A6000 — 4K Multi-Window Mosaic Processor

Quick setup guide

(Ver1.1)

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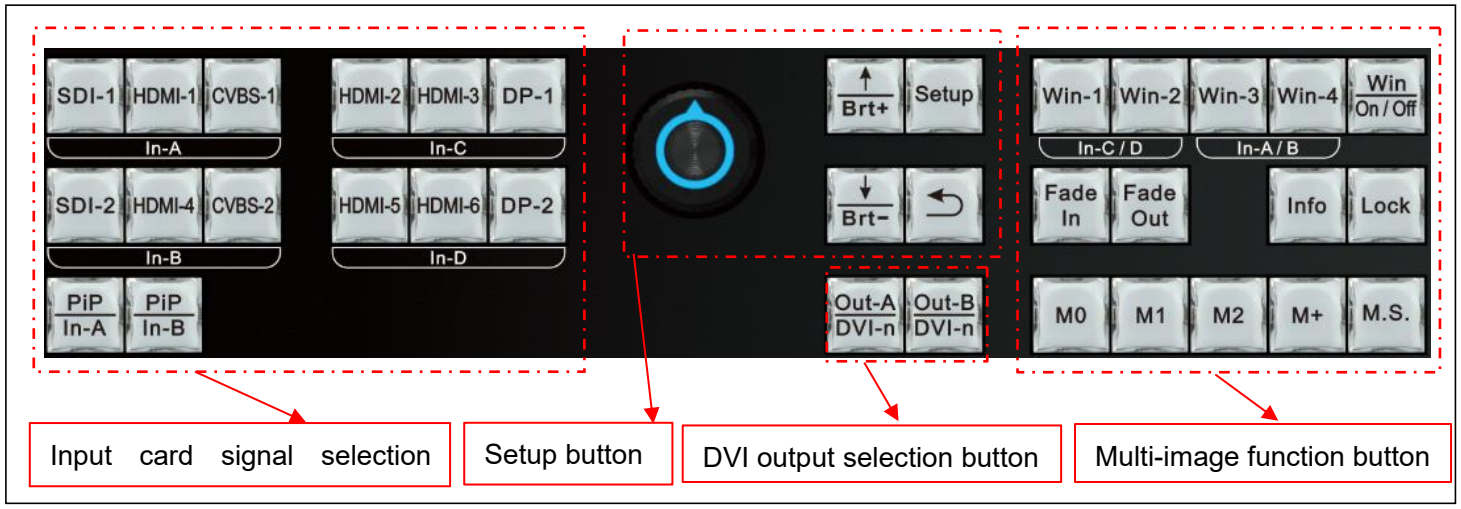
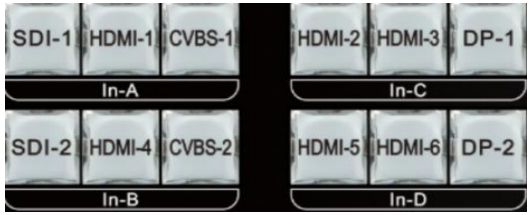
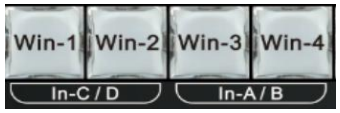
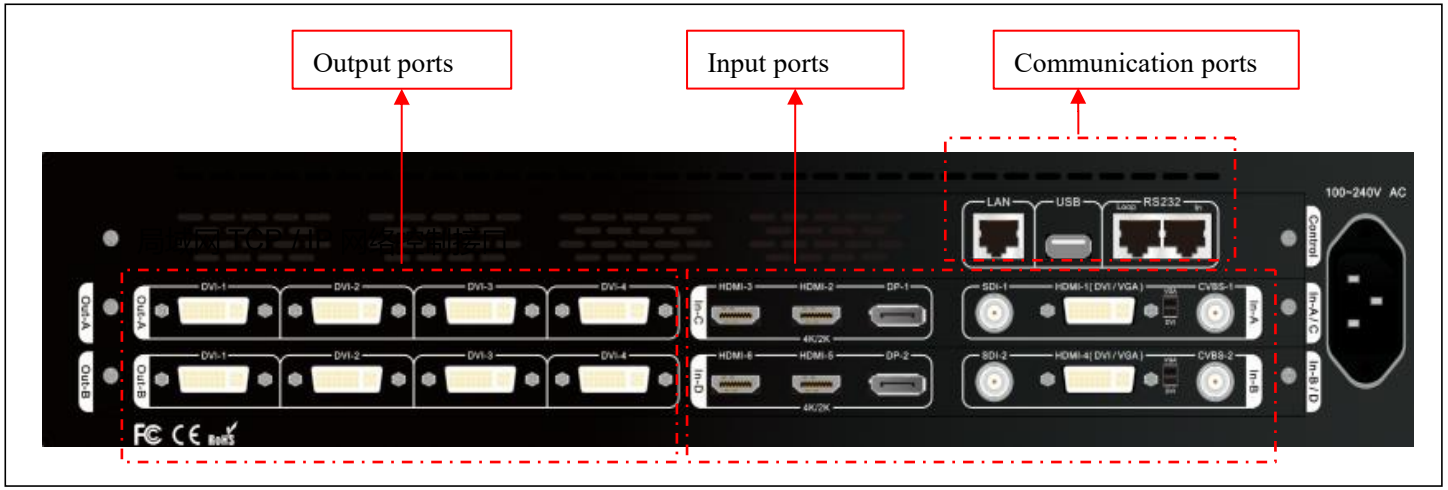
1. Descriptions of front panel buttons



Category	Buttons	Description
Input card signal selection button		A6000 offers 4 input cards ：In-A、 In-B、 In-C and In-D. In-A、In-B can access 2K signal，In-C、 In-D can access 4K signal. Press corresponding button to select input signal source directly. If the selected signal is valid, button indicator will lit up; if selected signal is invalid, the button indicator will flicker.
		In-A、In-B input card support two images display via PIP/POP function. Press this button，the button indicator lit up, then select another signal as sub-image source.
Output card and functionality button		DVI output port selection button. When need configure output port, continually press this button to select DVI-1、DVI-2、DVI-3 or DVI-4 output port .
		Multi-window selection button. A6000 can open 4 windows， marked as Win-1、 Win-2、 Win-3 and Win-4. Win-1 、 Win-2 can access 4K signal from In-C or In-D card separately. Win-3、Win-4 can access 2K signal from In-A or In-B card separately. In operation state, press the button to select corresponding window, each window can set（**Win-On/Off**）or（**Fade-In**）/**Fade-Out)** . In configuration state，press button to select corresponding window , then adjust “image quality” or “size and position” .
		Window image on or off button. First select target window by pressing **Win-1**、 **Win-2**、 **Win-3** or **Win-4** , then press“ **Win-On/Off** ”to open or close corresponding window. When window open，button light up，when window closed，button light off.
		Window image on top（**Fade-Out**）or on bottom（**Fade-In**）button. **A6000** can open 4 windows overlay display. First select the target window by pressing **Win-1**、 **Win-2**、 **Win-3** or **Win-4**, then press **Fade-Out** to set image on top， or press **Fade-In** to set image on bottom. Support Fade in/Fade out switching effect.

Category	Buttons	Description
Setup and adjustment button		Setup button. When processor under operate state ,press this button to enter setup menu, user can configure processor in the menu.
		Rotate knob to select menu item or adjust parameters, press knob（as **OK**）can save and apply parameters.
		Up and Down selection button. After enter setup menu, use to select menu item . When processor under operate state , press this button can directly adjust image brightness(increase or reduce) .
		Return button. Press button to return to previous menu or excite menu.
Display mode and lock button		Image display mode button. Divided into Multi-image display mode and output image display mode Both these display modes use these button jointly. 1）As Multi-image display button. In operation state, press **M0**、**M1**、**M2** to switch Multi-images display mode directly; when adjust Multi-image display parameters，press **M0**、**M1**、**M2** to select target display mode where all Multi-window parameters will be automatically saved in this mode. 2） As output image display mode. when processor in operation state， rotate knob to select different splicing mode .When adjust splicing parameter, press **M0**、**M1**、**M2** to select target mode where all splicing parameter will be automatically saved in this mode.
		Extended mode selection button. Press this button to select more display mode. The menu includes 13 display modes , marked as :M0、M1、M2、M3、 M4、M5、M6、M7、 M8、M9、M10、M11、 M12. Select different display mode by rotating knob .
		Multi-image mode and output image display mode duplication button. Copy all parameters from source mode to destination mode .
		Button lock. Press this button to lit up， all buttons will be invalid except **Lock** button itself, so as to avoid misoperation. Press **Lock** button 3 times continually to unlock , button indicator will light off .
		Processor info button. Press button to show processor setup information and software version information etc. Continually press this button to turn page .

2. Descriptions of rear panel interface



1）Video input ports

A6000 series can assemble maximum 4 input cards，In-C、In-D are 4K input cards , each card includes： HDMI2.0×2 、DP1.2×1

In-A、In-B are 2K input cards，each card includes： CVBS×1、3G-SDI×1、HDMI（DVI / VGA）×1

In-A、In-B HDMI input port version is HDMI1.3，compatible with DVI and VGA input. When input VGA signal，set the dial switch to VGA side

2）Video output ports

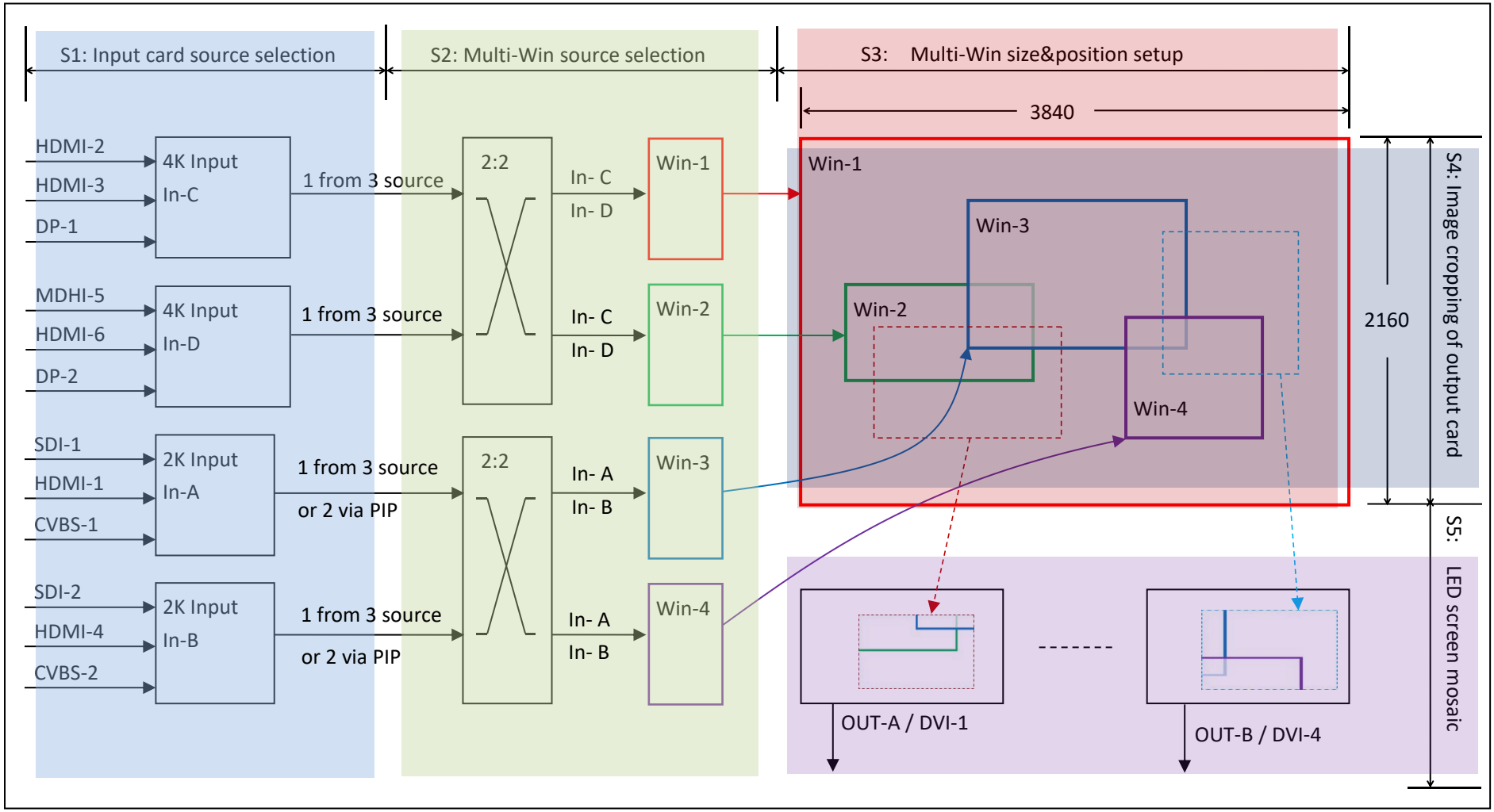
A6000 series can assemble maximum 2 output cards，each output card contains 4 independent DVI output port，each output card support 4 LED screen units splicing .

3）Communication ports

LAN：Local area network TCP/IP network control port

USB or RS232 control also provided

3. A6000 video processing procedure



1） A6000 video processing procedure is divided to 5 steps：

S1: Input card signal source selection

S2: Multi-window signal source selection

S3: Multi-window size and position setup

S4: Output image cropping(crop Multi-win image)

S5: Output image size and position setup (Led screen mosaic)

2） Input card signal source selection（**S1**）

2.1） A6000 offers two kind input card: HD(2K) input card, UHD(4K) input card. Maximum 2X2k card and 2X4K card installation, marked as In-A, In-B, In-C and In-D

2.2） In-A support selecting 1 from 3 input signals, two images selection available via PIP/POP function

2.2） In-B support selecting 1 from 3 input signals, two images selection available via PIP/POP function

2.3） In-C only support 1 from 3 input signal selection

2.3） In-D only support 1 from 3 input signal selection

3） Multi-window signal source selection（**S2**）

3.1） A6000 support 4 windows display, marked as: Win-1, Win-2, Win-3 and Win-4

3.2） Win-1 can select signal source from In-A or In-B

3.2） Win-2 can select signal source from In-A or In-B

3.3） Win-3 can select signal source from In-C or In-D

3.4） Win-4 can select signal source from In-C or In-D

4） Multi-window size and position setup（**S3**）

4.1） A6000 each window’s size and position can be arbitrarily adjusted within resolution 3840×2160

4.2） 4 window’s overlay order can be set at will, such as overlapped or tiled

5） Output image cropping by size and position（**S4**）

5.1） A6000 supports maximum 8 DVI outputs

5.2） Each DVI output support random input signal cropping within 3840×2160 , as shown in dotted frame in above picture S4 section

6） Output image size and position setup（**S5**）

6.1）Each DVI output support display cropped image (in 5.2） by any size and position on LED screen

4. A6000 setup instruction

Step1 :Input, output interface connection

1.1) Connect input signals to corresponding input card

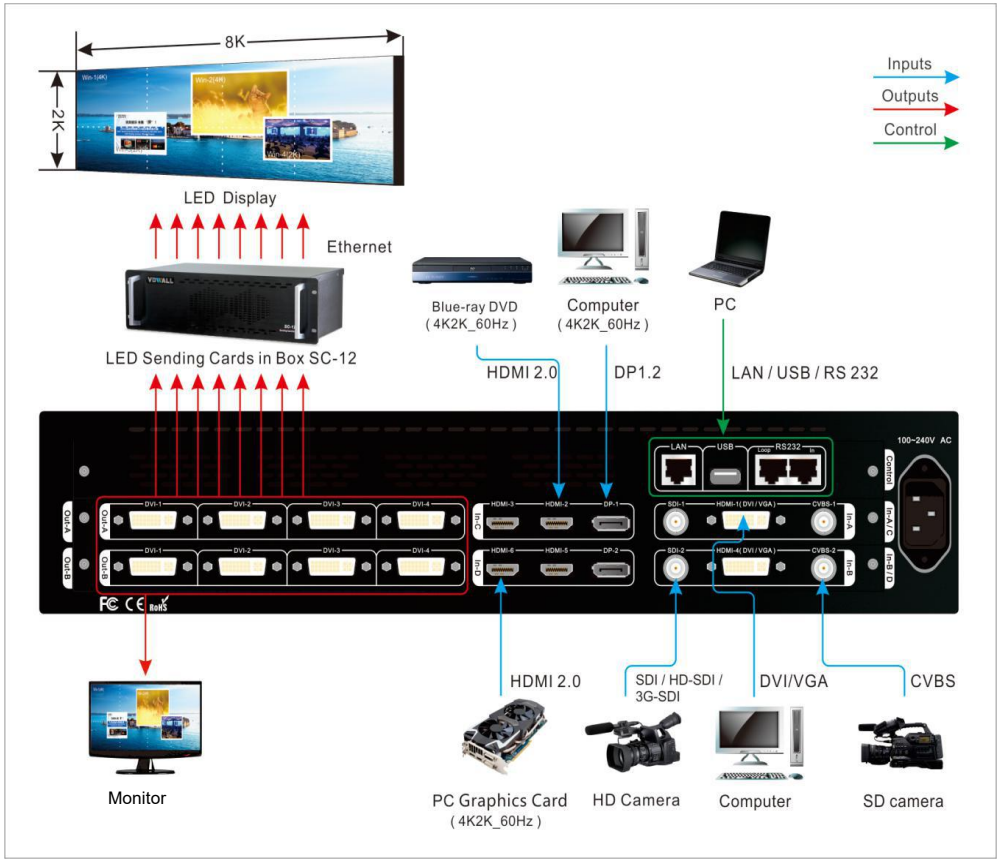
1.2) Connect A6000 DVI output to sending card

1.3) Sending card connect to LED screen by net cable

1.4) Configure sending card and LED screen. Be noticed :

The largest screen unit resolution can not exceed the output resolution of A6000

1.5) Refer to connection diagram on Picture 4-1.1



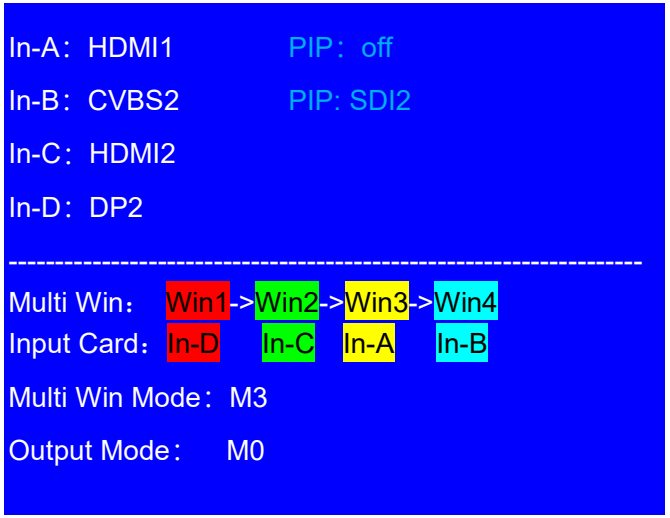
Picture 4-1.1

Step2 : Power on the processor

2.1) Plug in the power cable of A6000 and turn on device,

wait until device completely initialized

2.2） As shown in Picture 4-2.1, LCD display interface after boot up



Picture 4-2.1

Step3) : Output resolution setup of A6000

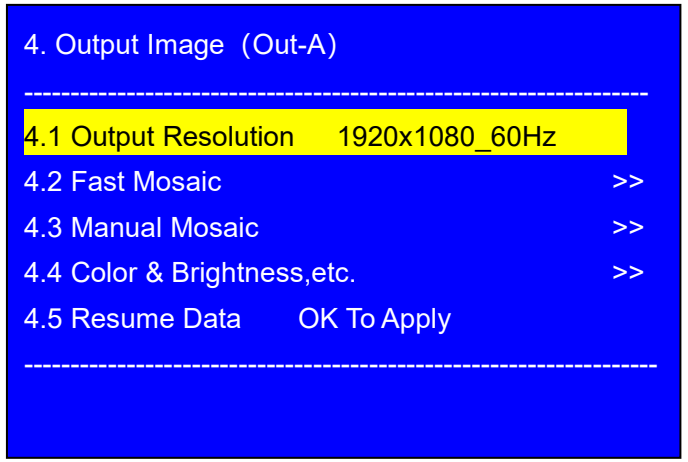
3.1) Press **Setup** button to enter setup menu, select “4.1 Output Resolution”,

set output resolution of A6000, as shown in Picture 4-3.1

Note: This operation will reset A6000 to default state, all existing configuration

data will be lost. Usually used when A6000 drives a new LED screen

otherwise, just skip this step



Picture 4-3.1

Step4) : Input card signal source selection

4.1） Press corresponding button to select input card signal source

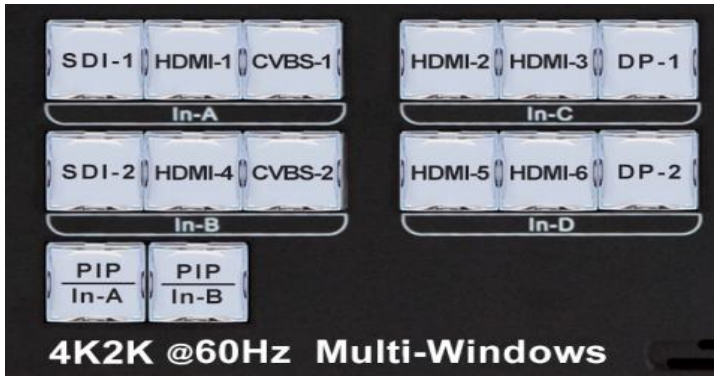
4.2） Press **PIP/In-A** to open PIP/POP dual image display for In-A,

then select sub-image source for PIP/POP

4.3） Press **PIP/In-B** to open PIP/POP dual image display for In-B,

then select sub-image source for PIP/POP

Note: When selected input signal is valid, the corresponding indicator lit up normally. Otherwise, indicator flickers.



Picture 4-4.1

Step5) : Multi-window signal source selection

5.1) Press **Setup** button to enter setup menu

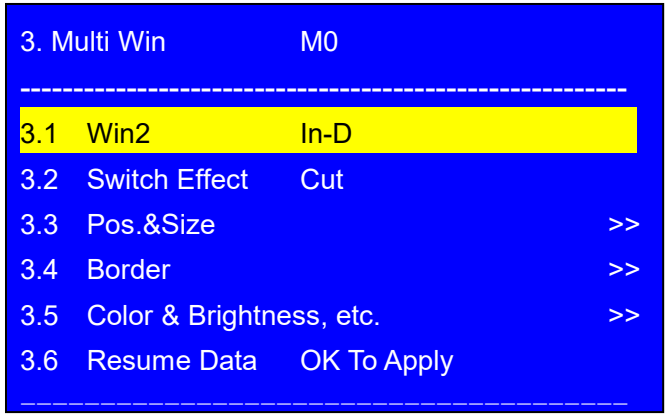
5.2) Select item: "*3.1 Win2 In-D*"

5.3) Press window button (**Win-1**， **Win-2**， **Win-3** ,**Win-4**)

to select target window

5.4) Rotate knob to switch signal source card

5.5) As shown in Picture 4-5.1, Win2 select In-D as signal source



Picture 4-5.1

Step6) : Multi-window size and position setup

6.1) A6000 supports 4 windows display, each window's size and position can be adjusted freely within resolution 3840×2160

6.2) Each window's position is defined by coordinate within 3840×2160 , the top left point's coordinate is (0,0)

horizontal start position marked as H_Start, vertical start position marked as V_Start

6.3) Each window's size defined by Width and Height

6.4) Picture 4-6.1 shows Win-3's H_Start, V_Start ,Width and Height for visualized understanding

6.5) As Picture 4-6.1, Win-1's position = (0， 0） , size = 3840×2160, full screen display

6.6）Enter the menu "3.3 Pos & Size"， as shown in picture 4-6.2

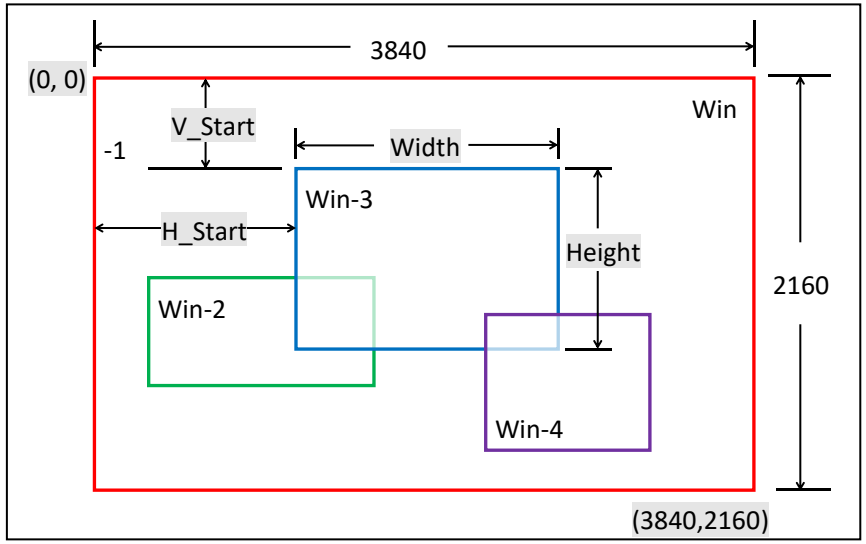
6.7）Press button **Win-1**、**Win-2**、**Win-3**、**Win-4** to select target window

6.8）Press button **M0**、**M1**、**M2** 、**M+** to select the display mode

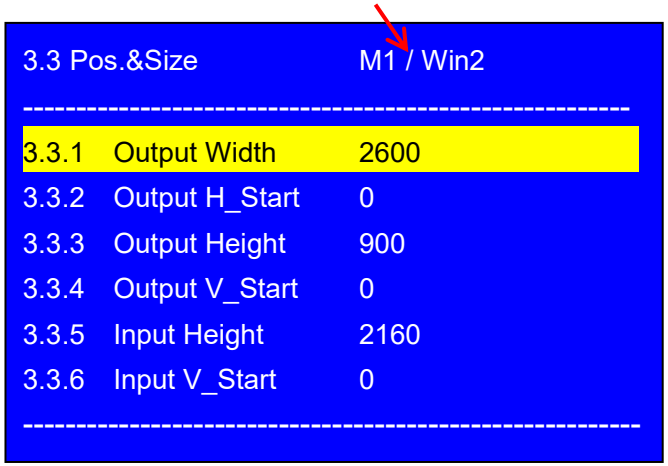
（ A6000 can preset 13 Multi-win display modes utmost)

6.9）The selected window (Win-n) and Multi-win display mode Mn will be showed in the first line of the LCD interface, as shown in the picture 4-6.2 where the red arrow indicates " M1 / Win2 ".

6.10）Enter menu"3.3.1 Output Width", rotate the knob to adjust the



Picture 4-6.1



Picture 4-6.2

parameters, then press **OK** to save and apply.

6.11） Enter menu “3.3.2 Output H_Start”, rotate the knob to adjust the values, then press **OK** to save and apply.

6.12） Enter menu “3.3.3 Output Height”, rotate the knob to adjust the values, then press **OK** to save and apply.

6.13） Enter menu “3.3.4 Output V_Start”, rotate the knob to adjust the values, then press **OK** to save and apply.

6.14） Repeat the above setting from 6.7) to 6.13) to adjust more windows size and position (Win-n), save more Multi-window display mode (Mn).

Step7)： Input signal image cropping

7.1）A6000 can assemble 2 DVI output cards, Out-A and Out-B, each output card has 4 DVI/HDMI outputs.

7.2）Each DVI output can crop image (multi-win image) within 3840*2160, as shown in the picture 4-7.1, the red dotted frame is the cropped size and position of Out-A/DVI-1, and the blue dotted frame is the cropped size and position of Out-B/DVI-4

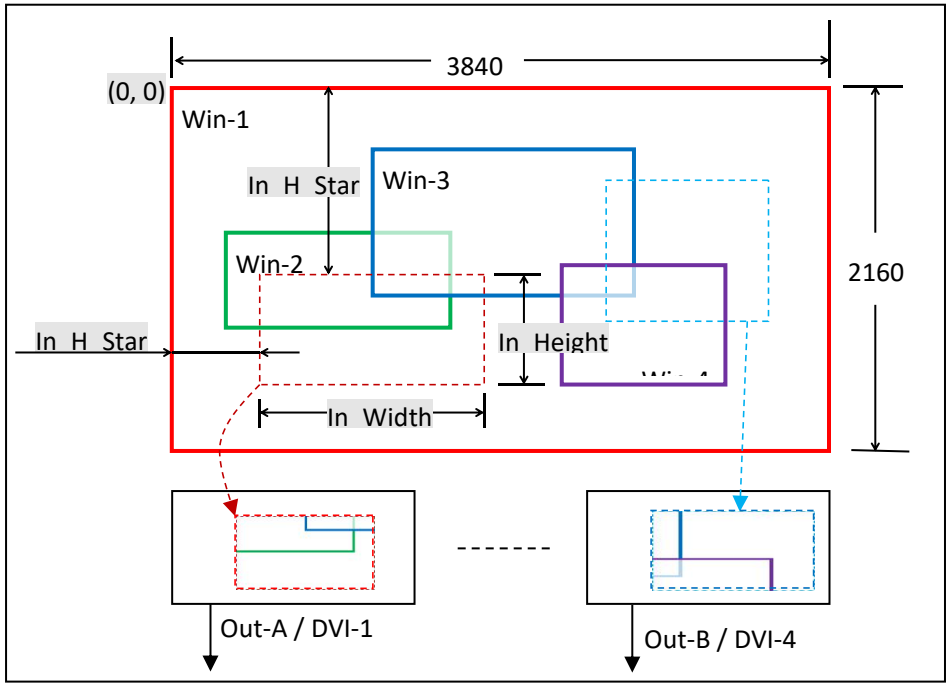
7.3）The cropped image in dotted frame is determined by the following parameters：

In_Width

In_H_Start

In_Height

In_V_Start



Picture 4-7.1

7.4） Enter menu “4.3 Manual Mosaic to set the the following parameters:

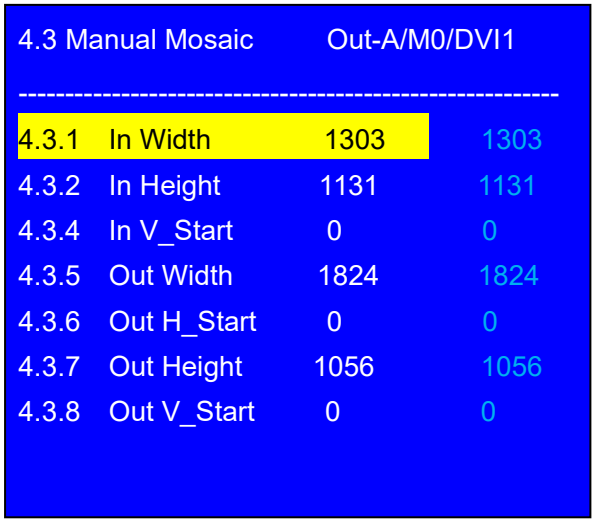
“4.3.1 Input Width”

“4.3.2 Input H_Start”

“4.3.3 Input Height”

“4.3.4 Input V_Start”

As shown in picture 4-7.2: Under display mode M0, set image cropping parameter of Out-A/DVI-1 .



Picture 4-7.2

7.5） How to set size and position of cropped image? please refer to appendix 1.

7.6） Press OUT-A/ DVI-n to switch the DVI outputs of OUT-A card.

Press OUT-B/ DVI-n to switch the DVI outputs of OUT-B card.

7.7） Press button **M0**、**M1**、**M2** 、**M+** to select target mode where all splicing parameters automatically saved

(A6000 can preset 13 splicing display modes)

Step8): Output image size and position setup

8.1） A6000 can assemble 2 DVI output cards, Out-A and Out-B, each output card has 4 DVI/HDMI outputs.

8.2）Each DVI output can randomly crop image (Multi-win image) within 3840*2160

8.3）Each output image's size and position on LED screen can be set arbitrarily within the output resolution. For instance, enter menu "4.1 Output Resolution", set the output resolution 1920×1080@60Hz, then each DVI output can set size and position within 1920*1080, as shown in picture 4-8.1

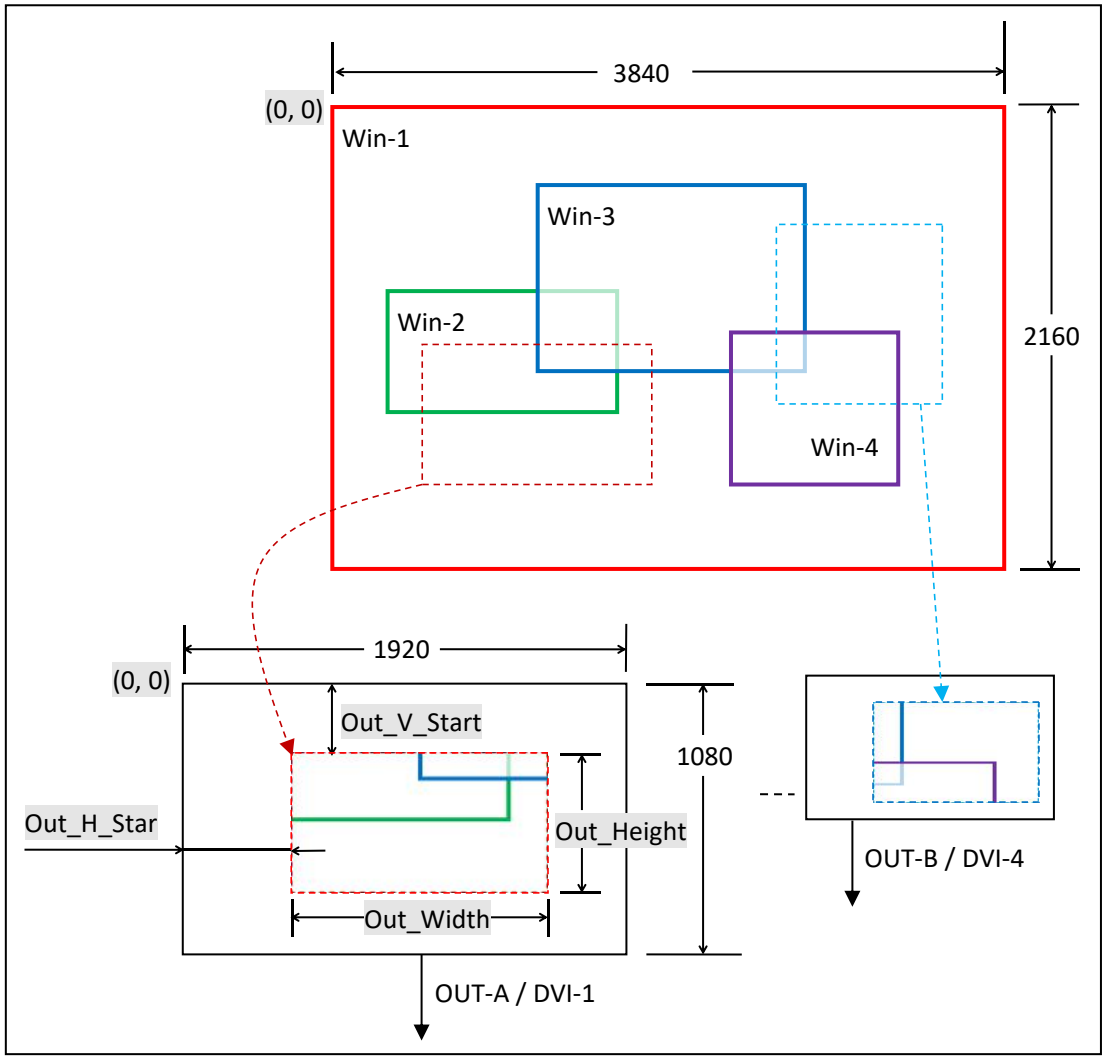
8.4）The output image size and position is shown in picture 4-8.1, as red dotted frame indicated, defined by the following parameters：

Out_Width

Out_H_Start

Out_Height

Out_V_Start



Picture 4-8.1

8.5） Enter menu “4.3 Manual Mosaic” to set the following parameters

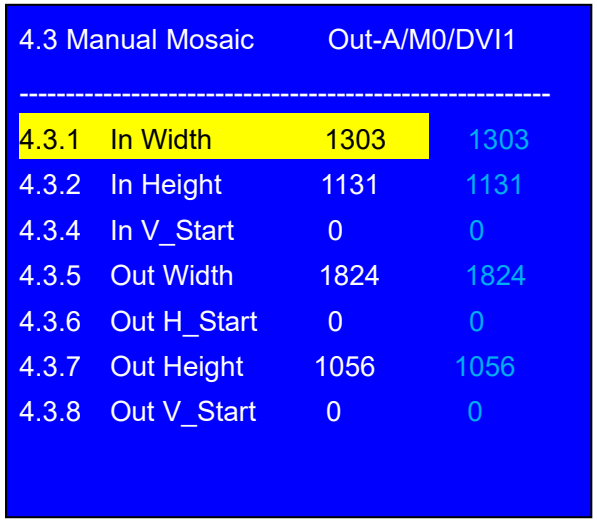
“4.3.5 Output Width”

“4.3.6 Output H_Start”

“4.3.7 Output Height”

“4.3.8 Output V_Start”

As shown in picture 4-8.2: Under display mode M0, set Out-A/DVI-1 size and position.



Picture 4-8.2

8.6） When DVI connect to LED sending card, the sending card default start coordinate is (0,0) , So configure DVI output accordingly, shown as following.

Out_H_Start = 0

Out_V_Start = 0

Out_Widh = LED unit screen pixels in horizon

Out_Widh =LED unit screen pixels in vertical

8.7） Press button **OUT-A / DVI-n** to switch the DVI outputs of OUT-A.

Press button **OUT-B / DVI-n** to switch the DVI outputs of OUT-B.

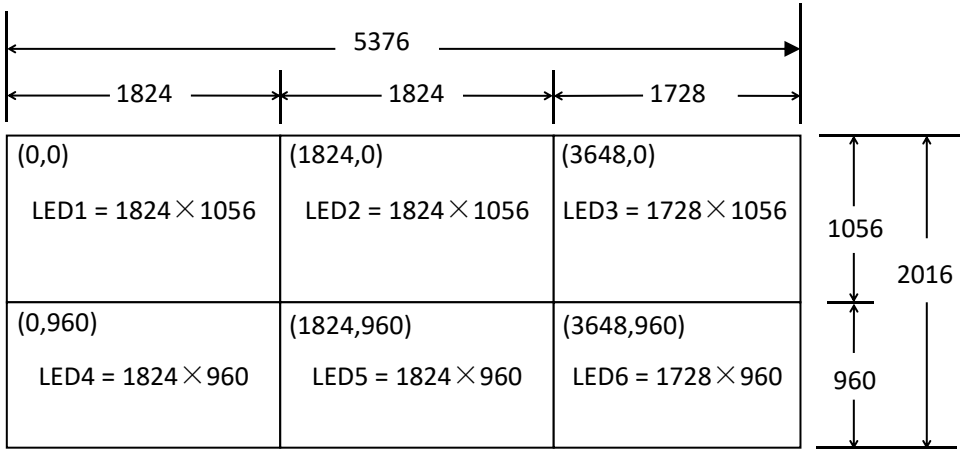
8.8） Press button **M0**、**M1**、**M2**、**M+** to select target mode where all splicing parameters automatically saved.

(A6000 can preset 13 splicing display mode)

Step9)：Output image fast mosaic

9.1）LED screen is consisted of several screen units. A6000 can jointly split the screen by “Fast Mosaic”

9.2）As shown in picture 4-9.1 , the LED consists 6 unit screens, each unit screen resolution as following:



Picture 4-9.1

LED1	1824×1056	LED2	1824×1056
LED3	1728×1056	LED4	1824×960
LED4	1824×960	LED6	1728×960

The total LED screen resolution is 5376*2016

9.3）6 unit LED screens are connected to 6 DVI outputs of the A6000 , as the following table.

OUT-A / DVI-1	LED1	OUT-A / DVI-2	LED2
OUT-A / DVI-3	LED3	OUT-A / DVI-4	LED4
OUT-B / DVI-1	LED5	OUT-B / DVI-2	LED6

9.4） According to the above LED screen corresponding connection, "4.2 Fast Mosaic" settings of each DVI output as Picture 4-9.2, Picture 4-9.3, Picture 4-9.4, Picture 4-9.5, Picture 4-9.6 and Picture 4-9.7

4.2 Fast Mosaic	Out-A/M0/DVI1
4.2.1 LED Total Width	5376
4.2.2 LED Total Height	2016
4.2.3 Unit Width	1824
4.2.4 Unit Height	1056
4.2.5 Unit H_Start	0
4.2.6 Unit V_Start	0
4.2.7 Auto Calculation	OK to apply

Picture 4-9.2

4.2 Fast Mosaic	Out-A/M0/DVI2
4.2.1 LED Total Width	5376
4.2.2 LED Total Height	2016
4.2.3 Unit Width	1824
4.2.4 Unit Height	1056
4.2.5 Unit H_Start	1824
4.2.6 Unit V_Start	0
4.2.7 Auto Calculation	OK to apply

Picture 4-9.3

4.2 Fast Mosaic	Out-A/M0/DVI3
4.2.1 LED Total Width	5376
4.2.2 LED Total Height	2016
4.2.3 Unit Width	1728
4.2.4 Unit Height	1056
4.2.5 Unit H_Start	3648
4.2.6 Unit V_Start	0
4.2.7 Auto Calculation	OK to apply

Picture 4-9.4

4.2 Fast Mosaic	Out-A/M0/DVI4
4.2.1 LED Total Width	5376
4.2.2 LED Total Height	2016
4.2.3 Unit Width	1824
4.2.4 Unit Height	960
4.2.5 Unit H_Start	0
4.2.6 Unit V_Start	1056
4.2.7 Auto Calculation	OK to apply

Picture 4-9.5

4.2 Fast Mosaic	Out-B/M0/DVI1
4.2.1 LED Total Width	5376
4.2.2 LED Total Height	2016
4.2.3 Unit Width	1824
4.2.4 Unit Height	960
4.2.5 Unit H_Start	1824
4.2.6 Unit V_Start	1056
4.2.7 Auto Calculation	OK to apply

Picture 4-9.6

4.2 Fast Mosaic	Out-B/M0/DVI2
4.2.1 LED Total Width	5376
4.2.2 LED Total Height	2016
4.2.3 Unit Width	1728
4.2.4 Unit Height	960
4.2.5 Unit H_Start	3648
4.2.6 Unit V_Start	1056
4.2.7 Auto Calculation	OK to apply

Picture 4-9.7

9.5）When finish setting from“4.2.1”to“4.2.6”， press“4.2.7” to confirm and apply，A6000 will automatically calculate the mosaic parameter.

Now we can enter “4.3 Manual Mosaic” to check calculated parameters as following picture

4.3 Manual Mosaic		Out-A/M0/DVI1	
4.3.1	In Width	1303	1303
4.3.2	In Height	1131	1131
4.3.4	In V_Start	0	0
4.3.5	Out Width	1824	1824
4.3.6	Out H_Start	0	0
4.3.7	Out Height	1056	1056
4.3.8	Out V_Start	0	0

Picture 4-9.8

4.3 Manual Mosaic		Out-B/M0/DVI2	
4.3.1	In Width	1303	1303
4.3.2	In H_Start	1303	1303
4.3.3	In Height	1131	1131
4.3.4	In V_Start	0	0
4.3.5	Out Width	1824	1824
4.3.6	Out H_Start	0	0
4.3.7	Out Height	1056	1056
4.3.8	Out V_Start	0	0

Picture 4-9.9

4.3 Manual Mosaic		Out-A/M0/DVI3	
4.3.1	In Width	1234	1234
4.3.2	In H_Start	2606	2606
4.3.3	In Height	1131	1131
4.3.4	In V_Start	0	0
4.3.5	Out Width	1728	1728
4.3.6	Out H_Start	0	0
4.3.7	Out Height	1056	1056
4.3.8	Out V_Start	0	0

Picture 4-9.10

4.3 Manual Mosaic		Out-A/M0/DVI4	
4.3.1	In Width	1303	1303
4.3.2	In H_Start	0	0
4.3.3	In Height	1029	1029
4.3.4	In V_Start	1131	1131
4.3.5	Out Width	1824	1824
4.3.6	Out H_Start	0	0
4.3.7	Out Height	960	960
4.3.8	Out V_Start	0	0

Picture 4-9.11

4.3 Manual Mosaic		Out-B/M0/DVI1	
4.3.1	In Width	1303	1303
4.3.2	In H_Start	1303	1303
4.3.3	In Height	1029	1029
4.3.4	In V_Start	1131	1131
4.3.5	Out Width	1824	1824
4.3.6	Out H_Start	0	0
4.3.7	Out Height	960	960
4.3.8	Out V_Start	0	0

Picture 4-9.12

4.3 Manual Mosaic		Out-B/M0/DVI2	
4.3.1	In Width	1234	1234
4.3.2	In H_Start	2606	2606
4.3.3	In Height	1029	1029
4.3.4	In V_Start	1131	1131
4.3.5	Out Width	1728	1728
4.3.6	Out H_Start	0	0
4.3.7	Out Height	960	960
4.3.8	Out V_Start	0	0

Picture 4-9.13

9.6） After fast mosaic. There may exist slight deviation on LED screen, then we can enter “4.3 Manual Mosaic” for fine turning, so as to offset the deviation.

9.7） Press **OUT-A / DVI-n** or **OUT-B / DVI-n** to switch different output DVI port for adjustment.

9.8） Press **M0**、**M1**、**M2** to select target mode where all splicing parameter will be automatically saved in this mode.

Appendix 1: How to determine the size and position of cropped image

Ap1.1） As shown in the picture Ap1-1， 4 windows overlay，

Win-1, Win-2, Win-3 and Win-4 display within resolution

3840 x 2160

Now we need to display the image(Ap-1-1) to LED screen

(Ap1-2)

Ap1.2） In order to guarantee the display integration and proportion，

we must set size and position of cropped image correctly.

Ap1.3） A6000 can automatically calculate cropped image

size and position by “4.2 Fast Mosaic”

Ap1.4） If use “4.3 Manual Mosaic”,

The following formula is used to calculate

the relevant parameters in proportion:

$$\frac{Y1}{1056} = \frac{2160}{2016}$$

Then：Y1=(2160×1056)÷2016=1131

Similarly

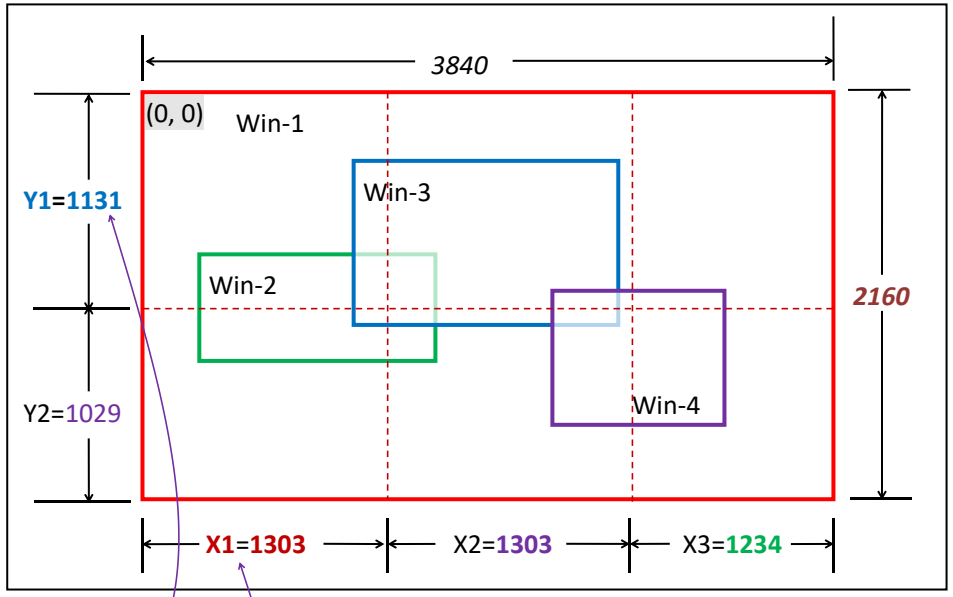
$$\frac{X1}{1824} = \frac{3840}{5376}$$

Then：X1=(3840×1824)÷5376=1303

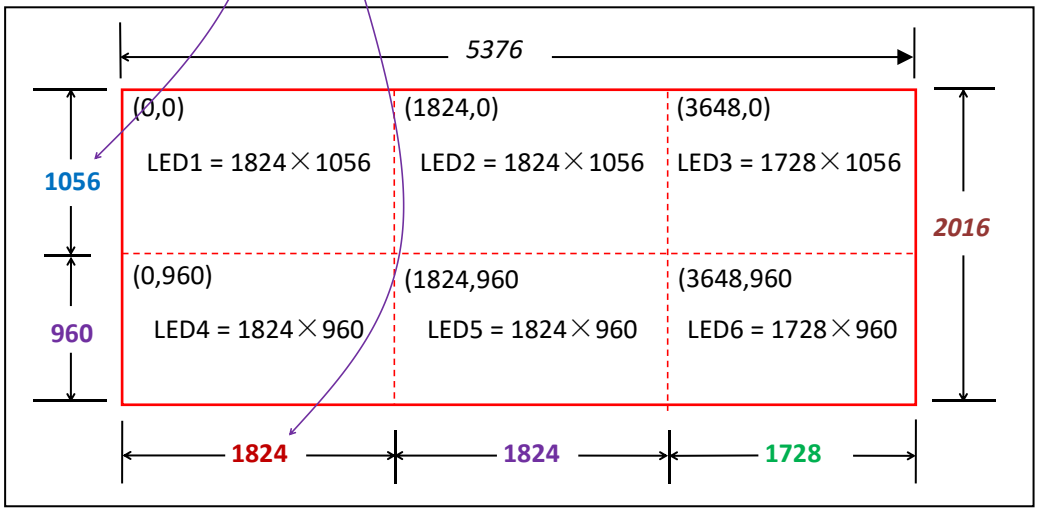
and so on, as calculated：

Y1=1131 Y2=2019

X1=1303 X2=1303 X3=1234



Picture Ap1-1



Picture Ap1-2

Ap1.5） Thus, manual mosaic parameter of each DVI output are listed as following table

	Out-A/DVI-1	Out-A/DVI-2	Out-A/DVI-3	Out-A/DVI-4	Out-B/DVI-1	Out-B/DVI-2
	LED1	LED2	LED3	LED4	LED5	LED6
4.3.1 In Width	1303	1303	1234	1303	1303	1234
4.3.2 In H_Start	0	1303	2606	0	1303	2606
4.3.3 In Height	1131	1131	1131	1029	1029	1029
4.3.4 In V_Start	0	0	0	1131	1131	1131
4.3.5 Out Width	1824	1824	1728	1824	1824	1728
4.3.6 Out H_Start	0	0	0	0	0	0
4.3.7 Out Height	1056	1056	1056	960	960	960
4.3.8 Out V_Start	0	0	0	0	0	0