



# Integrator's Guide hawthorne™



12x8 HD Component Video Matrix Switch  
with Pass-Through Outputs

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# Introduction

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Congratulations on your selection of the Hawthorne video matrix switch. The Hawthorne is a 12x8 high definition component video matrix switch, with pass-through outputs for stacking multiple units. The Hawthorne can be stacked up to 12 units to build a 12x96 matrix system.

## ***Hawthorne Features:***

- 12 inputs of component video (YPbPr)
- 12 fully buffered pass-through outputs
- 8 matrix switch outputs over Cat5 cable
- High bandwidth matrix section (140 MHz) provides full 1080p to each matrix output.
- Pass-through outputs utilize high accuracy and high bandwidth (400MHz) buffers to allow up to 12 units to be stacked.
- Attractive enclosure featuring brushed aluminum and high gloss acrylic front, with optional black or silver finish.
- Universal AC input power, 90-240VAC 50/60Hz with standard IEC320 receptacle.
- All gold plated RCA connectors ensure a long life without corroded connectors.

## ***Important Note Before Starting***

The Hawthorne and the Hornet in wall receiver module (sold separately) will only operate properly when all of the AC outlets for the system and the displays in each zone are properly wired and grounded.

Before installing anything, use an electrical outlet tester to verify proper hot, neutral and ground wiring.

In the event your display has a two prong AC plug, it may be necessary to connect the Hornet receiver's bracket to AC ground of the AC outlet. See the Hornet installation instructions for further information.

The 12x8 Matrix Switch does not use active ventilation, so it can have other equipment such as amplifiers stacked on top of it. There are small vents on the sides of the unit, and should be kept clear. The unit 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 8x16 matrix switch will include the following items:

- 1 – Matrix Switch Unit
- 1 – AC Power cord
- 1 – 6' USB cable
- 1- 6' RS-232 cable
- 1 – User's Guide
- 1 – Serial Protocol Guide

1 – CD-ROM driver disc

1 – Pair of rack mount ears with screws

## ***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 matrix switch.

## ***Inputs***

The Hawthorne has 12sets of YPbPr component video inputs. Connecting source devices to the matrix switch can be done in any order. All inputs have the same performance, so organize them as you see fit.

## ***Pass-Through***

The Hawthorne has 12sets of YPbPr component video pass-through connections. These are a buffered copy of the corresponding input number. They are powered and working regardless of the state of the matrix switch, or even if the matrix switch is in standby mode.

When stacking multiple Hawthornes, typically you will want the first unit on the bottom of the stack. Using 1 foot cables, connect each of the pass through outputs to the corresponding input number on the unit above.

## ***Outputs***

An output zone is made up of one Cat5 cable from the Hawthorne. The Hornet also has audio capabilities when used with the Concord matrix switch, however with the Hawthorne these features are not utilized.

## ***Output Cabling***

In general, we have been referring to the cables as Cat5. The minimum requirement for successful operation of the Hawthorne

system is Cat5, but Cat5e is preferred. Cat6 may be used as long as it is constructed with 24 AWG wires. Most Cat6 is 24 AWG, but a 22 AWG variety does exist, and should not be used for this system.

Terminating the ends of the Cat5 cable can be done with either TIA/EIA-568-B or A standard, so long as both ends are terminated using the same standard. Below is the color codes for 568-B.

Although in some case of Ethernet where polarity of the pairs can be swapped, with the Hawthorne system each pair must be in the correct order and polarity. A good practice is to use a cable tester on each cable after termination to verify pin order before using the cable.

Pin	Color
1	White / Orange
2	Orange
3	White / Green
4	Blue
5	White / Blue
6	Green
7	White / Brown
8	Brown

**Table 1: TIA/EIA-568-B wiring**

## ***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 PCs 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 matrix switch. When stacking Hawthornes, each unit will be controlled as an independent 12x8 matrix.

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 matrix switch, connect the USB cable to the PC’s USB port (flat end), and the other end (square end) to the 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 matrix switch. The power supply will detect whatever

voltage is supplied (from 90V to 240V AC, 50-60Hz), and adjust accordingly.

## ***Rack Mounting***

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

## **Overview**

The Hawthorne is designed to be controlled from a third party control system, either via RS232 or IR. The buttons on the front panel allow the control of power and status feedback, however matrix control must be performed from external sources.

## **Using the front panel**

The Hawthorne 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 Hawthorne 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.

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

Controlling the matrix switch using IR follows the basic sequence of:

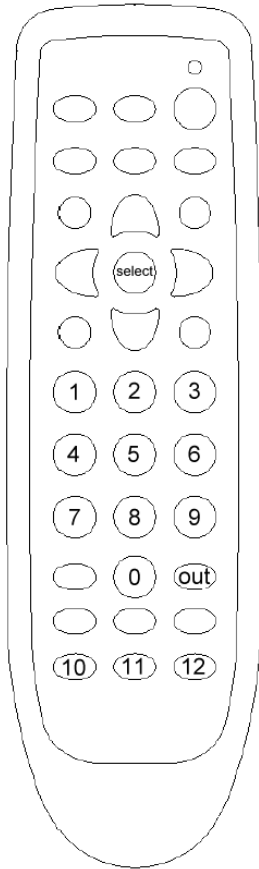
**#, Out, #** – Standard sequence for switching. The Hawthorne has been optimized for a short command sequence using only 3 IR codes.

The NeoPro IR reference remote does not label numeric buttons 10-12. Refer to Figure 1 for the location of those buttons.

## **Party Mode Shortcut:**

To route a single input program to all outputs, also known as party mode, use the "Select" key followed by the desired input:

Select, # Sends input # to all outputs





**Figure 1 - IR Remote numeric button locations**

## Last Command Feedback

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The normal display shown on the front panel display can be changed to the command feedback screen. This screen will display the last received command, and is very helpful during control system programming and debugging.

To access this screen, use the  (left arrow) or  (right arrow) buttons either on the front panel or the IR remote until the Last Command screen is displayed.



You may leave the display set to the Last Command screen to assist you in programming. This will display the last command received from IR, RS232 or USB interfaces.

## Setup Menu

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The user setup menu is accessible with an IR remote, as well as 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 “” on the remote control.

Use the  (left arrow) and  (right arrow) 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” (default) will force the unit to turn on, and the previous switch state will be restored. Selecting “Stby” will cause the unit to enter standby mode.

### ***Setup:Touchpanel***

This option will disable the front panel buttons. The default in 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 Hawthorne matrix switch does not require any regular maintenance besides keeping it clean.

Never use harsh cleaners or solvents on the 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 panel with the moist towel.

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

# 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
Matrix output video bandwidth (-3dB)	140 MHz
Pass-through buffer outputs video bandwidth (-3dB)	400 MHz
Crosstalk	Below -80dB
Video modes	480i, 480p, 540i, 540p, 576i, 576p, 720p, 1080i, 1080p
Video vertical rates	24, 25, 29.97, 30, 50, 59.97, 60

## **Power**

<b>Input voltage</b>	90-240V AC 50-60Hz autosensing
Input power (with 8 receivers)	37W

## **Physical**

<b>Dimensions</b>	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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