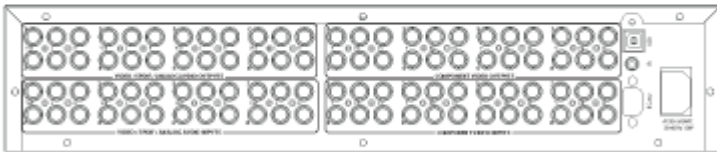
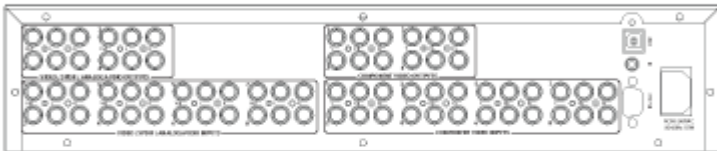
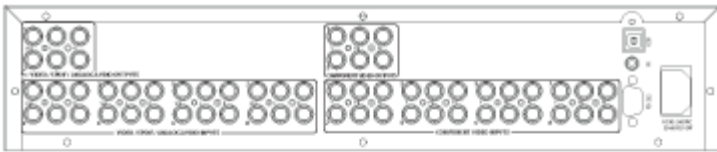




# Integrator's Guide borrego



HD Component Video / Composite Video / Analog Audio  
Matrix Switch

# Table of Contents

|   |    |
|---|----|
| <b>Table of Contents</b> .....              | 2  |
| <b>Introduction</b> .....                   | 3  |
| Features: .....                             | 3  |
| <b>Installation</b> .....                   | 3  |
| Unpacking .....                             | 4  |
| Front Panel Protective Film .....           | 4  |
| Inputs.....                                 | 4  |
| Outputs .....                               | 5  |
| RS-232 Serial .....                         | 5  |
| USB.....                                    | 5  |
| Rear Panel IR .....                         | 6  |
| Power .....                                 | 6  |
| Rack Mounting (optional).....               | 6  |
| <b>Operation</b> .....                      | 7  |
| Overview .....                              | 7  |
| Controlling from the front panel .....      | 7  |
| Controlling from an IR remote control ..... | 8  |
| <b>Setup Menu</b> .....                     | 10 |
| <b>Care and Maintenance</b> .....           | 12 |
| <b>Restoring to Factory Defaults</b> .....  | 12 |
| <b>Specifications</b> .....                 | 13 |
| Performance .....                           | 13 |
| Power .....                                 | 13 |
| Physical .....                              | 13 |
| <b>2 Year Warranty</b> .....                | 15 |

## **Introduction**

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Congratulations on your selection of the Borrego audio/video matrix switch. Borrego is a family of matrix switches featuring component video and digital audio. The Borrego is available in a 8x2, 8x4, and 8x8 configuration.

### ***Features:***

- 8 inputs of component video (YPbPr), composite video and analog audio. The composite video section can also be used for SPDIF digital audio
- Available with 2, 4 or 8 outputs of component video and digital audio
- High bandwidth video section (140 MHz) for 480i up to 1080p.
- Independent routing of all signal types
- Attractive enclosure featuring brushed aluminum and high gloss acrylic front, with silver top cover.
- Universal AC input power, 90-240VAC 50/60Hz with standard IEC320 receptacle.
- All gold plated RCA connectors ensure a long life without corroded connectors.

## **Installation**

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The Borrego Matrix Switch does not require ventilation, so it can have other equipment such as amplifiers stacked on top of it. The Borrego is also equipped with padded feet so it may be stacked on

top of other equipment without causing damage. In either case, to avoid scratches, never slide equipment on top of one another.

## ***Unpacking***

The shipping carton for the Borrego matrix switch will include the following items:

- 1 – Borrego Matrix Switch
- 1 – AC Power cord
- 1 – 6’ USB cable
- 1- 6’ RS-232 cable
- 1 – User’s Guide
- 1 – CD-ROM driver disc
- 1 – Pair of rack mount ears with screws

If accessories were ordered, the carton may also contain:

- 1 – IR remote control

## ***Front Panel Protective Film***

There is a clear film over the front panel to protect it during manufacturing and shipping. Remove this film before using your Borrego matrix switch.

## ***Inputs***

Connecting source devices to the Borrego can be done in any order. All inputs have the same performance, so organize them as you see fit. Just be sure to connect the video “Y”, “Pb” and “Pr” signals as labeled on the rear panel.

The connectors labeled “Video” are intended for either composite standard definition video, or alternatively SPDIF digital audio.

They can also be used for both signal type simultaneously, as long as care is taken not to route a signal of one type to a output of a different type.

The analog audio matrix is labeled “L” and “R”.

## ***Outputs***

Having a true matrix switch allows you to treat each output as a ‘zone’. For example, Output 1 can be the home theater zone, and output 2 can be the master bedroom zone. In this case you would run a set of component video cables plus audio cables to each zone. The maximum length of cable to each zone will vary on the quality of the cable used, but if high quality cable is used, the Borrego can support zones 300 feet away.

## ***RS-232 Serial***

The serial port on the rear panel is labeled “RS-232”. It is wired as a “DCE” device, which means it should be connected to a normal PC’s RS-232 port with a straight through cable. Connection to most control systems should be with a straight through type serial cable, such as the cable provided with the Borrego.

For the command protocols, please refer to the manual entitled “Integrator’s Guide to Serial Protocols”.

## ***USB***

If you plan to use the USB communication feature of the Borrego, connect the USB cable to the PC’s USB port (flat end), and the other end (square end) to the Borrego matrix switch.

Optionally you may choose to connect this cable later when you are prepared to install the driver CD-ROM. Connecting the cable will activate MS Windows plug and play wizard. On disconnect

and reboots, MS Windows will remember what COM port this device was assigned.

## ***Rear Panel IR***

The rear panel connector labeled “IR” is for direct connection to a control system. It is a 3.5mm 2 pin jack, and accepts unmodulated IR. It is polarity insensitive, however normally the ‘tip’ is the active signal, and the ‘sleeve’ is the ground.

Note: Some IR repeater systems are designed to work only with their own IR blasters. Many integrators will cut these blaster cables and add a 3.5mm plug on the end. In some cases this will work fine, however some low end IR repeater systems will have too much noise in their signal, and can prevent signals from being properly decoded. Your results may vary.

## ***Power***

Once all the input and output connectors are in place, connect the supplied power cable to the AC input. If you are not in North America, you may use your own standard IEC320 power cable with the Borrego matrix switch. The Borrego will detect whatever voltage is supplied (from 90V to 240V AC), and adjust accordingly.

## ***Rack Mounting (optional)***

The product ships with the rack mount ears detached from the unit. This is to prevent damage to the chassis during shipment. Use the supplied screws to attach the ears. The rack ears are universal, so they fit on either side.

The chassis is a 2 rack units high only when the bottom feet are removed. Removal requires a Philips screwdriver. Be careful when turning over the unit as to not scratch the top paint

# Operation

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## Overview

The Borrego matrix can be thought of as three matrix switches in one box. An 8x2/4/8 component video matrix, an 8x2/4/8 standard def. Composite video matrix, and a 8x2/4/8 stereo analog audio matrix. By default they are controlled together, but by using the audio and video commands mentioned below, they can be controlled separately.

## Controlling from the front panel

**Shortcut: (In), (#), (Out), (#)**

The Borrego matrix switch's front panel uses NeoTouch™ technology. This is different from many other front panels you have seen with 'membrane' or 'dome' type buttons. The NeoTouch™ panel senses a human finger touching the acrylic panel without any moving parts. For you, the user, this means that you need not press hard to activate a button, a light tap will do.

Powering the Borrego matrix switch on and off is accomplished by pressing the power button. To prevent accidental power offs, two button presses are required to shut down the matrix.

The Borrego matrix switch will suggest to you what buttons to press next by illuminating the LEDs.

In the powered on and ready state, three LEDs will be lit; In, Audio, and Video.

**In** – Selecting the In button will begin the process of switching both audio and video.

**Audio** – Selecting the Audio button will begin the process of switching Audio matrix only

**Video** – Selecting the Video button will begin the process of switching both the component and composite matrix.

Once one of the three In/Audio/Video buttons have been pressed, the Borrego matrix switch will light all the valid the inputs. The 0 button will also be lit. Selecting 0 as the input number will mute whatever output is selected in the following steps.

After an input number has been selected, press the “**Out**” key.

And finally, after pressing “**Out**”, press the Output number you wish to route the signal to.

To recap, the front panel is always done as a four-button sequence of **(In/Audio/Video), (number), (Out), (number)**.

Some typical examples of this might be the following.

*Example 1* – You would like to route the Cable box on Input 5 to the main display on output 1. Press **In, 5, Out, 1**.

*Example 2* – You wish to now route your audio from the CD changer on input 3 to the main AV receiver on output 1, but continue watching the cable box from example 1. Press **Audio, 3, Out, 1**.

## ***Controlling from an IR remote control***

### ***Shortcuts:***

**(Select),(#)** – Changes all outputs

**(Setup), (left and right arrows), (Select), (Exit)** – Setup menu

**(Video1), (#), (Out), (#)** – Controls YPbPr matrix

**(Video2), (#), (Out), (#)** – Controls composite video matrix

**(Audio1), (#), (Out), (#)** – Controls digital audio matrix

## **Control Sequence**

The command sequence for controlling the Borrego matrix switch from an IR remote control is exactly the same as controlling the switch from the front panel. If you have skipped ahead to this section, please go back and read the section “Controlling from the front panel” first.

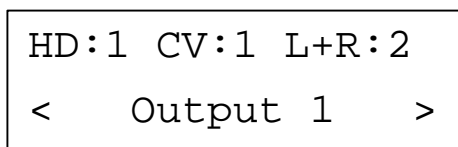
In addition to (In/Audio/Video), (number), (Out), (number) sequence as mentioned above, the IR remote is also capable of a shortcut method which will treat the matrix as a regular switch.

Pressing “Select” then a number if the desired input, will switch all outputs of the matrix to that selected input source.

## **Matrix status**

To view the current connection status of the matrix, use the IR remote left and right arrow keys. Each screen will show the current status of one output (see figure 1). The first line of the display shows what inputs are currently connected to that output. In some cases, the input numbers may be different, indicating that audio and video have been switched separately.

At any time the user may press exit to return to the home screen, or wait 10 seconds and the home screen will return on it’s own.



```
HD:1 CV:1 L+R:2
< Output 1 >
```

**Figure 1 - "HD" shows input status of component video,"CV" shows input status of composite video (or SPDIF), and "L+R" shows input status of analog audio.**

# Setup Menu

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The user setup menu is only accessible with an IR remote, not from the front panel. The same settings can also be controlled from the serial ports. Refer to the Serial Protocols document for more information on the commands.

To start the setup menu, press “**Setup**” on the remote control.

Use the “**Left**” and “**Right**” buttons to navigate through the different options.

Use the “**Select**” button to change any of the optional settings.

The menus are as follows:

## ***Setup:Panel LEDs***

This option will turn off all the front panel LED lights. The matrix’s behavior is otherwise unchanged. The default is ON

## ***Setup:Disp Lamp***

This option will set the display brightness to one of four levels. The default is 100%

## ***Setup:AC Pwr***

This option control what the matrix will do when AC power is first applied, or after a power outage. Selecting “ON” will force the unit to turn on, and the previous switch state will be restored. Selecting “Stby” (default) will cause the unit to enter standby mode.

## ***Setup:Touchpanel***

This option will disable the front panel buttons. The default is ON

## ***Setup:TouchSense***

## ***Setup:TouchDelay***

These two options work together to control the front panel touch button performance. The TouchSense setting controls the overall sensitivity, while the TouchDelay setting controls the detection delay, similar to a ‘debounce’ function.

If the buttons are falsely triggered by outside interference, setting the TouchSense to “LOW” and the TouchDelay to “HIGH” will likely remedy the situation.

If the buttons are difficult to press with smaller fingers, setting the TouchSense to “HIGH” will improve the sensitivity. Setting the TouchDelay to “LOW” will not change the sensitivity, but will make the button response seem faster.

Any of the above selections will be applied instantly. There is no need to save the changes. At any time the user may press exit to return to the home screen, or wait 10 seconds and the home screen will return on it’s own.

## **Care and Maintenance**

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The Borrego matrix switch does not require any regular maintenance besides keeping it clean.

Never use harsh cleaners or solvents on the Borrego front panel. There are several dusting products for electronics, and standard glass cleaner may be used.

Spray any liquids onto a towel first, then wipe the front of the Borrego with the moist towel.

Should the Borrego matrix switch fail to operate as expected, please contact NeoPro for service advice. **THERE ARE NO ADJUSTMENTS OR USER SERVICEABLE PARTS INSIDE THE CABINET.**

## **Restoring to Factory Defaults**

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Just in case you should disable the front panel or IR input via the USB or RS-232 port, you may require a way to restore those features without using the ports again. To restore the Borrego matrix switch back to factory settings, do the following:

- ✓ Unplug the unit for 10 seconds, then plug it back in. The Borrego should be in standby mode.
- ✓ On the front panel, slowly press 0, 0, 7.

The unit will then enter Initialization, and when complete, return to standby mode. The front panel and IR will work as normal.

# Specifications

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## Performance

### Component Video

|                               |   |
|-------------------------------|---|
| Input coupling                | AC  |
| Input impedance/termination   | 75 ohms   |
| Output coupling               | DC  |
| Output impedance              | 75 ohms source terminated                                 |
| Output video bandwidth (-3dB) | 140 MHz   |
| Crosstalk                     | Below -80dB   |
| Video modes                   | 480i, 480p, 540i, 540p, 576i, 576p,<br>720p, 1080i, 1080p |
| Video vertical rates          | 24, 25, 29.97, 30, 50, 59.97, 60                          |

### Composite Video

|                               |             |
|-------------------------------|-------------|
| Output video bandwidth (-1dB) | 10 MHz      |
| Crosstalk                     | Below -80dB |

### Audio

|                      |                                  |
|----------------------|----------------------------------|
| Input termination    | 10K ohms                         |
| Audio bandwidth      | DC-100KHz, +/- 0.5dB             |
| Gain and output type | Unity gain, low impedance output |

## Power

|                         |                                |
|-------------------------|--------------------------------|
| Input voltage           | 90-240V AC 50-60Hz autosensing |
| Input power consumption | 8W "On", 4W "standby"          |

## Physical

|                            |                         |
|----------------------------|-------------------------|
| Dimensions                 | 17"W x 3.5"H x 10.75"D  |
| Dim. with feet (removable) | 17"W x 3.75"H x 10.75"D |
| Unit Weight                | 8.8 lbs (typical)       |
| Shipping weight            | 13 lbs (typical)        |



## **2 Year Warranty**

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NeoPro warrants this product against defects in material and workmanship for a period of 2 years. This warranty applies to the original end-user purchaser and installation service provider. NeoPro will, solely at its option, repair or replace this product with a functionally equivalent new or factory-reconditioned product during the warranty period. The consumer should contact the installation service provider that resold the product who will in turn deliver the product to NeoPro. All transportation risks and costs in connection with this warranty service are the responsibility of the consumer.

In order to keep this warranty in effect, the product must have been handled and used as prescribed in the instructions accompanying this warranty. This warranty does not cover any damage due to accident, misuse, abuse, or negligence. Repair or replacement, as provided under this warranty, is your exclusive remedy. NeoPro shall not be liable for any incidental or consequential damages. Implied warranties of merchantability and fitness for a particular purpose on this product are limited to the duration of this warranty.

Some states/countries do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you. Some states/countries do not allow limitations on how long an implied warranty lasts, so the above limitation may not apply to you. This warranty gives you specific legal rights, and you may also have other rights that vary from state to state and country to country.



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