code.

3. Specification

Physical	Half-Size PCI Card One female DVI-analog connector One female High Density 15 pin VGA connector One Composite BNC video connector Optional S-Video connector (different bracket)
Pixel Rate	165 MHz
Graphics Sampling	24 bits per pixel/8-8-8 format
Input Resolutions Supported	640x350 up to 1920x1200
Output Resolutions (supported by hardware)	640x350 up to 1600x1200
Frame Rate	Up to 30 fps. SXGA, 18 fps. UXGA
Operating Systems	Windows 2000/XP, Linux
Horizontal Frequency	105 kHz
Storage Memory	2x1 mega pixels in double buffered acquisition mode
Temperature	0 to 35 deg. C.
Humidity	5% to 90% non-condensing
Application Software	Windows Media Encoder, Real Producer, Windows Movie Maker, Windows Messenger, and MSN Messenger. Installer, Windows Driver, API, software development kit, and sample applications.

4. Software Overview

Windows Driver

The DCC-3 can be installed by downloading the Digitizer Capture Card v 3.0 Drivers from the NCast website at <http://www.ncast.com/downloads.html>. Once the driver has been downloaded, double click on the .zip icon and follow the installation instructions as outlined 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 DCC-3 should be usable with most Windows video capture programs.

The DCC-3 and driver have been tested with the following Windows programs:

- Windows Media Encoder 9 Series
- Real Producer
- Windows Movie Maker
- Windows Messenger
- VLC
- MSN Messenger

Functionality

As the DCC-3 captures graphics and video requires constant output resolution, some of the operations like de-interlacing and scaling must be turned on or off before capture begins. As the DCC-3 can switch between interlaced and non-interlaced modes and also modes with different resolutions, the following functionality was placed within the driver:

- The DCC-3 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 DCC-3 will output 30 fps. of black screen.
- The DCC-3 is able to switch selected PiP and main inputs on the fly. While changing input signals or detecting a new resolution, a black screen will be generated.
- To change the selected inputs, get information about the current resolutions, adjust the PiP size and format, and update the firmware the user can reference the DCC-3's property page in Windows, or use the application properties such as in Windows Media Encoder.





Digitizer 3 Applications

An optional application is available for download at <http://www.ncast.com/downloads.html>. The Play Cap Moniker application, the application currently available, demonstrates to users how to access DCC-3 Inputs using Direct Show and the provided DLL library. Through these interfaces, users can test controls for:

- Selecting current inputs on both main and PiP windows
- Switch between PiP and Full Screen modes
- Change size of PiP and Main windows
- Adjust position of PiP and Main windows

The description of access to the API is outlined in “ncastwd1.idl” file, which compiles with Microsoft IDL compiler (MIDL). The file used to access this functionality is “ncastwd1_i.c”.

5. Installation

The DCC-3 packaging should contain the following items:

- The Digitizer Capture Card 3.0
- Installation and Application Instruction Sheet
- RGB HD15 Cable
- BNC to Composite video adaptor
- S-Video bracket

The DCC-3 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 DCC-3 Card under the Windows OS:

- Download the Digitizer Capture Card v 3.0 driver for Windows at the URL: www.ncast.com/downloads.html on the host computer.
- Unpack the .zip file on the computer into the desired Folder name.
- Shutdown the computer.
- 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 DCC-3 Card from the anti-static bag, and insert it securely within the empty PCI slot.
- Fasten the DCC-3 Card securely with a screw, and replace the PC cover.
- The DCC-3 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 DCC-3 card.
- After power up, wait for the “Found New Hardware” wizard to install the DCC-3 card.
- If no “Found New Hardware” wizard appears or it had been canceled earlier, go to Start / Control Panel / Add new hardware and the “Found New Hardware” wizard will appear.
- Proceed with the “Found New Hardware” wizard. If the “Found new Hardware” wizard asks you to connect to Windows Update to download new software, select: “No, not at this time.” Following this, instruct the wizard to “Install from a list or specific location (Advanced).” Point at the target folder, specifically in the driver binaries directory. Proceed with the installation until completion.

6. Quick Start

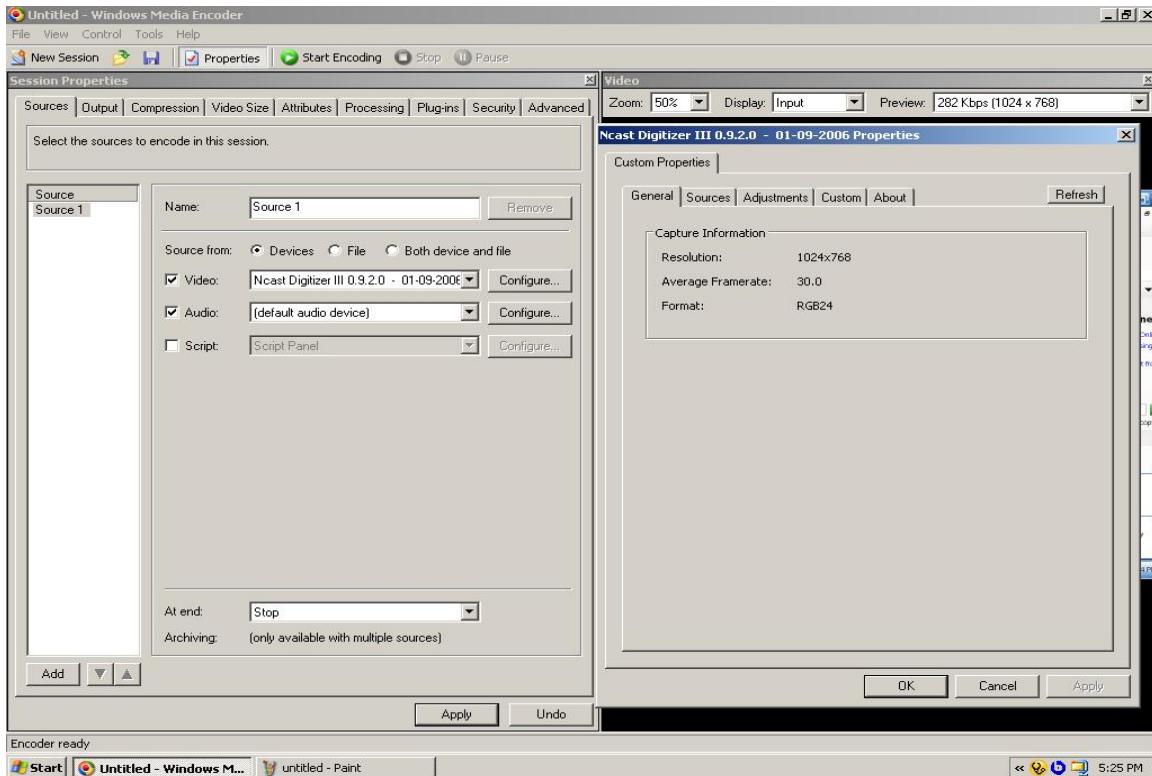
Windows Media Encoder

- Connect appropriate inputs. For this Quick start scenario, we will assume a combination of a RGB for the main input, and a DVD player as the PiP input.
- Launch Windows Media Encoder Professional. If the user does not have it installed, Windows Media Encoder can be downloaded from the Microsoft Web site.
- Click on “Custom Session” to start a session.
- Select the “N*Cast Digitizer III x.x.x.x.” device from the “Video” source drop down.
- Please reference the following pages for an overview on the various tabs of the DCC-3 configuration.



Properties

- To view the configuration and properties page, click on the “Configure” button. The display should be similar to the screenshot below, with updated information for the current driver release and source input. The “General” property page is currently reporting the resolution of the Main input at 1024x768, the current frame-rate, and format of RGB24.



Screenshot 1- General

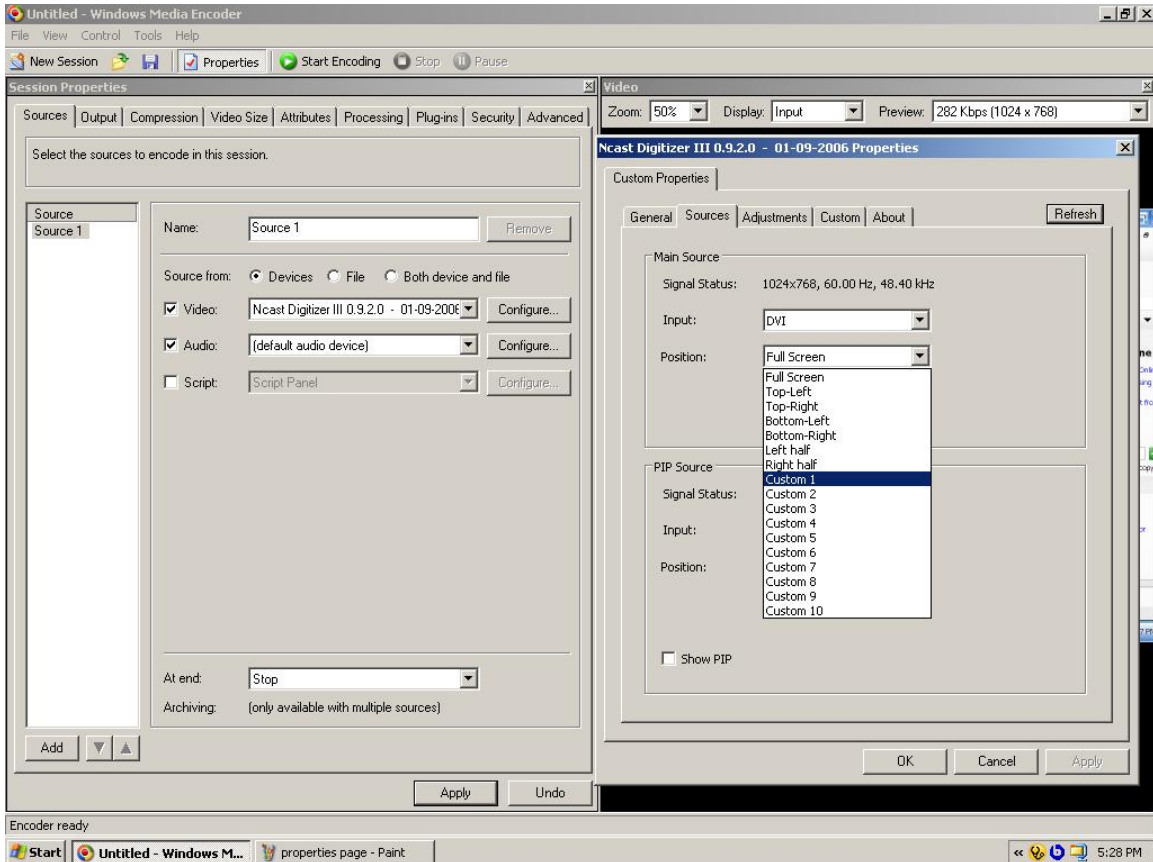
Sources

- From the sources page, the user can select inputs for both Main and PiP, toggle PiP on/off, view information about the current signals, and set positions for both Main and PiP.
 - i. Main
 1. Source - The user can select between XGA (RGB), DVI, Composite and S-Video (if enabled).
 2. Position- This option determines the position of the Main Input. Available selections are presets such as: Full Screen, Top-Left, Top-Right, etc. Also, customizable presets are available and referred to as Custom 1, Custom 2. The



custom presets can be determined by the user, and more on this option is available later in the custom section of this Quick Start.

- ii. PiP Source- The user has the same available options as the Main source. The user can combine XGA with DVI, S-Video and Composite, but S-Video cannot be combined with Composite and vice versa. All other input combinations are available.
- iii. Position- The user has the same options available for PiP positioning as with the Main input.

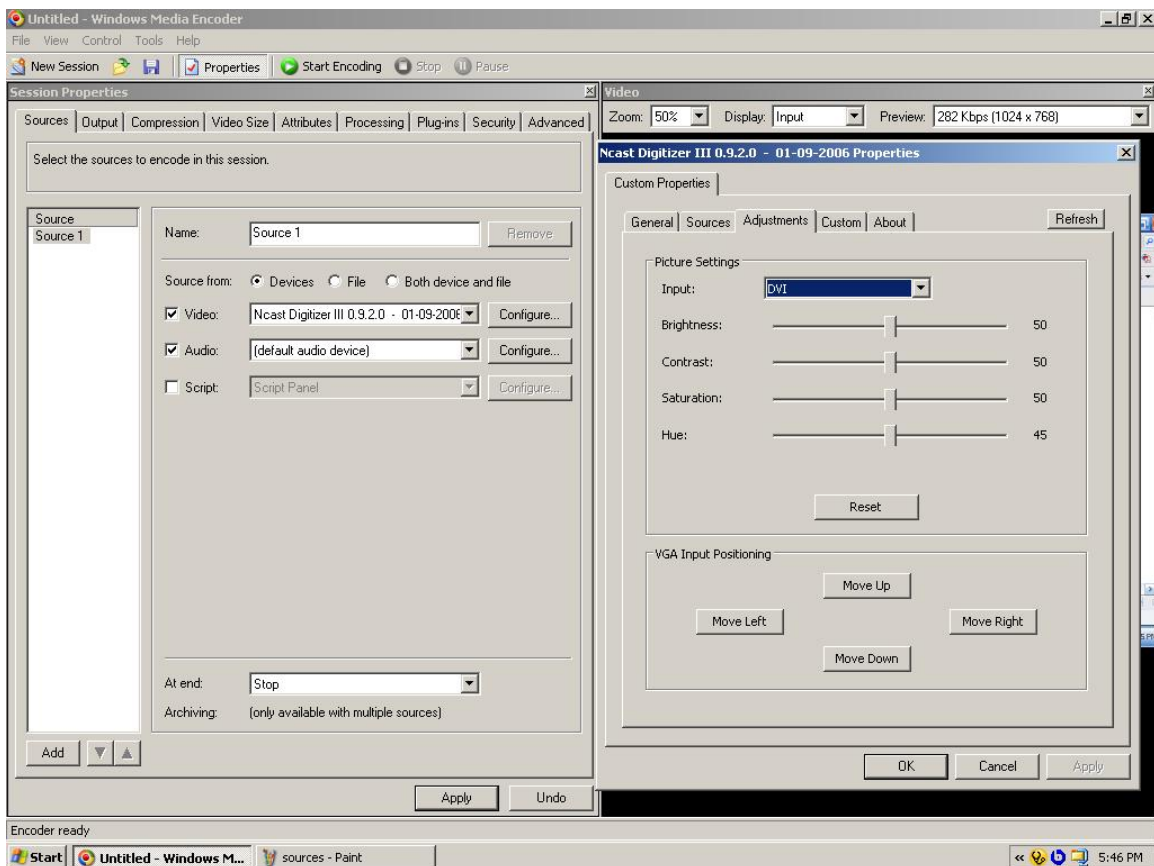


Screenshot 2- Sources



Adjustments

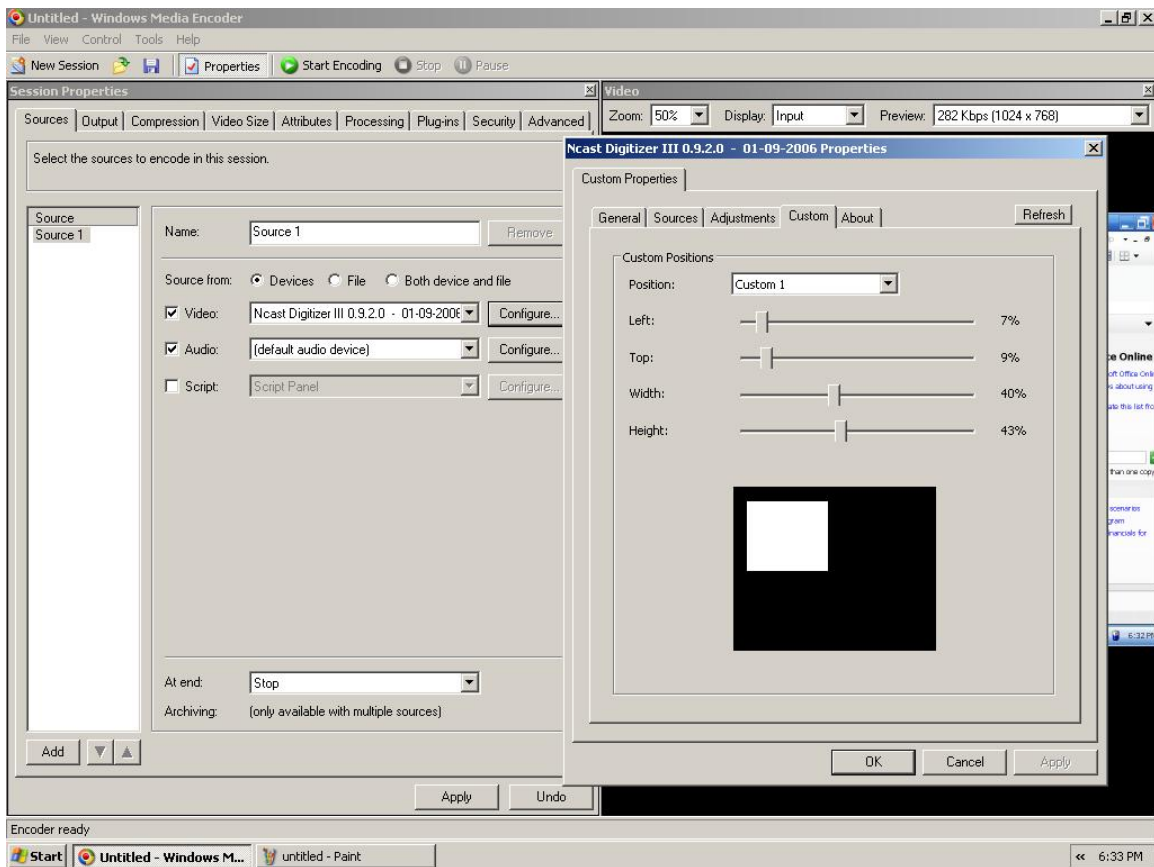
- The adjustments tab allows for a user to alter the picture settings for a desired input and also adjust the RGB/DVI input position.
 - i. Picture Settings- The user is allowed to select DVI, XGA, Composite and S-Video as the desired input. From this menu using sliders, the user is able to determine the desired level of brightness, contrast, saturation and hue. Each value will be saved according to the corresponding input selected.
 - ii. VGA Input Positioning- A minority of input signals may require additional positioning to center the image. From this control panel, the user can adjust vertical and horizontal position pixel by pixel, in an x,y format.



Screenshot 3- Adjustments

Custom

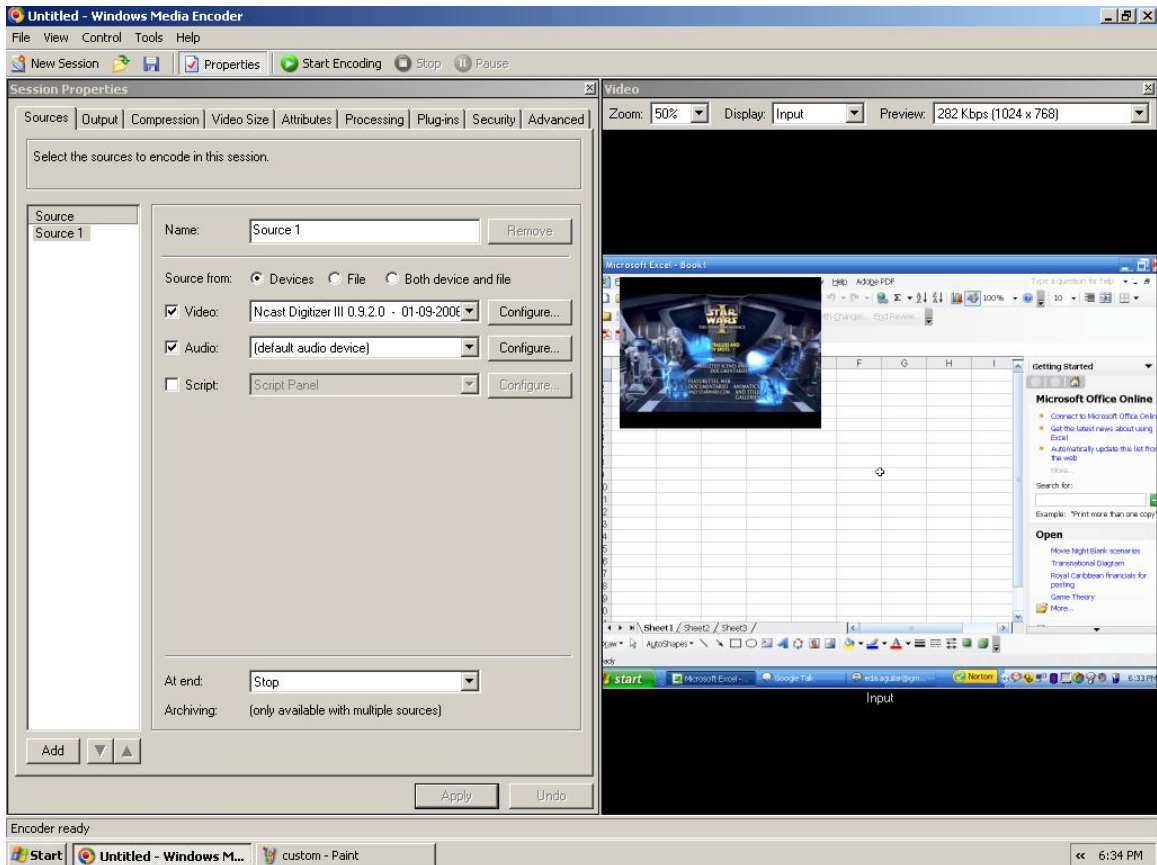
- This feature allows the user to create up to 10 custom positions for both Main and PiP sources.
 - i. Position- User can select one of 10 custom positions. When a custom position preset is selected, such as “Custom 1”, the user can establish position and size controls and save them. In the screenshot below, the PiP input is represented by the white screen, and the black screen represents the Main input. The “Left” slider allows the user to position the PiP along the x axis. The “Top” slider allows the user to position the PiP along the y axis. The “Width” slider adjusts the width of the PiP window, and the “Height” slider adjusts the length of the PiP window.



Screenshot 4- Custom

Preview

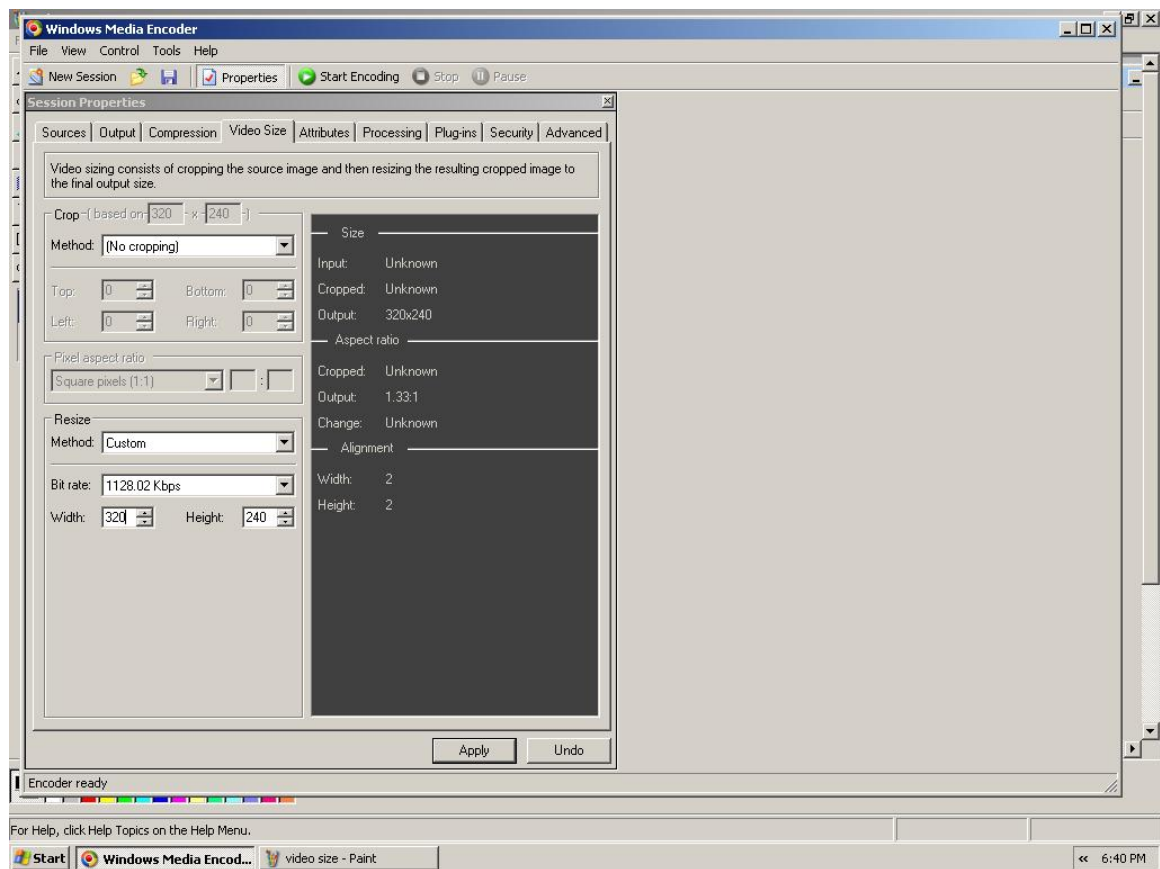
- Once the proper configuration options are established, click on the Apply button to see a Preview of the captured inputs. The screenshot below is an example of a RGB input coming from a laptop combined with a DVD player.



Screenshot 5- Preview

Video Size

- If the user wishes to use a larger capture size than XGA, then they will need to adjust the properties settings within Windows Media Encoder. Click on the “Video Size” tab in the “Session Properties” page in Windows Media Encoder. You should see a similar screenshot as is displayed below.
- The “Width” and “Height” screen allow the user to input the desired size, for instance UXGA would appear as Width: 1600 and Height: 1200.



Screenshot 6- Video Size

- Following this step, the user can click on the “Start Encoding” button to begin a session.



7. Technical Support

Customers can access support documentation at www.ncast.com. Also, users can send an e-mail to support@ncast.com with as much information on your reference system as possible. Also feel free to contact us appropriately below:

N*Cast Corporation
155 Moffett Park Drive
Suite A-103
Sunnyvale, CA 94089
Tel: 800-765-7718
Fax: 408-541-9231
E-mail: support@ncast.com
Web: www.ncast.com



155A Moffett Park Drive, Suite 103 | Sunnyvale, CA 94089 | Tel 408.541.9230 | Fax 408.541.9231 | www.ncast.com



Appendix A

Supported Standard Video Input Modes

Video	Resolution	Frequency
NTSC- 480i	720x480	60Hz
PAL- 576i	720x576	50Hz
Progressive- 480p	720x480	60Hz
Progressive- 576p	720x576	50Hz
HDTV- 720p	1280x720	50, 60Hz
HDTV- 1080i, 1080p	1920x1080, 1920x1080	50, 60Hz

Supported Standard Graphics Input Modes

Resolution	Resolution	Frequency
VGA	640x350	70, 85Hz
VGA	640x400	56, 70, 85Hz
VGA	640x480	60, 66, 67, 72, 75, 85Hz
VGA	640x480	60, 72, 70, 75, 85Hz
SVGA	720x350	70Hz
SVGA	720x400	70, 85Hz
SVGA	800x600	56, 60, 72, 75, 85Hz
SVGA	832x624	75Hz
XGA	1024x768	60, 70, 75, 85Hz
XGA	1152x864	70, 75Hz
XGA	1152x870	75Hz
XGA	1152x900	66, 76Hz
SXGA	1280x960	60, 85Hz
SXGA	1280x1024	60, 67, 70, 72, 75, 76, 85Hz
UXGA	1600x1200	60, 75Hz
WUXGA	1920x1200	60Hz

