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Carbon

Analog video interface
for Silicon Graphics O2

User Manual

Software Version: v1.0.6

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ENSEMBLE
DESIGNS

Serial Box Convertors

For high quality conversion between all analog formats and serial digital component, Serial Box offers the ideal way to drive picture monitors, waveform monitors, switchers, VTRs and DDRs. All Serial Box Convertors feature full 10 bit processing in YUV color space conversion for the most accurate output signal possible.

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Carbon™O2 Video I/O Stuff

Carbon™ provides analog video and key inputs and outputs for the Silicon Graphics O2 workstation. Carbon is great for using O2 in an analog environment with a beta deck or other analog gear. Its built in key channel enables the O2 to integrate into broadcast and post environments.

For more information on Ensemble products, contact us at:

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PREFACE

This manual provides complete application, installation, setup and user information for the Carbon™ Video I/O your have purchased for use with your SGI workstation.

The manual is divided into the following sections:

Carbon Overview

This section describes the main uses of Carbon and gives examples of common applications.

Installation

Installation of Carbon to the SGI Workstation and your external devices and specific information on genlocking is given in this section.

Setting Carbon Front Control Panel Controls

This section gives a description of setting up the Carbon operating parameters using its front panel controls.

Configuring The SGI Workstation

The setup of the SGI workstation to operate with Carbon is given in this section.

Troubleshooting

This section gives Carbon troubleshooting tips.

Product Specifications

This section gives the product specifications for Carbon.

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CARBON OVERVIEW

Carbon lets you easily integrate a Silicon Graphics O2 workstation into an analog video environment for connection to a beta deck or other types of analog video equipment such as a switcher (vision mixer), keyer or router.

Carbon connects to existing analog and digital inputs and outputs on the O2 video board and integrates these into a connector set with properly timed analog component or composite video and key outputs.

The analog video output from Carbon is derived from the O2's digital video output. Carbon produces a superior analog composite signal and provides the necessary analog component signals required to interface to certain types of analog equipment. The analog output from the O2 is further processed by Carbon to generate the key (alpha) output.

Component outputs can be configured as RGB or Y/R-Y/B-Y. Analog component or composite video inputs are an option.

Input and output format selections, line standard, and timing are all controlled from Carbon's front panel. A genlock reference input ensures accurate timing of video and key for ease of use in all video facilities, including broadcast and post environments.

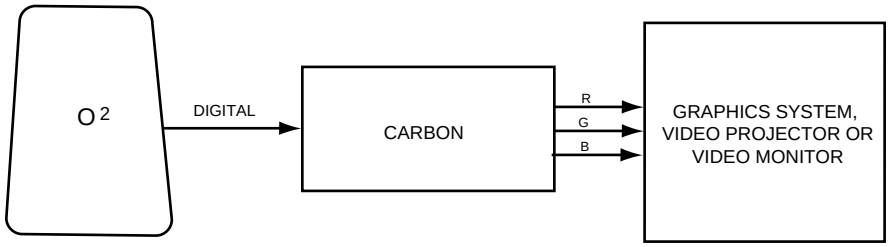
Carbon's key channel support allows key capable software to provide simultaneous video and key outputs that are properly timed in the analog domain. The O2 has simultaneous video and key support in its system software and applications that are key channel savvy can use Carbon's key channel output.

Output Format Applications

The most common output format applications for Carbon are illustrated in the following examples.

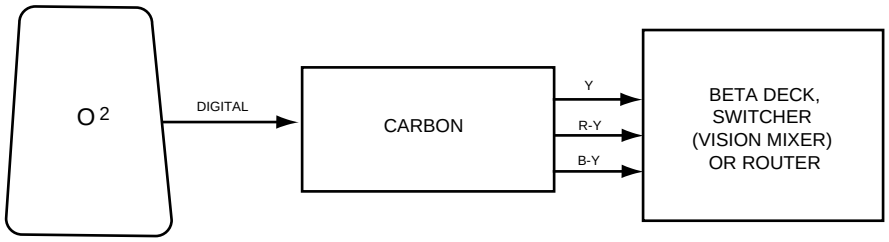
RGB

The Carbon outputs may be configured for RGB analog component video. A typical application requiring this format, such as connection to a graphics system, video projector or video monitor, is shown below.



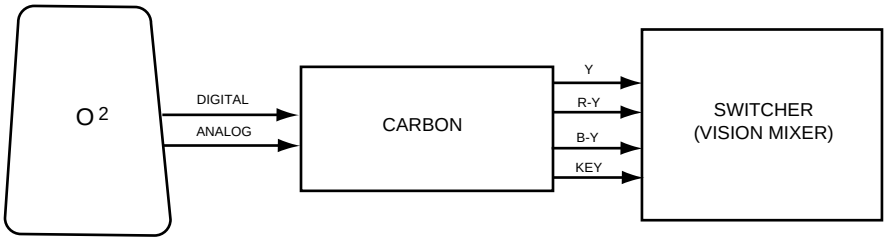
Y/R-Y/B-Y (YUV)

The Carbon outputs may be configured for Y/R-Y/B-Y color difference component format (sometimes referred to as YUV). A typical application such as connection to a Beta deck, component switcher (vision mixer) or router is shown below.



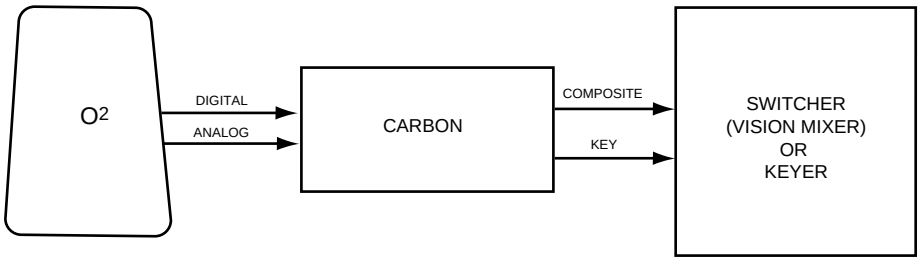
Y/R-Y/B-Y with Key (alpha)

Color difference applications requiring key channel (alpha) support, such as a production switcher, can utilize Carbon's key output to deliver simultaneous video and key (alpha) signal outputs. This application is illustrated below.



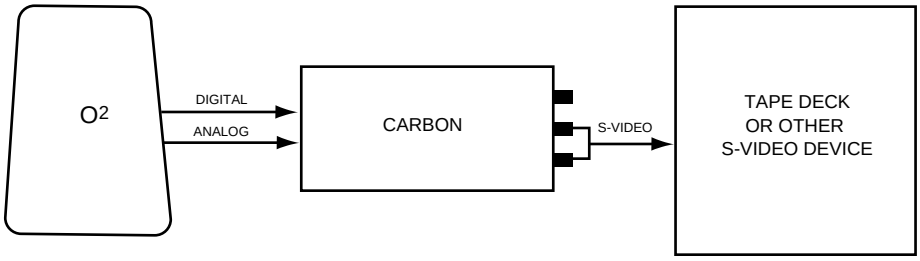
Analog Composite with Key

Carbon can output composite video along with a key signal to a switcher (vision mixer) or keyer, as shown below.



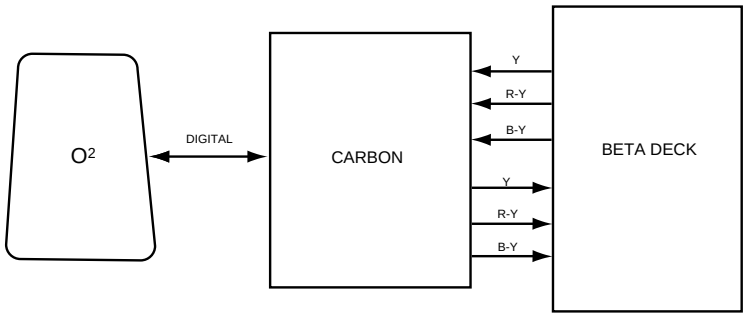
S-Video

Carbon can produce an S-Video video output in conjunction with the composite video output, as shown below.



Input Format Applications

For capturing video into your O2, connect the analog outputs from a component device, such as a Beta deck, to the Carbon inputs as illustrated in the following example. Alternately, connect a composite video source to the G/Y/Comp BNC. The Carbon Input option is required for this application.



If the Carbon Input option is not installed, an alternate method of capturing video into the O2 is available. This method allows you to route the Carbon key input directly into the O2's analog composite input by connecting your analog video source into the Carbon Key In BNC and selecting O2 Cmpst Src (O2 Composite Source) in the menu selection.

Refer to the **O2 Cmpst Src (O2 Composite Source)** menu in the **Setting Front Panel Controls** section later in this manual for instructions on using this method.

CARBON INSTALLATION

This section describes the installation of Carbon to the O2 workstation and the external devices you will be using. It also provides a detailed section on how to genlock your system.

Installation and genlock instructions are given in the follow order:

- Carbon Connection to SGI O2
- Carbon Connections to an External Device
- Genlocking Carbon

Three cables are provided with your Carbon system:

- One 68-pin to 68-pin Parallel Digital Connector Cable
- Two RCA Phono Cables with two connectors for Analog Video connection

NOTE: *Make sure the Digital Video Camera option is installed in the O2 workstation. The proper connectors will not be present without this option.*

After installation, you will need to set up the output format, line standard, genlock source and other setup functions using the Carbon front panel controls. This information is given in the **Setting Up the Carbon Front Panel Controls** section following installation.

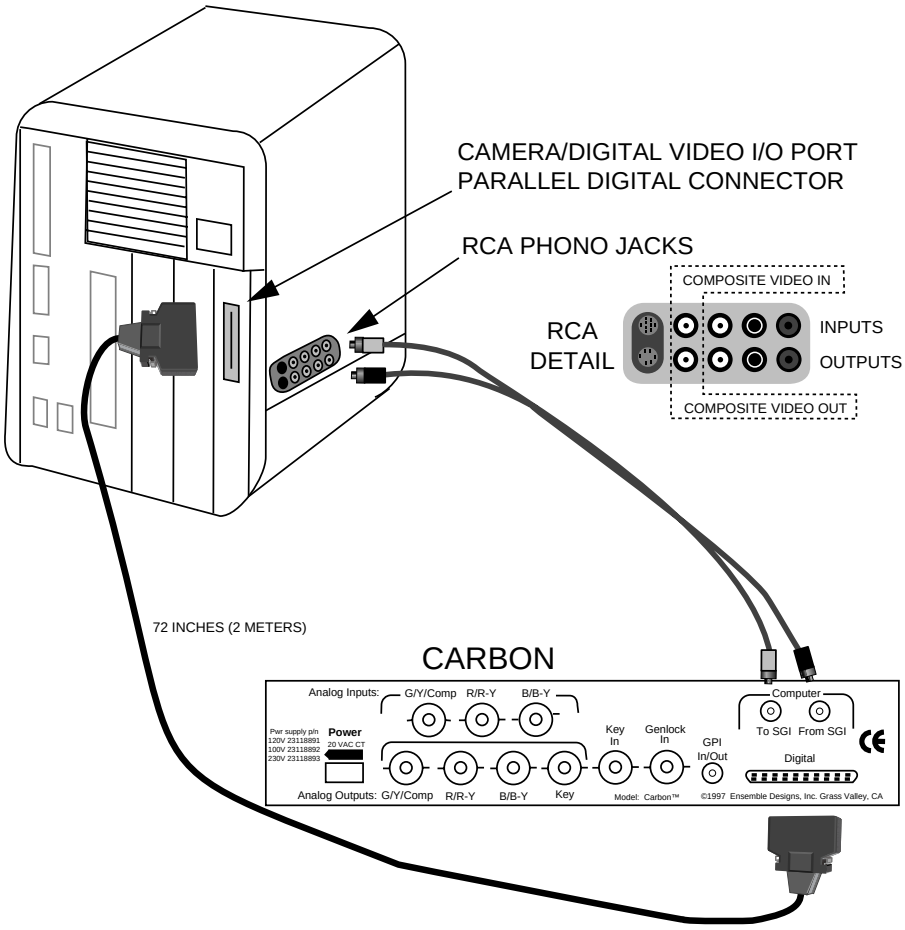
In addition, you will need to set up the SGI O2 for use with Carbon. This information is given in the **Configuring the SGI Workstation** section following the front panel control setup.

Carbon Connection to SGI O2

NOTE: *The Carbon frame must be placed within a distance of less than 72 inches (2 meters) from the* O2 *frame for proper cabling.*

To connect Carbon to the Silicon Graphics O2 workstation refer to the figure on the following page and follow the procedure below.

1. Connect the Parallel Digital Connector cable provided from the O2 Digital Interconnect connector on the lower right rear of Carbon to the Camera/Digital Video I/O option port on the right rear of the computer as illustrated on the next page.
2. Connect one of phono plugs on the RCA analog cable to the **TO SGI** connector on the top right rear of Carbon. Connect the other end of the same color plug to the **Composite Video In** connector on the O2 (the top RCA Phono connector).
3. Connect the other RCA plug from the **FROM SGI** connector on the top right rear of Carbon to the **Composite Video Out** connector on the O2 (the top RCA connector).
4. Connect the low voltage end of the Carbon power supply cable to the **Power** connector on the left rear of the Carbon chassis. Note the connector is keyed so the pointed side is inserted to the left to match the silk-screen above the connector.
5. Verify that you have the correct power supply for your line voltage. The part numbers are silk-screened on the rear of the Carbon chassis.
6. Connect the other end of the power supply to an AC Mains outlet.


CAMERA/DIGITAL VIDEO I/O PORT
PARALLEL DIGITAL CONNECTOR
RCA PHONO JACKS
COMPOSITE VIDEO IN
RCA
DETAIL
INPUTS
OUTPUTS
COMPOSITE VIDEO OUT
72 INCHES (2 METERS)
CARBON
Analog Inputs:
G/Y/Comp
R/R-Y
B/B-Y
Computer
To SGI
From SGI
Pwr supply p/n
120V 23118891
100V 23118892
230V 23118893
Power
20 VAC CT
Key
In
Genlock
In
GPI
In/Out
Digital
Analog Outputs:
G/Y/Comp
R/R-Y
B/B-Y
Key
Model: Carbon™
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Carbon Connections to an External Device

Refer to the backplane diagram on the following page for connecting Carbon to the external device you will be using.

Carbon Outputs

Analog Component Outputs

For RGB or Y/R-Y/B-Y component analog format applications, connect three 75 ohm coaxial cables of approximately the same length to the **G/Y/Comp**, **R/R–Y**, and **B/B–Y** Analog Output BNCs on the left rear of the chassis. Connect them to the corresponding inputs on your external device. Configure the outputs using the front panel controls as described later in this manual.

Analog Composite Output

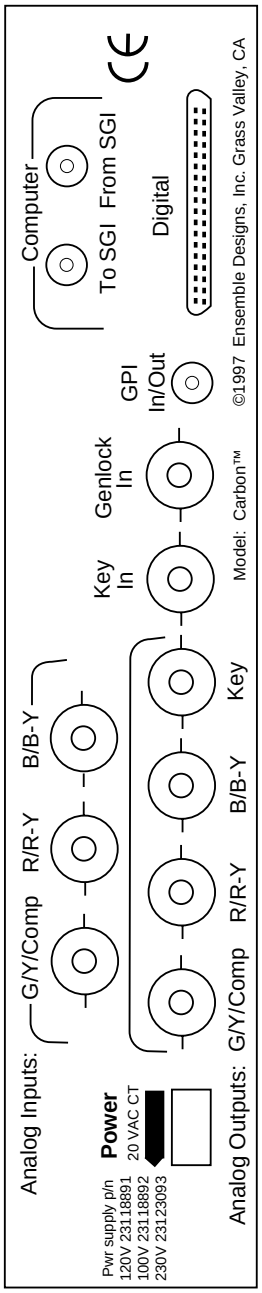
To use the Analog Composite output, connect a 75 ohm coax cable to the **G/Y/Comp** BNC and connect it to the video input of your external device. Configure the output using the front panel controls as described later in this manual.

S-Video Output

If you want to use S-Video, select the Composite Output format on the Carbon front panel controls. The **R/R–Y** BNC provides the luminance or Y channel output. The **B/B–Y** BNC provides the chrominance or C channel output. You may connect these to an S-Video device if desired with a BNC to S-Video adaptor (not provided).

Key Output

Connect a 75 ohm coaxial cable to the Analog Key Output if you require a key output channel to the external device.


Analog Inputs:
G/Y/Comp
R/R-Y
B/B-Y
Computer
To SGI
From SGI
Digital
Key In
Genlock In
GPI In/Out
Power
20 VAC CT
Pwr supply p/n
120V 23118891
100V 23118892
230V 23123093
Analog Outputs:
G/Y/Comp
R/R-Y
B/B-Y
Key
Model: Carbon™
©1997 Ensemble Designs, Inc. Grass Valley, CA

Carbon Inputs

Genlock In

For applications requiring an external reference, connect a coaxial cable from the house reference source to Carbon's Genlock input. For a detailed description of using a genlock reference, refer to the **Genlocking Carbon** section later in this installation section.

Key In

For capturing video and key into the O2, connect the key signal from an external device to Carbon's key input.

Alternately, Carbon can genlock to the Key input. Connect a coaxial cable from the house reference source to Carbon's Key input. See **Genlocking Carbon** following this section for more information.

Analog Component Inputs (Option)

To utilize the optional Carbon analog inputs, connect the analog component outputs from an external device to the **G/Y/Comp**, **R/R–Y**, and **B/B–Y** Analog Input BNCs on the top left rear of the Carbon chassis with three 75 ohm coaxial cables of approximately the same length. Or connect a composite (NTSC or PAL) video source to the **G/Y/Comp** BNC. Configure the inputs for the desired format using the front panel controls as described later in this manual.

Other Carbon Connections

GPI

The GPI input is a contact closure to ground. The GPI output pulls the output to ground.

The GPI connector is a 3.5 mm stereo mini-plug with the GPI Input on the tip of the plug, the output on the ring and the ground on the body. The O2 GPI connection is not supported at this time.

Genlocking Carbon

Carbon can be genlocked in several different ways. How you genlock Carbon depends on your application and the other equipment in your system.

Three of the most common genlocking configurations are given on the following pages. Refer to the genlocking description and illustrations to find the one most suited to your application.

Following each genlocking example some further engineering notes are given for a more technical explanation of the genlocking configuration.

Also note that each genlocking configuration requires menu setups for both the Carbon and O2 for proper genlocking.

External Analog Reference

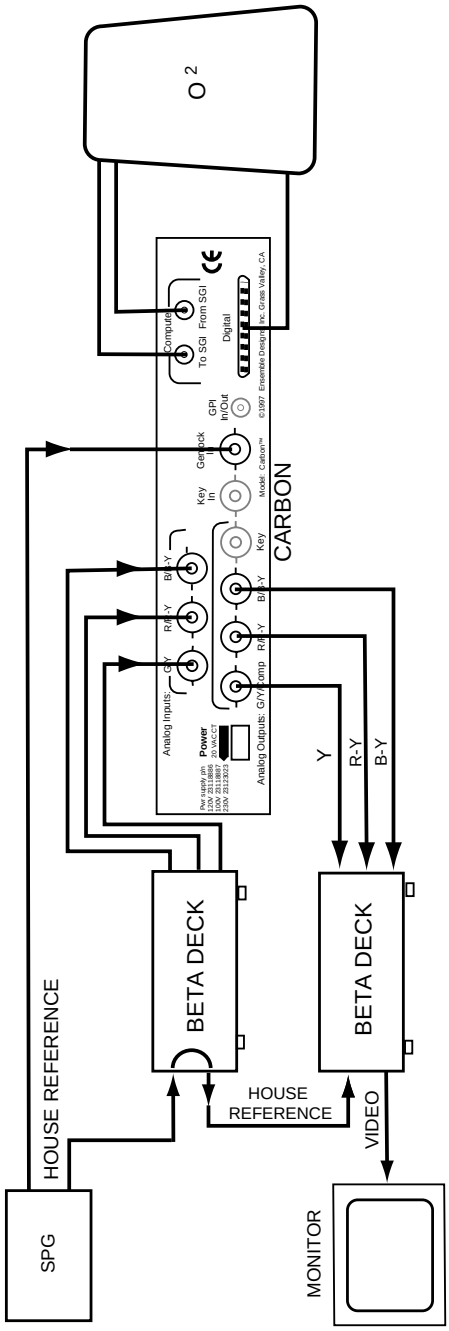
In this common application, Carbon is genlocked to an external reference sync pulse generator (SPG) or other house reference source. Typically, the signal used will be composite color black.

1. Connect the analog house reference from the reference source, such as a Sync Pulse Generator, to Carbon's **Genlock In** as shown in the illustration on the next page. If needed, use the same reference signal and loop it through the other external devices requiring synchronization, such as the Beta Decks, as shown in the example.

   Note that Carbon's **Genlock In** has an internal 75 ohm termination. If only a single reference signal is available, Carbon must be at the end of any loop-through connection.

2. After installation, refer to the **Setting Front Panel Controls** section for instructions on setting up Carbon Genlock/Timing. Set the Genlock/Timing for Genlock Input.

3. Set the SGI workstation genlock selection to SGI composite input. This selection is made in VCP (Video Control Panel). For more information on VCP, see the **Configuring the SGI Workstation** section later in this manual.


O 2
CARBON
Computer To SGI
From SGI
Digital
GPI In/Out
Genlock In
Key In
Key
B/B-Y
R/R-Y
G/Y
Comp
Analog Inputs:
Analog Outputs:
Power
Y
R-Y
B-Y
BETA DECK
BETA DECK
HOUSE REFERENCE
HOUSE REFERENCE
VIDEO
SPG
MONITOR

Engineering Notes

These engineering notes are provided for further information on using an external genlock source.

- Carbon locks its clock to the horizontal (H) rate of the signal applied to the genlock BNC.
- Carbon develops a time advanced reference from the house reference which is fed to the SGI workstation. This time advance compensates for the processing time required by Carbon to convert the O2 digital output into component or composite video.
- When video outputs are composite or Y/C, they will be locked both for H and hue. The color field sequence is synchronized with the genlock input.
- The timing of Carbon's video and key (alpha) outputs can be independently adjusted with respect to the house reference in increments of 18 nanoseconds (key) or 37 nanoseconds (video fill).

Genlocking to Key Input Video

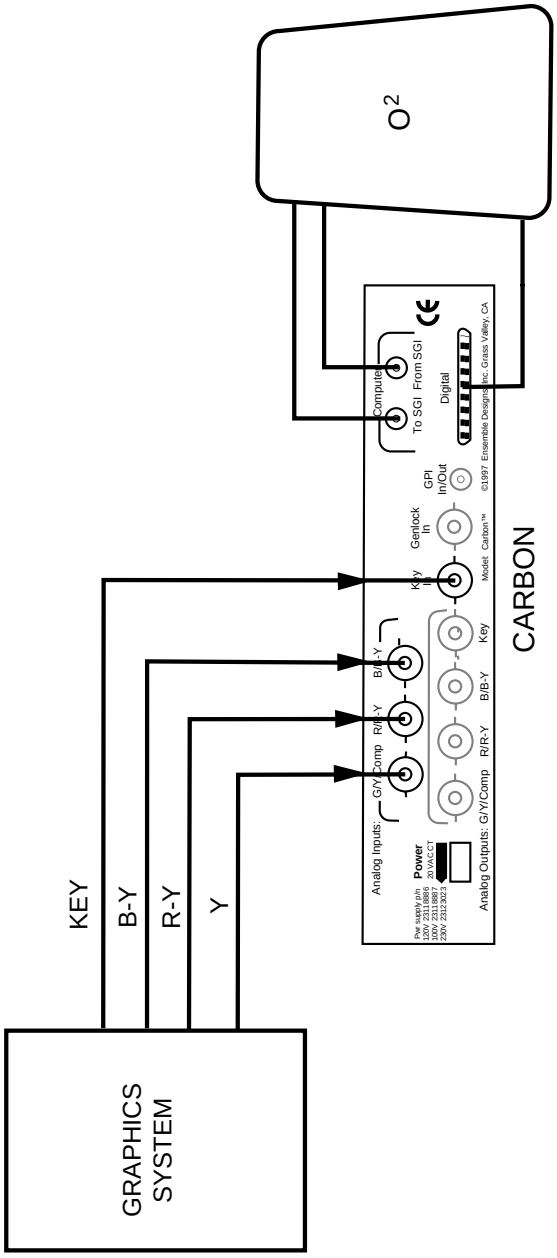
Carbon can also genlock to its key input. This is an alternative to genlocking to the reference input described earlier. In this configuration, Carbon is also providing the genlock source to the SGI workstation.

This mode is provided to make it convenient to bring video into the SGI workstation without recabling Carbon for output mode. The SGI workstation is genlocked to its composite input and all timing is now locked to Carbon's key input.

1. Connect the analog key source to Carbon's Key Input as shown in the illustration on the opposite page.
2. After installation, refer to the **Setting Front Panel Controls** section for instructions on setting up Carbon Genlock/Timing. Set the Genlock/Timing for Key Input.
3. Set the SGI workstation selection to genlock from the SGI composite input. Two selections must be made in VCP (Video Control panel), Genlock Mode and Genlock Source (set as Analog Composite/Y/C). For more information on VCP, see the **Configuring the SGI Workstation** section later in this manual.

Engineering Notes

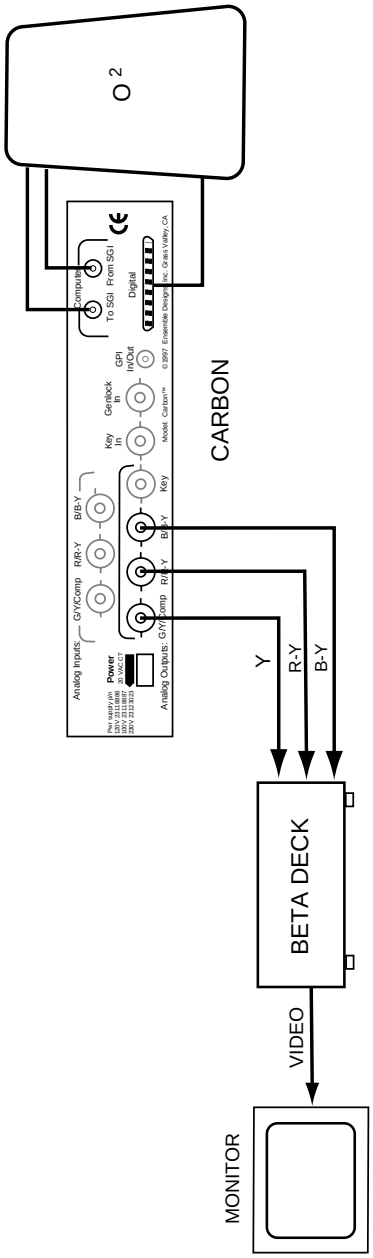
- The key input to Carbon can be streamed through Carbon, but both the video and key outputs of Carbon are no longer in time with the reference (key input to Carbon). Note that there is a multiframe frame delay in the O2 anyway.
- When Key Input is selected from the Carbon Genlock/Timing menu, an internal switch routes the key input to the O2 instead of the timed advanced reference made by Carbon.


O2
CARBON
Computer
To SGI
From SGI
Digital
GPI
In/Out
Genlock
In
Key
In
Model: Carbon™
©1997 Ensemble Designs Inc. Grass Valley, CA
Analog Inputs:
G/Y Comp
R/R-Y
B/B-Y
Key
Analog Outputs: G/Y/Comp
R/R-Y
B/B-Y
Key
Power
20 VAC CT
Pwr supply p/n
100V 2311887
100V 2311888
230V 2312323
KEY
B-Y
R-Y
Y
GRAPHICS
SYSTEM

Freerun Genlocking Mode

In Freerun mode, there are no reference inputs to Carbon. Carbon is creating its own timing reference and is providing the genlock source to the SGI workstation.

1. Connect the Carbon to the external device such as the Beta Deck shown in the illustration on the opposite page.
2. After installation, refer to the **Setting Front Panel Controls** section for instructions on setting up Carbon Genlock/Timing. Set the Genlock/Timing for Freerun.
3. Set the SGI workstation genlock selection to genlock to the SGI composite input. This selection is made in VCP (Video Control panel) For more information on VCP, see the **Configuring the SGI Workstation** section later in this document.


O 2
CARBON
Analog Inputs
G/Y/Comp
R/R-Y
B/B-Y
Analog Outputs
G/Y/Comp
R/R-Y
B/B-Y
Key
Key In
Genlock In
GPI In/Out
To SGI
From SGI
Digital
Y
R-Y
B-Y
BETA DECK
VIDEO
MONITOR

SETTING CARBON FRONT PANEL CONTROLS

Carbon must now be set up up for proper operation for the output format and other system parameters to match your configuration. This is done using the Carbon front panel controls.

Below is an illustration of the Carbon front panel. Note the locations of the Power and Signal indicators, the **MENU** button, the **ENTER** button, the **UP**, **DOWN**, **RIGHT** and **LEFT** arrows and the menu display window.

Navigating the Carbon Menus

Press the **MENU** button to bring up the top level choices. When the **MENU** button is active, it illuminates red.

In navigating the menus, the **UP** and **DOWN** arrows will take you from one menu level to a higher or lower level.

The **LEFT** and **RIGHT** arrows allow you to select or adjust a parameter. When adjusting a numeric parameter, such as Key Timing, holding down the **LEFT** or **RIGHT** arrow button will cause the parameter to increase or decrease continuously. A numeric parameter may be cleared to zero by pressing the **LEFT** and **RIGHT** arrow buttons simultaneously.

EEPROM Update

Carbon stores your configuration selections in an EEPROM (Electronically Eraseable Programmable Read

Only Memory). This non-volatile memory retains all of the configuration parameters when power is removed form Carbon. The EEPROM is updated 10 seconds after making a change indicated by a brief message in the display.

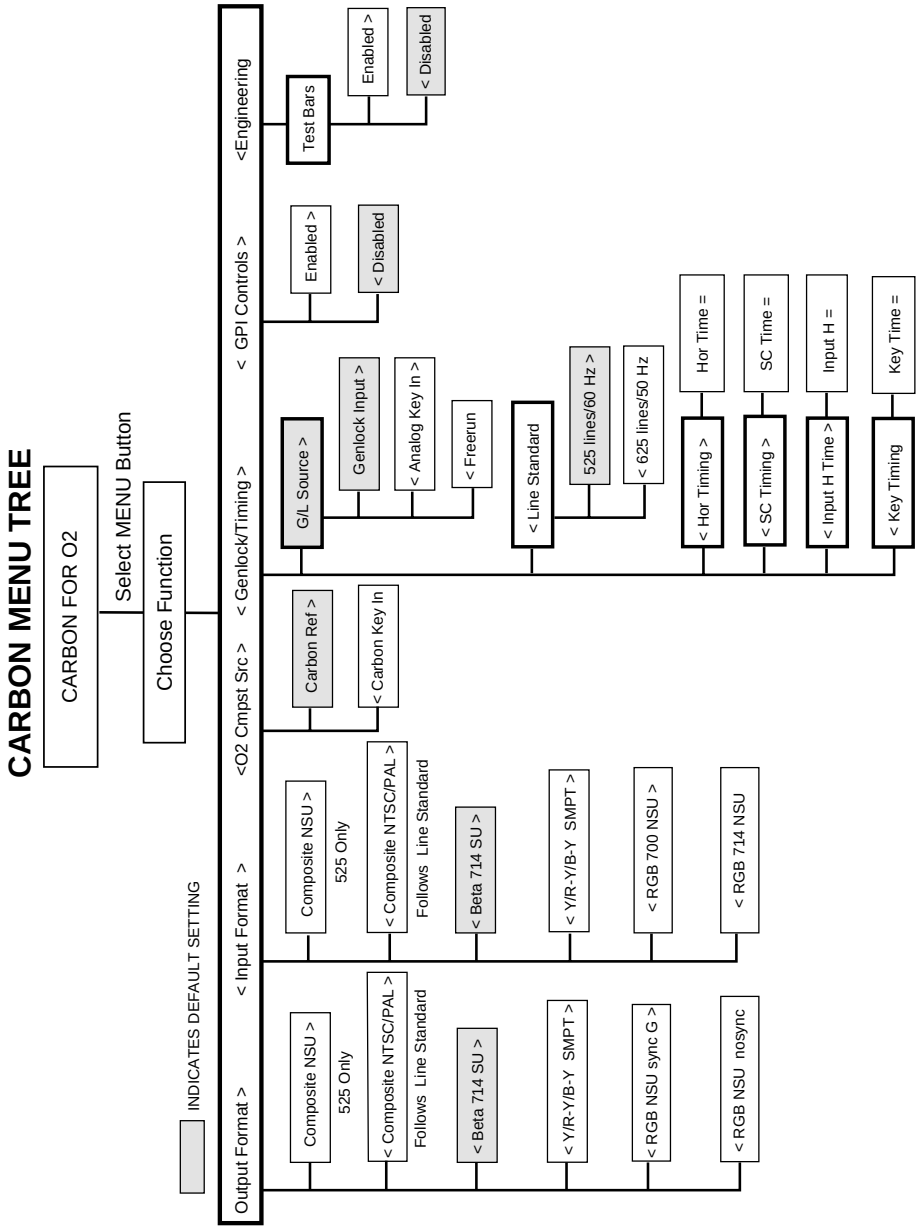
A summary of the menu settings selectable with the Carbon front panel is outlined in the menu tree on the opposite page.

At the top of the menu levels is the **CHOOSE FUNCTION** selection.

There are six main menus as listed below:

- Output Format
- Input Format
- O2 Cmpst Src (O2 Composite Source)
- Genlock/Timing
- GPI Controls
- Engineering

Set the parameters under each function as required for your application as described in the following steps.


CARBON MENU TREE
CARBON FOR O2
Select MENU Button
Choose Function
INDICATES DEFAULT SETTING
Output Format >
< Input Format >
<O2 Cmpst Src >
< Genlock/Timing >
< GPI Controls >
<Engineering
Composite NSU >
525 Only
< Composite NTSC/PAL >
Follows Line Standard
< Beta 714 SU >
< Y/R-Y/B-Y SMPT >
< RGB 700 NSU >
< RGB 714 NSU
Composite NSU >
525 Only
< Composite NTSC/PAL >
Follows Line Standard
< Beta 714 SU >
< Y/R-Y/B-Y SMPT >
< RGB NSU sync G >
< RGB NSU nosync
Carbon Ref >
< Carbon Key In
G/L Source >
Genlock Input >
< Analog Key In >
< Freerun
< Line Standard
525 lines/60 Hz >
< 625 lines/50 Hz
< Hor Timing >
Hor Time =
< SC Timing >
SC Time =
< Input H Time >
Input H =
< Key Timing
Key Time =
Enabled >
< Disabled
Test Bars
Enabled >
< Disabled

Output Format

Select the correct Output Format for your Carbon configuration using this selection. The output formats to choose from are listed below in the order they will appear. Note that format choices will differ depending on line rate (525 or 625) currently set in the Genlock Timing menu.

Composite NSU (Appears in 525 Line rate only)

Set for NTSC Composite applications requiring no setup, such as used in Japan.

Composite NTSC or PAL

Set for Composite NTSC or PAL applications. The NTSC or PAL setting will automatically follow the Line Standard selection as set later in the Genlock/Timing menu.

Beta 714 SU

Set for applications requiring Beta or Y/R-Y/B-Y formats requiring 714 mV with setup, such as Beta decks operating in 525. This is the default setting.

Y/R-Y/B-Y SMPT

Set for Y/R-Y/B-Y applications requiring SMPTE levels of 700 mV. This application is most often used with monitors and Beta decks operating in 625.

RGB NSU sync G

Set for RGB applications requiring no setup with sync on green, SMPTE standard.

RGB NSU nosync

Set for RGB applications requiring no setup with no sync signal, such as monitors not requiring sync on inputs.

Input Format

This function requires that the Carbon Input option be installed. Select the correct Input Format for connecting the outputs from another device to the Carbon analog inputs. Note that format choices will differ depending on line rate (525 or 625) currently set in the Genlock/Timing menu.

Composite NSU (Appears in 525 Line rate only)

Set for NTSC Composite applications requiring no setup, such as used in Japan.

Composite NTSC or PAL

Set for Composite NTSC or PAL application requiring setup. The NTSC or PAL setting will automatically follow the Line Standard selection as set later in the Genlock/Timing menu.

Beta 714 SU

Set for applications requiring Beta, Y/R-Y/B-Y formats requiring 714 mV with setup, SMPTE standard levels. This is the default setting. This format is often used with Beta decks in 525 and some cameras.

Y/R-Y/B-Y SMPT

Set for Y/R-Y/B-Y applications with SMPTE levels of 700 mV (also referred to as YUV). This format is used with Beta decks running in 625.

RGB 700 NSU

Set for RGB applications requiring no setup at 700 mV, SMPTE standard signal. Sync on green is required; sync on all three channels is recommended.This format is often used with cameras.

RGB 714 NSU

For RGB applications requiring no setup at 714 mV.

Sync on green is required; sync on all three channels is recommended. This format is often used with cameras.

O2 Cmpst Src (O2 Composite Source)

This selection allows you to choose the composite source to the O2's analog composite input—either the Carbon Reference or the Carbon Key Input.

Carbon Ref (Carbon Reference)

Use this setting for normal operation where Carbon is providing the reference to the O2. This is the default setting.

When set to Carbon Reference, Carbon synthesizes a black reference for the O2 which is locked to Carbon's selected genlock reference (Genlock In, Key In, or Freerun). This allows Carbon to time the O2 inputs.

Carbon Key In

Use this setting when you wish to route the Carbon key input directly into the O2's analog composite input. Connect your analog video source to the Carbon Key In BNC. Note that Carbon output timing will no longer be timed to the reference when this mode is selected.

The preferred method of capturing analog composite video into the O2 is to connect the video source to Carbon's G/Y Composite Analog Input connector and set the Carbon Input Format to composite. This requires the Carbon Analog Input option.

If you don't have Carbon's input option, but you want to capture video, use this method as an alternate way to capture the analog video into the O2.

When set to Carbon Key In, Carbon is put into a bypass mode allowing you to capture video into the O2. In this mode, Carbon's key input is routed directly to the O2's analog composite input.

Genlock Timing

In the Genlock/Timing menu several parameters must be selected to correctly setup Carbon. The Genlock/Timing functions to choose from are listed below:

G/L Source

Assign the correct genlock source according to your Carbon cabling configuration from the selections below. (If you are not sure which source to use, refer to the previous **Genlocking Carbon** section for a detailed explanation of genlock timing.)

Genlock Input—Use this selection if Carbon is set up to genlock to an external house reference (Genlock In BNC).

Analog Key In—Use this selection if Carbon is set up to genlock from its key input.

Freerun—Use this selection if you are operating without a reference.

Line Standard

Choose between **625 Lines/50 Hz** (PAL) and **525 Lines/60 Hz** (NTSC) depending on your line standard requirements.

Horizontal Timing

Horizontal Timing adjusts the video output timing in relation to the genlock source. The timing is adjusted by selecting numbers in the menu, each number representing an 37 nanosecond increment, either positive or negative.

A negative value corresponds to the output being earlier in time than the genlock source.

A positive value causes the output to be later than the genlock reference.

Note that this selection is not available when Freerun is selected as the genlock source.

Subcarrier Timing

For applications using the composite output format, this selection adjusts the output subcarrier (or system phase) relative to the reference input.

The timing is adjusted by selecting numbers in the menu, each number representing a fraction of a degree.

Increasing the SC Timing value will rotate system phase clockwise when viewed on an externally referenced vectorscope.

Decreasing the parameter will cause a counter-clockwise rotation.

Note that this selection is not available when Freerun is selected as the genlock source.

Input H Timing

This menu selection adjusts the horizontal timing of the captured video from the Carbon Analog Input option in relation to the O2 application you are using.

Adjust the horizontal timing to center the input video by selecting numbers in the menu to move the video to the left (negative) or right (positive).

When no Analog Input option is installed, this selection will indicate INPUT MODULE NOT INSTALLED.

Key Timing

This menu selection adjusts the horizontal timing of the key (alpha) output relative to the video output.

The timing is adjusted by selecting numbers in the menu, each number representing an 18 nanosecond increment, either positive or negative.

A negative value corresponds to the key (alpha) output being earlier in time than the video output.

A positive value causes the output to be later than the video output.

GPI Controls

Note this function is not implemented in the O2 at this time.

Choose between **ENABLED** and **DISABLED**.

Engineering

As a troubleshooting aid, Carbon can internally generate color bars.

Choose between **ENABLED** and **DISABLED**.

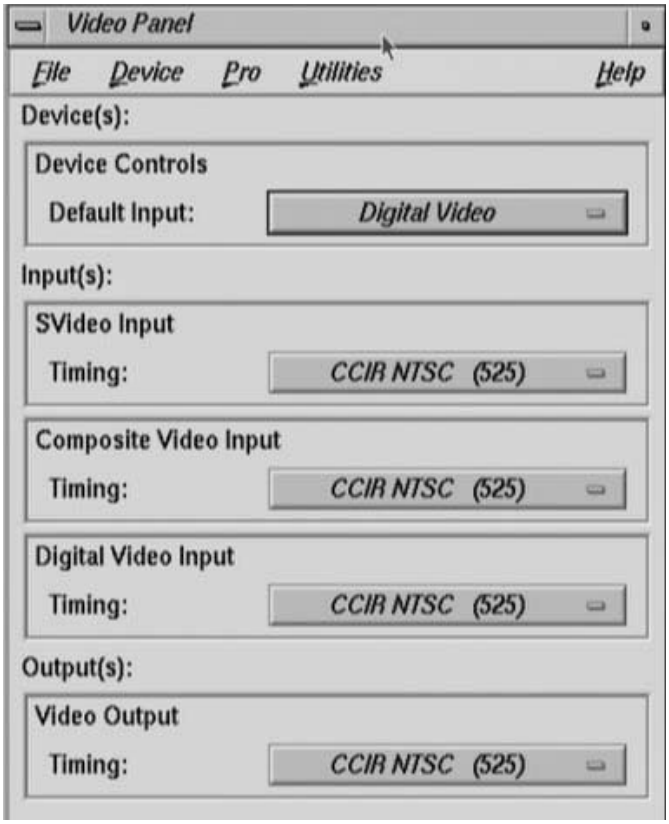
The SGI O2 workstation must be set up for use with Carbon. Refer also to the **SGI Setup Notes** at the end of this section for further notes on SGI setup.

At the O2 workstation go to Desktop and open a Unix shell. Type **vcp** (for video control panel) and hit enter.

The VCP window, called **Video Panel**, will open. Refer to the figure below.

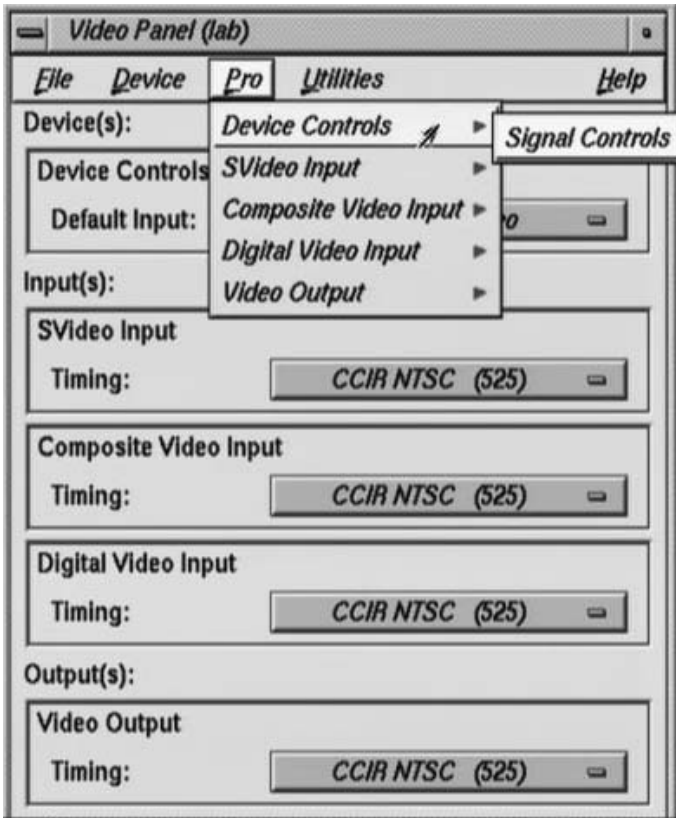
Set the Default Input to **Digital Video.**

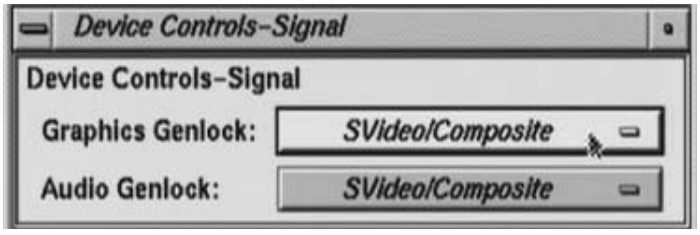
Set the video input and output choices to the desired format: **CCIR NTSC (525)** or **CCIR NTSC (625)**.



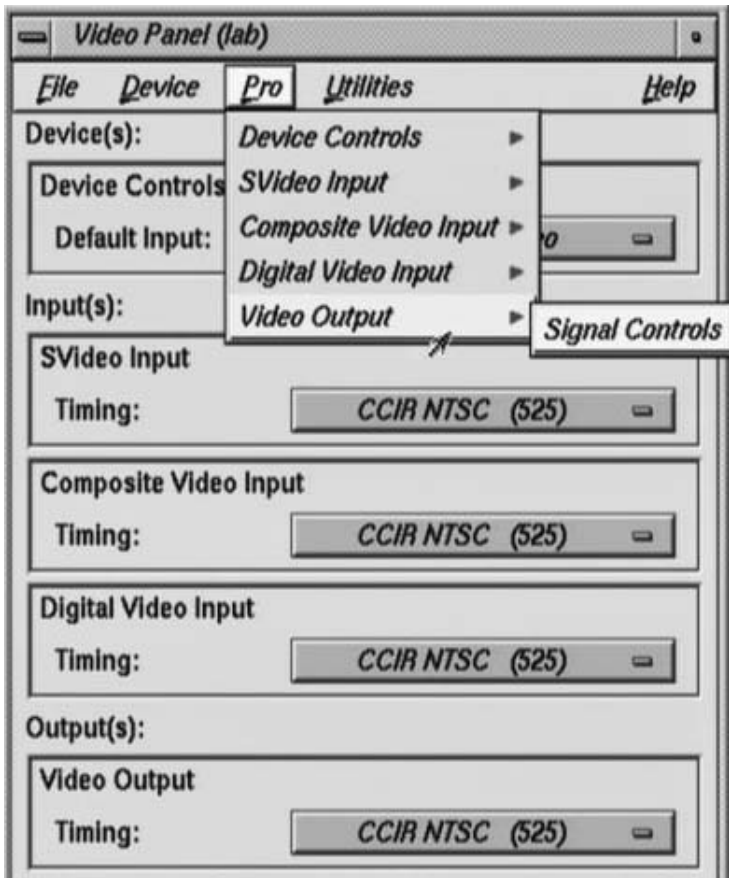
Go to the **Pro** pull down selection and select **Device Controls**, then select **Signal Controls** as illustrated in the top figure below. The **Device Controls-Signal** window will open as shown in the lower figure below.

Set the **Graphics Genlock** to **SVideo/Composite**. Finish setting the genlock source in the **Video Output** menu later in this procedure.





Go back to the Video Panel window and pull down the **Pro** menu shown in the figure below. Select **Video Output**, then select **Signal Controls**.



The **Video Output-Signal** window will open as shown in the illustration on the next page.

For typical applications select the following:

Check the **Standard Blanking** box.

Set the **Output Sync** to **Genlock**.

Set the **Genlock Source** to **SVideo/Composite**.

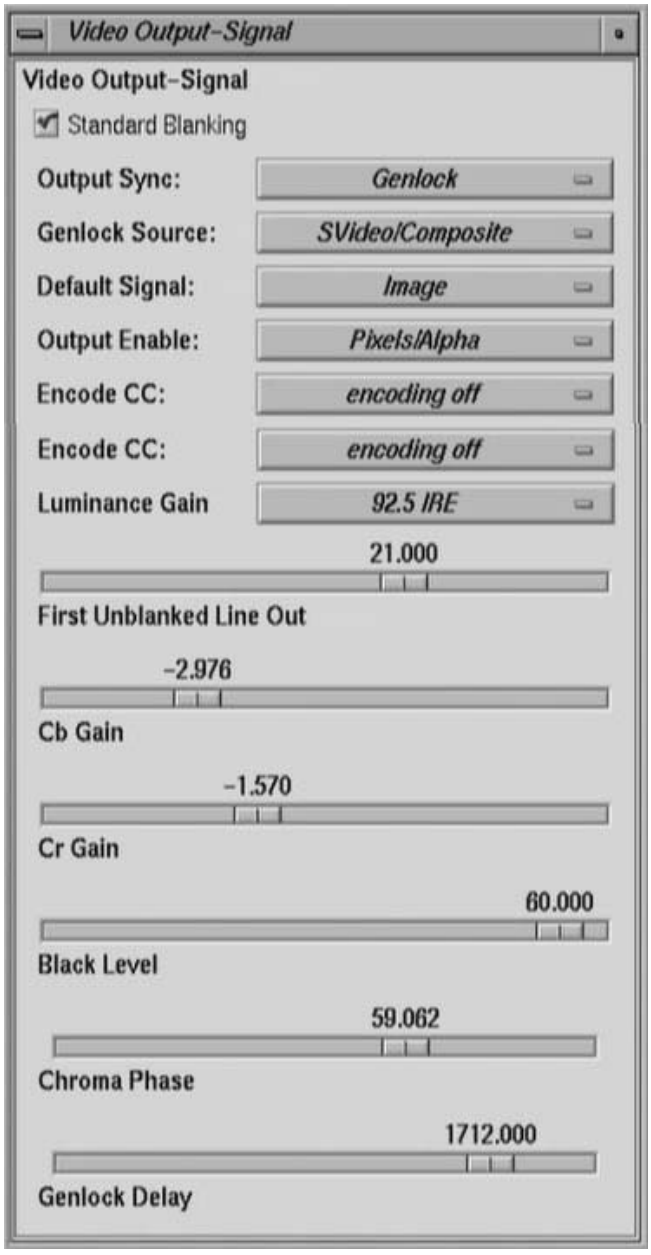
Set the **Default Signal** to **Image**.

For most applications, the **Output Enable** should be set to **Pixels/Alpha**.

Set the **First Unblanked Line Out** to **21.000**.

Set the **Genlock Delay** to **1712.000**.

When finished, go back to the **Video Panel** menu, pull down the **File** menu and select **Save Current Settings**.


Video Output-Signal
Video Output-Signal
Standard Blanking
Output Sync:
Genlock
Genlock Source:
SVideo/Composite
Default Signal:
Image
Output Enable:
Pixels/Alpha
Encode CC:
encoding off
Encode CC:
encoding off
Luminance Gain
92.5 IRE
21.000
First Unblanked Line Out
-2.976
Cb Gain
-1.570
Cr Gain
60.000
Black Level
59.062
Chroma Phase
1712.000
Genlock Delay

SGI O2 Setup Notes

Some software applications run on the O2 will deal with the video controls directly. In that case, you will not need to use the vcp utility. These applications may overwrite selections you made in vcp before launching the intended video application.You may need to make video configuration choices within the application software.

TROUBLESHOOTING

If you are experiencing problems with Carbon operation, refer to the section below for some common troubleshooting tips.

No Display or Power Indication

- Verify that you have the power supply connected to a functional AC mains outlet.

No Video Output from Carbon

- Verify cabling between Carbon and the O2. See the Installation section of this manual. Be sure cables are properly seated.
- Verify that the O2 is configured for video output.
- Try enabling Color Bars (in the Carbon Engineering menu) to verify Carbon outputs are connected properly to destination.

Unstable Video Output

- If "No GL Reference" is displayed on Carbon when menu light is off, the genlock reference is not properly connected.
- The O2 must be configured for Genlock or Key In, whichever is being used as a reference. If no reference is used select Freerun. Refer to the **Genlocking Carbon** heading in the Installation section of this manual.
- The Line Standard selection (NTSC/525 or PAL /625) on Carbon and the O2 must agree.
- Some devices require sync when running in RGB. If you are using a device like this with Carbon, make sure the device has an external sync feed. Select RGB No Sync for Carbon's output format.

Video Output Stable, but Colors Wrong

- Carbon Output Format selection (Composite, RGB or Y/R-Y/B-Y) must agree with the device being fed with Carbon. For example, if you are using a Beta deck in 525, select Beta 714 SU. If you are using a Beta deck in 625, select Y/R-Y/B-Y SMPTE.
- Component cables may be swapped (Red output feeding blue destination). Refer to the Installation section.

Unable to Adjust Output Timing

- Make sure that the O2 Compst Src menu selection is set to Carbon Reference.

PRODUCT SPECIFICATIONS

Carbon - O2 Interconnect

Digital Component	Parallel digital component in and out of O^2 via Digital Video Port (Camera Port)
Analog Composite	Analog composite in and out of O^2 via Composite Video Port

All interconnect cables between Carbon and O^2 are provided

Outputs

Analog Component Formats: Beta Y/R-Y/B-Y 714mV with setup
SMPTE Y/R-Y/B-Y 700mV without setup
RGB 700mV no setup with and without sync on G

Response	Y Chan: 6 MHz Bandwidth, 0.25dB to 5 MHz
Color Diff	2.5 MHz Bandwidth
2T K Factor	<1% Y Channel
D to A	10 bit, 2x Oversampling

Analog Composite Formats: Composite NTSC with or w/o setup, & Y/C
Composite PAL & Y/C (on separate BNC's)

Response	0.25dB to 5 MHz
2T K Factor	<1%
Diff Gain	<1.5%
D to A	10 bit, 2x Oversampling

Key Channel Luminance key output w/sync, 0.7v/1.0Vpp

Inputs (Optional)

Analog Component Formats: Beta Y/R-Y/B-Y 714mV with setup
SMPTE Y/R-Y/B-Y 700 mV without setup
RGB 700 mV no setup with sync on G
RGB 714 mV no setup with sync on G

Response	Y Chan: 6 MHz Bandwidth, 0.25dB to 5 MHz
Color Diff	2.5 MHz Bandwidth,
2T K Factor	<1% Y Channel
A to D	8 bit sampling of all components 2x Oversampling

Analog Composite Formats: Composite NTSC with or without setup
Composite PAL

Decoder	3 line adaptive comb filter
A to D	8 bit 2X Oversampling

Key Channel Input Levels
0.7/1.0 V p-p
Genlock Reference Input
1V p-p, composite
Output timing adjustable

All inputs 75 ohm, internally terminated , BNC Connector

GPI

1 GPI input, 1 GPI output
1/8" stereo jack

Mechanical & Power

Size: 8.5" W, 1.75" H, 7.5" D
Weight: 3.0 lbs

Power Requirement: 22VA
Power is supplied by a UL and CSA listed inline transformer.
Specify either 100, 120 or 230 volts.
CE Compliant

System Requirements

O^2 must be fitted with O^2 Video option

Contact us for further info:
Ensemble Designs
PO Box 993 Grass Valley CA 95945
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info@endes.com www.ensembledesigns.com