VWC2-B and ROC Series Video Wall Controller

Communication Protocol V1.1

DIGIBIRD TECHNOLOGY CO., LTD.
www.digibirdtech.com
sales@digibirdtech.com

Communication methods

There are two communication methods between VWC and PC:

RS232

Directly connect PC with the VWC via RS232 serial cable, with the PC serial port setting as: Baud Rate 9600, 1 Stop Bit, and No Parity.

UDP

Connect PC with the VWC via Ethernet cable, the PC sends one UPD message to the port 5000 of VWC, each UDP packet takes one command.

The RS232 and UPD methods can work simultaneously, but the VWC only proceed one command from RS232 or UPD, while the other command will be ignored.

Command Format

Communication between PC and VWC is using bidirectional protocol, and the format is:
<Command,Param1,Param2,…ParamN>
This Command Set adopts ASCII Code, no case-sensitive for characters. Each command starts with "<" and ends with ">", adopting half-width "," to separate each parameter; no space characters in the command.

All commands are sent initiatively from PC to VWC, the controller responds to commands in four ways:
Command/order executed correctly if the command is unidirectional the VWC will response with message:
<Command,OK>

Command/order executed correctly, if the command is to read info from VWC, the VWC will response with message:
<Command,Param1,Param2,…ParamN>
…
<Command,OK>

According to different commands, the VWC will response one or several messages with parameters, and end with OK.

Command/order executed failed because of format error or incompatible version, the response will be:
[ERR]

Command Timeout

When the VWC is in progress of executing the current command, then the second received command will be disregarded and result in no feedback/response to PC. Generally, please set 1 second timeout check after PC sending previous command.

Parameter Convention

Following are some main parameters in this protocol:

1. Channel

The main number of Input Channel, being used to identify one main input signal source, start from 1.

The physical input port number of VWC2-B indicated on rear panel.

2. Sub-channel

For VWC2-M4. HPro series modular designed controller, there are two or fours inputs cards. So user need to indicates with sub-channel ID. As for VWC2-B and ROC compact series controller the sub-channel ID is always '0'.

3. W_ID

It is used to distinguish different windows, and ID of different windows must never be the same.

W_ID range: 1≤W_ID≤32

To operate on a window, you need to provide W_ID. W_ID needs to do the recycling, if the window using a certain ID is closed, the new window can use this ID in the future.

In matrix mode, this parameter is the specific output channel number.

4. Coordinate

Coordinate (by pixel) is used to identify the window position and size on the video wall. (X0, Y0) is the top left point of window.

For example, a full screen window on top left 1024x 768 monitor, the original coordinate is (0, 0) and the end (bottom right) is (1024, 768).

5. GroupID

The VWC2-B and ROC series can support control one group video wall. The group ID will always be '1'.

Command

1. Windows operating

The main operation of windows including, Open, Close, Moving, Resize, Top, Bottom and channel switching.

1.1 Open Window

<OPEN,W_ID,Channel,SubChannel,x0,y0,x1,y1,GroupID>

W_ID	Window ID	Be used to identify specific window, if open a new window by existing ID (one window for this ID is opened), the existing window will be closed.
Channel	Main channel number	Refer to 'Parameter Convention'.
SubChannel	Sub channel number	Refer to 'Parameter Convention'.
x0,y0	Original coordinate	Refer to 'Parameter Convention'.
x1,y1	End point coordinate	Refer to 'Parameter Convention'.
GroupID	Videowall ID	'1' for VWC2-B and ROC

Successful and response:

<OPEN,OK>

For example:

Open a one window with ID '1' on videowall group '1', top left corner coordinate is (0,0), bottom right corner coordinate is (100,100).

<OPEN,1,1,0,0,0,100,100,1>

1.2 Shutdown/Close window

< SHUT,W_ID ,GroupID>

This command is used for closing the window under 'W_ID'.

W_ID	Window ID	Be used to identify specific window
GroupID	Videowall ID	'1' for VWC2-B and ROC

Successful and response:

<SHUT,OK>

For example:

Close a window with ID ’1’ on video wall group ‘1’.

<SHUT,1,1>

1.3 Move window

<MOVE,W_ID,Channel,SubChannel,x0,y0,x1,y1,GroupID

This command is used for changing the position and size of the window.

W_ID	Window ID	Be used to identify specific window, if open a new window by existing ID (one window for this ID is opened), the existing window will be closed.
Channel	Main channel number	Refer to ‘Parameter Convention’.
SubChannel	Sub channel number	Refer to ‘Parameter Convention’.
x0,y0	Original coordinate	Refer to ‘Parameter Convention’.
x1,y1	End point coordinate	Refer to ‘Parameter Convention’.
GroupID	Videowall ID	‘1’ for VWC2-B and ROC

Successful and response:

<MOVE,OK>

For example:

Move the window with ID ’1’ to new position to top left corner coordinate (0,0), bottom right corner coordinate (150,150).

<MOVE,1,1,0,50,50,150,150,1>

1.4 Resize the window

<SIZE,W_ID,Channel,SubChannel,x0,y0,x1,y1,GroupID>

This command is to adjust the position and size of the window, this command parameters are same with MOVE command.

Successful and response:

<SIZE,OK>

For example:

Enlarge the window with ID ’1’ to twice of original size, top left corner coordinate (0,0), bottom right corner coordinate (200,200).

<SIZE,1,1,0,0,0,200,200,1>

1.5 Adjust the layering

<MOVZ,W_ID,ZOrder, GroupID >

This command is used for adjusting the window layers.

W_ID	Window ID	Be used to identify specific window,
ZOrder	Windows layer	1≤ZOrder≤n, 1 means bottom, n means top. (n=total windows qty. on wall.
GroupID	Videowall ID	'1' for VWC2-B and ROC

Successful and response:
<MOVZ,OK>

For example:
Change the layer of window with ID '1' to layer 8.
<MOVZ,1,8,1>

1.6 Shutdown/Close all windows

<SALL, GroupID >

This command is to shut down all windows. Successful and response:
<SALL,OK>

For example
Close all windows on video wall with ID '1'
<SALL, 1 >

1.7 Input Source Cropping

Below commands are added to enable the operation of cropped input source.

OPE2, the command to open cropped input
SIZ2, the command to resize cropped input
MOV2, the command to move cropped input
CAL2, the command to recall the saved scene with cropped input

The command protocol is the same to previous protocol except for adding the cropped pixel number of Left, Top, Right, Bottom, means pixels cut from left, top, right, bottom edge.

For example.
the command to open cropped inputs, with cropped 10 pixels to left, 20 pixels to Top, 25 pixels to right and 30 pixels to bottom.

<OPE2,1,1,0,0,0,1920,1080,10,20,25,30>

Move window
<MOV2,1,1,0,272,363,2192,1443,10,10,10,10,1>

Resize the window

<SIZ2,1,1,0,272,363,2192,1554,10,10,10,10,1>

Recall Presets

<CAL2,10,1>

Return message

<CAL2,1,1,272,363,2192,1554,0,10,10,10,10,1>

<CAL2,OK>

1.8 Save scene

<save,SCENE_ID, GroupID >

SCENE_ID	Scene ID	Scene ID from 1 to 100.
GroupID	Videowall ID	'1' for VWC2-B and ROC

Successful and response:

<SAVE,OK>

1.9 Recall scene

<CALL,SCENE_ID,GroupID >

SCENE_ID	Scene ID	Scene ID from 1 to 100.
GroupID	Videowall ID	'1' for VWC2-B and ROC

Successful and response.

<CALL,W_ID,Channel,x0,y0,x1,y1,SubChannel >

…

<CALL,OK>

For example.

Recall scene 5 on group ID '1'.

<CALL,5, 1>

Response;

<CALL,1,1,0,0,100,100,0>

<CALL,2,1,100,100,200,100,0>

…

<CALL,OK>

Command for VWC2-ROC series（additional）

1. Adjust output volume

<WAVA,Mark,Output Channel,Mute Status,Volume>

Mark	Audio settings	1: set to 3.5mm output (output channel must be 1) 2: set to eARC (output channel must be 1) 3: set to HDMI embedded audio output Note：eARC and HDMI embedded audio does not support volume adjustment.
Output Channel	Embedded audio Output channel	From 1 to 12
Mute Status	Mute status	0: unmute 1: mute
Volume		Form 1 to 100, default is 50

For example

<WAVA,1,1,0,60> set 3.5mm output volume to 60
<WAVA,2,1,1,50> set to eARC
<WAVA,3,2,1,50> set HDMI output 2 to mute.

2. Read Volume

<RAVA,mark,output channel>

Successful and receive
<RAVA Mark,Output channel,Mute Status, Volume>
<RAVA,OK>

Mark	Audio settings	1: set to 3.5mm output (output channel must be 1) 2: set to eARC (output channel must be 1) 3: set to HDMI embedded audio output Note：eARC and HDMI embedded audio does not support volume adjustment.
Output Channel	Embedded audio Output channel	From 1 to 12
Mute Status	Mute status	0: unmute 1: mute
Volume		From 1 to 100, default is 50

3. Audio switching

<WACH,Mark,Switching status 1,Switching status 2>

Mark	Audio settings	0 (command reserved for future)
Switching Status	Source A-Output B Source A-Output B1/B2	Source A: 1-4, 0 means cancel switching. Output B: 1 means 3.5mm output

		2 means eARC 3 means HDMI embedded audio. Support single input switch to multiple outputs.

For example

<WACH,0,1-1/2/3> Input 1 switch to all outputs

<WACH,0,1-1,2-2/3> Input 1 switch to 3.5mm Jack output, Input 2 switch to eARC and embedded outputs.

4. Read audio switching status

<RACH,Mark>

Successful and reply

Recv: <RACH,Mark, Switching status 1,Switching status 2>

<RACH,OK>

Mark	Audio settings	0 all channels switching status
Switching Status	Source A-Output B Source A-Output B1/B2	Source A: 1-4, 0 means cancel switching. Output B: 1 means 3.5mm output 2 means eARC 3 means HDMI embedded audio. Support single input switch to multiple outputs.

5. Recall Scene

CAL3 command is used for recall scene with cropped source and audio switching status.

<CAL3,SCENE_ID,GroupID >

SCENE_ID	Scene ID	0-100
GroupID	Video Wall group ID	1

Successful and reply

<CAL3,W_ID,SrcChannel,x0,y0,x1,y1,SubChannel,LeftCutX,LeftCutY,v,RCutY,Mute,AudioVal,GroupID>

…

<CAL3,OK>

W_ID	Window ID	Be used to identify specific window, if open a new window by existing ID (one window for this ID is opened), the existing window will be closed.
Channel	Main channel number	Refer to ‘Parameter Convention’.
SubChannel	Sub channel number	Refer to ‘Parameter Convention’.
x0,y0	Original coordinate	Refer to ‘Parameter Convention’.
x1,y1	End point coordinate	Refer to ‘Parameter Convention’.

LeftCutX	Pixel cut from left horizontally	Pixel cut from left horizontally
LeftCutY	Pixel cut from left vertically	Pixel cut from left vertically
RCutX	Pixel cut from right horizontally	Pixel cut from right horizontally
RCutY	Pixel cut from right vertically	Pixel cut from right vertically
Mute	Mute status	0: unmute 1: mute
AudioVal	Volume	From 1 to 100, default is 50
GroupID	Videowall ID	'1' for VWC2-B and ROC