
GeoBox UD10X RS232 Commands

1 PURPOSE

This document describes the UART Protocol between the GeoBox and a Computer (Host). The Protocol is based on a ASCII commands. By using this protocol a Host will be able control the GeoBox on a physical link.

2 SCOPE

The physical link is not defined in this document. Therefore the protocol can either be implemented on top of RS-232, USB, Ethernet or other forthcoming communication methods.

2.1 RS232 Setting

Baud rate:	9600/115200
Parity check:	None
Data bit:	8
Stop bit:	1
Flow Control:	None

Table 1

3 FUNCTION TYPE

The Function is grouped in six different function types:

Function type	Comments
Header code	'S': An <i>start</i> function executes an action.
Device ID	'00'- '99': An <i>ID</i> function performs a set operation to the selected device.
Function code	An <i>command</i> function is performed with three defined characters.
Argument	'+' & '-': Adjust or Execution for the command code. 'R': Read back current setting according to the command code.
Value code	'000'-'999': The programmed value for the command code. ('000' for 'R' Argument)
End code	<CR><LF>

Table 2

4 COMMAND RETURN CODES

If a valid command is received the GeoBox executes the command and as an acknowledgment it replies to the box by returning a copy of the command with the current value appended.

If the box receives an illegal command, it replies by returning an error message as 'ERR'.

5 COMMAND SYNTAX

Every command consists of a command that is ended with a delimiter. The command consists of a *function code*, a *separator*, and an argument.

A *function code* consists of 3-5 ASCII letters and begins with a letter [A-Z], [a-z]

```
|-----Command-----|
```

```
<Header code><Device ID><Function code><Argument><Value code><End code>
```

At the end of this document, the "Table of Serial Commands" lists all valid function codes. Any other combination of characters received before a *delimiter* will result in an error response from the box to the control unit (Host).

5.1 Command Example

Select the HDMI1 Input Source Regardless the Box ID:

```
ASCII: S00INP+001<CR><LF>
HEX: 53 30 30 49 4E 50 2B 30 30 31 0D 0A
```

Load Profile 1 to the Box With ID 1:

```
ASCII: S01PFL+000<CR><LF>
HEX: 53 30 31 50 46 4C 2B 30 30 31 0D 0A
```

Set Left Edge Overlap to +1000:

```
ASCII: S00OLE1000<CR><LF>
HEX: 53 30 30 4F 4C 45 31 30 30 30 0D 0A
```

Set Left Edge Overlap to -1000:

```
ASCII: S01OLE9000<CR><LF>
HEX: 53 30 30 4F 4C 45 39 30 30 30 0D 0A
```

6 ERROR SYNTAX

If an command isn't available the box response with an error message:

```
|-----Command-----|
```

```
<Header code><Device ID><ERR><Argument><Value code><End code>
```

6.1 Error Example

```
ASCII: S00ERR+000<CR><LF>
HEX: 53 30 30 45 52 52 2B 30 30 30 0D 0A
```

7 TABLE OF FUNCTIONS

Function	Code	Value	Default	Remarks
Virtual IR Key	VKY			0: 0
				1: 1
				2: 2
				3: 3
				4: 4
				5: 5
				6: 6
				7: 7
				8: 8
				9: 9
				10: POWER
				11: MUTE
				12: HDMI-1 (4/7/10)
				14: HDMI-2 (5/8/11)
				17: DisplayPort-1 (2/3/4)
				19: HDMI-3/6/9/12
				20: INFO
				21: RETURN
				22: MENU
				23: EXIT
				24: LEFT
				25: RIGHT
				26: UP
				27: DOWN
				28: ENTER
				30: 1080P
				31: 720P
				32: 4K60
				33: OTHER (4K60)
				35: XGA
				36: 1280x800
				40: 4 CORNER
				41: WARP
				42: PATTERN
				43: OSD TIME OUT
				44: VIDEO WALL
				45: EDGE BLEND
				46: PROFILE
				48: CH A/B (toggle PIP on/off display)
				60: CH-1
				61: CH-2

				62: CH-3
				63: CH-4
				70: OVERLAP
				71: RESET
				72: ALL (Input Source/Output Resolution)
Power	PWR	RANGE: 0~1	1	0: Power Off
				1: Power On
Brightness	BRI	RANGE: 0~100	50	
Contrast	CON	RANGE: 0~100	75	
Hue	HUE	RANGE: 0~100	50	(Video Color Space Only)
Saturation	XAT	RANGE: 0~100	50	(Video Color Space Only)
Sharpness	XHA	RANGE: 0~100	0	
Color Temperature	CLR	RANGE: 0~3	0	0: Reddish
				1: Neutral
				2: Bluish
				3: Custom
Red Gain	RGN	RANGE: 0~255	255	
Green Gain	GGN	RANGE: 0~255	255	
Blue Gain	BGN	RANGE: 0~255	255	
Scaling Ratio	XCL	RANGE:0~2	0	0: Full Screen
				1: Original Aspect Ratio
				2: 1:1
Input Source	INP	RANGE: 0~3	0	0: HDMI-1 (4/7/10)
				1: HDMI-2 (5/8/11)
				2: HDMI-3 (6/9/12)
				2: DisplayPort-1 (2/3/4)
Output Mode	OPM	RANGE: 0~19	0	0: 3840x2160@60
				1: 3840x2160@50
				2: 3840x2160@30
				3: 4096x2160@60
				4: 4096x2160@50
				5: 1920x1080@60
				6: 1920x1200@60
				7: 1280x720@60
				8: 1024x768@60
				9: 1280x800@60
				10: 1360x768@60
				11: 1280x1024@60
				12: 1400x1050@60
				13: 1600x1200@60
				14: 1920x1080@50
				15: 1920x1200@30
				16: 1920x1080@24
				17: 1920x1080@30

				18: 1920x1080@120
				19: 3840x2160@24
Orientation	ORI	RANGE: 0~5	0	0: Normal
				1: 90 degree (4 Win off)
				2: 270 degree (4 Win off)
				3: H Mirror (4 Win off)
				4: V Mirror (4 Win off)
				5: HV Mirror (4 Win off)
PIP On/Off	PIO	RANGE: 0~10	0	0: Off
				1: PIP
				2: POP (left / right)
				3: POP (up / down)
				4: SBS 2/1
				5: POP3
				6: POP4
				7: 3X SBS
				8: 3X T/B
				9: 4X Split
				10: 4X T/B
PIP Size	PIZ	RANGE: 0~100	0	0: 1/6 output resolution
				44: 1024x768 for 1080P output mode
				100: full (Max Width: 1920, 900 for resolution>3840x2160)
PIP Horizontal Position	PIH	RANGE: 0~100	0	
PIP Vertical Position	PIV	RANGE: 0~100	0	
PIP Display Ratio	PIR	RANGE: 0~1	0	0: Full
				1: Aspect Ratio
PIP Input Source	PIT	RANGE: 0~3		0: HDMI-1 (4/7/10)
				1: HDMI-2 (5/8/11)
				2: HDMI-3 (6/9/12)
				3: DisplayPort-1 (2/3/4)
PIP Orientation	POR	RANGE: 0,3,4,5	0	0: Normal
				1: 90 degree (4 Win off)
				2: 270 degree (4 Win off)
				3: H Mirror (4 Win off)
				4: V Mirror (4 Win off)
				5: HV Mirror (4 Win off)
PIP Overlap Left Edge	PLO	RANGE: +/-1800	0	-1: 9001, -1800: 9800
PIP Overlap Right Edge	PRO	RANGE: +/-1800	0	
PIP Overlap Top Edge	PTO	RANGE: +/-1800	0	
PIP Overlap Bottom Edge	PBO	RANGE: +/-1800	0	
Input Source	INP	RANGE: 0~3	0	0: HDMI-1 (4/7/10)
				1: HDMI-2 (5/8/11)
				2: HDMI-3 (6/9/12)

				3: DisplayPort-1 (2/3/4)
Profile Save	PFX	RANGE: 0~9		0: Index 1
				1: Index 2
				2: Index 3

				9: Index 10
Profile Load	PFL	RANGE: 0~9		0: Index 1
				1: Index 2
				2: Index 3
				3: Index 4
				4: Index 5
Profile Save All	PFV	RANGE: 0~9		0: Index 1
				1: Index 2
				2: Index 3

				9: Index 10
Profile Load All	PFA	RANGE: 0~9		0: Index 1
				1: Index 2
				2: Index 3

				9: Index 10
Horizontal Zoom	HZM	RANGE: 0~14	0	
Vertical Zoom	VZM	RANGE: 0~14	0	
Horizontal Pan	HPN	RANGE: 0~14	0	
Vertical Pan	VPN	RANGE: 0~14	0	
Overlap Left Edge	OLE	RANGE: +/-1800	0	-1: 9001, -1800: 9800
Overlap Right Edge	ORE	RANGE: +/-1800	0	
Overlap Top Edge	OTE	RANGE: +/-1800	0	
Overlap Bottom Edge	OBE	RANGE: +/-1800	0	
Language	LNG	RANGE: 0~2	0	0: English
				1: Simplified Chinese
				2: Traditional Chinese
Reset Settings	RXT	RANGE: 1~3		1: Reset All Settings
				2: Reset Video Wall Settings
				3: Reset Anyplace Settings
Audio Mute	MUT	RANGE: 0~1		0: Main Source
				1: PIP/POP Source
				2: Mute On
Menu Time Out Time	MTO	RANGE: 0~60		0: Menu Time Out Off
				60: Menu Time Out After 60 Seconds
Logo Time Out Time	LTO	RANGE: 0~60	10	0: Disable Start-up Logo
Standby Time	XTT	RANGE: 0~120	0	0: Disable Power Saving
Black Screen (no input signal)	BLK	RANGE: 0~1	0	0: Blue Screen
				1: Black Screen

Box ID	BID	RANGE: 0~99	0	
EDID (Current Input Source)	EDI	RANGE: 0~13	0	0: 3840x2160 60Hz (VIC 97)
				1: 3840x2160 30Hz (VIC 95)
				2: 1920x1080 60Hz (VIC 16)
				3: 1024x768 60Hz (VESA)
				4: 1280x720 60Hz (VIC 4)
				5: 1280x800 60Hz (VESA)
				6: 1920x1200 60Hz (VESA RB)
				7: 1920x2160 60Hz (CVT RB)
				8: 2560x1440 60Hz (VESA RB)
				9: 2560x1600 60Hz (VESA RB)
				10: 3840x1080 60Hz (CVT RB)
				11: 3840x2400 60Hz (CVT RB)
				12: 3840x2400 30Hz (CVT RB)
				13: Customize (CVT RB)
HDMI-1(4/7/10) EDID	H1E	RANGE: 0~13	0	Same as above
HDMI-2(5/8/11) EDID	H2E	RANGE: 0~13	0	Same as above
HDMI-3(6/9/12) EDID	DPE	RANGE: 0~13	0	Same as above
DP-1(2/3/4) EDID	DPE	RANGE: 0~13	0	Same as above
HDMI-1(4/7/10) Customize EDID Width	H1W	1024~4080	1920	
HDMI-1(4/7/10) Customize EDID Height	H1V	720~3840	1080	
HDMI-1 Customize EDID Refresh Rate	H1R	RANGE: 24~120	60	24, 30, 50, 60, 100, 120Hz
HDMI-2(5/8/11) Customize EDID Width	H2W	1024~4080	1920	
HDMI-2(5/8/11) Customize EDID Height	H2V	720~3840	1080	
HDMI-2 Customize EDID Refresh Rate	H2R	RANGE: 24~120	60	24, 30, 50, 60, 100, 120Hz
HDMI-3(6/9/12) Customize EDID Width	H3W	1024~4080	1920	
HDMI-3(6/9/12) Customize EDID Height	H3V	720~3840	1080	
HDMI-3 Customize EDID Refresh Rate	H3R	RANGE: 24~120	60	24, 30, 50, 60, 100, 120Hz
DP-1(2/3/4) Customize EDID Width	DPW	1024~4080	1920	
DP-1(2/3/4) Customize EDID Height	DPV	720~3840	1080	
DP-1 Customize EDID Refresh Rate	DPR	RANGE: 24~120	60	24, 30, 50, 60, 100, 120Hz
Grid Pattern	PTN	Range: 0~15	0	0: [0000] Pattern Off
				1: [0001] Red Grid
				2: [0010] Green Grid
				4: [0100] Blue Grid
				6: [0110] Cyan Grid
				7: [0111] White Grid
				15: [1111] Transparency White Grid
Frame Sync (Frame Lock)	FLO	RANGE: 0~2	1	0: Normal (fixed video latency)
				1: Fast (dynamic video latency)
				2: Disable (free-run mode)
Input Signal Status	IPT	RANGE: 0~15		0: [0000] no input signal on CH1~4
				1: [0001] input signal on CH1

				15: [1111] input signal on CH1~4
Output Signal Status	OPT	RANGE: 0~15		0: [0000] no output signal on CH1~4
				1: [0001] output signal on CH1
				15: [1111] output signal on CH1~4
Anyplace Warp Mode	WPM	RANGE: 0~16	0	0: Off
				1: 2x2
				2: 3x3
				3: 5x3
				4: 9x5
				5: 17x9
				6: Edge Blend
				7: Wall Corner
2x2 Top-Left Corner Horizontal Shift	TLA	RANGE: +/-600	0	
2x2 Top-Left Corner Vertical Shift	TLB	RANGE: +/-600	0	
2x2 Top-Right Corner Horizontal Shift	TRA	RANGE: +/-600	0	
2x2 Top-Right Corner Vertical Shift	TRB	RANGE: +/-600	0	
2x2 Bottom-Left Corner Horizontal Shift	BLA	RANGE: +/-600	0	
2x2 Bottom-Left Corner Vertical Shift	BLB	RANGE: +/-600	0	
2x2 Bottom-Right Corner Horizontal Shift	BRA	RANGE: +/-600	0	
2x2 Bottom-Right Corner Vertical Shift	BRB	RANGE: +/-600	0	
Curved 9x5 Location Index	95I	RANGE: 0~44	0	0: Top Left Corner
				8: Top Right Corner
				22: Center
				36: Bottom Left Corner
				44: Bottom Right Corner
Curved 9x5 Location X	95X	RANGE: +/-600	0	
Curved 9x5 Location Y	95Y	RANGE: +/-600	0	
Curved 17x9 Location Index	17I	RANGE: 0~152	0	0: Top Left Corner
				16: Top Right Corner
				76: Center
				136: Bottom Left Corner
				152: Bottom Right Corner
Curved 17x9 Location X	17X	RANGE: +/-600	0	
Curved 17x9 Location Y	17Y	RANGE: +/-600	0	
Wall Corner Location X	WLX	RANGE: +/-1200	0	'95I' 0: Top Left 1 st Wall Corner
				'95I' 2: Top Left 2 nd Wall Corner
				'95I' 4: Top Center 3 rd Wall Corner
				'95I' 6: Top Right 4 th Wall Corner
				'95I' 8: Top Right 5 th Wall Corner
				'95I' 18: Left Wall Corner
				'95I' 26: Right Wall Corner
				'95I' 36: Bottom Left 1 st Wall Corner
				'95I' 38: Bottom Left 2 st Wall Corner

				'95l' 40: Bottom 3 rd Wall Corner
				'95l' 42: Bottom Right 4 th Wall Corner
				'95l' 44: Bottom Right 5 th Wall Corner
Wall Corner Location Y	WLY	RANGE: +/-1200	0	Same as above
Left Edge Blending Size	LEB	RANGE: 0~1920	0	
Right Edge Blending Size	REB	RANGE: 0~1920	0	
Top Edge Blending Size	TEB	RANGE: 0~1200	0	
Bottom Edge Blending Size	BEB	RANGE: 0~1200	0	
Edge Blending Left Shift	EFL	RANGE:-100~500	0	
Edge Blending Right Shift	EFR	RANGE:-100~500	0	
Edge Blending Top Shift	EFT	RANGE:-100~500	0	
Edge Blending Bottom Shift	EFB	RANGE:-100~500	0	
Edge Blending Transition Gamma Red	EBR	RANGE: 90~300	220	
Edge Blending Transition Gamma Green	EBG	RANGE: 90~300	220	
Edge Blending Transition Gamma Blue	EBB	RANGE: 90~300	220	
Edge Blending Transition Gamma Gain Red	GGR	RANGE: 0~100	50	adjust transition gamma curve
Edge Blending Transition Gamma Gain Green	GGG	RANGE: 0~100	50	
Edge Blending Transition Gamma Gain Blue	GGB	RANGE: 0~100	50	
Edge Blending Offset Gamma	EBL	RANGE: 90~250	220	
Edge Blending Offset Corner X	EOX	EANGE: +/-1200	0	-1000: 9000, -1200: 9200
				'95l' 0: Top Left Corner
				'95l' 4: Top Edge Corner
				'95l' 8: Top Right Corner
				'95l' 18: Left Edge Corner
				'95l' 26: Right Edge Corner
				'95l' 36: Bottom Left Corner
				'95l' 40: Bottom Edge Corner
				'95l' 44: Bottom Right Corner
Edge Blending Offset Corner Y	EOY	EANGE: +/-900		as above
Edge Blending Offset Color Red	BCR	EANGE: 0~255	0	'95l' 22: Center Area
				'95l' 0: Top Left Area
				'95l' 4: Top Edge Area
				'95l' 8: Top Right Area
				'95l' 18: Left Edge Area
				'95l' 26: Right Edge Area
				'95l' 36: Bottom Left Area
				'95l' 40: Bottom Edge Area
				'95l' 44: Bottom Right Area
Edge Blending Offset Color Green	BCG	EANGE: 0~255	0	as above
Edge Blending Offset Color Blue	BCB	EANGE: 0~255	0	as above
Edge Blending Red Gain	EGR	RANGE: 0~100	50	compensates the output color
Edge Blending Green Gain	EGG	RANGE: 0~100	50	
Edge Blending Blue Gain	EGB	RANGE: 0~100	50	

Edge Blending Red Offset	EOR	RANGE: 0~100	50	
Edge Blending Green Offset	EOG	RANGE: 0~100	50	
Edge Blending Blue Offset	EOB	RANGE: 0~100	50	
Edge Blending Mask Corner X	EMX	EANGE: +/-900	0	'95l' 0: Top Left Corner
				'95l' 4: Top Edge Corner
				'95l' 8: Top Right Corner
				'95l' 18: Left Edge Corner
				'95l' 26: Right Edge Corner
				'95l' 36: Bottom Left Corner
				'95l' 40: Bottom Edge Corner
				'95l' 44: Bottom Right Corner
Edge Blending Mask Corner Y	EMY	RANGE: +/-900		as above
Grid Size	GRD	RANGE: 8~120	32	
Deep Color Output Mode	DCM	RANGE: 0~1	0	0: 8-Bit; 1: 10-Bit
HDCP Output Selection	HDO	RANGE: 0~2	0	0: HDCP Input Only (follow with input)
				1: HDCP Enable (always on)
				2: HDCP Disable (always off and output will be AV_Muted when input is with HDCP)
Sub Window Selection	SBW	RANGE: 0~2	0	0: SubWin1
				1: SubWin2
				2: SubWin3
3D Input Format	3DI	RANGE: 0~4	0	0: Auto
				1: Side by Side
				2: Top and Bottom
				3: Line Alternative
				4: Frame Sequential
3D Output Format	3DO	RANGE: 0~4	0	0: Left Eye
				1: Right Eye
				2: Side by Side
				3: Top and Bottom
				4: Frame Sequential
Curved Grid Horizontal Location Index	GRH	RANGE: 0~130	0	Horizontal Position / 16 or 32 (4K)
Curved Grid Vertical Location Index	GRV	RANGE: 0~78	0	Vertical Position / 16 or 32 (4K)
Curved Grid Horizontal Location X	GRX	RANGE: +/-50	0	1/4 pixel per step (4K: 1/2 pixel)
Curved Grid Vertical Location Y	GRY	RANGE: +/-50	0	1/4 pixel per step (4K: 1/2 pixel)
Curved Grid Reset	GRR	RANGE: 0~1	-	
Edge Blending Control	EBC	RANGE: 0-1		0: Disable Edge Blending
				1: Enable Edge Blending

Table 3