

Multi-Format Video Scan Converter

Converts PC and HDTV to interlaced NTSC/PAL
and Component output.



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This equipment generates, uses, and can radiate radio-frequency energy, and if not installed and used properly, that is, in strict accordance with the manufacturer's instructions, may cause interference to radio communication. It has been tested and found to comply with the limits for a Class A computing device in accordance with the specifications in Subpart J of Part 15 of FCC rules, which are designed to provide reasonable protection against such interference when the equipment is operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference, in which case the user at his own expense will be required to take whatever measures may be necessary to correct the interference.

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Normas Oficiales Mexicanas (NOM)
Electrical Safety Statement
INSTRUCCIONES DE SEGURIDAD

1. Todas las instrucciones de seguridad y operación deberán ser leídas antes de que el aparato eléctrico sea operado.
2. Las instrucciones de seguridad y operación deberán ser guardadas para referencia futura.
3. Todas las advertencias en el aparato eléctrico y en sus instrucciones de operación deben ser respetadas.
4. Todas las instrucciones de operación y uso deben ser seguidas.
5. El aparato eléctrico no deberá ser usado cerca del agua—por ejemplo, cerca de la tina de baño, lavabo, sótano mojado o cerca de una alberca, etc.
6. El aparato eléctrico debe ser usado únicamente con carritos o pedestales que sean recomendados por el fabricante.
7. El aparato eléctrico debe ser montado a la pared o al techo sólo como sea recomendado por el fabricante.
8. Servicio—El usuario no debe intentar dar servicio al equipo eléctrico más allá lo descrito en las instrucciones de operación. Todo otro servicio deberá ser referido a personal de servicio calificado.
9. El aparato eléctrico debe ser situado de tal manera que su posición no interfiera su uso. La colocación del aparato eléctrico sobre una cama, sofá, alfombra o superficie similar puede bloquea la ventilación, no se debe colocar en libreros o gabinetes que impidan el flujo de aire por los orificios de ventilación.
10. El equipo eléctrico deber ser situado fuera del alcance de fuentes de calor como radiadores, registros de calor, estufas u otros aparatos (incluyendo amplificadores) que producen calor.
11. El aparato eléctrico deberá ser conectado a una fuente de poder sólo del tipo descrito en el instructivo de operación, o como se indique en el aparato.

12. Precaución debe ser tomada de tal manera que la tierra física y la polarización del equipo no sea eliminada.
13. Los cables de la fuente de poder deben ser guiados de tal manera que no sean pisados ni pellizcados por objetos colocados sobre o contra ellos, poniendo particular atención a los contactos y receptáculos donde salen del aparato.
14. El equipo eléctrico debe ser limpiado únicamente de acuerdo a las recomendaciones del fabricante.
15. En caso de existir, una antena externa deberá ser localizada lejos de las líneas de energía.
16. El cable de corriente deberá ser desconectado del cuando el equipo no sea usado por un largo periodo de tiempo.
17. Cuidado debe ser tomado de tal manera que objetos líquidos no sean derramados sobre la cubierta u orificios de ventilación.
18. Servicio por personal calificado deberá ser provisto cuando:
 - A: El cable de poder o el contacto ha sido dañado; u
 - B: Objetos han caído o líquido ha sido derramado dentro del aparato; o
 - C: El aparato ha sido expuesto a la lluvia; o
 - D: El aparato parece no operar normalmente o muestra un cambio en su desempeño; o
 - E: El aparato ha sido tirado o su cubierta ha sido dañada.

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1. Specifications

Output System: NTSC or PAL interlaced video, YCbCr Component

Resolution: PC: VGA @ 60 Hz up to 140 Hz refresh rate,

SVGA @ 60 Hz up to 120 Hz refresh rate,

XGA @ 60 Hz up to 85 Hz refresh rate,

SXGA @ 60 Hz refresh rate,

UXGA @ 60 Hz refresh rate;

HDTV: 480i & 480p @ 60 Hz,

576i & 576p @ 50 Hz,

720p @ 50 & 60 Hz,

1080i @48, 50 & 60 Hz

User Controls: (7) front-panel buttons: Power, Left arrow, Right arrow,
Down arrow, Up arrow, Aspect, Overscan;

(1) Back-panel switch: Power On/Off

Connectors: Input: (1) HD15, (3) RCA (YPbPr or YCbCr), (1) DB9 RS-232;

Output: (1) RCA, (1) 4-pin mini DIN, (3) RCA (YCbCr), (1) HD15, (3) RCA
(YPbPr/YCbCr)

Indicators: LEDs: (1) Standby/On

Power: 5-VDC, 2-A, center positive

Size: 2"H x 6.1"W x 8"D (5 x 15.5 x 20.4 cm)

Weight: 2.2 lb. (1 kg)

Multi-Format Video Scan Converter

2. Overview

2.1 Introduction

The VSC-VGA-TV is a high-performance, Multi-Format Video Scan Converter. It converts not only PC but also HDTV images to interlaced NTSC/PAL and component output. Use it for videoconferencing, home theaters, business presentations, lecturing rooms, or viewing PC/HDTV images on TV.

2.2 Features

- Back-panel switch selects PC or HDTV input, NTSC or PAL, and Component output.
- Supports high-resolution PC input up to UXGA (1600 x 1200 @ 60 Hz) and HDTV input up to 1080i @ 60 Hz.
- Select output video format between Composite/S-video, and Component (YCbCr).
- Supports a high-input refresh rate up to 140 Hz (VGA).
- Loops through PC and HDTV input signals via additional HD15 and 3 RCA connectors.
- Provides adjustable image scaling: Pan, Position, and Zoom.
- Advanced 2D flicker filter ensures a flicker-free picture.
- Aspect adjustment for wide-screen HDTV source.
- Adjustable contrast, brightness, color, and sharpness.
- Provides overscan, freeze, test pattern, and magnifier.
- Adjust and control via an RS-232 interface.
- Has remote control and OSD operation display.

2.3 What's Included

Your package should include the following items. If anything is missing or damaged, contact Black Box Technical Support at 724-746-5500 or info@blackbox.com.

- Multi-Format Video Scan Converter
- (1) 3-ft. (0.9-m) Composite video cable
- (1) 3-ft. (0.9-m) S-video cable
- (1) 3-ft. (0.9-m) Component video cable

- (1) 3-ft. (0.9-m) VGA cable
- RS-232 Control Software
- (1) IR remote control (includes batteries)
- (1) power supply
- This user's manual

2.4 Hardware Description

2.4.1 Front Panel

Figure 2-1 shows the front panel of the converter. Table 2-1 describes its components.

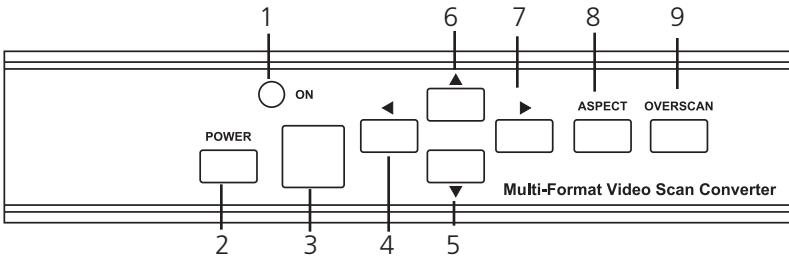


Figure 2-1. Front panel.

Table 2-1. Front panel components.

Number	Component	Description
1	Standby/On indicator	This indicator lights red when it is in standby mode. It lights green when it is in ON mode.
2	Power button	Push this button to turn power on or to standby.
3	Remote control sensor	Senses signal from the remote control.
4	Left arrow button	Push the button to adjust the picture leftward under Position, Pan, or Zoom mode.
5	Down arrow button	Push the button to adjust the picture downward under Position, Pan, or Zoom mode.

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Table 2-1 (Continued). Front panel components.

Number	Component	Description
6	Up arrow button	Push the button to adjust the picture upward under Position, Pan, or Zoom mode.
7	Right arrow button	Push the button to adjust the picture rightward under Position, Pan, or Zoom mode.
8	Aspect button	Push the button to select the screen aspect: Full, Pan and Scan, or Letterbox.
9	Overscan button	Push the button to overscan/underscan the picture.

2.4.2 Back Panel

Figure 2-2 shows the back panel of the converter. Table 2-2 describes its components.

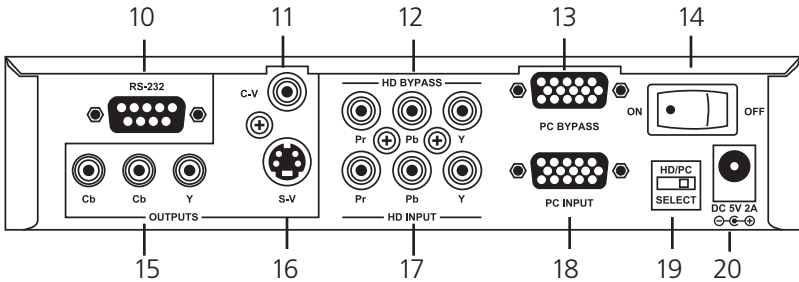


Figure 2-2. Back panel.

Table 2-2. Back panel components.

Number	Component	Description
10	DB9 connector	RS-232
11	RCA connector	Composite video output
12	(3) RCA connectors	HDTV (YPbPr) loop-through output
13	HD15 connector	PC loop-through output
14	Rocker switch	Selects power ON/OFF

Table 2-2 (continued). Back panel components.

Number	Component	Description
15	(3) RCA connectors	YCbCr Component output connector
16	4-pin mini DIN connector	S-Video output
17	(3) RCA connectors	HDTV (YPbPr) input
18	HD15 connector	PC input
19	Slide switch	Selects input source resolution type
20	Barrel	5-VDC, 2-A power supply

NOTE: You can select output video format between Composite/S-Video and Component (YCbCr). Press the output key on the IR remote to select the output format.

3. Remote Control Functions

Figure 3-1 shows the remote control. Table 3-1 describes its components.

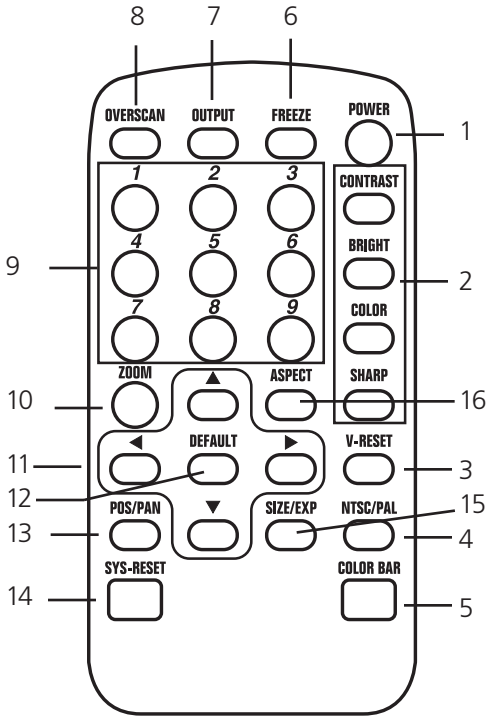


Figure 3-1. Remote Control.

Table 3-1. Remote Control Components.

Number	Component	Description
1	Power	Turn remote control ON/OFF
2	Video setting adjustments	Adjust picture contrast, brightness, color, and sharpness
3	V-Reset button	Press the button to reset the picture adjustment to factory default value
4	NTSC/PAL	Press the button to select NTSC or PAL as video output

Table 3-1 (Continued). Remote Control Components.

Number	Component	Description
5	Color bar pattern ON/OFF	Press the button to show color bar pattern on the screen. Press again to close the color bar.
6	Image freeze ON/OFF	Press the button to freeze an image. Press again to un-freeze the image.
7	Output format	Press the button to select the desired output format
8	Under/overscan	Press the button to choose an underscan image or an overscan image.
9	9-blocks selection (Zoom)	Under zoom mode, press one of the buttons to select its corresponding sub-area, which is $\frac{1}{9}$ of the full screen
10	Zoom ON/OFF	Press the button to zoom in a picture. Press again to zoom out.
11	Horizontal/vertical adjust arrows	Adjust the size or position of an image when it is under Zoom, Position/Pan, or Size/EXP mode.
12	Default	Press the button to revert the following parameters to factory preset value: Zoom, Position, Size, Picture Adjust
13	Pos/Pan	When a picture is in underscan mode, press the button to adjust the position. When a picture is in overscan mode, press the button to adjust the pan.
14	System Reset	Press the button to revert all system parameters back to factory preset value. The system parameters default settings are: Overscan, NTSC output, full aspect, video settings reset, position/pan/size/expand reset

Table 3-1 (Continued). Remote Control Components.

Number	Component	Description
15	Size/Exp	When a picture is in underscan mode, press the button to do size adjustment. When a picture is in overscan mode, press the button to do expand adjustment.
16	Aspect	Press the button to switch between full, pan & scan, or letterbox.

4. RS-232 Software Operation

System requirements: PC OS: Windows 98/Me/2000/XP/7

4.1 Software Installation

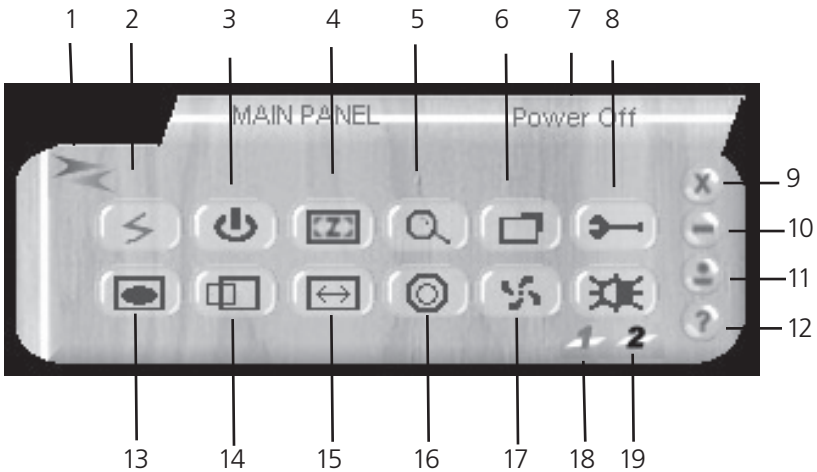
1. Place the installation CD in the CD-ROM drive.
2. Run setup.exe on the installation CD.
3. OS might need to update some files.

Restart the PC. After the PC is ready, run setup. exe again.

4. Click taskbar menu (START)->(Programs)->(Scan Converter) to run software.

4.2 Main Panel

Figure 4-1 shows the main panel screen and lists its components.

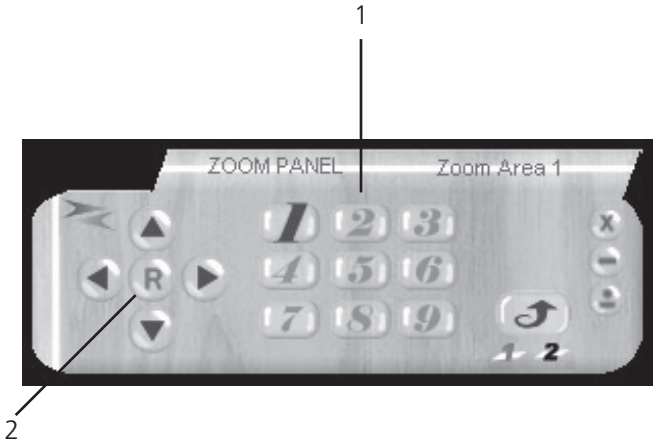


No.	Component	No.	Component	No.	Component
1	Connection status	8	Option	14	Pan/Position
2	Power	9	Close	15	Expand/Size
3	System reset	10	Minimize	16	Output format
4	Zoom	11	System tray	17	Screen frame
5	Magnifier	12	About	18	Video settings
6	Under/overscan	13	Aspect	19	RS-232 COM port
7	Prompt				

Figure 4-1. Main panel screen.

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1. Connection Status: Gray icon means the Multi-Format Video Scan Converter is disconnected. Colored icon means the VSC-VGA-TV unit is connected.
2. Power: Power on/off.
3. System reset: Reset VSC-VGA-TV settings to the default value.
4. Zoom: Turn zoom on.



Number	Component
1	Zoom area: Zoom area selection: 1–9
2	Reset: Reset to zoom area 1

Figure 4-2. Zoom area on the screen.

5. Magnifier: Turn the magnifier on. Only for PC-INPUT.

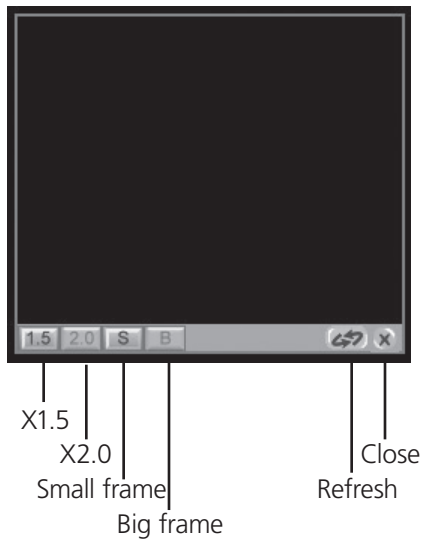


Figure 4-3. Magnifier screen.

- 6. Under/overscan: TV overscan adjustments are “pan” and “expand”; underscan adjustments are “position” and “size.”
- 7. Prompt: Operation message.
- 8. Option: TV system options, including panel skin, test pattern, and window on top.

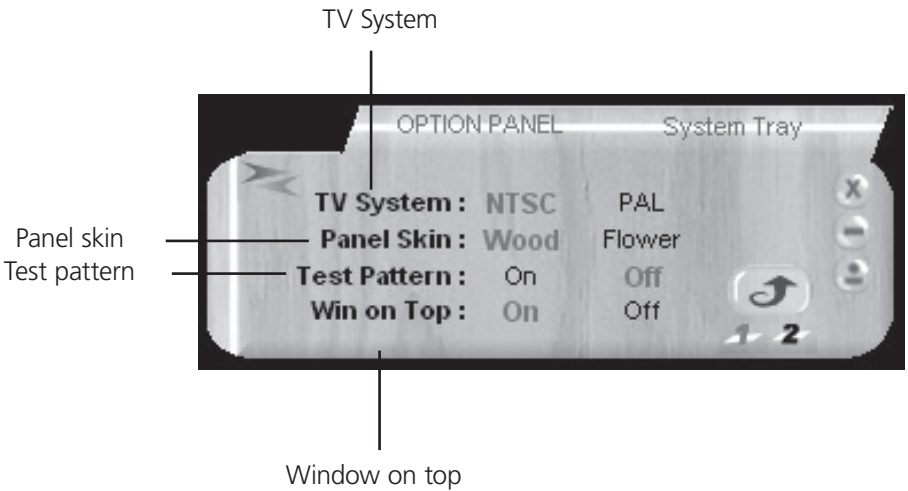


Figure 4-4. TV system options.

- 9. Close: Terminate application software.
- 10. Minimize: Shrink the application software to the window taskbar.
- 11. System tray: Shrink the application software to the system tray. Click the icon and return to the normal window.



Figure 4-5. System tray.

12. About: Display the software version.

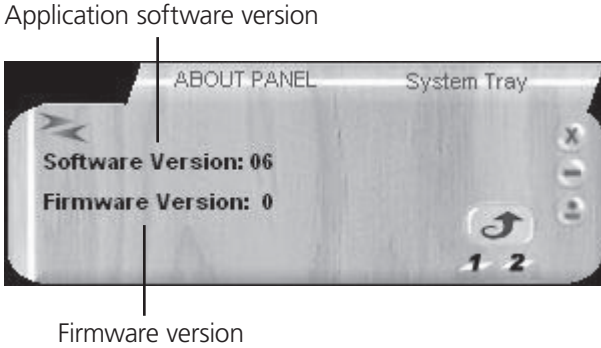
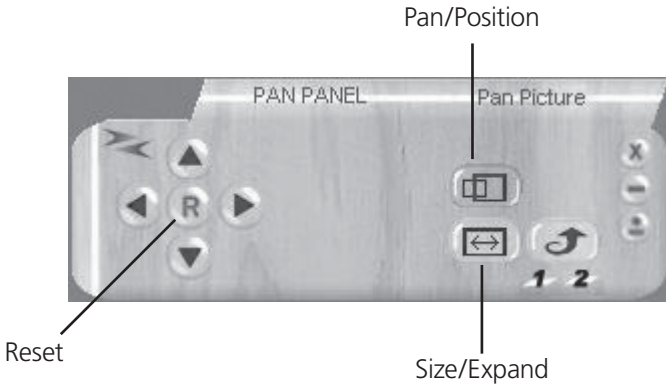


Figure 4-6. Software version: application software version;
Firmware version: Multi-Format Video Scan Converter firmware version.

13. Aspect: Select the screen aspect: Full>Pan & Scan>Letterbox.

14/15. Pan/Position and Size/Expand adjustments.



Pan/Position Adjustments: Position for underscan. Pan adjustment for overscan.
Size/Expand adjustments: Size for underscan. Expand for overscan.
Reset: Reset settings to default values.

Figure 4-7. Adjustments screen.

16. Output format: Select output format for C-V/S-V, or YCbCr.
17. Screen freeze: Still screen.
18. Video settings: Brightness/Contrast/Color/Sharpness adjustments.



Figure 4-8. Reset: Reset settings to default values.

19. RS-232 Communication Port: COM1: or COM2:.

5. Connection and Installation

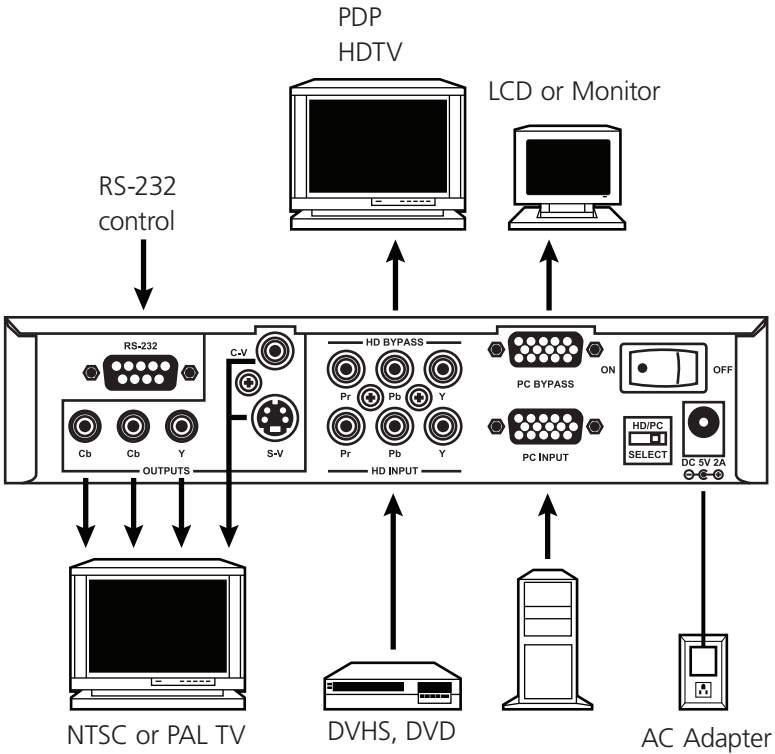
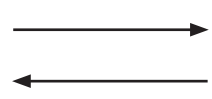


Figure 5-1. Typical application.

Table 5-1 shows the connection between the Multi-Format VideoScan Converter and remote controller with RS-232 modem cable.

Table 5-1. Modem cable pin definitions.

VSC-VGA-TV		Remote Controller	
Pin	Definition	Pin	Definition
1	NC	1	NC
2	TxD	2	RxD
3	RxD	3	TxD
4	NC	4	NC
5	GND	5	GND
6	NC	6	NC
7	NC	7	NC
8	NC	8	NC
		9	NC



- RS-232 transmission format:

Baud rate: 9600 bps

Data bits: 8 bits

Parity: None

Stop bit: 1 bit

- RS-232 transmission Command/Response codes:

- Command/Response codes are the combination of 6 bytes.
- Every command's transmission, scan converter responds the equal codes.
- Only PWR???, VER??? codes are available while unit is on Power-Off status.
- Some functions need time to process.

Wait until you receive the for "RDY???" code, then you can input the next command.

Table 5-2. Code descriptions.

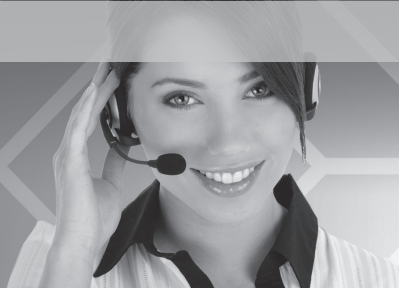
Code	Ready State	Comment	Description
PWR000 PWR001 PWR999	RDY005	POWER	power off
			power on
			inquire status
NPO000 NPO001 NPO999		N/P output	NTSC output
			PAL output
			inquire status
FRZ000 FRZ001 FRZ999		FREEZE	freeze image off
			freeze image on
			inquire status
SCN000 SCN001 SCN999		SCAN	underscan
			overscan
			inquire status
ZOM000 ZOM001 ZOM999	RDY006 RDY006	ZOOM	zoom off
			zoom on
			inquire status
MVU000 MVU001		Move UP	move UP button release
			move UP button press
MVD000 MVD001		Move DOWN	move DOWN button release
			move DOWN button press
MVL000 MVL001		Move LEFT	move LEFT button release
			move LEFT button press
MVR000 MVR001		Move RIGHT	move RIGHT button release
			move RIGHT button press
SZU000 SZU001		Size UP	shorter height image button release
			shorter height image button press
SZD000 SZD001		Size DOWN	higher height image button release
			higher height image button press

Table 5-2 (continued). Codes descriptions.

Code	Ready State	Comment	Description
SZL000		Size LEFT	narrower width image button release
SZL001			narrower width image button release
SZR000		Size RIGHT	wider width image button release
SZL001			wider width image button release
RST000	RDY000	RESET	system reset
RST001			reset image position
RST002			reset image size
RST003	RDY003		reset video settings
PAT000	RDY007	PATTERN	test pattern off
PAT001	RDY007		test pattern on
PAT999			inquire status
FMT000		Output Format	CV/SV
FMT001			YsUV
FMT999			inquire status
ARA001–ARA009		Zoom AREA	zoom area 1–area 9
ARA999			inquire status
ASP000		ASPECT	aspect is full screen
ASP001			aspect is pan&scan
ASP002			aspect is letterbox
ASP999			inquire status
CON001–CON063		CONTRAST	range = 0–63
CON999			inquire status
BRI000–BRI255		BRIGHTNESS	range = 0–255
BRI999			inquire status
SAT000–SAT063		SATURATION	range = 0–63
			inquire status
FLK000–FLK021		FLICKER	range = 0–21
FLK999			inquire status
VER???		VERSION	unit firmware version response
VER999			inquire unit firmware version

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