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## GeoBox G901 RS232 Commands

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## 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

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## 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
				14: HDMI-2
				15: HDMI-3
				17: DisplayPort-1
				18: DisplayPort-2
				19: OTH (Input: HDMI-3/DP-2)
				20: INFO
				21: RETURN
				22: MENU
				23: EXIT
				24: LEFT
				25: RIGHT
				26: UP
				27: DOWN
				28: ENTER
				30: 1080P
				35: XGA
				36: WXGA
				39: OTH (Output: 4K60)
				43: OSD TIME OUT
				44: VIDEO WALL
				46: PROFILE
				70: OVERLAP
				71: RESET
				77: SHIFT (Freeze Main Window)
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 Ratio
Input Source	INP	RANGE: 0~4	0	0: HDMI-1
				1: HDMI-2
				2: HDMI-3
				3: DisplayPort-1
				4: DisplayPort-2
Output Mode	OPM	RANGE: 0~17	5	0: 3840x2160@60 (VIC 97)
				1: 3840x2160@50 (VIC 96)
				2: 3840x2160@30 (VIC 95)
				3: 3200x1800@60 (VESA R/B)
				4: 2560x1440@60 (VESA R/B)
				5: 1920x1080@60 (VIC 16)
				6: 1920x1200@60 (VESA R/B)
				7: 1280x720@60 (VIC 4))
				8: 1024x768@60 (VESA)
				9: 1280x800@60 (VESA)
				10: 1360x768@60 (VESA)
				11: 1280x1024@60 (VESA)
				12: 1400x1050@60 (VESA)
				13: 1600x1200@60 (VESA)
				14: 1920x1080@50 (VIC 31)
				15: 1920x1200@30 (VESA)
				16: 3840x1080@60
				17: Customize
Customize Output Mode Width	CMW	800~4096	1920	Overall resolution: under 3840x2400
Customize Output Mode Height	CMH	600~3840	1080	
Customize Output Mode Refresh Rate	CMR	24Hz~120Hz	60	
Orientation	ORI	RANGE: 0~5	0	0: Normal
				1: 90 degree
				2: 270 degree
				3: H Mirror
				4: V Mirror

				5: HV Mirror
PIP On/Off	PIO	RANGE: 0~10	0	0: Off
				1: PIP
				2: SBS
				3: Top / 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 (320x180 for 1080P)
				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: 0~4	1	0: HDMI-1
				1: HDMI-2
				2: HDMI-3
				3: DisplayPort-1
				4: DisplayPort-2
PIP Orientation	POR	RANGE: 0~5	0	0: Normal
				1: 90 degree
				2: 270 degree
				3: H Mirror
				4: V Mirror
				5: HV Mirror
PIP Overlap Left Edge	PLO	RANGE: +/-1800	0	-1000: 9000, -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	
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
				-----

				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: 1~2		1: Reset All Settings
				2: Reset Video Wall Settings
Audio Mute	MUT	RANGE: 0~2		0: Main Audio On
				1: PIP/POP Audio On
				2: Mute On
Menu Time Out Time	MTO	RANGE: 0~60	0	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
OSD Menu Horizontal Position	MPH	RANGE: 0~100	50	
OSD Menu Vertical Position	MPV	RANGE: 0~100	50	
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 EDID	H1E	RANGE: 0~13	0	same as above
HDMI-2 EDID	H2E	RANGE: 0~13	0	same as above
HDMI-3 EDID	H3E	RANGE: 0~13	0	same as above
DP-1 EDID	DPE	RANGE: 0~13	0	same as above

DP-2 EDID	D2E	RANGE: 0~13	0	same as above
HDMI-1 Customize EDID Width	H1W	1024~4080	1920	
HDMI-1 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 Customize EDID Width	H2W	1024~3840	1920	
HDMI-2 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 Customize EDID Width	H3W	1024~4080	1920	
HDMI-3 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 Customize EDID Width	DPW	1024~4080	1920	
DP-1 Customize EDID Height	DPV	720~3840	1080	
DP-1 Customize EDID Refresh Rate	DPR	RANGE: 24~120	60	24, 30, 50, 60, 100, 120Hz
DP-2 Customize EDID Width	D2W	1024~4080	1920	
DP-2 Customize EDID Height	D2V	720~3840	1080	
DP-2 Customize EDID Refresh Rate	D2R	RANGE: 24~120	60	24, 30, 50, 60, 100, 120Hz
Frame Sync (Frame Lock)	FLO	RANGE: 0~2	2	0: Normal (fixed video latency)
				1: Fast (dynamic video latency)
				2: Disable (free-run mode)
Input Signal Status	IPT	RANGE: 0~3		0: [0000] Main/PIP Input Signal Off
				1: [0001] Main Input Signal On
				2: [0010] PIP/POP Input Signal On
				3: [0011] Main/PIP Input Signal On
Output Signal Status	OPT	RANGE: 0~1		0: Output signal Off
				1: Output Signal On
Deep Color Output Mode	DCM	RANGE: 0~1	0	0: 8-Bit; 1: 10-Bit
				(not available for 4K50/60 RGB/444)
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

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				4: Frame Sequential
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**Table 3**