

MULTI-FORMAT MATRIX SWITCHER

XS-1HD

Reference Manual

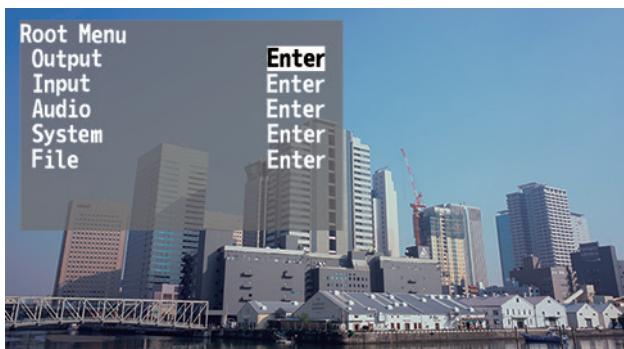
Contents

Menu List	2
Output Menu	2
In Matrix Mode	2
In Split Mode or Switcher Mode	3
Input Menu	4
Composition Menu	5
In Split Mode	5
In Switcher Mode	6
Audio Menu	6
System Menu	7
File Menu	8
RS-232 Command Reference	9
REMOTE Connector (RS-232) Specifications	9
Command Summary	9
Received Commands (Controller → XS-1HD)	10
Sent Commands (XS-1HD → Controller)	10

Menu List

When you press the [MENU] button, the menu appears on the monitor that's connected to the VIDEO OUTPUT 4 connector of the XS-1HD.

- * The XS-1HD's video output provides three screen modes: matrix, split, and switcher (p. 7). The menu that appears depends on the mode.
- * The default value is printed in bold characters.



MEMO

- If the menu extends across multiple pages, you can move in units of pages by turning the [CURSOR] knob while pressing it.
- If the value area indicates "Enter," you can press the [ENTER] button to proceed to a lower level. Alternatively, pressing the [ENTER] button executes an operation.
- By turning the [VALUE] knob while pressing it, you can change the value more greatly.
- If you hold down the [ENTER] button and press the [VALUE] knob, the selected menu item returns to the default setting. If you hold down the [ENTER] button and long-press the [VALUE] knob, all menu items in the same level return to the default setting.

Output Menu

In Matrix Mode

Menu item	Value	Explanation
Format	720p, 1080i, 1080p , 1024 x 768, 1280 x 720, 1280 x 800, 1366 x 768, 1280 x 1024, 1400 x 1050, 1600 x 1200, 1920 x 1080, 1920 x 1200	Specifies the output format.
Scaling & Color Correction	Specifies scaling settings and color correction for each output.	
Output 1-4	(Enter)	Displays a menu for making detailed settings for Output 1-4 (see below).

Output 1-4 detailed settings menu

Menu item	Value	Explanation
Scaling	Use the following settings to specify the scaling.	
Zoom	10.0- 100.0 -1000.0% (*1)	Adjusts the zoom ratio.
Size H	-1920- 0 - +1920 (*1)	Adjusts the size in the horizontal direction.
Size V	-1200- 0 - +1200 (*1)	Adjusts the size in the vertical direction.
Position H	-19200- 0 - +19200 (*1)	Adjusts the displayed position in the horizontal direction.
Position V	-12000- 0 - +12000 (*1)	Adjusts the displayed position in the vertical direction.
Color Correction	Use the following settings to specify color correction.	
Brightness	-64- 0 - +64	Adjusts the brightness.
Saturation	-64- 0 - +64	Adjusts the saturation.
Contrast	-64- 0 - +64	Adjusts the contrast.
Red	-64- 0 - +64	Adjusts the red level.
Green	-64- 0 - +64	Adjusts the green level.
Blue	-64- 0 - +64	Adjusts the blue level.
Color Space	RGB 0-255 , RGB 16-235, YCC	Specifies the color space.
Signal Type	HDMI , DVI-D	Specifies the HDMI output mode.

(*1) The range of this value varies according to conditions such as the input/output format. The values listed above are the minimum and maximum values.

In Split Mode or Switcher Mode

Menu item	Value	Explanation
Format	720p, 1080i, 1080p , 1024 x 768, 1280 x 720, 1280 x 800, 1366 x 768, 1280 x 1024, 1400 x 1050, 1600 x 1200, 1920 x 1080, 1920 x 1200	Specifies the output format. * In switcher mode, the output format of the VIDEO OUTPUT 4 connector is fixed at 1080p/60 Hz. Also, the frame rate of the video that is output from the VIDEO OUTPUT 4 connector will decrease to about 5 fps.
Scaling	(Enter)	Displays a menu for making detailed scaling settings (see below).
Color Correction	Specifies color correction for each output.	
Output 1–4	(Enter)	Displays a menu for making detailed settings for Output 1–4 (see below).

Scaling detailed settings menu

Menu item	Value	Explanation
Zoom	10.0– 100.0 –1000.0% (*2)	Adjusts the zoom ratio.
Size H	-1920– 0 – +1920 (*2)	Adjusts the size in the horizontal direction.
Size V	-1200– 0 – +1200 (*2)	Adjusts the size in the vertical direction.
Position H	-19200– 0 – +19200 (*2)	Adjusts the displayed position in the horizontal direction.
Position V	-12000– 0 – +12000 (*2)	Adjusts the displayed position in the vertical direction.

(*2) The range of this value varies according to conditions such as the input/output format. The values listed above are the minimum and maximum values.

Output 1–4 detailed settings menu

Menu item	Value	Explanation
Color Correction	Use the following settings to specify color correction.	
Brightness	-64– 0 – +64	Adjusts the brightness.
Saturation	-64– 0 – +64	Adjusts the saturation.
Contrast	-64– 0 – +64	Adjusts the contrast.
Red	-64– 0 – +64	Adjusts the red level.
Green	-64– 0 – +64	Adjusts the green level.
Blue	-64– 0 – +64	Adjusts the blue level.
Color Space	RGB 0-255 , RGB 16-235, YCC	Specifies the color space.
Signal Type	HDMI , DVI-D	Specifies the HDMI output mode.

Input Menu

Menu item	Value	Explanation
Input Status	(Enter)	Indicates the video format that is being input to each VIDEO INPUT connector, and the presence or absence of an HDCP signal.
Input 1–4	(Enter)	Displays a menu for making detailed settings for Input 1–4 (see below).
Background Color	(Enter)	Displays the background color detailed settings menu (see below).

Input 1–4 detailed settings menu

Menu item	Value	Explanation
Scaling	Use the following settings to specify the scaling.	
Zoom	10.0– 100.0 –1000.0% (*3)	Adjusts the zoom ratio.
Type	Full , Letterbox, Crop, Dot by Dot, Manual	Specifies the scaling type. Full: Regardless of the aspect ratio of the input video, always show it expanded to the full screen. Letterbox: Preserving the aspect ratio, expand the input video to match the horizontal screen resolution. The portion of the video that falls outside the screen above and below is cut off. Crop: Preserving the aspect ratio, expand the input video to match the vertical screen resolution. The portion of the video that falls outside the screen at left and right is cut off. Dot by Dot: No scaling is performed. Manual: Scale according to the “Manual Size H” and “Manual Size V” settings below.
Manual Size H	-1920– 0 – +1920 (*3) (*4)	Adjusts the size in the horizontal direction.
Manual Size V	-1200– 0 – +1200 (*3) (*4)	Adjusts the size in the vertical direction.
Position H	-19200– 0 – +19200 (*3)	Adjusts the displayed position in the horizontal direction.
Position V	-12000– 0 – +12000 (*3)	Adjusts the displayed position in the vertical direction.
Color Correction	Use the following settings to specify color correction.	
Brightness	-64– 0 – +64	Adjusts the brightness.
Saturation	-64– 0 – +64	Adjusts the saturation.
Contrast	-64– 0 – +64	Adjusts the contrast.
Red	-64– 0 – +64	Adjusts the red level.
Green	-64– 0 – +64	Adjusts the green level.
Blue	-64– 0 – +64	Adjusts the blue level.
Color Space	RGB 0-255, RGB 16-235, YCC SD, YCC HD, Auto	Specifies the color space.
Flicker Filter	Disabled , Enabled	Enables/disables the flicker filter.
Input Source	HDMI , Still Image	Specifies the source (HDMI input or still image) that is assigned to the input channel.

(*3) The range of this value varies according to conditions such as the input/output format. The values listed above are the minimum and maximum values.

(*4) Valid when the Scaling “Type” is set to “Manual.”

Background Color detailed settings menu

Menu item	Value	Explanation
Hue	0 –359	Adjusts the hue.
Saturation	0 –255	Adjusts the saturation.
Value	0 –255	Adjusts the brightness.

Composition Menu

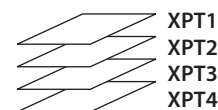
In Split Mode

Menu item	Value	Explanation
XPT 1-4	(Enter)	Displays the detailed settings menu for each layer (XPT 1-4) (see below).

XPT 1-4 detailed settings menu

Menu item	Value	Explanation
PinP Window	Use the following items to adjust the layer.	
Position H	-100.0- +100.0% (*5)	Adjusts the displayed position in the horizontal direction.
Position V	-100.0- +100.0% (*5)	Adjusts the displayed position in the vertical direction.
Aspect	1:1, 4:3, 3:2, 16:9	Specifies the aspect ratio.
Size	10.0- +100.0% (*5)	Adjusts the size.
Correction H	-100.0- 0.0 - +100.0%	Adjusts the size in the horizontal direction.
Correction V	-100.0- 0.0 - +100.0%	Adjusts the size in the vertical direction.
PinP View	Use the following items to adjust the image that is shown in the layer.	
Position H	-100.0- +100.0% (*5)	Adjusts the displayed position in the horizontal direction.
Position V	-100.0- 0.0 - +100.0%	Adjusts the displayed position in the vertical direction.
Zoom	100.0 - +1000.0%	Adjusts the zoom ratio.
Key (*6)	Disabled , Enabled	Enables/disables key-compositing.
Type (*6)	Luminance Black , Luminance White	Specifies the key-compositing type (color).
Level (*6)	0 -127	Adjusts the degree to which the key is removed (transparency).
Gain (*6)	0 -16	Adjusts the degree to which the edge of the key is blurred (semi-transparent area).

* The order in which layers are overlaid is fixed.



(*5) Default settings are as follows.

	XPT 1	XPT 2	XPT 3	XPT 4
PinP Window				
Position H	+25.0%	-25.0%	-50.0%	+50.0%
Position V	-25.0%	-25.0%	0.0%	0.0%
Size	50.0%	40.0%	100.0%	100.0%
PinP View				
Position H	0.0%	0.0%	+25.0%	-25.0%

(*6) Shown only for XPT 1.

In Switcher Mode

Menu item	Value	Explanation
Composition	Use the following items to make composition settings (PinP, luminance key).	
Mode	PinP & Key, AUX	Specifies whether to use composition or the AUX bus. PinP & Key: Composite the video using PinP/key. Use the XPT2 row of cross-point buttons to select the video that you want to composite. AUX: Assign the AUX bus to the VIDEO OUTPUT 3 connector. Use the XPT2 row of cross-point buttons to select the video that is sent to the AUX bus.
Setup (*7)	(Enter)	Displays the detailed settings menu for composition (see below).

(*7) Shown if the Composition "Mode" is set to "PinP & Key."

Composition detailed settings menu

Menu item	Value	Explanation
PinP Window	Use the following items to adjust the inset screen.	
Position H	-100.0– -25.0 – +100.0%	Adjusts the displayed position in the horizontal direction.
Position V	-100.0– -25.0 – +100.0%	Adjusts the displayed position in the vertical direction.
Aspect	1:1, 4:3, 3:2, 16:9	Specifies the aspect ratio.
Size	10.0– 40.0 – +100.0%	Adjusts the size.
Correction H	-100.0– 0.0 – +100.0%	Adjusts the size in the horizontal direction.
Correction V	-100.0– 0.0 – +100.0%	Adjusts the size in the vertical direction.
PinP View	Use the following items to adjust the inset screen.	
Position H	-100.0– 0.0 – +100.0%	Adjusts the displayed position in the horizontal direction.
Position V	-100.0– 0.0 – +100.0%	Adjusts the displayed position in the vertical direction.
Zoom	100.0 – +1000.0%	Adjusts the zoom ratio.
Key	Disabled , Enabled	Enables/disables key-compositing. The PinP inset screen image is key-composited.
Type	Luminance Black , Luminance White	Specifies the key-compositing type (color).
Level	0 –127	Adjusts the degree to which the key is removed (transparency).
Gain	0 –16	Adjusts the degree to which the edge of the key is blurred (semi-transparent area).

Audio Menu

Menu item	Value	Explanation
[Input] HDMI 1–3, HDMI 4/Line/Test Tone (choose from three)		
Input	HDMI 4, Line , Test Tone	Specifies the audio source that is assigned to input channel 4. HDMI 4: The input audio from the VIDEO INPUT 4 connector Line: The input audio from the AUDIO INPUT connector Test Tone: Test tone
State	Mute, Mix , Follow	Specifies the state of the input channel. Mute: The input audio is temporarily muted (mute function). Mix: The audio is input. Follow: The input channel is used with audio follow.
Level	0 – 100 –127	Adjusts the volume of the input audio. * 100 = 0.0 dB, and 127 = +6.0 dB.
[Output] All		
State	Mute, Mix	Specifies the state of the output channel. Mute: The output audio is temporarily muted (mute function). Mix: The result of the audio mix is output.
Level	0 – 40 –127	Adjusts the volume of the output audio. * 100 = 0.0 dB, and 127 = +6.0 dB.
Follow XPT	XPT 1 –4	Specifies the cross-point buttons that control the audio follow function. When you use the cross-point buttons specified here to switch video, only the audio that is used with audio follow is output in tandem with the switched video. Other audio is automatically muted.
Delay Time	0.0 –500.0 ms	Adjusts the delay time of the output audio.

System Menu

Menu item	Value	Explanation
Frame Rate	59.94 , 50 Hz	Specifies the frame rate.
HDCP Mode	Disabled , Enabled	If this is set to "Enabled," copy-protected (HDCP) video can be input. Also, HDCP is applied to the video that is output.
Screen Mode	Matrix , Split, Switcher	Specifies the screen mode of the video output. Matrix: Use the cross-point buttons to switch the combination of four inputs and four outputs, and output the video. The internal frame synchronizer allows seamless video switching. Split: Up to four screens of the video selected by the crosspoint buttons can be layer-composited and output. The video of XPT 1 can also be key-composited. Switcher: The video of the PGM side (XPT3 row) is always output. The PST side (XPT4 row) selects the preset video (the video that will be output next). Use the [AUTO] button or operate the video fader to switch the video.
XPT Assign	(Enter)	Displays the cross-point assign detailed settings menu (see below). * When in switcher mode, cross-point assign is only shown.
Test Pattern	(Enter)	Displays the test pattern detailed settings menu (p. 8).
EDID Copy	(Enter)	Displays the EDID copy detailed settings menu (p. 8).
Auto Memory	Disabled, Enabled	If this is set to "Enable," memory 1 functions as the last memory. When you close a menu or recall a memory, the current settings are automatically saved in memory 1.
Auto Power Off	Disabled, Enabled	Enables/disables the auto-off function. If this is set to "Enable," the power automatically turns off when 240 minutes elapse with the XS-1HD in the following state. <ul style="list-style-type: none"> • The XS-1HD is not operated • Audio or video are not input • No output device is connected
Remote Baudrate	9600 , 38400 bps	Specifies the communication speed (bps) of the REMOTE connector (RS-232).
LED Dimmer	1-8	Adjusts the brightness of the top panel LEDs.
Fader Calibration	(Enter)	Calibrates the video fader.
Factory Reset	(Enter)	Resets the unit to its factory-set state.
Version	—	Displays the system program version.

XPT Assign detailed settings menu

In Matrix Mode

Menu item	Value	Explanation
[Output]	[Input]	Specifies the cross-point that is assigned to each output. If this is set "Off," video is not output. <ul style="list-style-type: none"> • When using four outputs, video transitions are separated by the background color. • By restricting the outputs, you can perform seamless video transitions that use dissolve. Restrict to three outputs: Seamless video transition is possible for one screen. Restrict to two outputs: Seamless video transition is possible for two screens simultaneously. • By combining cross-points and outputs, 2-4 screens can be spanned.
HDMI 1	Off, XPT 1-4	
HDMI 2	Default settings are as follows. HDMI 1: XPT 1	
HDMI 3	HDMI 2: XPT 2 HDMI 3: XPT 3	
HDMI 4	HDMI 4: XPT 4	

In Split Mode

Menu item	Value	Explanation
[Output]	[Input]	Enables/disables (Off) the cross-point.
HDMI 1	Off , XPT 1	<ul style="list-style-type: none"> • When compositing four screens, video transitions are separated by the background color. • By decreasing the number of screens to three or fewer, you can perform seamless video transitions using dissolve. * In split mode, the same image is always output from VIDEO OUTPUT 1-4.
HDMI 2	Off , XPT 2	
HDMI 3	Off, XPT 3	
HDMI 4	Off, XPT 4	

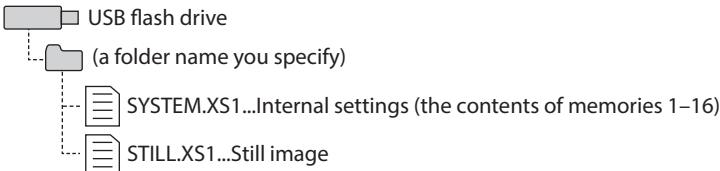
Test Pattern detailed settings menu

Menu item	Value	Explanation
Pattern	Disabled , Color Bars SMPTE, Color Bars 75%, Color Bars 100%, Ramp, Step, Hatch, Frame, Diagonal, Circle, Red, Green, Blue, white, Black	Specifies the test pattern.
Motion	Disabled , Slow, Medium, Fast	Specifies the scroll speed of the test pattern.

EDID Copy detailed settings menu

Menu item	Value	Explanation
Source	Default, Output 1	Specifies the EDID copy source. Default: The factory-default settings (XS-1HD) Output 1: The settings of the device connected to VIDEO OUTPUT 1
Destination	Input 1–4	Specifies the copy-destination VIDEO INPUT connector. When you select “Execute” and press the [ENTER] button, the EDID information is copied.

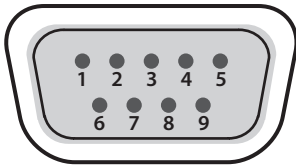
File Menu

Menu item	Value	Explanation						
All Setting		The following items allow you to save the XS-1HD’s settings (the contents of memories 1–16) as a single file on a USB flash drive. A file saved on a USB flash drive can also be loaded into the XS-1HD.						
Load	(Enter)	The File ► Load screen appears. Select a folder on the USB flash drive and press the [ENTER] button to recall the XS-1HD’s settings. When you recall the settings, the contents of the XS-1HD’s memories (1–16) are overwritten.						
Save	(Enter)	The File ► Save screen appears. Select a folder on the USB flash drive and press the [ENTER] button to overwrite the settings onto the settings file (SYSTEM.XS1) in the selected folder.						
Save as	(Enter)	The File ► Save as screen appears. Saves the XS-1HD’s settings to the USB flash drive as a single file. When you press the [ENTER] button, a folder is created on the USB flash drive. The XS-1HD’s settings are saved as a file in the folder that is created. * If a still image has been loaded into the XS-1HD, the still image is also saved in the folder. Folder structure 						
Still Image		The following item allows you to load a still image.						
Load	(Enter)	The File ► Load screen appears. Here you can load a still image from a USB flash drive into the XS-1HD. File format of the still images that can be loaded <table border="1" data-bbox="539 1854 1216 1995"> <tbody> <tr> <td>Format</td> <td>Bitmap (.bmp), 24 bits/pixel, uncompressed</td> </tr> <tr> <td>Resolution</td> <td>Maximum 1920 x 1200 pixels</td> </tr> <tr> <td>File name</td> <td>Eight or fewer single-byte alphanumeric characters * The file extension “.bmp” must be added.</td> </tr> </tbody> </table>	Format	Bitmap (.bmp), 24 bits/pixel, uncompressed	Resolution	Maximum 1920 x 1200 pixels	File name	Eight or fewer single-byte alphanumeric characters * The file extension “.bmp” must be added.
Format	Bitmap (.bmp), 24 bits/pixel, uncompressed							
Resolution	Maximum 1920 x 1200 pixels							
File name	Eight or fewer single-byte alphanumeric characters * The file extension “.bmp” must be added.							
Format	(Enter)	Formats the USB flash drive.						

RS-232 Command Reference

You can use the REMOTE connector (RS-232) to remotely control the XS-1HD from an external device.

REMOTE Connector (RS-232) Specifications



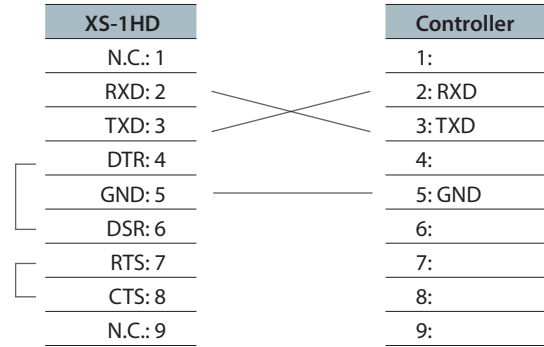
D-sub 9-pin (male)

Pin No.	Signal
1	N.C.
2	RXD
3	TXD
4	DTR
5	GND
6	DSR
7	RTS
8	CTS
9	N.C.

Communication method	Synchronous (asynchronous), full-duplex
Communication speed	9600, 38400 bps
Parity	none
Data length	8 bit
Stop bit	1 bit
Code set	ASCII
Flow control	XON/XOFF

Cable wiring diagram

Connect the three lines RXD, TXD, and GND as shown in the illustration below.



- * Numbers 4 and 6, and numbers 7 and 8 are internally connected inside the XS-1HD.
- * Use a cross-cable to make connections with the controlling device (such as a computer that is equipped with RS-232).

Command Summary

The command format consists of the ASCII code string "stx" plus "three alphabetical characters (uppercase)" plus ";" (semicolon).

The three alphabetical characters indicate the type of command.

If the command has an argument, a ":" (colon) is inserted between the three alphabetical characters and the argument. If there are multiple arguments, they are separated by a "," (comma).

stx	This is the name of a signal in ASCII code (code number: 02H); it is a control code that indicates the beginning of a command. "H" indicates hexadecimal notation.
:	This is the code by which the XS-1HD recognizes the demarcation between the command and the parameter(s).
;	This is the code by which the XS-1HD recognizes the end of the command.

* stx (02H), ACK (06H), and Xon (11H)/Xoff (13H) are control codes.

* When the external device transmits successive commands to the XS-1HD, it must wait for "ACK" to be returned before transmitting the next command.

Received Commands (Controller → XS-1HD)

Item	Received Commands	Parameter
Select the XPT1 input (*1)	stxXP1:a;	a: 0 (Input 1)–3 (Input 4), 4 (Color)
Select the XPT2 input (*1)	stxXP2:a;	a: 0 (Input 1)–3 (Input 4), 4 (Color)
Select the XPT3 input (*1)	stxXP3:a;	a: 0 (Input 1)–3 (Input 4), 4 (Color)
Select the XPT4 input (*1)	stxXP4:a;	a: 0 (Input 1)–3 (Input 4), 4 (Color)
Specify the video transition time	stxTIM:a;	a: 0 (0.0 sec)–20 (2.0 sec)
Press the [AUTO] button (*2)	stxATO;	
Adjust the output audio level	stxMVL:a;	a: 0–127
Adjust the level of audio channel 1	stxCV1:a;	a: 0–127
Adjust the level of audio channel 2	stxCV2:a;	a: 0–127
Adjust the level of audio channel 3	stxCV3:a;	a: 0–127
Adjust the level of audio channel 4	stxCV4:a;	a: 0–127
Recall a memory	stxMEM:a;	a: 0 (Memory 1)–15 (Memory 16)
Return version information	stxVER;	
Obtain the status of the XS-1HD	stxACS;	
Flow control	XON	
Flow control	XOFF	

(*1) The operation differs depending on the screen mode.

(*2) Valid only when the screen mode is switcher mode.

Sent Commands (XS-1HD → Controller)

Item	Sent Commands	Parameter
Transmitted when the transmitted command was received correctly	ACK	
Transmitted when the transmitted command was not received correctly	stxERR:a;	a: 0 (syntax error) There is a problem with the received command. 5 (out of range error) The argument of the received command is outside the range.
Transmitted when the VER command is received	stxVER:XS-1HD,a;	a: Version * Version information is an ASCII text string
Flow control	XON	
Flow control	XOFF	