Compass 3.0 Presentation Switcher

API Protocol

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Contents

Table of Contents

Revision History

Version	Author	Modification	Date
A	GK	Initial release	02-Feb-17
B	GK	Added Freeze, Blank and func_list commands	30-Mar-17
C	GK	Changed the set/get input edid commands Added revision table	12-Apr-17
D	GK	Added PiP commands Added Network functions	17-Jul-17
E	GK	Corrected the “blank”, “freeze” and “function_list” commands. The first letter in these command needs to lower case	22-Aug-17

1 Communication

1.1 API Call

Communication between the PC and the Scaler Board is through remote API calls and corresponding answers.

The syntax of the API calls always is:
[command] [function] [par1],[par2],[par3],[par4]<cr>

<cr> is carriage return, which is sent by terminal programs when pressing the return key.

When the command string is composed in proprietary software a hexadecimal 0x0D has to be appended, accordingly.

[command] and [function] are mandatory, parameters can be none to many depending on the function.

Functions are invoked with commands "get", “getnv”, "set" or "save".

Default parameters are stored in non-volatile memory (flash memory). At boot time these values are copied (cached) into program memory and used at run time from this volatile memory. A set call will change the parameter value in program memory only. To permanently store the value in non-volatile memory, such that it is used the next time the box is powered up, a corresponding save call has to be issued. With a get call the value from volatile program memory is peeked. With getnv the value from non-volatile (flash memory) is peeked.

Examples:

Function Text (ASCII)	Hexadecimal Values
get brightness<cr>	67 65 74 20 62 72 69 67 68 74 6e 65 73 73 0d
getnv brightness<cr>	67 65 74 6e 76 20 62 72 69 67 68 74 6e 65 73 73 0d
set brightness 50<cr>	73 65 74 20 62 72 69 67 68 74 6e 65 73 73 20 35 30 0d
save brightness<cr>	73 61 76 65 20 62 72 69 67 68 74 6e 65 73 73 0d

Special functions always have the command "sys".

Blanks within parameters are admissible, that is why parameters are delimited by commas. If a comma within a parameter is needed, this is done with a backslash.

Example:

Special Function Text (ASCII)	Hexadecimal Values
sys slvcmd_write_textedit 1,0,WE EAT\,GRANDPA<cr>	73 79 73 20 73 6c 76 63 6d 64 5f 77 72 69 74 65 5f 74 65 78 74 65 64 69 74 20 31 2c 30 2c 57 45 20 45 41 54 5c 2c 47 52 41 4e 44 50 41 0d

1.2 API Return

If everything went right the answer is either

OK<cr><lf>

in case of a set or save API call, or

OK,[parameter]<cr><lf>

in case of a get or getnv API call.

If something went wrong the answer is

ERROR,[text message]<cr><lf>

<cr><lf> is 0x0D 0x0A in hex. With this line end code communication on typical terminal emulations looks like this:

set brightness 50
OK
get brightness
OK,50
foo bar
ERROR,Unknown function
set brightness
ERROR,Wrong number of parameters

When sending more than one command in a row it's necessary to wait for the previous one to complete by waiting for the response code. Sending a new command without waiting for the response code from the previous one first will lead to the commands being received wrong, hence not understood and error messages returned.

1.3 TCP/IP Port

Port 30000 is used.

1.4 UART Connector and UART Configuration

The board UART connector is PL8.
PL8 Connector Type: 3-way 0.1” male, mating type 3-way 0.1” female

PL8 Pin	Signal name	Function
1	RXDA232	RS232 levels, Rx (from the HOST)
2	TXDA232	RS232 levels, Tx (to the HOST)
3	DGND	Ground

The board UART is configured to the following parameters:

Parameter	Value
Baud rate	**115200 Bits/second**
Stop Bits	1
Number of bits received/transmitted in the BYTE	8
Parity Bits	No Parity
Flow Control	Off

1.5 Examples

The following examples are used to explain how the API calls and protocol work:

1.) Change the Contrast Setting for runtime use. Increase the contrast (gain) by 10%.

Function Text (ASCII)	Hexadecimal Values
set contrast 10<cr>	73 65 74 20 63 6f 6e 74 72 61 73 74 20 31 30 0d

(Expected) Return Message (ASCII)	Hexadecimal Values
OK<cr><lf>	4f 4b 0d 0a

2.) Save the Contrast Setting such that it is permanently stored in non-volatile memory (flash) and used the next time the system is reset or powered up again.

Function Text (ASCII)	Hexadecimal Values
save contrast<cr>	73 61 76 65 20 63 6f 6e 74 72 61 73 74 0d

(Expected) Return Message (ASCII)	Hexadecimal Values
OK<cr><lf>	4f 4b 0d 0a

3.) Read back the Contrast Setting from non-volatile memory.

Function Text (ASCII)	Hexadecimal Values
getnv contrast<cr>	67 65 74 6e 76 20 63 6f 6e 74 72 61 73 74 0d

(Expected) Return Message (ASCII)	Hexadecimal Values
OK,10<cr><lf>	4f 4b 2c 31 30 0d 0a

4.) Switch between inputs HDMI1 (current) and SDI1 (Index: 0).

Function Text (ASCII)	Hexadecimal Values
set main_input 0<cr>	73 65 74 20 6d 61 69 6e 5f 69 6e 70 75 74 20 30 0d

(Expected) Return Message (ASCII)	Hexadecimal Values
OK<cr><lf>	4f 4b 0d 0a

5.) Rename a User (e.g. User 1 renamed to JOHN).

Function Text (ASCII)	Hexadecimal Values
set user1_rename JOHN<cr>	73 65 74 20 75 73 65 72 31 5f 72 65 6e 61 6d 65 20 4a 4f 48 4e 0d

(Expected) Return Message (ASCII)	Hexadecimal Values
OK<cr><lf>	4f 4b 0d 0a

2 Functions set, get, getnv and save

functions can be called with a **set, get, getnv and save** command. In the following tables the function and the parameters of a set call are listed. get, getnv and save are called without parameters.

Note: The OSD menu items are sliders, text, list box items or action items. If in doubt the range of a given command can be checked by operating the menu item manually. List box items start from index 0.

2.1 Input

2.1.1 Input Source Select

Model	Function	Par1	
		Range	Description
CO-PS81 CO-PS81A	main_input	0 to 9	Basic Model Main input channel selection: 0: DP, 1: HDMI 1, 2: HDMI 2, 3: DVI, 4: VGA, 5: RGB/YPbPr, 6: CVBS, 7: HDMI-3, 8:TESTPAT9:LOGO

Model	Function	Par1	
		Range	Description
CO-PS101 CO-PS101A	main_input	0 to 11	Basic Model & SDI Main input channel selection: 0: 3G-SDI 1, 1: 3G-SDI 2, 2: DP, 3: HDMI 1, 4: HDMI 2, 5: DVI, 6: VGA, 7: RGB/YPbPr, 8: CVBS 9: HDMI 3, 10: TESTPAT 11: LOGO

Model	Function	Par1	
		Range	Description
CO-PS91 CO-PS91A	main_input	0 to 10	Basic Model & HDBT Main input channel selection: 0: DP, 1: HDMI 1, 2: HDMI 2, 3: HDBT, 4: DVI 5: VGA, 6: RGB/YPbPr 7: CVBS, 8: HDMI 3, 9: TESTPAT 10: LOGO

Model	Function	Par1	
		Range	Description
CO-PS111, CO-PS111A	main_input	0 to 12	Basic Model w SDI & HDBT Main input channel selection: 0: 3G-SDI 1, 1: 3G-SDI 2, 2: DP, 3: HDMI 1, 4: HDMI 2, 5: HDBT, 6: DVI, 7: VGA, 8: RGB/YPbPr, 9: CVBS, 10: HDMI 3, 11: TESTPAT 12:LOGO

2.1.2 Input Config.

2.1.2.1 Analog Inputs

2.1.2.1.1 VGA-1

Model	Function	Par1	
		Range	Description
All	vga1_in_clock	Depends on input mode	Horizontal total pixel value of the VGA input

Model	Function	Par1	
		Range	Description
All	vga1_in_phase	0 to 31	Phase value of the VGA input

Model	Function	Par1	
		Range	Description
All	vga1_hadj	Depends on input mode	VGA input image horizontal position (front porch)

Model	Function	Par1	
		Range	Description
All	vga1_vadj	Depends on input mode	VGA input image vertical position (front porch)

Model	Function	Par1	
		Range	Description
All	vga1_in_cspace	0 to 1	VGA input color space 0: RGB 1: YPbPr

Model	Function	Par1	
		Range	Description
All	vga1_in_range	0 to 1	VGA input greyscale range 0: Full 1: Limited

Model	Function	Par1	
		Range	Description
All	vga1_edid_res	0 to 22	Set the preferred resolution in the unit´s EDID. Refer to the output resolution list in the Output/Display Type section of this document.

Model	Function	Par1	
		Range	Description
All	vga1_edid_fr	0 to 8	Set the preferred frame rate in the unit´s EDID. Refer to the frame rate list in the Output/Display Type section of this document.

2.1.2.1.2 VGA-2

Model	Function	Range	Description
All	vga2_in_clock	Depends on input mode	Horizontal total pixel value of the RGB/YPbPr input

Model	Function	Range	Description
All	vga2_in_phase	0 to 31	Phase value of the RGB/YPbPr input

Model	Function	Range	Description
All	vga2_hadj	Depends on input mode	RGB/YPbPr input image horizontal position (front porch)

Model	Function	Range	Description
All	vga2_vadj	Depends on input mode	RGB/YPbPr input image vertical position (front porch)

Model	Function	Range	Description
All	vga2_in_sync	0 to 1	RGB/YPbPr synchronization scheme 0: Separate; 1: SoG/SoY

Model	Function	Range	Description
All	vga2_in_cspace	0 to 1	RGB/YPbPr input color space 0: RGB; 1: YPbPr

Model	Function	Range	Description
All	vga2_in_range	0 to 1	RGB/YPbPr input greyscale range 0: Full ; 1: Limited

Model	Function	Range	Description
All	vga2_edid_res	0 to 22	Set the preferred resolution in the unit´s EDID. Refer to the output resolution list in the Output/Display Type section of this document.

Model	Function	Range	Description
All	vga2_edid_fr	0 to 8	Set the preferred frame rate in the unit´s EDID. Refer to the frame rate list in the Output/ Display Type section of this document.

2.1.2.1.3 Composite Video

Model	Function	Range	Description
All	Ccs	0 to 1	Activate cross color suppression on composite video signals 0: Off ; 1: On

2.1.2.2 Digital Inputs

2.1.2.2.1 Display Port

Model	Function	Par1	
		Range	Description
All	dp_in_cspace	0 to 2	Display Port input color space 0: RGB 1: YCbCr 2: Auto

Model	Function	Par1	
		Range	Description
All	dp_in_range	0 to 2	Display Port input greyscale range 0: Full 1: Limited 2: Auto

Model	Function	Par1	
		Range	Description
All	dp_dc	0 to 1	Display Port deep color support 0: Off 1: On

Model	Function	Par1	
		Range	Description
All	dp_edid_res	0 to 27	Set the preferred resolution in the unit´s EDID. Refer to the output resolution list in the Output/Display Type section of this document.

Model	Function	Par1	
		Range	Description
All	dp_edid_fr	0 to 8	Set the preferred frame rate in the unit´s EDID. Refer to the frame rate list in the Output/Display Type section of this document.

2.1.2.2.2 HDMI-1

Model	Function	Par1	
		Range	Description
All	hdmi1_in_cspace	0 to 2	HDMI 1 input color space 0: RGB 1: YCbCr 2: Auto

Model	Function	Par1	
		Range	Description
All	hdmi1_in_range	0 to 2	HDMI 1 input greyscale range 0: Full 1: Limited 2: Auto

Model	Function	Par1	
		Range	Description
All	hdmi1_dc	0 to 1	HDMI 1 input deep color support 0: Off 1: On

Model	Function	Par1	
		Range	Description
All	hdmi1_in_hdcp	0 to 1	HDMI 1 input HDCP support 0: Off 1: On

Model	Function	Par1	
		Range	Description
All	hdmi1_edid_res	0 to 27	Set the preferred resolution in the unit´s EDID. Refer to the output resolution list in the Output/Display Type section of this document.

Model	Function	Par1	
		Range	Description
All	hdmi1_edid_fr	0 to 8	Set the preferred frame rate in the unit´s EDID. Refer to the frame rate list in the Output/Display Type section of this document.

2.1.2.2.3 HDMI-2

Model	Function	Par1	
		Range	Description
All	hdmi2_in_cspace	0 to 2	HDMI 2 input color space 0: RGB 1: YCbCr 2: Auto

Model	Function	Par1	
		Range	Description
All	hdmi2_in_range	0 to 2	HDMI 2 input greyscale range 0: Full 1: Limited 2: Auto

Model	Function	Par1	
		Range	Description
All	hdmi2_dc	0 to 1	HDMI 2 input deep color support 0: Off 1: On

Model	Function	Par1	
		Range	Description
All	hdmi2_in_hdcp	0 to 1	HDMI 2 input HDCP support 0: Off 1: On

Model	Function	Par1	
		Range	Description
All	hdmi2_edid_res	0 to 27	Set the preferred resolution in the unit´s EDID. Refer to the output resolution list in the Output/Display Type section of this document.

Model	Function	Par1	
		Range	Description
All	hdmi2_edid_fr	0 to 8	Set the preferred frame rate in the unit´s EDID. Refer to the frame rate list in the Output/Display Type section of this document.

2.1.2.2.4 HDBT

Model	Function	Par1	
		Range	Description
CO-PS91 CO-PS91A CO-PS111 CO-PS111A	hdbt_in_cspace	0 to 2	HDBaseT input color space 0: RGB 1: YCbCr 2: Auto
	hdbt_in_range	0 to 2	HDBaseT input greyscale range 0: Full 1: Limited 2: Auto
	hdbt_dc	0 to 1	HDBaseT input deep color support 0: Off 1: On
	hdbt_edid_res	0 to 27	Set the preferred resolution in the unit´s EDID. Refer to the output resolution list in the Output/Display Type section of this document.
	hdbt_edid_fr	0 to 8	Set the preferred frame rate in the unit´s EDID. Refer to the frame rate list in the Output/Display Type section of this document.
	hdbt_in_hdcp	0 to 1	HDMI 1 input HDCP support 0: Off 1: On

2.1.2.2.5

2.1.2.2.6 DVI

Model	Function	Par1	
		Range	Description
All	dvi_in_cspace	0 to 2	DVI input color space 0: RGB 1: YCbCr 2: Auto

Model	Function	Par1	
		Range	Description
All	dvi_in_range	0 to 2	DVI input greyscale range 0: Full 1: Limited 2: Auto

Model	Function	Par1	
		Range	Description
All	dvi_dc	0 to 1	DVI 1 input deep color support 0: Off 1: On

Model	Function	Par1	
		Range	Description
All	dvi_in_hdcp	0 to 1	DVI input HDCP support 0: Off 1: On

Model	Function	Par1	
		Range	Description
All	dvi_edid_res	0 to 27	Set the preferred resolution in the unit´s EDID. Refer to the output resolution list in the Output/Display Type section of this document.

Model	Function	Par1	
		Range	Description
All	dvi_edid_fr	0 to 8	Set the preferred frame rate in the unit´s EDID. Refer to the frame rate list in the Output/Display Type section of this document.

2.1.2.2.7 HDMI-3

Model	Function	Par1	
		Range	Description
All	hdmi3_in_cspace	0 to 2	HDMI3I input color space 0: RGB 1: YCbCr 2: Auto

Model	Function	Par1	
		Range	Description
All	hdmi3_in_range	0 to 2	HDMI 3 input greyscale range 0: Full 1: Limited 2: Auto

Model	Function	Par1	
		Range	Description
All	hdmi3_dc	0 to 1	HDMI 3 input deep color support 0: Off 1: On

Model	Function	Par1	
		Range	Description
All	hdmi3_in_hdcp	0 to 1	HDMI 3 input HDCP support 0: Off 1: On

Model	Function	Par1	
		Range	Description
All	hdmi_audio	0 to 5	Overwrite unit EDID audio capability information to signal a HDMI source to output audio as: 0: Full (unit default EDID) 1: Match Display 1 2: Match Display 2 3: S/PDIF friendly 4: SDI friendly, 2-ch 5: SDI friendly, 8-ch

Model	Function	Par1	
		Range	Description
All	hdmi3_edid_res	0 to 27	Set the preferred resolution in the unit´s EDID. Refer to the output resolution list in the Output/Display Type section of this document.

Model	Function	Par1	
		Range	Description
All	hdmi3_edid_fr	0 to 8	Set the preferred frame rate in the unit´s EDID. Refer to the frame rate list in the Output/Display Type section of this document.

2.1.2.2.8 SDI

Model	Function	Par1	
		Range	Description
CO-PS101 CO-PS101A CO-PS111 CO-PS111A	sdi_audio_map	0 to 4	0 = stereo input ch(1,2) mapped to all SDI output pairs; 1,2,3 = 2nd, or 3rd or 4th pair mapped to all outputs; 4 = multichannel mode, 8 channel out gets 8 channel input
	sdi_level_b_prio	0 to 1	Selects SDI input when both input are SDI level B
	sdi1_level_b_stream sdi2_level_b_stream	0 to 1	Selects the stream to be processed when the input format is 3G-SDI Level B Dual Stream

2.1.2.3 Test Pattern Setup

Model	Function	Par1	
		Range	Description
All	test_pattern	0 to 14	Test Pattern selection: 0: Red Curtain 1: Green Curtain 2: Blue Curtain 3: Grey V Bars 4: Grey H Bars 5: Aspect Test 6: Multi Test 7: Warp Adjust 8: SMPTE 9: Pluge 10: Moving Test Pattern 11: Custom TP 1 12: Custom TP 2 13: Custom TP 3 14: Custom TP 4

Model	Function	Par1	
		Range	Description
All	tpg_speed	1 to 10	Number of pixels that the test pattern moves per frame

Model	Function	Par1	
		Range	Description
All	tpg_width	4 to 40	The width of the moving cross in pixels

Model	Function	Par1	
		Range	Description
All	tpg_fg_col	0 to 7	Colour of the cross 0 = black; 1 = white; 2 = yellow; 3 = cyan; 4 = green; 5 = magenta; 6 = red; 7 = blue

Model	Function	Par1	
		Range	Description
All	tpg_bg_col	0 to 8	Colour of the quadrants in the background: 0 = black; 1 = white; 2 = yellow; 3 = cyan; 4 = green; 5 = magenta; 6 = red; 7 = blue; 8 = multicolour, sets the four quadrant colours as red, green, blue and black

Model	Function	Par1	
		Range	Description
All	test_tone	0 to 1	Associated test tone for Test Pattern 0: Off 1: On

2.1.2.4 Input Source Enable

Model	Function	Range	Description Basic Model
H620 H620A L720	 input1_enable input2_enable input3_enable input4_enable input5_enable input6_enable input7_enable input8_enable input9_enable input10_enable	0 or 1	0: Disable / 1: Enable DP HDMI-1 HDMI-2 DVI VGA RGB/YPbPr CVBS, HDMI-3 TESTPAT LOGO

Model	Function	Range	Description Basic Model & 3G-SDI
H630 H730 H630A H730A L730	 input1_enable input2_enable input3_enable input4_enable input5_enable input6_enable input7_enable input8_enable input9_enable input10_enable input11_enable input12_enable	0 or 1	0: Disable / 1: Enable 3G-SDI 1 3G-SDI 2 DP HDMI-1 HDMI-2 DVI VGA RGB/YPbPr CVBS HDMI-3 TESTPAT LOGO

Model	Function	Range	Description Basic Model & HDBT
H625 H625A L725	 input1_enable input2_enable input3_enable input4_enable input5_enable input6_enable input7_enable input8_enable input9_enable input10_enable input11_enable	0 or 1	0: Disable / 1: Enable DP HDMI-1 HDMI-2 HDBT DVI VGA RGB/YPbPr CVBS, HDMI-3 TESTPAT LOGO

Model	Function	Range	Description Basic Model & 3G-SDI & HDBT
H670 H670A H770 H770A L770	input1_enable input2_enable input3_enable input4_enable input5_enable input6_enable input7_enable input8_enable input9_enable input10_enable input11_enable input12_enable input13_enable	0 or 1	0: Disable / 1: Enable 3G-SDI 1 3G-SDI 2 DP HDMI-1 HDMI-2 HDBT DVI VGA RGB/YPbPr CVBS HDMI-3 TESTPAT LOGO

Model	Function	Range	Description Basic Model & SV
H620ASV L720SV	input1_enable input2_enable input3_enable input4_enable input5_enable input6_enable input7_enable input8_enable input9_enable input10_enable input11_enable	0 or 1	0: Disable / 1: Enable DP HDMI-1 HDMI-2 IMX6 DVI VGA RGB/YPbPr CVBS HDMI-3 TESTPAT LOGO

Model	Function	Range	Description Basic Model & 3G-SDI &SV
H630ASV H730ASV L730SV	input1_enable input2_enable input3_enable input4_enable input5_enable input6_enable input7_enable input8_enable input9_enable input10_enable input11_enable input12_enable input13_enable	0 or 1	0: Disable / 1: Enable 3G-SDI 1 3G-SDI 2 DP HDMI-1 HDMI-2 IMX6 DVI VGA RGB/YPbPr CVBS HDMI-3 TESTPAT LOGO

2.1.2.5

2.1.2.6 Switching transition

Model	Function	Par1	
		Range	Description
All	switching_transition	0 to 3	Switching scheme: 0: Freeze 1: Blank 2: Fast Fade 3: Slow Fade

2.1.3 Input Color Adjustments

Model	Function	Range	Description
All	black	0 to 1	Black level offset. 0: 0 IRE; 1: 7.5 IRE

Model	Function	Range	Description
All	brightness	-50 to 50	Brightness (black level) value

Model	Function	Par1	
		Range	Description
All	contrast	-50 to 50	Contrast value

Model	Function	Range	Description
All	color	-50 to 50	Saturation value

Model	Function	Par1	
		Range	Description
All	hue	-50 to 50	Hue value
Model	**Function**	**Par1**	
		Range	**Description**
All	input_colortemp	0 to 4	Output color temperature. 0: 3700K; 1: 5500K; 2: 6500K 3: 7500K; 4: 9300K

Model	Function	Par1	
		Range	Description
All	input_gamma	10 to 30	Input gamma value in units of one tenth. Ex: to apply 2.2, 22 22 needs to be written

2.1.3.1 RGB Values

Model	Function	Par1	
		Range	Description
All	red_offset	-512 to 512	Red offset (bias) value

Model	Function	Par1	
		Range	Description
All	green_offset	-512 to 512	Green offset (bias) value

Model	Function	Par1	
		Range	Description
All	blue_offset	-512 to 512	Blue offset (bias) value

Model	Function	Par1	
		Range	Description
All	red_gain	-512 to 512	Red gain value

Model	Function	Par1	
		Range	Description
All	green_gain	-512 to 512	Green gain value

Model	Function	Par1	
		Range	Description
All	blue_gain	-512 to 512	Blue gain value

2.1.4 Geometry

2.1.4.1 Picture Format

Model	Function	Par1	
		Range	Description
All	main_picture_format	0 to 4	Change aspect ratio 0: Original 1: Full screen 2: Crop 3: Anamorphic 4: Theatrescope

2.1.4.2 Overscan

Model	Function	Par1	
		Range	Description
All	main_overscan	0 to 10	Increase input scaling to generate an over scan.

2.1.4.3 PTZ

Model	Function	Par1	
		Range	Description
All	ptz_enable	0 to 1	Enable Pan Tilt Zoom 0: Off; 1: On

Model	Function	Par1	
		Range	Description
All	ptz_setting	0 to 1	Select the scope of the PTZ setting 0: Use Globally; 1: User per mode

Model	Function	Par1	
		Range	Description
All	ptz_values	0 to 1	PTZ Values 0: Pixels 1: Percent

Model	Function	Par1	
		Range	Description
All	ptz_pan	-500 to 500	Adjust the pan (left/right displacement) in 1/10 of percent of the image size.

Model	Function	Par1	
		Range	Description
All	ptz_tilt	-500 to 500	Adjust the tilt (top/bottom displacement) in 1/10 of percent of the image size.

Model	Function	Par1	
		Range	Description
All	ptz_zoom_h	250 to 4000	Adjust the horizontal zoom factor in 1/10 of percent.

Model	Function	Par1	
		Range	Description
All	ptz_zoom_v	250 to 4000	Adjust the vertical zoom factor in 1/10 of percent.

Model	Function	Par1	
		Range	Description
All	ptz_aspect	0 to 1	Aspect ratio lock setting. When aspect ratio is locked (on) the vertical scaling factor equals the horizontal scaling factor 0: On ; 1: Off

2.1.5 Enhancement

Model	Function	Par1	
		Range	Description
All	sharpness	-4 to 4	Adjust sharpness filter.

Model	Function	Par1	
		Range	Description
All	detail_enhance	0 to 3	Adjust detail enhancement filter.

2.2 Output

2.2.1 Display Type

Model	Function	Par1	
		Range	Description
All	output_resolution	0 to 27	Output image resolution 0: 640x480p 1: 720x480i 2: 720x480p 3: 720x576i 4: 720x576p 5: 800x600p 6: 1024x768p 7: 1080x1920p 8: 1280x720p 9: 1280x768p 10: 1280x800p 11: 1280x1024p 12: 1360x768p 13: 1366x768p 14: 1400x1050p 15: 1440x900p 16: 1600x1200p 17: 1680x1050p 18: 1920x1080i 19: 1920x1080p 20: 1920x1200p 21: 2048x1080p 22: 2048x1200p 23: 2560x1080p 24: 2560x1440p 25: 2560x1600p 26: 3840x2160p 27: 4096x2160p

Model	Function	Par1	
		Range	Description
All	frame_rate	0 to 8	Output video frame rate. 0: 60 Hz 1: 59.94 Hz 2: 50 Hz 3: 48 Hz 4: 30 Hz 5: 29.97 Hz 6: 25 Hz 7: 24 Hz 8: 23.98 Hz 9: Auto

Model	Function	Par1	
		Range	Description
All	io_lock	0 to 2	Locking condition. 0: Off 1: Source 2: Genlock

Model	Function	Par1	
		Range	Description
All	frame_rate_50	0 to 1	Allow 50 Hz o/p frame rate. 0: No 1: Yes

Model	Function	Par1	
		Range	Description
All	frame_rate_48	0 to 1	Allow 48 Hz o/p frame rate. 0: No 1: Yes

Model	Function	Par1	
		Range	Description
All	frame_rate_30	0 to 1	Allow 30/29.97 Hz o/p frame rate. 0: No 1: Yes

Model	Function	Par1	
		Range	Description
All	frame_rate_25	0 to 1	Allow 25 Hz o/p frame rate. 0: No 1: Yes

Model	Function	Par1	
		Range	Description
All	frame_rate_24	0 to 1	Allow 24/23.98 Hz o/p frame rate. 0: No 1: Yes

2.2.2 Gamma / Color Temp

Model	Function	Par1	
		Range	Description
All	output_gamma	10 to 30	Output gamma value in units of one tenth, e.g. to apply a gamma of 2.2 the value 22 has to be written

Model	Function	Par1	
		Range	Description
All	output_colortemp	0 to 5	Output color temperature. 0: 3700K 1: 5500K 2: 6500K 3: 7500K 4: 9300K 5: 10000K

2.2.3 Output Config.

Model	Function	Par1	
		Range	Description
All	output_optimize	0 to 1	Consider display EDID blocks. 0: DVI/HDMI (deep color) 1: DVI forced (24 bit)

Model	Function	Par1	
		Range	Description
All	output_hdcp	0 to 1	Switch of HDCP support on HDMI/DVI/HDBT outputs. 0: Off 1: On

Model	Function	Par1	
		Range	Description
All	dvi_out_csc	0 to 1	Force Color Space Conversion. 0: RGB 1: YPbPr

Model	Function	Par1	
		Range	Description
All	dvi_out_range	0 to 2	Greyscale range being used. 0: full 1: limited 2: auto

2.2.4 Video Wall

Model	Function	Par1	
		Range	Description
All	multiple_unit_autozoom	0 to 1	Activate Autozoom 0:Off 1:On
	multiple_unit_width	1 to 4	Determine number of projectors set horizontally
	multiple_unit_height	1 to 4	Determine number of projectors stacked vertically
	multiple_unit_horizontal	0 to 3	Tile of the matrix to be processed by the unit
	multiple_unit_vertical	0 to 3	Tile of the matrix to be processed by the unit
	wall_setup	0 to 1	Defines the LED wall partition 0:Standard 1:Advanced (Irregular wall)
	wall_width	0 to X	total width of wall in pixels; X calculated dynamically according to number of units and output format resolution
	wall_height	0 to X	total height of wall in pixels
	wall_horizontal	0 to X	Horizontal Offset in pixels
	wall_vertical	0 to X	Vertical Offset in pixels

Model	Function	Par1	
		Range	Description
All	Left Bezel	0 ... 50 in steps of 2	
	Right Bezel	0 ... 50 in steps of 2	
	Top Bezel	0 ... 50	
	Bottom Bezel	0 ... 50	

2.3 PiP

Model	Function	Range	Description
CO-PS101 CO-PS101A CO-PS111 CO-PS111A	pip_input	0 to 11	PIP Input 0 = 3G-SDI 1 1 = 3G-SDI 2 2 = DP 3 = HDMI 1 4 = HDMI 2 5 = HDBT 6 = IP VIDEO 7 = DVI 8 = VGA 9 = RGB/YPbPr 10 = CVBS 11 = HDMI 3 12 = TESTPAT 13 = LOGO

Model	Function	Range	Description
CO-PS101 CO-PS101A CO-PS111 CO-PS111A	pip_input	0 to 11	PIP Input 0 = 3G-SDI 1 1 = 3G-SDI 2 2 = DP 3 = HDMI 1 4 = HDMI 2 5 = HDBT 6 = DVI 7 = VGA 8 = RGB/YPbPr 9 = CVBS 10 = HDMI 3 11 = TESTPAT 12 = LOGO

Model	Function	Range	Description
CO-PS101 CO-PS101A CO-PS111 CO-PS111A	pip_input	0 to 11	PIP Input 0 = 3G-SDI 1 1 = 3G-SDI 2 2 = DP 3 = HDMI 1 4 = HDMI 2 5 = IP VIDEO 6 = DVI 7 = VGA 8 = RGB/YPbPr 9 = CVBS 10 = HDMI 3 11 = TESTPAT 12 = LOGO

Model	Function	Range	Description
CO-PS101 CO-PS101A CO-PS111 CO-PS111A	pip_input	0 to 11	PIP Input 0 = 3G-SDI 1 1 = 3G-SDI 2 2 = DP 3 = HDMI 1 4 = HDMI 2 5 = DVI 6 = VGA 7 = RGB/YPbPr 8 = CVBS 9 = HDMI 3 10 = TESTPAT 11 = LOGO

Model	Function	Range	Description
CO-PS101 CO-PS101A CO-PS111 CO-PS111A	pip_mode	0 to 1	PIP Mode 0 = Off 1 = PIP

Model	Function	Range	Description
CO-PS101 CO-PS101A CO-PS111 CO-PS111A	pip_system_managed	0 to 1	System Managed 0 = Off 1 = On

Model	Function	Range	Description
CO-PS101 CO-PS101A CO-PS111 CO-PS111A	pip_overscan	0 to 10 In percentage	

Model	Function	Range	Description
CO-PS101 CO-PS101A CO-PS111 CO-PS111A	pip_pos	0 to 4	PIP Pos/Size 0 = Top Left 1 = Top Right 2 = Bottom Left 3 = Bottom Right 4 = Free H/V

Model	Function	Range	Description
CO-PS101 CO-PS101A CO-PS111 CO-PS111A	pip_x	0 to 1760 In steps of 4 pixels	PIP H-Pos

Model	Function	Range	Description
CO-PS101 CO-PS101A CO-PS111 CO-PS111A	pip_y	0 to 990 In steps of 2 lines	PIP V-Pos

Model	Function	Range	Description
CO-PS101 CO-PS101A CO-PS111 CO-PS111A	pip_size	0 to 3	PIP Size 0 = Small 1 = Medium 2 = Large 3 = Free W/H

Model	Function	Range	Description
CO-PS101 CO-PS101A CO-PS111 CO-PS111A	pip_format	0 to 1	PIP Format 0 = Original 1 = As Output

Model	Function	Range	Description
CO-PS101 CO-PS101A CO-PS111 CO-PS111A	pip_width	160 … 1920 In steps of 4 pixels	PIP Width

Model	Function	Range	Description
CO-PS101 CO-PS101A CO-PS111 CO-PS111A	pip_height	90 … 1080 In steps of 2 lines	PIP Height

Model	Function	Range	Description
CO-PS101 CO-PS101A CO-PS111 CO-PS111A	pip_ptz_enable	0 to 1	PTZ Enable 0 = Off 1 = On

Model	Function	Range	Description
CO-PS101 CO-PS101A CO-PS111 CO-PS111A	pip_ptz_setting	0 to 2	PTZ Setting: 0 = Global 1 = Per Input 2 = Per Input per Mode

Model	Function	Range	Description
CO-PS101 CO-PS101A CO-PS111 CO-PS111A	pip_ptz_pan	0 .. 0	Pan

Model	Function	Range	Description
CO-PS101 CO-PS101A CO-PS111 CO-PS111A	pip_ptz_tilt	0 .. 0	Tilt

Model	Function	Range	Description
CO-PS101 CO-PS101A CO-PS111 CO-PS111A	pip_ptz_zoom_h	0 .. 0	Zoom H:

Model	Function	Range	Description
CO-PS101 CO-PS101A CO-PS111 CO-PS111A	pip_ptz_aspect	0 to 1	Aspect Lock 0 = Off 1 = PIP

Model	Function	Range	Description
CO-PS101 CO-PS101A CO-PS111 CO-PS111A	pip_ptz_zoom_v	0 .. 0. in steps of 2	Zoom V:

Model	Function	Range	Description
CO-PS101 CO-PS101A CO-PS111 CO-PS111A	pip_ptz_reset		Resets PTZ values

Model	Function	Range	Description
CO-PS101 CO-PS101A CO-PS111 CO-PS111A	pip_black	0 = 0 IRE 1 = 7.5 IRE	Black-Level Offset

Model	Function	Range	Description
CO-PS101 CO-PS101A CO-PS111 CO-PS111A	pip_brightness	-50 .. 50	Brightness / Black-Level

Model	Function	Range	Description
CO-PS101 CO-PS101A CO-PS111 CO-PS111A	pip_contrast	-50 .. 50	

Model	Function	Range	Description
CO-PS101 CO-PS101A CO-PS111 CO-PS111A	pip_color	-50 .. 50	

Model	Function	Range	Description
CO-PS101 CO-PS101A CO-PS111 CO-PS111A	pip_hue	-50 .. 50	

2.4 System

2.4.1 Names/Profiles

Model	Function	Par1	
		Range	Description
All	current_user	0 to 3	Determine current user (default names: USER1 to USER4)

Model	Function	Par1	
		Range	Description
All	user1_rename	Text with 9 ASCII characters	Change name of the USER1 slot. Note: Only capital letters, numerals, minus and blank are allowed in the text.

Model	Function	Par1	
		Range	Description
All	user2_rename	Text with 9 ASCII characters	Change name of the USER2 slot. Note: Only capital letters, numerals, minus and blank are allowed in the text.

Model	Function	Par1	
		Range	Description
All	user3_rename	Text with 9 ASCII characters	Change name of the USER3 slot. Note: Only capital letters, numerals, minus and blank are allowed in the text.

Model	Function	Par1	
		Range	Description
All	úser4_rename	Text with 9 ASCII characters	Change name of the USER4 slot. Note: Only capital letters, numerals, minus and blank are allowed in the text.

Model	Function	Par1	
		Range	Description
All	input_rename	Text with 9 ASCII characters	Change unit name. Default is VIDEOPROC.

Model	Function	Par1	
		Range	Description
All	inputX_rename X=1,2,…,16	Text with 9 ASCII characters	Change name of the X input channel. Note: Only capital letters, numerals, minus and blank are allowed in the text.

2.4.2 Menu Settings

Model	Function	Par1	
		Range	Description
All	language	0 to 2	Language selection: 0: (American) English 1: (British) English 2: Deutsch

Model	Function	Par1	
		Range	Description
All	keypad_lock	0 to 2	Lock keypad operation 0: Off (keypad operational) 1: Menu only (Menu key blocked) 2: All keys (all keys blocked)

Model	Function	Par1	
		Range	Description
All	menu_time	0 to 6	Menu time out: 0: 5 sec 1: 10 sec 2: 15 sec 3: 20 sec 4: 25 sec 5: 30 sec 6: infinite

Model	Function	Par1	
		Range	Description
All	lcd_backlight	0 to 10	LCD backlight brightness adjustment

Model	Function	Par1	
		Range	Description
All	jog_push_enable	0 to 1	Jog wheel push function emulating the Menu key 0: Off (no function) 1: On (Menu on push)

Model	Function	Par1	
		Range	Description
All	web_theme	0 to 1	Web color theme 0: Dark 1: Light

2.4.3 Network Settings

Model	Function	Par1	
		Range	Description
All	dhcp	0 to 1	0: Disable DHCP 1: Enable DHCP Example: set dhcp 0

Model	Function	Par1	
		Range	Description
All	Static_ip	xxx.xxx.xxx.xxx	Sets the static IP address Example: set static_ip 192.168.254.100 get static_ip

Model	Function	Par1	
		Range	Description
All	Static_netmask	xxx.xxx.xxx.xxx	Set the static net mask Example: set static_netmask 255.255.254.0 get static_netmask

Model	Function	Par1	
		Range	Description
All	Static_getway	xxx.xxx.xxx.xxx	Sets the static getway Example: set static_getway 192.168.254.250 get static_getway

The following function are only called with a get command

Model	Function	Description
All	ip_address	Example: get ip_address

Model	Function	Description
All	netmask	Example: get netmask

Model	Function	Description
All	getway	Example: get gateway

Model	Function	Description
All	Mac_address	Example: mac_address

To apply the new network settings, use the “func network_apply”

2.5 Audio

Model	Function	Par1	
		Range	Range
CO-PS81A CO-PS91A CO-PS101A CO-PS111A	audio_delay	-100 to +500	delay audio relative to video, in ms
	audio_assign	0 or 1	Global or Per input setting 0 = global connector/mode assign setting; 1 = connector/mode assign setting per input video channel
	audio_input	0-2	global audio_mode 0 = analogue stereo 1 = analogue mono + microphones; 2 = digital stereo + microphones
	analog_audio_input	0 - 7	global analogue connector selection: 0 = CVBS, 1= DP, 2= HDMI1, 3=HDMI2, 4=VGA, 5=DVI, 6=HDMI3, 7=HDBT
	sdi1_audio_in sdi2_audio_in dp_audio_in hdmi1_audio_in hdmi2_audio_in hdmi3_audio_in hdbt_audio_in dvi_audio_in vga1_audio_in vga2_audio_in cvbs_audio_in	0 or 2	Per-input setting: Selects audio_mode when the corresponding source is the main video input: 0 = analogue stereo, 1 = analogue mono + microphones; 2 = digital stereo + microphones
	sdi1_analog_in sdi2_analog_in dp_analog_in hdmi1_analog_in hdmi2_analog_in hdmi3_analog_in hdbt_analog_in dvi_analog_in vga1_analog_in vga2_analog_in cvbs_analog_in	0 or 7	Per-input setting: Selects the analogue audio connector when the corresponding source is main the video input: 0 = CVBS, 1= DP, 2= HDMI1, 3=HDMI2, 4=VGA, 5=DVI, 6=HDMI3, 7=HDBT
	audio_level	120 to +60 steps of 15	audio input level, attenuation/gain in dB x 10, stored per input video channel
	audio_mode	0 or 1	0 = mono, 1 = stereo, for analogue audio inputs
	audio_mute	0 or 1	0 = muted, 1 = normal, for current analogue or digital audio input

Model	Function	Par1	
		Range	Range
CO-PS81A CO-PS91A CO-PS101A CO-PS111A	mic1_level	-120 to 0, steps of 15	microphone input level, in dB x 10
	mic1_mix	0 to 100	microphone mix ratio in percentage. Reduces mic sensitivity when < 50%, or reduces line-in level when > 50%
	mic1_phantom	0 or 1	1 = enable 48v phantom voltage supply to mic1
	mic1_mute	0 or 1	0 = muted, 1 = normal
	mic2_level	-120 to 0, steps of 15	microphone input level, in dB x 10
	mic2_mix	0 to 100	microphone mix ratio in percentage. Reduces mic sensitivity when < 50%, or reduces line-in level when > 50%
	mic2_phantom	0 or 1	1 = enable 48v phantom voltage supply to mic2
	mic2_mute	0 or 1	0 = muted, 1 = normal
	audio_volume	-625 to 0, steps of 5	main volume level of analogue line-out and speaker output, in dB x 10
	audio_balance	-100 to +100	balance control
	audio_bass	-150 to +150, steps of 5	bass tone control, in dB x 10
	audio_treble	-150 to +150, steps of 5	treble tone control, in dB x 10
	audio_amp	0 to 38	analogue power amp output gain (relative to analogue line-out), in dB

Model	Function	Par1	
		Range	Range
CO-PS81A CO-PS91A CO-PS101A CO-PS111A	hdmi_audio	0 to 5	set audio support level in input EDIDs: 0 = full; 1 = same as sink on HDMI 1 out; 2 = same as sink on HDMI 2 out; 3 = suitable for S/PDIF out; 4 = suitable for SDI output (48kHz PCM only, stereo); 5 = suitable for SDI output (48kHz PCM only, 8 channels);
	hdmi_mute	0 or 1	0 = mute audio on HDMI 2 output; 1 = normal audio output
	dvi_mute	0 or 1	0 = mute audio on HDMI 1/DVI output; 1 = normal audio output
	hdbt_mute	0 or 1	0 = mute audio on HDBT output; 1 = normal audio output
	sdi_mute	0 or 1	0 = mute audio on SDI output; 1 = normal audio output
	line_mute	0 or 1	0 = mute audio on analogue line output; 1 = normal audio output
	speaker_mute	0 or 1	0 = mute audio on analogue speaker output; 1 = normal audio output

2.6 Global Functions: Blank, Freeze, Function_list

These functions don't exist in the menu system. They can be accessed via API or from the front panel buttons only.

Model	Function	Description
All	blank	0 = "Off" 1 = "On"

Model	Function	Description
All	freeze	0 = "Off" 1 = "On"

This function works with the get command

Model	Function	Description
All	function_list	Lists all available commands

3 Function func

Some functions are called without a parameter. These **func** commands are listed below.

3.1 Input

Model	Function	Description 0 Basic Model
CO-PS81 CO-PS81A	input_1_quickselect input_2_quickselect input_3_quickselect input_4_quickselect input_5_quickselect input_6_quickselect input_7_quickselect input_8_quickselect input_9_quickselect input_10_quickselect	DP HDMI-1 HDMI 2 DVI VGA RGB/YPbPr CVBS, HDMI-3 TESTPAT LOGO

Model	Function	Description 1 Basic Model & 3G-SDI
CO-PS101 CO-PS101A	input_1_quickselect input_2_quickselect input_3_quickselect input_4_quickselect input_5_quickselect input_6_quickselect input_7_quickselect input_8_quickselect input_9_quickselect input_10_quickselect input_11_quickselect input_12_quickselect	3G-SDI 1 3G-SDI 2 DP HDMI-1 HDMI-2 DVI VGA RGB/YPbPr CVBS HDMI-3 TESTPAT LOGO

Model	Function	Description 2 Basic Model & HDBT
CO-PS91 CO-PS91A	input_1_quickselect input_2_quickselect input_3_quickselect input_4_quickselect input_5_quickselect input_6_quickselect input_7_quickselect input_8_quickselect input_9_quickselect input_10_quickselect input_11_quickselect	DP HDMI-1 HDMI 2 HDBT DVI VGA RGB/YPbPr CVBS, HDMI-3 TESTPAT LOGO

Model	Function	Description 3 Basic Model & 3G-SDI & HDBT
CO-PS111 CO-PS111A	input_1_quickselect input_2_quickselect input_3_quickselect input_4_quickselect input_5_quickselect input_6_quickselect input_7_quickselect input_8_quickselect input_9_quickselect input_10_quickselect input_11_quickselect input_12_quickselect input_13_quickselect	3G-SDI 1 3G-SDI 2 DP HDMI-1 HDMI-2 HDBT DVI VGA RGB/YPbPr CVBS HDMI-3 TESTPAT LOGO

3.2 PTZ reset

Model	Function	Description
All	ptz_reset	Resets the pan tilt zoom settings. The image is centered without being zoomed.

3.3 VGA Reset

Model	Function	Description
All	vga1_reset	Resets the VGA mode to the original settings.

Model	Function	Description
All	vga2_reset	Resets the RGB/YPbPr mode to the original settings.

3.4 Factory Reset

Model	Function	Description
All	factory_reset	Resets the unit to the original settings applied in production at the factory.

3.5 Standby

Model	Function	Description
All	on	If the unit is in standby mode, (indicated by the front LCD) the unit will start up. Sending "func on" to a unit that's already on, it will result in an “ERROR,Unknown function" message

Model	Function	Description
All	standby	If the unit is in live operation, it will be placed in standby mode. If sending a valid command, such as “get contrast”, results in "ERROR,Unknown function" message, it means that the unit is in standby.

3.6 Network Settings

Model	Function	Description
All	network_apply	This function applies the current network settings and updates the network interface

4 Function sys

Model	Function	Description
All	read_model	Reads the model number. Depending on the model number parameters of the set functions may vary, e.g. the index of the Test Pattern channel or any other input channel. The model number can be used to select certain control code written by a user.

Model	Function	Description
All	read_revision	Reads the firmware revision number. The firmware revision number can be used to adopt control code written by a user.