



Advantiv® VSP Application System Commands with Advanced Features

Rev 0.6

Systems and Software
Engineering
Analog Devices Inc.

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VSP Application System Commands

Revision History:

Revisions	Author	Descriptions	Date
0.1	SG	Initial draft including VSP command only	Nov. 2011
0.2	SG	Updated based on VSP 1.6 release	March 2012
0.3	CL	Updated based on VSP 1.63 release	Nov. 2012
0.4	Jl	Added, copyright and product information sections, performed editorial corrections and updates	Sep. 2013
0.5b	CL	Added "spaset"	July, 2014
0.6	Jl	Added External OSD commands	March,2015

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PRODUCT INFORMATION

Product information can be obtained from the Analog Devices Web site and other Web sources.

Analog Devices Web Site

The Analog Devices Web site, www.analog.com, provides information about a broad range of products—analogue integrated circuits, amplifiers, converters, and digital signal processors. To access a complete technical library for each video product family, go to <http://www.analog.com/en/audiovideo-products/products/index.html>.

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Conventions

Command template

All system commands are presented in one of the following formats:

1. Short form: used to present commands without options

Command	
Description:	Command description

2. Long form: used to present commands with multiple options

Command	
Description:	Command description
Syntax:	command <options>
Options:	
Default:	Default value at power on
Example:	An example describing the usage of the command

Notes

- (All informational notes are presented in the bracket and in blue color fonts)
- All cautionary notes are presented in red color fonts

HDMI Repeater Commands

Audio/Video Control Commands

Amute	
Description:	Controls HDMI audio output when mute mode is set to manual
Syntax:	amute <on, off>
Options:	on Mutes the HDMI Tx audio output
	off Un-mutes the HDMI Tx audio output
Default:	Off
Example:	mute man; set the mute mode to manual amute on; mutes the HDMI Tx audio output

Arctx	
Description:	Controls the ARC (Audio Return Channel) feature on the HDMI Tx
Syntax:	arctx <on, off><1 or 2 or all>
Options:	on Enables the ARC on the HDMI Tx
	off Disables the ARC on the HDMI Tx
	1, 2 ,all Enable or disable the ARC on HDMI Tx1, Tx2, or Tx all
Default:	Off
Example:	arctx on 2 ; Enables the ARC on the HDMI Tx 2, in order to try the ARC operation the HDMI SINK device also needs to support the ARC feature

Avmute	
Description:	Controls AVMUTE packet to the HDMI Sink device to mute the audio/video
Syntax:	avmute <on, off>
Options:	on Sends set_AVMUTE packet over the HDMI Tx to the Sink device
	off Sends clear_AVMUTE packet over the HDMI Tx to the sink device
Default:	Off
Example:	avmute on ; the sink device, if capable of receiving GCP packets, receives a set_AVMUTE packet and mutes audio and/or video accordingly

Mute

VSP Application System Commands

Description:	Sets the muting mode to manual or automatic	
Syntax:	mute <man, auto>	
Options:	man	Sets the muting method to manual
	auto	Sets the muting mode to automatic
Default:	Auto	
Example:	mute man ; sets the mute mode to manual	

Vmute		
Description:	Controls HDMI videoo output when mute mode is set to manual	
Syntax:	vmute <on, off>	
Options:	on	mutes the HDMI Tx video output
	off	Un-mutes the HDMI Tx video output
Default:	Off	
Example:	mute man; set the mute mode to manual vmute on; mutes the HDMI Tx video output	

Operation/Mode Control Commands

Cec		
Description:	Controls CEC support functionality	
Syntax:	cec <on, off>	
Options:	on	Enables the CEC support by the software driver
	off	Disables the CEC support by the software driver
Default:	On	
Example:	cec off ; disables the CEC support by the software driver	

Cecsend		
Description:	Sends CEC messages from the console	
Syntax:	cecsend <parameter length><op code><logical address> <parameters>	
Options:	Parameter length	Specify the CEC parameter length in byte
	Op code	Specify CEC operation code
	Logical address	Specify the logical address of the destination device

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	Parameters	Specify the CEC parameters
Default:	n/a	
Example:	cecsend 0x02 0x70 0x05 0x11 0x00 ; Reports the current active source is 1100	

Spaset		
Description:	Changes SPA value for CEC purpose	
Syntax:	spaset <port> <spavalue>	
Options:	port	0 for port_A, 1 for port_B, 2 for port_C, 3 for port_D
	spavalue	such as 1100, abcd, etc.
Default:	n/a	
Example:	spaset 0 1234: set port_A SPA to 1.2.3.4 spaset 0 0000: clear port_A manual SPA, software will use the default SPA for port_A.	

Enc		
Description:	Controls the HDCP operation at HDMI Tx output	
Syntax:	enc <on, off, us, rtx>	
Options:	on	Forces the HDCP operation at HDMI Tx output
	off	Disables the HDCP operation at the HDMI Tx output
	us	Follows the upstream device (source) in terms of HDCP operation
	rtx	Enables the HDCP on HDMI Rx and Tx separately and not as a HDCP repeater
Default:	us	
Example:	enc on ;enables the HDCP operation at the HDMI Tx even if the video received from the source is not encrypted (HDCP is not enabled on HDMI Rx)	

FS		
Description:	Controls the Fast Switching “Xpressview” feature on the HDMI Rx inputs	
Syntax:	fs <on, off>	
Options:	on	Enables the Fast Switching “Xpressview” feature on the HDMI Rx inputs
	off	Disables the Fast Switching “Xpressview” feature on the HDMI Rx inputs
Default:	on	
Example:	fs on	

Mode

VSP Application System Commands

Description:	Sets the HDMI repeater operation mode	
Syntax:	mode <rec, rep, xmt>	
Options:	rec	Sets the HDMI repeater to receiver mode, Audio/Video will be muted at HDMI Tx. HDMI repeater switches to this mode automatically when no HDMI output device is present
	rep	Sets the HDMI repeater to Repeater mode, Audio/Video is repeated from HDMI Rx to HDMI Tx
	xmt	Sets the HDMI repeater to Transmit mode, Audio/Video is not repeated from HDMI Rx to HDMI Tx and HDMI Rx is set to freerun mode. HDMI repeater switches to this mode automatically when no HDMI Input device is present.
	auto	Sets the HDMI repeater to one of the above formats automatically based on the connection of source/sink
Default:	Rep	
Example:	mode rec	

Outmode		
Description:	Sets the HDMI Tx operation mode	
Syntax:	outmode <hdmi, dvi, us, forced>	
Options:	hdmi	Sets the HDMI Tx output to HDMI mode
	dvi	Sets the HDMI Tx output to DVI mode
	us	Sets the HDMI Tx output to follow the upstream (HDMI Source)
	forced	TBD
Default:	Us	
Example:	outmode dvi ; forces the HDMI Tx output to DVI mode	

Xmtmode		
Description:	Controls the freerun operation when HDMI repeater is in the Transmitter mode (xmt)	
Syntax:	xmtmode <on, off>	
Options:	on	Freerun is active and HDMI Tx is enabled
	off	Freerun is not active and HDMI Tx is disabled
Default:	On	
Example:	Xmtmode off ; Disables the freerun and turns off the HDMI Tx output	

System Control & General Commands

? or help	
Description:	Lists all available console commands

dbg		
Description:	Selects the debug output information printed on the console	
Syntax:	dbg <rx, tx, hdcpc, edid, cec, int, none, all>	
Options:	rx	Selects HDMI Rx debug information only
	tx	Selects HDMI Tx debug information only
	hdcpc	Selects HDCP debug information only
	edid	Selects EDID debug information only
	cec	Selects CEC debug information only
	int	Selects Interrupt debug info only
	none	Selects no debug information
	all	Selects all debug information
Default:	All	
Example:	dbg cec ;System prints CEC debug messages	

dbg+, dbg-		
Description:	Adds or Removes the debug output information printed on the console	
Syntax:	dbg + <rx, tx, hdcpc, edid, cec, int, none, all> dbg- <rx, tx, hdcpc, edid, cec, int, none, all>	
Options:	rx	Selects HDMI Rx debug information only
	tx	Selects HDMI Tx debug information only
	hdcpc	Selects HDCP debug information only
	edid	Selects EDID debug information only
	cec	Selects CEC debug information only
	int	Selects Interrupt debug info only
	none	Selects no debug information
	all	Selects all debug information
Default:		

VSP Application System Commands

Example:	dbg+ cec ;adds CEC debug messages to the existing debug information dbg- edid ; removes EDID debug messages from the existing debug information
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Power	
Description:	Operates power modes in the HDMI product (HDMI chip)
Syntax:	Power <on, off 0, off 1, off 2>
Options:	on Configures the HDMI product to power on state
	off 0 Configures the HDMI product to standby mode including the CEC module
	off 1 Configures the HDMI product to standby mode while CEC module stays in power on mode. CEC standby message will be sent
Default:	On
Example:	Power off 0 ; forces the HDMI product into standby mode

Reset	
Description:	Restarts the software and reinitializes the reference hardware platform

Rev	
Description:	Prints the software revision

Run	
Description:	Resume software execution on the microcontroller

Stat	
Description:	Prints the HDMI Input/Output status on the console

Stop	
Description:	Stops software execution on the microcontroller

XRC+	
Description:	Disables the software driver and enters in XRC mode. In this mode, XRC application controls the reference hardware platform using i2c commands

XRC-	
Description:	Enables the software driver and exits XRC mode

Register/Memory Access Commands

i2cr		
Description:	Reads the contents of 8-bit registers with 8-bit addressing scheme from a given device	
Syntax:	i2cr <device><register><byte count>	
Options:	device	Device address (hex value)
	register	Register address (hex value)
	Byte count	Number of bytes to be read, min=1, max=255, for values bigger than 1, the value of the following registers will be printed
Default:	n/a	
Example:	i2cr b8 00 1 ; reads one byte data showing the chip revision code from the register 0x00 at device address 0xb8 (Main) i2cr b8 00 4 ;reads the register values for the registers 0x00, 0x01, 0x02, 0x03 from the device address 0xb8	

i2cw		
Description:	Writes an 8-bit value to a register on a given device address	
Syntax:	i2cw <device><register><value>	
Options:	device	Device address (hex value)
	register	Register address (hex value)
	value	8-bit number (hex value)
Default:	n/a	
Example:	i2cw b8 0b 1e ; Writes 0x1e into register 0x0b in device address 0xb8 (Main)	

i2c16r		
Description:	Reads the contents of the 8-bit registers with 16-bit addressing scheme from a given device (ADV800x)	
Syntax:	i2cr <device><16-bit register><byte count>	
Options:	device	Device address (hex value)
	16-bit register	16-bit Register address (hex value)
	Byte count	Number of bytes to be read, min=1, max=255, for values bigger than 1, the value of the following registers will be printed
Default:	n/a	
Example:	i2c16r 1a 59af 1 ; reads one byte data from the register 0x59af at device address 0x1a	

i2c16w	
Description:	Writes an 8-bit value to a register with 16-bit addressing scheme on a given device (ADV800x)
Syntax:	i2cw <device><16-bit register><value>
Options:	device Device address (hex value)
	register 16-bit register address (hex value)
	value 8-bit number (hex value)
Default:	n/a
Example:	i2c16w 1a 59af ff ; Writes 0xFF into register 0x59AF in the device address 0x1A

VSP Commands

Configuring video inputs/outputs

Src		
Description:	Selects the video input	
Syntax:	src <type> <index>	
Options:	hdmi 1...4	Selects the HDMI port A ...D video input as the main video source
	hdmi n	Selects none of the HDMI ports as the main video source
	hdmi t	Auto selects the HDMI port video input as the main video source
	cvbs 1	Selects the CVBS video input as the main video source
	svideo 1	Selects the S-Video input as the main video source
	comp 1	Selects the Component video input as the main video source
	vga 1	Selects the graphical video input as the main video source
		Shows list of available sources (<i>Note: type anything else after src different from the above commands also shows the list of available sources</i>)
Default:	hdmi 1	
Example:	src comp 1 ;Selects the Component video input as the main video source	

Out		
Description:	Selects output display	
Syntax:	out <interface> <index> <source>	
Options:	interface	hdmi, comp, cvbs, svideo
	index	1 or 2 for HDMI, 1 for all others
	source	thro for pass through mode, main for main VSP mode, aux for secondary VSP mode, off to turn off display
Default:	thro for all interfaces	
Example:	out cvbs 1 main ; Sets CVBS output into main VSP	

Configuring VSP outputs

asp1		
Description:	Set aspect ratio of primary VSP output; it should be followed by the “mainvsp” command	
Syntax:	asp1 <4x3, 6x9, norm, wh or wv>	
Options:	4x3	Sets the aspect ratio at primary VSP output to 4x3
	16x9	Sets the aspect ratio at primary VSP output to 16x9
	norm	Follows the video input aspect ratio
	wh	TBD
	wv	TBD
Default:	norm	
Example:	tx1 main asp1 4x3 mainvsp 1080p60 ; By executing above three commands the Primary VSP is selected as the input for HDMI Tx1 and the aspect ratio is changed to 4x3 on the HDMI Tx1 while 1080p60 is the selected video format	

autovsp		
Description:	Enables/disables VSP auto routine. VSP auto routine sets the VSP based on EDID received from HDMI sink device(s)	
Syntax:	autovsp <on, off>	
Options:	On	Enables the VSP auto routine
	Off	Disables the VSP auto routine
Default:	Off	
Example:	autovsp on ; Turns on the VSP auto routine	

auxvsp					
Description:	Sets the Secondary VSP (a.k.a.: Auxiliary VSP or, VSP2) video output				
Syntax:	auxvsp < thro, ..supported video formats..>				
Options:	thro	Selects pass-through mode. In pass-through mode input video is passed to output unchanged with the addition of blended OSD			
	TV video formats (CEA) represented in: <V.lines><I/P><V.rate> format; please refer to the below available TV formats:				
	480i60	480p60	720p60	1080i30	

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Default:	480p60
Example:	auxvsp 720p60 ;Sets the auxiliary VSP output to 720p60 TV format

crop1		
Description:	Crops the input video at Primary VSP (a.k.a.: Main VSP or, VSP1). It should be followed by the “mainvsp” command to take into effect by the VSP.	
Syntax:	crop1 <x, y, w, h>	
Options:	x	Sets the horizontal position on the input video for cropping, the screen’s top left corner is considered as x=0
	y	Sets the vertical position on the input video for cropping, the screen’s top left corner is considered as y=0
	w	Sets the width of the cropped video, this size should be less than the remaining horizontal video size based on the value of x
	h	Sets the height of the cropped video, this size should be less than the remaining vertical video size based on the value of y
Default:	disabled	
Example:	tx1 main (assuming video input is 480p60) crop1 300, 200, 100, 100 mainvsp 1080p60 ; crops the video input starting from the top left corner at 300, 200 (x and y) positions and stretches the video to 100, 100 (w , h) values at the Primary VSP output (Note: if the x,y, w, h values are set beyond the video size boundaries, the VSP output will be corrupted. Currently the board need to be restarted to exit from a wrong cropping status)	

crop2		
Description:	Crops the input video at Secondary VSP (a.k.a.: Auxiliary VSP or, VSP2). It should be followed by the “auxvsp” command to take into effect by the VSP.	
Syntax:	crop2 <x, y, w, h>	
Options:	x	Sets the horizontal position on the input video for cropping
	y	Sets the vertical position on the input video for cropping
	w	Sets the width of the cropped video, this size should be less than the remaining horizontal video size after cropping
	h	Sets the height of the cropped video, this size should be less than the remaining vertical video size after cropping
Default:	disabled	
Example:	tx2 aux (assuming video input is 480p60) crop2 300, 200, 100, 100 auxvsp 1080p60 ; crops the video input starting from the top left corner at 300, 200 (x and y) positions and stretches the video to 100, 100 (w, h) values at the Secondary VSP output (Note: if the x,y, w, h values are set beyond the video size boundaries, the VSP output will be corrupted. Currently the board need to be restarted to exit from a wrong cropping status)	

edidmrg		
Description:	Enables/disables EDID merging feature.	
Syntax:	edidmrg <on, off>	
Options:	On	Enables the EDID merging feature
	Off	Disables the EDID merging feature
	default	Use ADV800x default EDID, Sink's EDID is discarded.
Default:	On	
Example:	edidmrg on ; enables the EDID merging feature (Note: Please refer to the "DVP_VSP_Driver_Specifications" document section 4.1.2 for more details about this feature)	

mainvsp						
Description:	Sets the Primary VSP (a.k.a.: Main VSP or, VSP1) video output					
Syntax:	mainvsp < thro, ..supported video formats..>					
Options:	thro	Selects pass-through mode. In pass-through mode input video is passed to output unchanged with the addition of blended OSD				
	TV video formats (CEA) represented in: <V.lines><I/P><V.rate> format; please refer to the below available TV formats:					
	480i60	480p60	720p60	1080i60	1080p60	1080p24
	576i50	576p50	720p50	1080i50	1080p50	
	Computer video formats (VESA) represented in: <H.lines>x<V.lines>p<V.rate> format; please refer to the below available computer formats:					
	640x480p60	640x480p72	640x480p75	800x600p60	800x600p72	
	800x600p75	1024x768p60	1024x768p72	1024x768p75	1360x768p60	
1280x768p60	1280x800p60	1280x1024p60	1440x900p60			
Default:	480p60					
Example:	mainvsp 720p60 ;Sets the Primary VSP output to 720p60 TV format					

tx1csc		
Description:	Converts the color space at the Primary VSP (a.k.a.: Main VSP or, VSP1) video output	
Syntax:	tx1csc <rgb, 601, 709><null, 444, 422>	
Options:	rgb	Sets the Primary VSP output color space to RGB
	601	Sets the Primary VSP output color space according to the YUV scheme per ITU-R Recommendation BT.601 standard (limited to 4:2:2 chroma sub sampling)
	709	Sets the Primary VSP output color space according to the YUV scheme ITU-R Recommendation BT.709 standard
	null	If left blank follows the video input chroma sub sampling

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	444	Sets the YUV color space to 4:4:4 chroma sub sampling				
	422	Sets the YUV color space to 4:2:2 chroma sub sampling				
Available combinations	rgb	601	601 422	709	709 422	709 444
Default:	Follows the video input color space unless VSP is in the signal path, in the later case color space will be always YUV.					
Example:	tx1csc 709 422 ;Sets the Primary VSP output color space to YUV (709) with 4:2:2 sub sampling (Note: Please refer to the “DVP_VSP_Driver_Specifications” document section 4.2 for more details about this feature)					

tx2csc						
Description:	Converts the color space at the Secondary VSP (a.k.a.: Auxiliary VSP or, VSP2) video output					
Syntax:	tx2csc <rgb, 601, 709><null, 444, 422>					
Options:	rgb	Sets the Secondary VSP output color space to RGB				
	601	Sets the Secondary VSP output color space according to the YUV scheme per ITU-R Recommendation BT.601 standard (limited to 4:2:2 chroma sub sampling)				
	709	Sets the Secondary VSP output color space according to the YUV scheme ITU-R Recommendation BT.709 standard				
	null	If left blank follows the video input chroma sub sampling				
	444	Sets the YUV color space to 4:4:4 chroma sub sampling				
	422	Sets the YUV color space to 4:2:2 chroma sub sampling				
Available combinations	rgb	601	601 422	709	709 422	709 444
Default:	Follows the video input color space unless VSP is in the signal path, in the later case color space will be always YUV.					
Example:	tx2csc 709 422 ;Sets the Secondary VSP output color space to YUV (709) with 4:2:2 sub sampling (Note: Please refer to the “DVP_VSP_Driver_Specifications” document section 4.2 for more details about this feature)					

Configuring External OSD

pipinit	
Description:	initializes the source of external OSD, and set the default data format and color space
Syntax:	pipinit
Options:	n/a
Default:	n/a
Example:	pipinit; it must be run before getting external OSD

pipvic	
Description:	sets the external OSD VIC
Syntax:	pipvic <vic value>
Options:	VIC value
Default:	2 (480p60)
Example:	pipvic 16 ; Sets the external OSD VIC is 1080P60 (VIC=16). As there is no AVI Info frame, no video timing detection for the external OSD, This command must be run to give the right VIC information for VSP to work.

pipdisp	
Description:	turns on/off the external OSD(small picture)
Syntax:	pipdisp <on/off>
Options:	On turns on the external video
	Off turns off the external video
Default:	Off
Example:	pipdisp on ; turns on the small picture.

pipmenu	
Description:	turns on/off the OSD menu
Syntax:	pipmenu <on/off>
Options:	On turns on the OSD menu
	Off turns off the OSD menu
Default:	n/a
Example:	pipmenu on ; turns on the OSD menu.

pipsize	
Description:	configures the size of small picture when in PiP mode
Syntax:	pipsize <width, height>
Options:	width, height set the external OSD display size as per the width and height
Default:	EGA (640x350)
Example:	pipsize 720 480 ; displays external OSD in size 720x480.

piploc	
Description:	configures the location of small picture when in PiP mode
Syntax:	piploc <Xstart,Ystart>
Options:	Xstart, Ystart set the external OSD display location as per the start position
Default:	n/a
Example:	piploc 100 50 ; displays external OSD from the upper-left corner at horizontal offset=100, vertical offset=50.

pipcs	
Description:	configures the Color Space of small picture when in PiP mode
Syntax:	pipcs <0/1>
Options:	0 when external OSD data is RGB 1 when external OSD data is YCbCr
Default:	pipcs 0; RGB
Example:	pipcs 0 ; sets the external OSD color space as RGB

pipfmt	
Description:	Configures the Data Format of small picture when in PiP mode
Syntax:	pipfmt <24/36> <444/422>
Options:	24/36, 444/422 Sets the Data Format of small picture as 24 or 36 bit 422 or 444.
Default:	pipfmt 36 444
Example:	pipfmt 24 444 ; configures the 800x registers for 24-bit 4:4:4 data format (Note: "pipfmt" configuration is based on hardware design. Default setting is 3 x 12-bit 4:4:4 for our EVAL board)

piplres		
Description:	Configures the large picture's resolution in PoP or PiP modes manually (4k, 1080p, 720p)	
Syntax:	piplres <4k/1080p/720p>	
Options:	4k	sets the large picture resolution as 4k
	1080p	sets the large picture resolution as 1080p
	720p	sets the large picture resolution as 720p
Default:	piplres 1080p	
Example:	<p>piplres 4k</p> <p>; Configure the large picture to 3840x2160 resolution in PiP and PoP mode. Also the OSD only, extOSD only and extOSD+Menu mode are displaying in 3840x2160 resolution. When main video is in 4K mode, output resolution will follow the input. Like main video is 4096x2160, then large picture is in the same resolution.</p>	

pipsres		
Description:	Configures the small picture's resolution in PoP or PiP modes manually (small, medium, large)	
Syntax:	pipsres <l,m,s>	
Options:	l	SVGA for small picture, taking 1/2 of full screen
	m	EGA for small picture, taking 1/4 of full screen
	s	QVGA for small picture, taking 1/12 of full screen
Default:	pipsres m	
Example:	<p>pipsres l</p> <p>; sets SVGA for small picture, taking 1/2 of full screen</p>	

piprst		
Description:	Resets the external OSD settings	
Syntax:	piprst <0 to 3>	
Options:	0	turns off external OSD
	1	turns off external OSD and to reset OSD menu resolution
	2	turns off external OSD, to reset OSD menu resolution and to turn off OSD CSC
	3	turns off external OSD, to reset OSD menu resolution and to turn off OSD CSC, and to reset VSP settings for external OSD
Default:	n/a	
Example:	<p>piprst 0</p> <p>; Resets the external OSD settings</p>	

pipmode		
Description:	Sets the different display mode to demo video display combinations	
Syntax:	pipmode <1/2/3/4/5/6>	
Options:	1	Displays video and OSD menu, it is the default mode
	2	Displays OSD menu only
	3	Displays external OSD only
	4	Displays OSD menu on external OSD, no main video
	5	Displays OSD menu and external OSD over main video
	6	Displays OSD menu and external OSD outside main video
Default:	pipmode 1	
Example:	<p>pipmode 5 ; Displays OSD menu and external OSD over main video; When to switch among each mode, should run “pipmode 1” at first. For example, to switch from mode 2 to mode 5, commands are run as: “pipmode 2”, “pipmode 1”&“pipmode 5”.</p> <p>When main video resolution is changed, “pipmode 1” should be run again.</p>	

pipport			
Description:	Selects the HDMI input port for the small picture when in PiP mode		
Syntax:	pipport<0,1,2 etc>		
Options:	<table border="1"> <tr> <td>port number</td> <td>Selects the HDMI port for small picture</td> </tr> </table>	port number	Selects the HDMI port for small picture
port number	Selects the HDMI port for small picture		
Default:	port A – pipport 0		
Example:	<p>pipport 1 ; Selects the HDMI input B for the small picture. Should run pipvic if different resolutions are used in HDMI ports</p>		