Multi-Screen Splicing Processor Communication Protocol

This protocol also supports serial port control and TCP network control.

- Serial port configuration

Serial port configuration of protocol is shown in table 1.

Baud rate	115200
Start bit	1
Data bit	8
Stop bit	1
Verification mode	No

Table 1 serial port configuration

- Network configuration

Network configuration of this protocol is shown in the table 2:

Default IP	192.168.1.128
Socket port	5000,5100,5200,5300

Table 2 TCP network configuration

The following commands are in ASCII code and backspace for newline is “\r\n”.

Contents

Detailed introduction to commands

1.1 Display wall operation

1.1.1 Windowing command

Format	<open,Wall_ID,Window_ID,Src_Ch,src_hstart,src_vstart,src_hsize,src_vsize,win_x0,win_y0,win_width,win_height>	
Definition	This command is to define the position and size of a window for specific input signal source.	
Parameters	Wall_ID	Splicing wall number: when it is 0, it represents the first set of splicing wall; 1, the second set; 2, the third set; 3, the fourth set.
	Window_ID	Window ID, varying in 0-287.
	Src_Ch	Input signal channel of windows, varying from 1 to maximum input channels.
	src_hstart	Start position of capture for input signal source in horizontal position; mustn't be greater than horizontal resolution of inputs.
	src_vstart	Start position of capture for input signal source in vertical position; mustn't be greater than vertical resolution of inputs.
	src_hsize	Size of horizontal capture. The combination with src_hstart cannot be greater than input horizontal resolution. When equal to 0, it means horizontal size of original signal source will be used and src_hstart become invalid.
	src_vsize	Size of vertical capture. The combination with src_vstart cannot be greater than input vertical resolution. When equal to 0, it means vertical size of original signal source will be used and src_vstart become invalid.
	win_x0	Position of horizontal starting pixel of window
	win_y0	Position of vertical starting pixel of window
	win_width	Horizontal width of window
	win_height	Vertical height of window
Reference	Example 1 <open,1,0,3,0,0,0,0,0,0,1910,1070> This command indicates that a window of ID 0 will be opened on the second display wall set, with coordinate (x0, y0) = (0, 0), size (win_width,win_height) = (1910,1070) and input source of window is input channel 3 without capturing input signal source.	
Returned value	<open cmd done>	

1.1.2 Moving window command

Format	<move,Wall_ID,Window_ID,Src_Ch,src_hstart,src_vstart,src_hsize,src_vsize,win_x0,win_y0,win_width,win_height>
Definition	This command is to move a window to a specific position or zoom to a specific size.
Parameters	Other parameters of this demand are the same with the ones in windowing command. Please refer to command 1.2.1.
Returned value	<move cmd done>

1.1.3 Command for switching input sources of window

Format	<switch,Wall_ID,Window_ID,Src_Ch,src_hstart,src_vstart,src_hsize,src_vsize>
Definition	This command indicates that the contents of a window will be switched to a specific input source.
Returned value	<switch cmd done>
Reference	Example 1 <switch,1,0,3,0,0,0,0> It indicates that signal source of window 0 of the second display wall set will be switched to input channel 3 without capturing any part of input signal.

1.1.4 Command for changing windows superposition layers

Format	<movz,Wall_ID,Window_ID,levelNum>	
Definition	This command is to set the superposition layer of specific windows.	
Parameters	levelNum	Window layer number, varying from 1 to maximum number of opened windows.
Returned value	<movz cmd done>	
Reference	Example 1 <movz,1,0,3> This command indicates that the 0# window from the second display wall set will be moved to layer 3.	

1.1.5 Command for closing a specific window

Format	<shut,Wall_ID,Window_ID>
Definition	This command is to close a window.
Returned value	<shut cmd done>
Reference	Example 1 <shut,1,0> This command indicates closing the 0# window in the second display wall set.

1.1.6 Command for closing all windows in a display wall set

Format	<reset,Wall_ID>
Definition	This command is to close all windows in specific splicing screen set.
Returned value	<reset cmd done>
Reference	Example 1 <reset,1> This command is to close all the windows in the second display wall set.
Format	<take-pre,Wall_ID>
Definition	This command is to confirm and implement the pre-operation on current display wall set.
Returned value	<take-pre cmd done>
Reference	Example 1 <take-pre,0> This command is to confirm and implement the pre-operation on the first display wall set.

1.2 Contextual model operation

1.2.1 Command for saving a contextual model

Format	<save,Wall_ID,Scene_id>	
Definition	This command is to save current window state of specific screen set as a contextual model.	
Parameters	Scene_id	It indicates the number of contextual model to be saved, varying from 1 to 32.
Returned value	<save cmd done>	

1.2.2 Command for invoking a contextual model

Format	<call,Wall_ID,Scene_id>	
Definition	This command is to assign a saved specific contextual model to specific screen set.	
Parameters	Scene_id	It indicates the number of contextual model to be saved, varying from 1 to 32.
Returned value	<call cmd done>	

1.2.3 Command for deleting a contextual model

Format	<delete,Wall_ID,Scene_id>	
Definition	This command is to delete a specific saved contextual model for specific screen set.	
Parameters	Scene_id	It indicates the number of contextual model to be delted, varying from 1 to 32.
Returned value	<delete cmd done>	

Format	<getwhitebalance,out_ch>	
Definition	This command is to obtain the parameters of white balance.	
Parameters	Out_ch	Output channel (1-MAX)
Returned value	<whitebalanceack,out_ch,R,G,B>	

1.3 Inquiry operation

1.3.1 Command for inquiring about a display wall set

Format	<wallinf,Wall_ID>	
Definition	This command is to display all windows, bottom diagram and output mapping information of specific display wall set.	
Parameters	Wall_ID	Number of display wall set.
Returned value	Example 1 <wallinf, 0> This command indicates the related information of the first display wall set and returned value is shown as follow: Hnum is 2 //Refer to section 1.1.1 for detailed definition. Vnum is 2 //Refer to section 1.1.1 for detailed definition. PanelWidth is 1920 //Refer to section 1.1.1 for detailed definition. PanelHeight is 1080 //Refer to section 1.1.1 for detailed definition. HgapL is 0 //Refer to section 1.1.1 for detailed definition. HgapR is 0 //Refer to section 1.1.1 for detailed definition. VgapU is 0 //Refer to section 1.1.1 for detailed definition. VgapD is 0 //Refer to section 1.1.1 for detailed definition. HFrontPorch is 140 VFrontPorch is 40 ActHsize is 1920 ActVsize is 1080 HTotal is 2200 VTotal is 1125 Hswidth is 8 Vswidth is 9 HsyncPol is 1 VsyncPol is 1 Fps is 60 screen_en is 1 //Display the enabled state of display wall set. The current out_table for 0 is : //Display mapping table of display wall set (logical channel: physical channel) 0 : 0,1 : 1,2 : 2,3 : 3 >	

1.3.2 Command for inquiring current input state

Format	<srcinf>
Definition	This command is to list all current input channels. (Actively checked by main control panel).

Returned value	Example 1 <srcinf> Returned value: signal type includes VGA,HDMI,DVI,YPbPr,BNCQ,SDI,IP,4K,AREA. No signal is NOSRC. <The valid Input is : SRC TYPE SIGNAL SUB_VALID //Input channel number input channel type if input channel is valid 1,VGA,1 //1# input channel signal type is VGA input channel is valid 2,VGA,0 3,HDMI,0 4,HDMI,1 5,BNCQ,3 6,BNCQ,5//6# input channel signal type is CVBS input channel condition is 0101 (binary system), namely, 1# and 3# channel is valid 7,4k,1 //A input board only supports 4k inputs, one channel 8,4k,1 9,4k,1 10,4k,1 11,DVI,0 12,DVI,0 13,DVI,0 14,DVI,0 >

1.3.3 Command for inquiring window information

Format	<winf,Wall_ID>
Definition	This command is to display all the window information of specific display wall set.
Returned value	Example 1 <winf,0> Returned value is shown as follow: <The valid window ID is : id levelnum Src_Ch src_hstart src_vstart src_hsize src_vsize win_x0 win_y0 win_width win_height //Refer to section 1.2.1 for detailed definition. 0,1,2,0,0,0,0,0,0,1919,1079 1,2,3,0,0,0,0,300,200,480,270 2,3,2,0,0,0,0,200,200,1919,1079 3,4,3,0,0,0,0,700,600,480,270 4,5,2,0,0,0,0,1000,1500,1919,1079 5,6,3,0,0,0,0,300,200,480,270 >

1.3.4 Command for inquiring network parameters

Format	<netinf>
Definition	This command indicates the network configuration data of controller.
Returned value	Example 1 <netinf> Returned value is shown as follow: <IP:192.168.1.108 MAC:00-08-DC-01-02-03 MASK:255.255.255.0 GATE:192.168.1.1 PORT:5000.5100.5200.5300.5400.5500.5600.5700 >

1.4 Other settings

1.4.1 Command for setting network parameters

Format	<netset,mac1[6,]ip[4],mac2[6],mask[4],gate[4],port>
Definition	This command indicates the network parameters for controller configuration.
Parameters	This command includes 25 parameters, including setting the machine as mac1, IP address, MAC2 address, mask, gateway, and port number.
Returned value	<netset cmd done>
Reference	Example 1<netset,0,8,220,1,2,3,192,168,1,108,0,8,220,1,2,3,255,255,255,0,192,168,1,1,5000>
Note	Do remember to convert corresponding MAC address into decimal form, for example: 0A—>10.