

# IN3654/ IN3656

4-In 1-Out / 6-In 1-Out RGBHV Switchers  
with Serial Control



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The **IN3654** and **IN3656** are high performance RGBHV switchers. These units allow users to select between four or six video sources, routing the selected source to an attached video output device such as a data monitor or projector. Both models are identical in function and design, with the only difference being the number of inputs:

The **IN3654** is a 4-Input, 1-Output RGBHV switcher. The **IN3656** is a 6-Input, 1-Output RGBHV switcher.

**Wide Compatibility** - The **IN3654 / IN3656** switchers route analog video signals in the RGBHV format. These units may also be used with many other signal formats including RGBS, RGsB, RsGsBs, monochrome high resolution video, as well as NTSC / PAL / SECAM sources in the component, Y/C, or composite video formats.

**Three Switching Modes** - In **Manual Mode**, users select the desired input by pressing a front panel button or remotely via serial or contact closure control. In **Autoswitch Mode**, the switcher automatically selects the active input. If more than one input is active, the highest numbered input has priority. Autoswitch mode is ideal for automatic operation in installations with multiple interfaces or wall plates. In **Scan Mode**, the switcher scans through selected inputs, displaying each input for a user defined period of time (adjustable from 2.5 seconds to 37.5 seconds).

**Front Panel Control** - Users select the desired input by pressing a front panel button. Each time a button is pressed, the switcher selects the appropriate input and an LED lights to indicate the currently selected input. All non-selected inputs are terminated into 75 ohms.

**Advanced Serial Control Capability** makes it easy to integrate the **IN3654 / IN3656** switchers into a variety of simple and complex audiovisual systems. RS-232 serial commands from a third-party control system or computer serial port can be used select inputs and to configure all switcher settings.

The **I/O Port** allows for remote input selection by any device which is capable of providing momentary or latching contact closures. The I/O port also includes a +5V power supply and tally outputs to provide feedback to a control system. The **IN3590** is an optional hardwired remote control that connects to the I/O port, providing remote channel selection from up to 25' away.

**Stereo Audio-Follow-Video** capability may be added by using an optional **IN3546R** stereo audio switcher in conjunction with the **IN3654 / IN3656**. The **IN3546R** attaches to the I/O port, receiving both power and switching commands from the attached RGBHV switcher.

## FEATURES

- 300 MHz Video Bandwidth
- Three Switching Modes: Manual, Autoswitch, Scan
- Remote Channel Selection via RS-232 Serial Commands or Contact Closures
- Vertical Interval Switching for Glitch-Free Transitions When Switching Between Synchronous Video Sources
- RGB Delay - Routes Sync Signals to Output Before RGB Signals
- Expandable Design - 2 or More Switchers Work Together to Create a Large Switching System
- BNC Input and Output Connectors
- Internal Universal Power Supply
- Rack Mountable in 1U Space With Optional Rack Ears

## SPECIFICATIONS

### INPUTS:

Connectors:

Compatible Signals:

Compatible Formats:

**IN3654** - Four Sets of 5 BNC female for RGBHV

**IN3656** - Six Sets of 5 BNC female for RGBHV

Video: 0.7 Vp-p nom, 1.5 Vp-p max.

Sync: TTL, 5 Vp-p max.

Non-selected channels are terminated into 75 ohms

RGBHV, RGBS, RGsB, RsGsBs, Component, Y/C,

Composite, Monochrome with Sync, Audio

### OUTPUT:

Connectors:

Bandwidth:

Gain:

Isolation:

Switching Time:

5 BNC female for RGBHV

300 MHz @ -3dB with 0.7 Vp-p input signal

1.0 (unity)

60 dB @ 50 MHz, 55 dB @ 75 MHz, 50 dB @ 100 MHz

3.0 mSec typical

### GENERAL:

RS-232 Control:

I/O (Contact Closure) Port:

Power Supply:

Power Consumption:

Shipping Weight:

Dimensions:

Optional Accessories:

5-Pin Phoenix Connector, 1200 to 9600 Baud, N, 8, 1

15-Pin D female

Internal Switch Mode: 90-260 VAC; 47-63 Hz

10 watts

10 lbs. / 5 Kg      Product Weight: 5.7 lbs. / 2.6 Kg

1.75" x 17" x 12.2" / 4.4cm x 43.2cm x 31.0cm

**IN3590** Wired Remote, **IN3546R** Stereo Audio Switcher, **IN9123** Rack Ears

Regulatory Approvals:

UL1950, CAN/CSA-22.2 No.950, Third Edition

CE: EN55022 (1987), EN50081-1 (1991),

EN50082-1 (1992 and 1994), EN0950-92

The **Blank Button** temporarily disconnects the current input when it is activated. When the blank button is pressed again (deactivated), the switcher returns to the last selected input. The blank button has two modes of operation. In the **Default mode**, the Blank button disconnects all signal components (RGBHV) from the output. In the **Sync Pass mode**, the Blank button disconnects only the RGB signals from the output while the sync signal(s) continue uninterrupted. This lets the display device maintain sync lock while a black image is displayed. When the blank button is pressed again, the RGB signal components are reconnected to the output and the display device instantly displays the input signal.

The **RGB Delay** feature may be engaged to provide a more attractive on-screen appearance when switching between various computer video sources. When switching between high resolution video sources, data display devices normally require some period of time to identify and lock up to a new source. During this adjustment period the screen may show flashing, resizing and other strange effects. With RGB Delay, each time a new input is selected the switcher immediately routes the sync signal(s) for the new input to the output, followed by the RGB signals at a later time. This allows the display device time to lock up to the new signal before any image is displayed (during the delay time the display shows black). When the RGB components are finally connected to the output, the display device has a solid lock on the new signal and immediately displays a stable image. The RGB delay time is adjustable from 0.5 seconds to 7.5 seconds in 0.5 second increments and can be set using serial commands or by pressing specific front panel buttons at power on.

**Vertical Interval Switching** capability provides glitch-free switches when used with synchronous video sources. The vertical interval switching mode can be engaged using an RS-232 serial command or by pressing specific buttons at power on. The **IN3654 / IN3656** switchers get vertical timing information from the currently selected input and delay the actual switch so that it occurs during the vertical blanking interval. Vertical interval switching mode is compatible with synchronous video signals in the composite, s-video, component, RGsB, RGBS, and RGBHV formats. To ensure proper operation, the signal component containing vertical sync information must be connected to the V/C Sync connector on each input.

**Expandable Design** - Two or more **IN3654 / IN3656** switchers may be configured to act together as a single large switching system with 11, 16, 21, 26, 31 or 36 inputs. In order to create an expanded switching system, one unit is set as the master switcher and all other switchers are set as slave switchers with serial control cables looping between all switchers. The video output signal from slave switcher #1 is connected to Input 1 on the master switcher, slave #2 output to Input 2 on the master, and so on. This expansion design provides maximum video bandwidth performance, since any signal travels through only one or two switchers.

**Rack Mountable Design** - The 1U high, EIA 19" standard rack width form factor of the **IN3654 / IN3656** switchers simplifies switcher placement for portable systems and permanent installations. The switcher can be placed under a computer monitor, on a podium shelf, stacked with other audiovisual equipment or easily rack mounted in a 1U rack space using the optional **IN9123** rack ears. The 1U height and rack width size also saves space, time and expense since the switcher requires less vertical rack space than most other RGBHV switchers and doesn't need the rack shelves or blank panels required to install half-rack width switchers.

## ACCESSORIES INCLUDED

- IN9230** Power Cord, IEC Female to Male Edison Plug, 6' Long (USA Only)  
Operation Manual for IN3654 / IN3656

## OPTIONAL ACCESSORIES

- IN3546R** 6-Input, 1-Output Stereo Audio Switcher - Adds Stereo Audio-Follow-Video Switching Capability to IN3500 / IN3600 Series Switchers. Includes IN9112 Control / Power Cable which connects between IN3546R and IN3500 / IN3600 Series I/O Port.
- IN9133** Control / Power Cable for IN3546R with Loop-Through Connector. Allows IN3500 / IN3600 Series switcher to be controlled via contact closures through I/O port while IN3546R is connected.
- IN3590** Hardwired Remote Control with 25' cable. Connects to I/O port on IN3500 Series / IN3600 Series switchers and provides remote input selection up to 25' away.
- IN9123** 1 Pair Rack Ears - Connects to Sides of IN3600 Series Switcher for mounting in 19" Equipment Rack

## INPUT / OUTPUT CABLES AND ADAPTERS

<u>RGB Input / Output Cables</u>	<b>3-Conductor</b>	<b>4-Conductor</b>	<b>5-Conductor</b>
Standard Resolution	N/A	IN7000-4	IN7000-5
Standard Resolution, Plenum	N/A	IN7000P-4	IN7000P-5
High Resolution	IN7100-3	IN7100-4	IN7100-5
Ultra High Resolution	IN7200-3	IN7200-4	IN7200-5

All cable grades are available in lengths from 3' to 250' pre-terminated with high quality BNC connectors or as bulk cable.

<u>Input / Output Adapter Cables</u>	<b>6' Long</b>	<b>12' Long</b>	<b>25' Long</b>	<b>50' Long</b>
15-Pin HD Male to 5-BNC	IN9047	IN9045	IN9045-L25	IN9045-L50
15-Pin HD Female to 5-BNC	IN9048	IN9046	IN9046-L25	IN9046-L50
13W3 Male (SUN) to 4-BNC - 61 KHz emul.	IN9072	IN9072-L12	IN9072-L25	IN9072-L50
13W3 Female (SUN) to 4-BNC - 61 KHz emul.	IN9073	IN9073-L12	IN9073-L25	IN9073-L50

