GeoBox

G406 Video Wall Controller Datasheet

4-channel Video Wall Controller

Up to 7680x1200 30 fps/ 4096x2160 60 fps inputs

With multi-video display function

4 in/ 4 out, 4K60 inputs, 4:4:4 Chroma sampling, 2x4 Matrix Switch function, multi-video display, independent rotation/scaling/cropping/color adjustment

Sales & Technical support

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DCi/UHD 4k/60/4:4:4	**HDMI 2.0** DisplayPort 1.2	**HDCP** 2.2/1.4	**10-bit** High-end scaler	**Cadence** Film 3:2 / 2:2	**3D Motion** De-interlace	**Deep Color** xvYCC/12-bit	**Matrix SW** Free source selection	**Mosaic** Irregular wall

Multi-Unit Cascade	**Multi-view** Discrete display	**Flexible** Aspect Ratio Bezel Correction	**Rotation** Landscape Portrait	**Loop Out** Daisy chain	**Control** IR/USB/RS232 /Ethernet	**Projector** Output overlap	**RoHS** CE FCC

G406 Quad channel controller

The GeoBox G406 is a new generation 4k2k @60Hz four-screen video wall controller that offers considerable flexibility in designing video walls of any scale with various contents and LCD arrays. It features four synchronized HDMI 1.4 outputs, two HDMI 2.0b loop-through ports with HDCP 2.2/1.4, two DisplayPort 1.2 inputs, and two HDMI 2.0b loop-through ports. Each output features independent scaling, cropping, rotation, and color modification.

To display 1, 2, 3, or 4 independent items on four LCD video walls, the G406 is equipped with a 2x4 matrix switcher and a multi-video display feature. For multiple unit cascades, two HDMI 2.0b loop-through connectors enable users to choose between two ranges for the entire video wall.

It is purely hardware and a user-friendly standalone system. Every action can

Infinite creative configuration

✧ 4x HDMI2.0b inputs & 4x HDMI1.4 outputs with flexible multi-unit cascade.

✧ Support up to 4k/2k @60Hz and 7680x1200 @30Hz input resolution.

✧ All inputs and outputs support HDCP compliance: input: HDCP 2.2/1.4, output: HDCP 1.4

✧ Matrix switch function to allow multiple-video display, 1/2/3/4 contents on 4x LCD.

✧ Dual Loop-through ports for multiple unit cascade with two selectable inputs.

✧ Pixel base position alignment up to +_ 1800 pixels in H&V for flexible image capture, cropping, position alignment, bezel compensation & irregular video wall.

✧ Set overlap pixels up to 1800 pixels for projector edge blending application.

✧ Independent Image color adjustment, cropping, scaling, and bezel correction in each channel.

✧ Independent image rotation and flip/mirror in each channel for variable landscape, portrait, and irregular video wall display.

✧ Selectable output resolution and programmable EDID to optimize video quality.

✧ Flexible aspect ratio adjustment in each edge up to +_ 1800 pixels.

✧ Frame-Lock function to get perfect synchronization among output channels.

✧ G406 can serve as a Quad channel processor or two independent dual-channel processors.

✧ Easy setup via IR, front panel Keypad, USB, RS232 & Ethernet. No PC is required.

✧ Ready for a 24/7 working environment.

Specifications

- ✧ Input: 2x HDMI2.0b for all channels, 1x DP1.2a for CH1/CH2, 1x DP1.2a for CH3/CH4
- ✧ Input HDCP: HDMI: V2.2/V1.4, DP: V1.3.
- ✧ Max. input resolution: 4096*2160 60fps & 7680x1200 @30Hz, 4:4:4 chroma sampling.
- ✧ Output: 4x HDMI1.4 up to 2048*1200 60 fps. 4:4:4 progressive, 24/30 bits.
- ✧ 2x HDMI2.0b loop out ports for multiple unit cascade & daisy chain connection.
- ✧ Support non-VESA STD input timings.
- ✧ 18 selectable output modes up to 2048x1200 60Hz in each independent output port.
- ✧ Selectable 8/10-bit output color depth.
- ✧ One frame latency: 16.7ms (V=60Hz)
- ✧ Support xvYCC color input processing & 8/10 bits deep color output.
- ✧ Overlap setting for edge blending in each edge up to +_ 1800 Pixels.
- ✧ 3:2/2:2 cadence, low angle smooth algorithm, high-quality scaling engine.
- ✧ 3D motion adaptive de-interlace.
- ✧ 10-bit processor, frame rate conversion.
- ✧ 50Hz in/out to avoid video artifacts.
- ✧ Matrix switch for multi-video display.
- ✧ Frame lock for synchronized outputs.
- ✧ Support HDR input signal but no HDR effect in the output.
- ✧ Individual 90/180/270 rotation, flip, cropping, scaling & color adjustment in each channel.
- ✧ When image rotation is 90/270 degrees, the maximum input is 4k/2k 30 fps.
- ✧ Embedded HDMI audio in each output.
- ✧ Selectable and programmable EDID.
- ✧ ESD Protection: ±15kV (Air-gap discharge), ±8kV (Contact discharge).
- ✧ DC 12V/1.1A, max. 13.2W, (100-240 VAC PSU)
- ✧ Working environment: 45°C, 10-90% RH
- ✧ Control: IR, RS232, USB, Ethernet
- ✧ Dimensions (Body only): 440mm*186mm*44mm (without protruding parts). 440mm*197mm*55mm (including protruding part)
- ✧ Weight: 2.31 kg (body only)
- ✧ CE/FCC/RoHS Certified
- ✧ 30-Month Warranty

A. *Application examples*
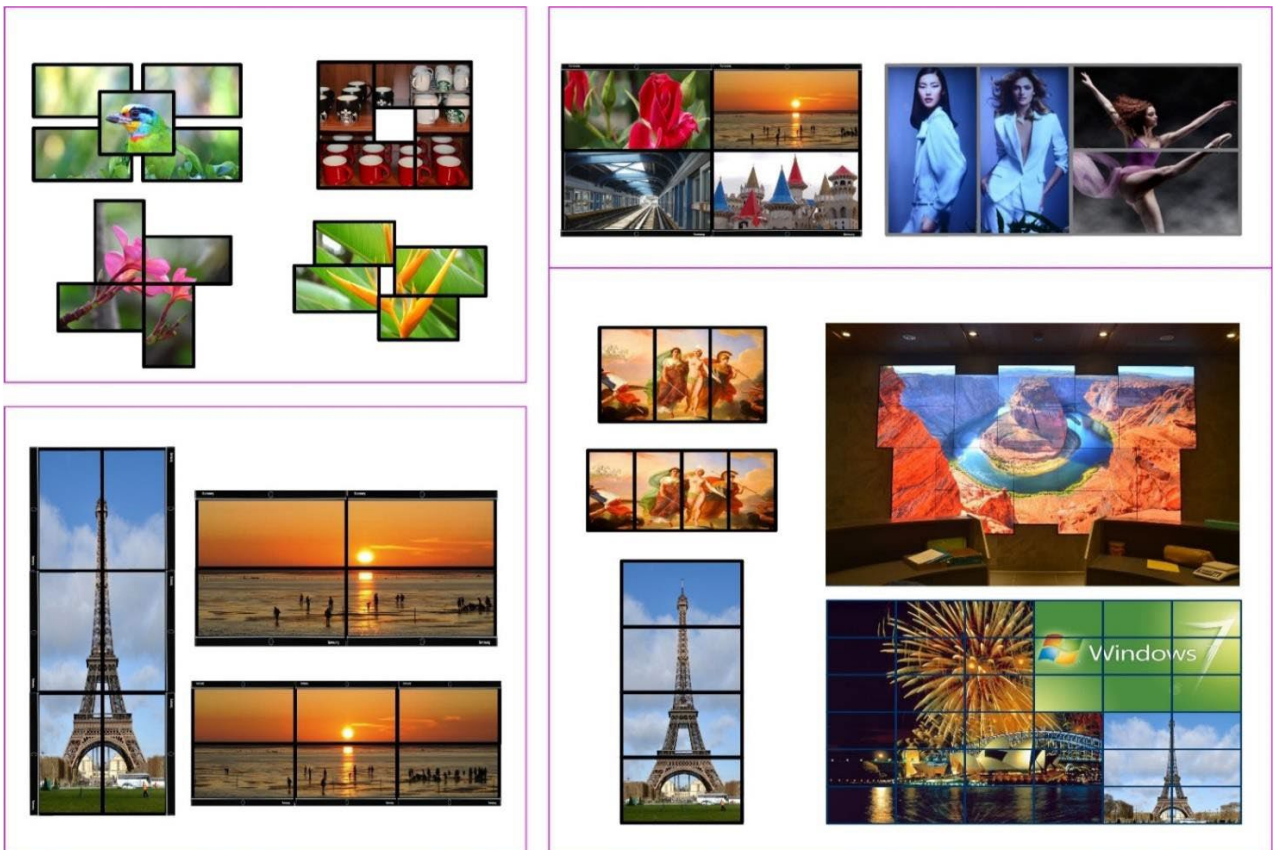

B. *Single G406 applications*

Configuration for 2x2 video wall with one G-406: (HDMI: A&B, DP: C&D)
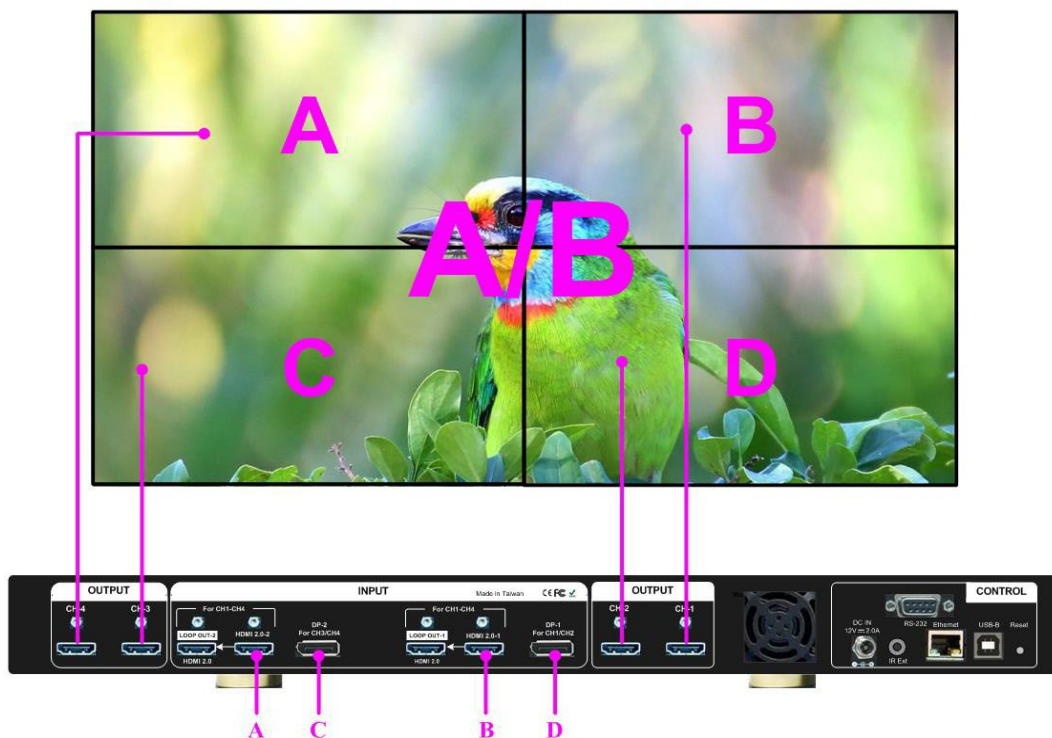
- One content display: Display A or B on the entire video wall (All-in-one)

- Two content displays: Display A or C on two LCDs and B or D on another two LCDs (1+1)

- Three content displays: Display A & C in two LCDs and B or D across another two LCDs (2+1/1+2)

- 4x content display: display A, B, C, and D discrete contents across 4x LCD. (1+1+1+1)

- Each LCD can be randomly rotated at 90/180/270 degrees with 1800 pixels image alignment.

- Display 2x LCD in landscape + 2x LCD in a portrait, like a windmill style.

- Display 1/2/3/4 portrait or horizontal array.

C. *Multiple units cascade applications*

Example for 2 units of G406 application (HDMI input signal: A/B/E/G, DP input signal: C/D/F/H)
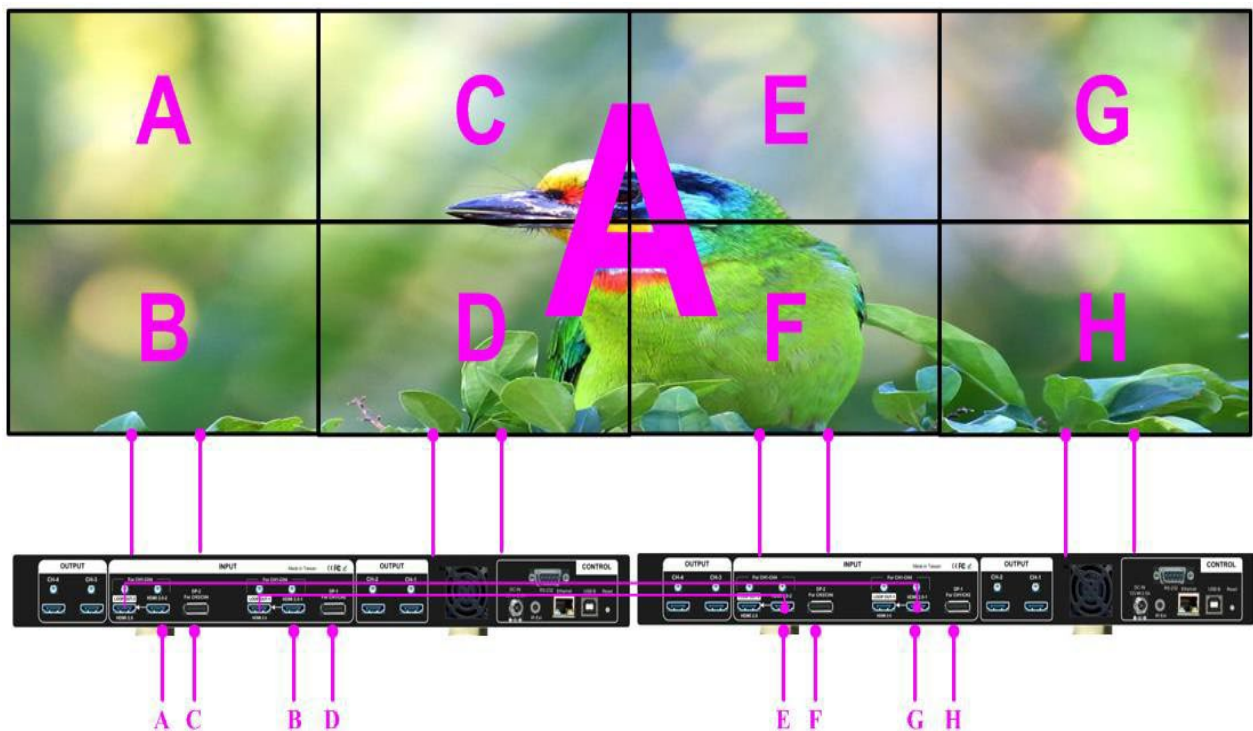
- Display A or B across the entire video wall (All-in-one).

- If the user adds two 2x1 HDMI switchers in front of E&G, the user can display A or B contents across the entire video wall and 8 discrete contents across the whole video wall.

- Display A on LH 4x LCD and B on RH 4x LCD or vice versa (1+1)

- Display 2/3/4/5/6/7/8 different contents across the entire video wall. It depends on the input connection configuration. Each LCD can select a range from max. 3 input ports. Example: LCD-A can pick a signal from A, B, and C. LCD-D can select a signal from A, B & D.

- Any LCD can be independently in portrait or landscape position for irregular video walls.

D. *Flexible Aspect Ratio Adjustment*

Users can shrink the image with black borders or stretch the image in a specific direction to compensate for the aspect ratio difference between the video wall and the content. The Maximum adjustment range is +_1800 pixels on each edge.
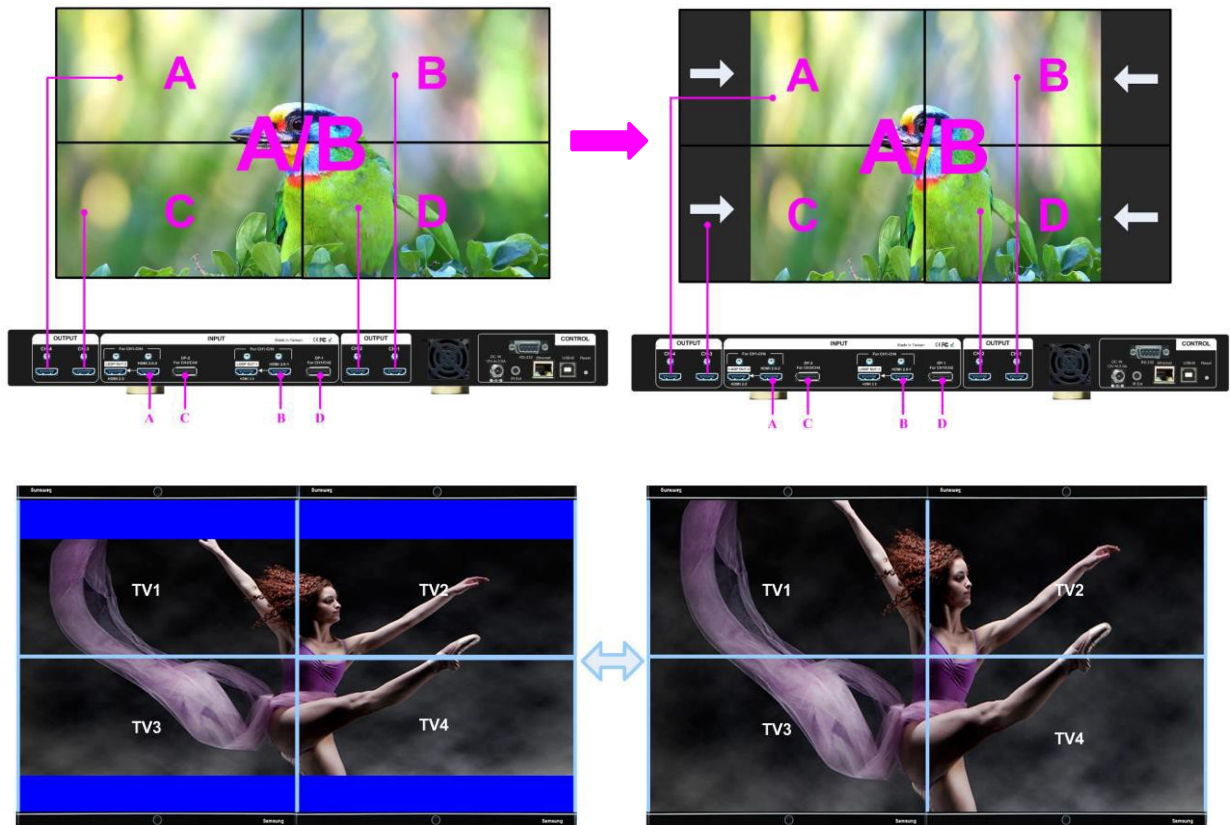
E. *Irregular Video wall*

Each output channel can be rotated separately. Users can use the Video wall function to split the image and adjust the Overlap value to align all images to make a seamless creative video wall. No limitations in panel size and bezel dimensions.

F. *Split image for a projector with an embedded blending function*

Two GeoBox outputs with redundant data in the overlap region

Projected images are overlapped and blended by projectors

After projector edge blending, resulting seamless image

One G4o6 can splitter one or two 4k images for up to four projectors.

High-resolution system applications

Multiple 4k signal sources can build a high-resolution display system with high-quality pixel-to-pixel mapping video walls.

8K Width video wall
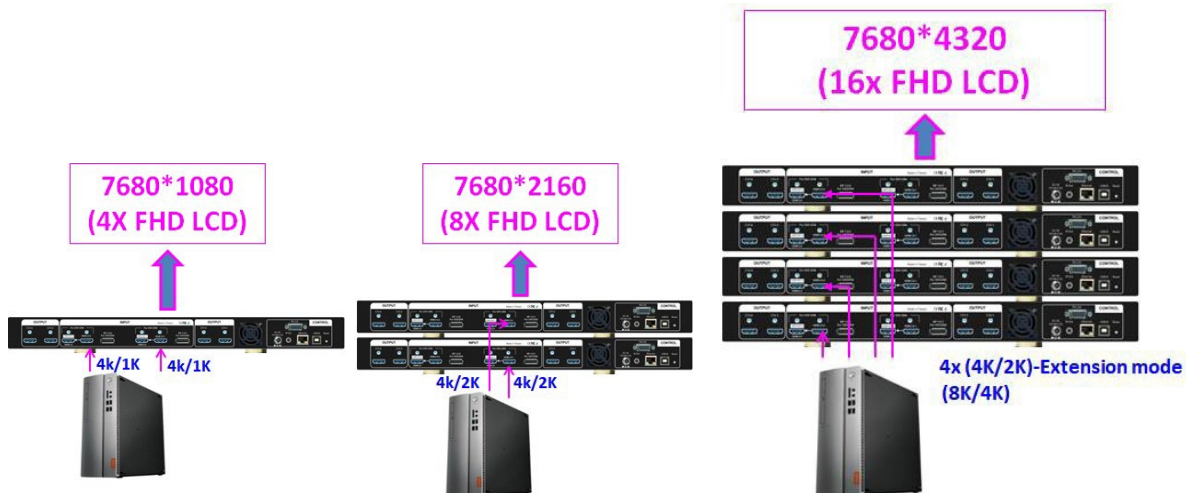
G. *Limitation in HDMI input ports*

- G406 is designed with two display groups. Group A consists of CH1 & CH2. Group B consists of CH3 & CH4. It can be treated as two dual-channel systems or one quad-channel processor. Users can use 4 units of G-406 with 4x UHD signals (8k/4k signal source) to display pure 8k/4k video walls with pixel-to-pixel video quality.

- Two display groups will share the same HDMI input signal. Users can select HDMI-1 or HDMI-2 signal for CH1/CH2 but can't choose HDMI-1 & HDMI-2 simultaneously for CH1/CH2. If HDMI-1 is set for CH1, then CH2 will switch to HDMI-1 simultaneously. Users can further change CH2 to DP1 input signals to allow different contents to be displayed in CH1 and CH2.

- Group B CH3/CH4 will have the same limitation in HDMI-1 & HDMI-2 inputs.

- DP1 is for group A (CH1/CH2) and DP2 is for group B (CH3/CH4) only, not swappable. DP input selection is independent and will not affect all other input port selections.

H. *Limitation in image rotation/flip mode*

Image rotation at 90/270 degrees is only available for input resolutions not larger than 3840x2400 @30Hz. Image flip or rotation at 180 degrees has no input resolution limitation. It can support up to 4k/60Hz input source.