

# G-106/G-106Ex/G-70X Gwarp2 PC Tool user guide

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## A. Features

1. Compatible with Windows USB HID class, no driver is required, ability to be used in all Windows OS version (Windows 7/8/10).
2. Implement complete Edge Blending processes in Gwarp and can be stored in GeoBox, then no PC is required for system operation. The functions include geometry alignment, Video Wall settings, Edge Blend settings and color Uniformity adjustment.
3. Hotkeys for convenient Gwarp operation through keyboard and mouse, even user can execute complete geometry alignment without seeing Gwarp operation menu window.

## B. Applicable models:

1. G-106: warping processor
2. G-106Ex: single channel edge blending processor
3. G-702: Dual channel edge blending processor
4. G-703: three channel edge blending processor
5. G-704: four channel edge blending processor

## C. Equipment and connection

1. USB cable:  
USB Type B (G-70X/G-106) to USB (PC/Notebook)
2. PC/Notebook with Windows standard USB HID driver. No special driver is required.

## D. System connection for code update

1. Use USB cable to connect PC USB port with GeoBox USB type B port.



2. USB Ethernet extender can extend USB connection up to 50 meters.
3. After PC/Notebook connected with GeoBox, user can use wireless keyboard and mouse for convenient operation of Gwarp2 in front of the screen.
4. User can connect Gwarp2 operation window to GeoBox and show operation menu

on the screen at the same time for easy operation.

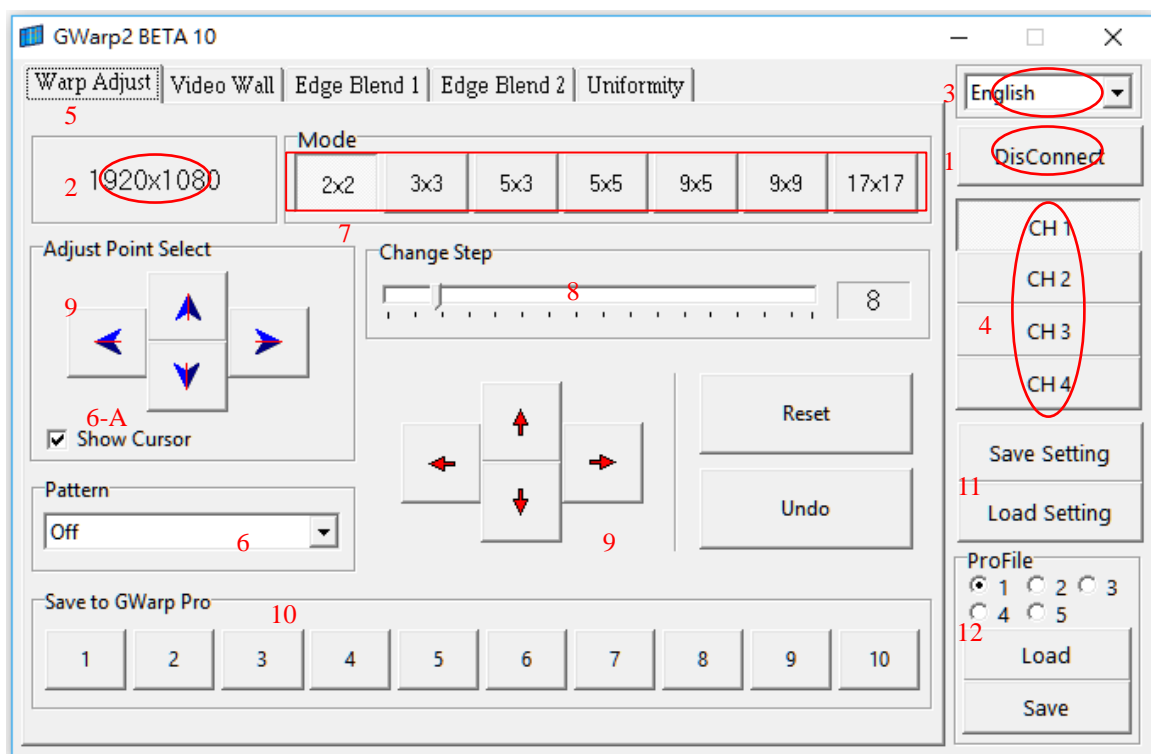
5. Gwarp is designed with hotkeys on the keyboard for convenient operation even without seeing operation menu on the screen.

## E. Gwarp2 PC software tool

1. Please download G-700/106 PC tool [Gwarp2.RAR] file from website [www.vnstw.com](http://www.vnstw.com).
2. Decompressed Gwarp2.RAR into two files
  - i. Gwarp2.ex\_
  - ii. Languages.ini
3. Rename [Gwarp2.ex\_] into [Gwarp.exe] before execution. This is for security reason.
4. Gwarp2 is integrated with English languages only: English and user can create his own language.
5. [Languages.ini] is for user to change operation language with local language. Please open the file and replace the strings inside and save in the same Directory, then user can select local language for Gwarp2 operation menu.

## F. Gwarp2 operation procedures:

### (A) Open Gwarp2 and [Warp Adjust]



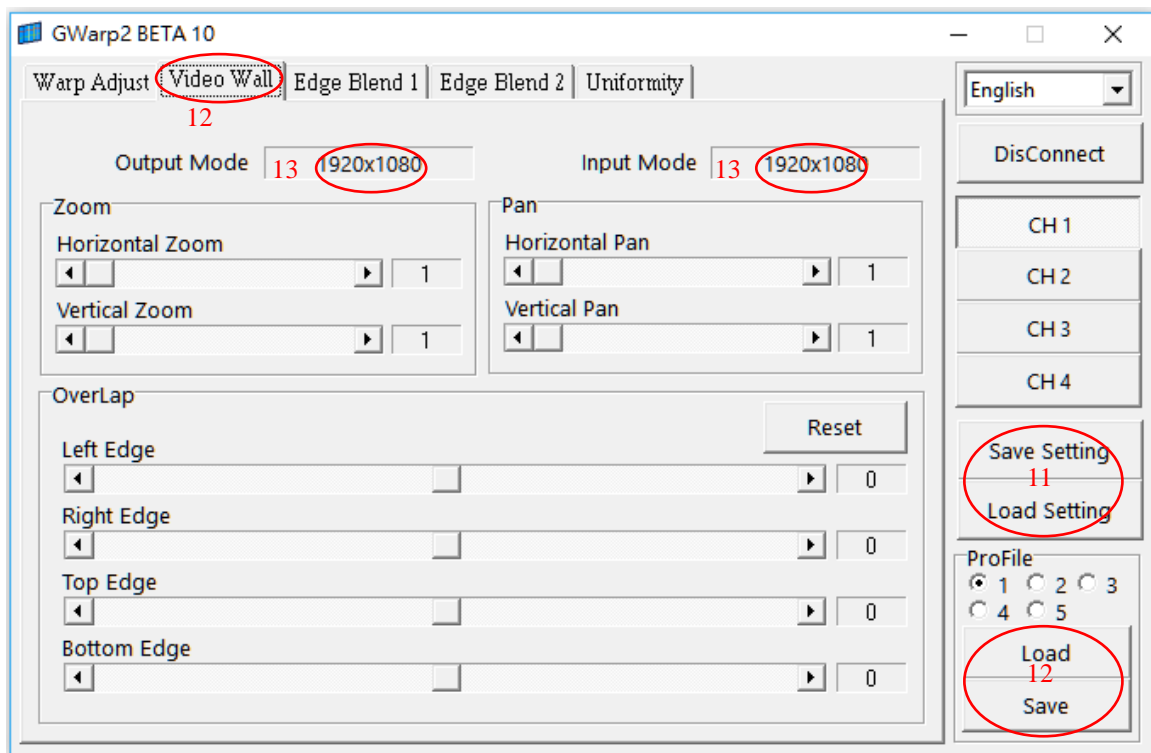
1. Open Gwarp2.exe software in PC and click [Connect] (1) to link PC with GeoBox.
2. User will see [Disconnect] (1) and GeoBox output resolution in (2) after connection.

3. Select preferable Language (3).
4. Don' t forget to select correct [CH #] for the operation.
5. [Warp Adjust]: for geometry alignment
  - i. [Pattern] (6): Open Grid pattern with different color
  - ii. [Show Cursor] (6A): default is Enable under [Warp Adjust] menu. If user selects other menu, cursor will automatically disappear.
  - iii. Select mode (7) for adjustment.
  - iv. Select [Change step] (8) for adjusting step.
  - v. Select adjusting point (9)
6. Adjust control point position to execute geometry alignment.
  - i. [2x2] to draw the location for 4 corners to the desired locations.
  - ii. [3x3] to draw image center and edges to the expected locations.
  - iii. To use other grid patterns to do further geometry alignments. Please follow the step [2x2]→ [3x3]→ [5x5]→ [9x9]→ [17x17]. When [17x17] is executed and return to [9x9] adjustment, only the values at same control points as [9x9] will be reserved.
  - iv. User can return to [2x2] for final adjustment and the curve adjustment result will not be reset. For the rest, it will only keep the lower control point mode result.
7. Up to this stage, the geometry result is stored in PC only. User needs to load the adjustment result to GeoBox through below procedures:
  - i. Clickt # under [Save to Gwarp Pro] menu to save [Warp Adjust] result.
  - ii. User can save [Warp Adjust] result through [Profile] together with other adjustment results, such as [Video Wall] & [Edge Blend] results in Gwarp2.
  - iii. User can also save [Warp Adjust] result directly into GeoBox.
    - Click [CTRL + P] on keyboard (or continuous press [Pattern] key on remote controller) to turn off grid pattern so that user can see OSD.
    - Press Menu to activate OSD menu in GeoBox
    - Select [Anyplace]→ [GawrpPro]→ [UserMap#]→ [OK] to recall [Warp Adjust] settings and do further operation through OSD menu.
8. If user wants to save the result in PC, please click [Save setting] (11).
9. Select [Video Wall] (12) to activate video wall setting menu as below.

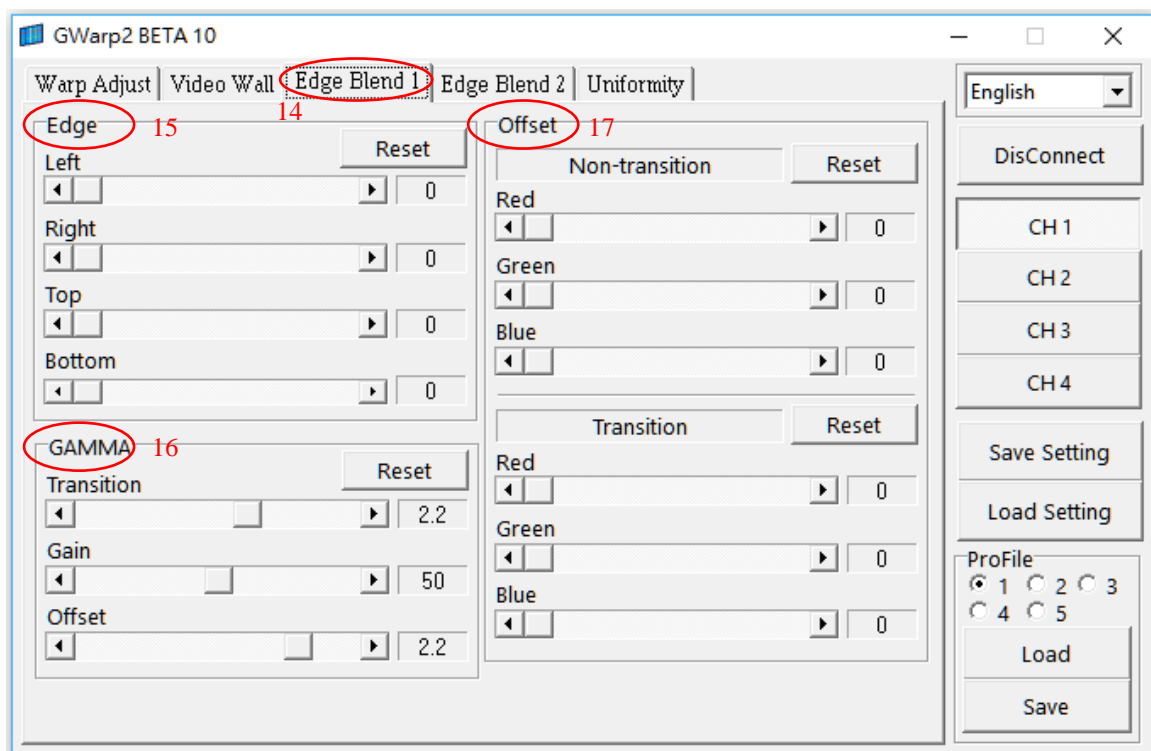
#### **(B) [Video Wall] settings**

1. Select [Video Wall] menu, user will see Input and output resolution in (13). User needs to set [Zoom], [Pan] and [Overlap] value.
2. The Overlap value can be calculated through Excel Spread Sheet. Please see more details in User Manual.
3. The result will be implemented to GeoBox directly through UART command. User will see the change in the screen immediately. It will be kept inside GeoBox even the system is Power Off/On again.

- Video wall setting result can't be saved in PC through [Save Settings] (11) but user can save it into GeoBox [Index] through Profile [Save] (12) for long term reservation.



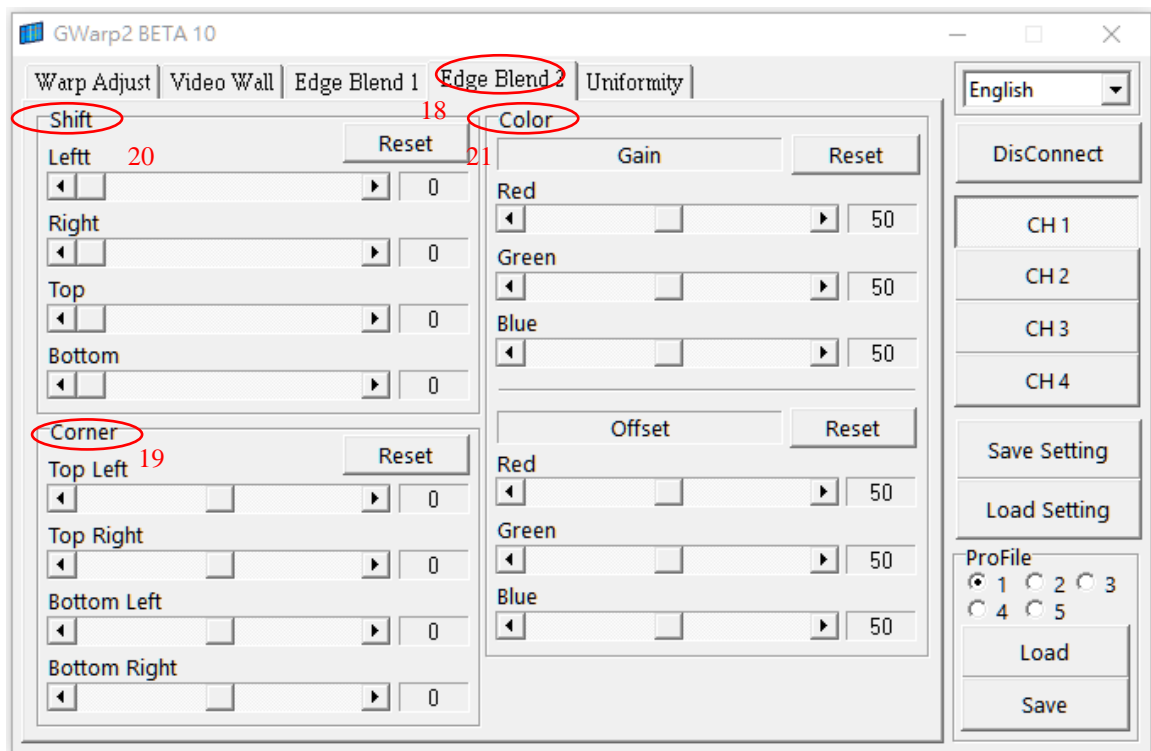
### (C) [Edge Blend 1] setting



- Select [Edge Blend 1] (14) for Edge blending settings. [Edge Blend 1] allows user to set the range for edge blending and adjust Gamma and Offset value.

2. The result will be implemented to GeoBox directly through UART command. User will see the change in the screen immediately. It will be kept inside GeoBox even the system is Power Off. User can save it in Profile Index for long term reservation.
3. [Edge] (15) is to select the edge for edge blending and set the range.
4. [GAMMA] (16) is to do further color correction in edge blending area.
5. [Offset] (17) is to uplift the black level of non-overlapped area to compensate light leakage in the projector.

#### (D) Edge Blend 2

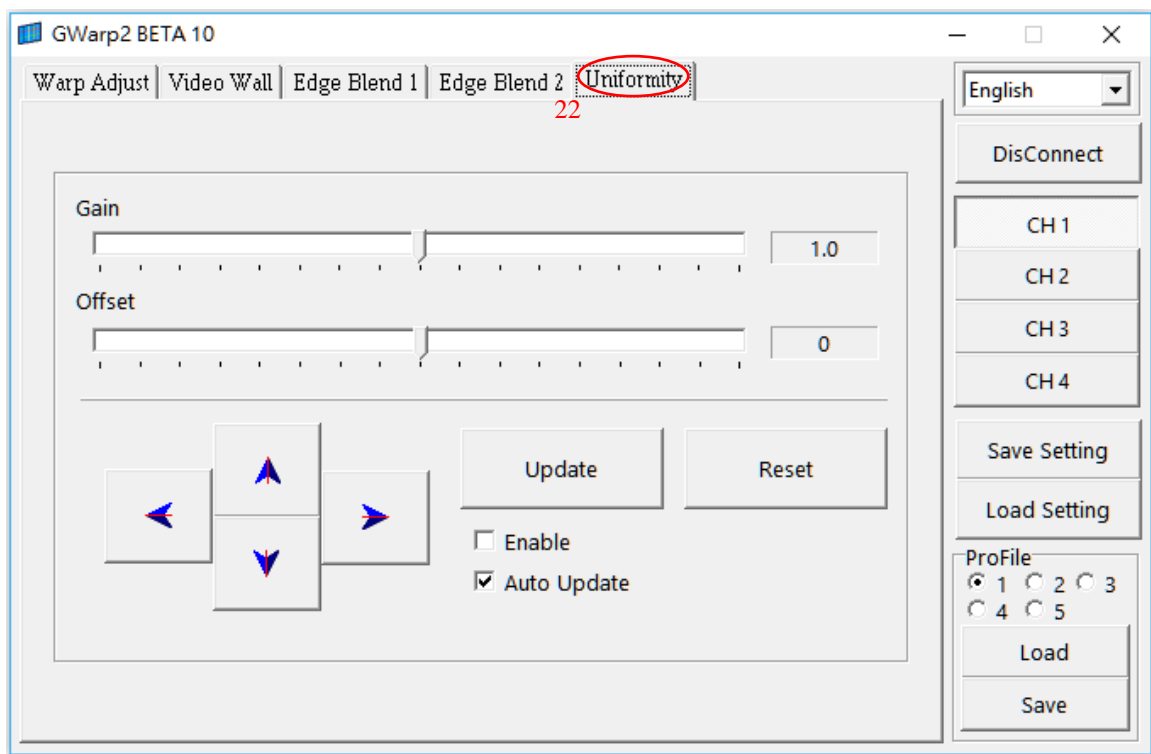


1. Select [Edge Blend 2] (18) to activate second edge blending menu.
2. [Corner] (19) is to adjust the position for Black Level Uplift [Offset]. Please apply black background image and lower ambient light to see [Offset] location for adjustment. Accurate geometry alignment at edge of overlapped area is required for precise Corner position adjustment.
3. [Shift] is to shift location for [Overlap] in edge blending edge. If select non-edge blending edge, this function will become [Edge Mask].
4. [Color] is to do color and white balance correction among projectors. User can adjust [Gain] and [offset] in independent RGB color in each projector.

#### (E) Edge Mask

[Shift] (20) under [Edge Blend 2] menu has the function of [Edge Mask] in non-edge blending edge. The maximum edge mask range is up to 500 pixels in each edge.

(F) [Uniformity]



1. [Uniformity] (22) is to execute color uniformity adjustment across entire screen.
  - i. The adjustment area is 64x64 pixels as one block. RGB color Gain and Offset will be applied at the same time.
  - ii. It can compensate brightness difference in overlap area and entire screen.
  - iii. User can gradually change the value in Gain and Offset in adjacent areas to get smooth uniformity result.
  - iv. User can use this function together with [Edge Blend] settings ([Edge] & [Shift]) to locate the result in correct area to improve the final result in edge blending.
2. Uniformity adjustment result is stored in PC. User needs to save the adjustment result to GeoBox together with [Warp Adjust] through below procedures:
  - i. Go to [Warp Adjust] menu and select # in [save to Gwarp Pro] to save settings.
  - ii. Press Menu to activate OSD menu in GeoBox
  - iii. Select [Anyplace]→ [GwarpPro]→ [UserMap#]→ [OK]
3. User can open any past settings from Profile Index or from GwarpPro and run Gwarp2 PC tool to do further uniformity adjustment. After finishing Uniformity adjustment, user needs to go back to [Warp Adjust] and store the final result into [Save to Gwarp Pro], then it will be stored in GeoBox [GwarpPro] permanently. User can save the result into Profile Index for long term reservation.

### **(G) Save user settings: Profile**

1. After finishing all settings, user can save final result into [Profile] (12) or recall the settings directly from Gwarp2.
2. [Load]: to recall the settings
3. [Save]: to save settings, total 5 Indexes are available to store the settings. The result is the same as Profile settings from keypads or remote controller.
4. Notice: Don't forget to save [Warp Adjust] and [Uniformity] result into [Save to Gwarp Pro] before [Save] to [Profile]. Otherwise, [Warp Adjust] and [Uniformity] result will not be saved into Profile Index.
5. Each channel should save the final result into [Profile] separately.

### **(H) Keyboard Hotkey for convenient Gwarp2 operation**

1. Global System Reset:
  - [CTRL + Shift + R]: Reset selected channel
  - [CTRL + Shift + A]: Reset all channels (from CH1-CH4)
  - Input/Output resolution and Profile Index settings will remain the same without reset
2. [Warp Adjust]
  - [M]: Change Adjust mode from [2x2] → [3x3] → [5x3] → [5x5]...
  - [CTRL + Arrow]: Select control point
  - [Arrow]: adjust value (control point position)
  - [Shift + Arrow]: Geometry adjustment with 1 pixel/step
  - [P]: Enable grid pattern with different colors (R, G, B, C, M, W)
  - [CTRL + P]: Disable grid pattern
3. [Uniformity] procedures
  - Click [Enable] to execute uniformity function
  - [Arrow] key to move control point to the location for uniformity adjustment
  - Set Uniformity value in GAIN
    - [S]: to increase GAIN value with small step (about 0.001)
    - [X]: to increase Gain value with large step (about 0.5)
    - [A]: to decrease GAIN value with small step (about 0.001)
    - [Z]: to decrease GAIN value with large step (about 0.5)
  - Set Uniformity value in Offset
    - [F]: to increase OFFSET value with small step (about 1)
    - [V]: to increase OFFSET value with large step (about 10)

- [D]: to decrease OFFSET value with small step (about 1)
- [C]: to decrease OFFSET value with large step (about 10)
- [Space Bar]: Execute uniformity adjustment at current point
- [CTRL + Arrow]: Execute uniformity adjustment to the target point
- Example to change different locations for the same uniformity adjustment
  - [Arrow]: Change to new position.
  - [L]: Recall previous Uniformity setting value
  - [CTRL + Arrow] to execute uniformity adjustment
- Example to copy uniformity settings value from one location to another location
  - Move [Arrow] to the location to copy the value
  - Press [Space Bar] in keyboard to get the value
  - [Arrow] key to new location
  - Press [L] to copy the setting value
  - [CTRL + Arrow] to implement uniformity adjust.

#### (I) Switching between Gwarp2 and other PC program

- User may click other program in PC windows. In this case, Gwarp2 will stop temporarily and the connection will be kept without terminated.
- Once user clicks Gwarp operation window again, it will resume Gwarp2 operation.

#### (J) Exit from [Show Cursor] (6A):

Default is Enable under [Warp Adjust] menu. If user selects other menu, cursor will automatically disappear. If user is under [Warp Adjust] menu and [Exit] from Gwarp2, cursor will still show on the screen. User can press [4 Corner] or [Warp] hot keys to disable it.