

User Guide
020-102080-04

H Series, HS Series, and GS Series (635, 700, 850, 1075)

Auto Warp

CHRISTIE®

NOTICES

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Products are warranted under Christie's standard limited warranty, the complete details of which are available by contacting your Christie dealer or Christie. In addition to the other limitations that may be specified in Christie's standard limited warranty and, to the extent relevant or applicable to your product, the warranty does not cover:

- a. Problems or damage occurring during shipment, in either direction.
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- e. Problems or damage caused by the use of any lamp, replacement part or component purchased or obtained from an unauthorized distributor of Christie lamps, replacement parts or components including, without limitation, any distributor offering Christie lamps, replacement parts or components through the internet (confirmation of authorized distributors may be obtained from Christie).
- f. Problems or damage caused by misuse, improper power source, accident, fire, flood, lightning, earthquake or other natural disaster.
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- h. Problems or damage caused by use of a product on a motion platform or other movable device where such product has not been designed, modified or approved by Christie for such use.
- i. Problems or damage caused by use of a projector in the presence of an oil-based fog machine or laser-based lighting that is unrelated to the projector.
- j. For LCD projectors, the warranty period specified in the warranty applies only where the LCD projector is in "normal use" which means the LCD projector is not used more than 8 hours a day, 5 days a week.
- k. Except where the product is designed for outdoor use, problems or damage caused by use of the product outdoors unless such product is protected from precipitation or other adverse weather or environmental conditions and the ambient temperature is within the recommended ambient temperature set forth in the specifications for such product.
- l. Defects caused by normal wear and tear or otherwise due to normal aging of a product.

The warranty does not apply to any product where the serial number has been removed or obliterated. The warranty also does not apply to any product sold by a reseller to an end user outside of the country where the reseller is located unless (i) Christie has an office in the country where the end user is located or (ii) the required international warranty fee has been paid.

The warranty does not obligate Christie to provide any on site warranty service at the product site location.

WARRANTY

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- a. Problems or damage occurring during shipment, in either direction.
- b. Problems or damage caused by combination of a product with non-Christie equipment, such as distribution systems, cameras, DVD players, etc., or use of a product with any non-Christie interface device.
- c. Problems or damage caused by misuse, improper power source, accident, fire, flood, lightning, earthquake, or other natural disaster.
- d. Problems or damage caused by improper installation/alignment, or by equipment modification, if by other than Christie service personnel or a Christie authorized repair service provider.
- e. Use of third party product enclosures for environmental protection during outside use must be approved by Christie.
- f. Problems or damage caused by use of a product on a motion platform or other movable device where such product has not been designed, modified or approved by Christie for such use.
- g. Except where the product is designed for outdoor use, problems or damage caused by use of the product outdoors unless such product is protected from precipitation or other adverse weather or environmental conditions and the ambient temperature is within the recommended ambient temperature set forth in the specifications for such product.
- h. Image retention on LCD flat panels.
- i. Defects caused by normal wear and tear or otherwise due to normal aging of a product.

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PREVENTATIVE MAINTENANCE

Preventative maintenance is an important part of the continued and proper operation of your product. Failure to perform maintenance as required, and in accordance with the maintenance schedule specified by Christie, will void the warranty. For preventative maintenance schedules, refer to www.christiedigital.com.

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The product has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the product is operated in a commercial environment. The product generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of the product in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at the user's own expense. Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment

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REGULATORY

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This equipment has been tested and found to comply with the limits for a Class B digital devices, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one of more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

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ENVIRONMENTAL

The product is designed and manufactured with high-quality materials and components that can be recycled and reused. This symbol  means that electrical and electronic equipment, at their end-of-life, should be disposed of separately from regular waste. Please dispose of the product appropriately and according to local regulations. In the European Union, there are separate collection systems for used electrical and electronic products. Please help us to conserve the environment we live in!

Content

- Auto Warp application installation. 5**
 - Affected products. 5
 - Auto Warp system layout. 5
 - Auto Warp application overview. 6
 - Installing the webcam driver. 6
 - Installing the Auto Warp application. 6
 - Reverting all settings. 7
 - Restoring previously saved warping settings. 7
 - Adjusting the brightness of the blending zone. 7

- Stacking solution. 8**
 - Configuring the stacking solution. 8
 - Setting up the camera. 8
 - Setting the boundaries of the projected image. 9
 - Calibrating the image. 9

- Auto blending solution. 10**
 - Configuring the auto blending solution. 10
 - Setting up the camera. 10
 - Setting the boundaries of the projected image. 11
 - Calibrating the image. 11

- Auto blending and stacking solution. 13**
 - Configuring the auto blending and stacking solution. 13
 - Setting up the camera. 14
 - Setting the boundaries of the projected image. 14
 - Calibrating the image. 14

Auto Warp application installation

Learn how to install the webcam driver and Auto Warp application.

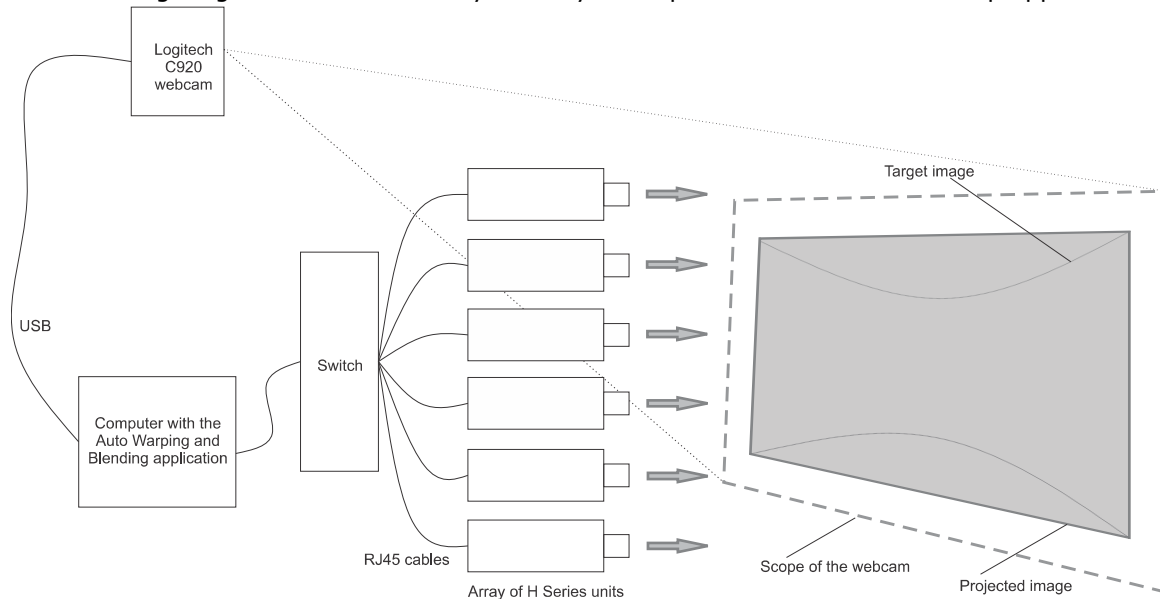
Affected products

The following products can use the Blending and Warping application.

- DHD635-GS and DWU635-GS
- DHD700-GS and DWU700-GS
- DHD850-GS and DWU850-GS
- DHD1075-GS and DWU1075-GS
- D12HD-H and D12WU-H
- D13HD-HS and D13WU-HS

Auto Warp system layout

The following diagram illustrates the system layout required to use the Auto Warp application.



Auto Warp application overview

The Auto Warp application uses a webcam to provide easy configuration of warping, blending, and stacking for projectors.

Using the Auto Warp application you can control up to six units simultaneously with various layouts for warping, blending, and stacking.

| Blending | Stacking | Maximum units |
|----------|----------|---------------|
| 1x1 | 1 to 6 | 6 |
| 1x2 | 1 to 3 | 6 |
| 2x1 | 1 to 3 | 6 |
| 1x3 | 1 to 2 | 6 |
| 3x1 | 1 to 2 | 6 |
| 2x2 | 1 | 4 |
| 2x3 | 1 | 6 |
| 3x2 | 1 | 6 |

Installing the webcam driver

Installing the Logitech HD Pro Webcam C920 driver makes sure the Auto Warp application functions as expected.

1. Navigate to the Logitech website for the Logitech HD Pro Webcam C920:
<http://www.logitech.com/en-us/support/hd-pro-webcam-c920?section=downloads&bit=64&osid=14&softwareFile=on>
2. Click **Downloads**.
3. Under Windows, select the appropriate operating system.
The Auto Warp application supports Windows XP, Windows 7 (32-bit or 64-bit), and Windows 8.
4. Click **Download**.
5. In the Opening dialog, click **Save File**.
6. Navigate to where you downloaded the file and double-click **lws251.exe**.
7. Click Run.
8. To complete the installation, follow the **Logitech Webcam Software Installation** wizard.

Installing the Auto Warp application

Install the Auto Warp application on a computer running Windows XP, Windows 7 (32-bit or 64-bit), or Windows 8.

To install the Auto Warp application, run **Auto AP Setup.exe**.

The Auto Warp application shortcut is installed on the desktop.

Reverting all settings

At any time, you can revert all settings back to their default settings.

From the Auto Warp homepage, click **Reset**.

Restoring previously saved warping settings

If the currently set warping settings are not correct or as expected, you can apply the previous geometry correction.

From the Auto Warp homepage, click **Resync**.

Adjusting the brightness of the blending zone

Adjust the brightness of the gradient by increasing or decreasing the gamma of the blend zone.

1. From the Auto Warp homepage, click **Others**.
2. In the Edge Blending Settings dialog, adjust the Gamma slider to the brightness required. The brightness can be adjusted from 0 to 10.
3. To close the dialog, in the right-hand corner of the dialog, click **X**.

Stacking solution

When the user needs brighter luminance output for the display, use the stacking function to stack several projection images onto the same shape.

Follow these steps to configure the stacking solution.

1. *Set Stacking as the solution you want to configure* (on page 8).
2. *Set up the camera* (on page 8) so it appears clearly in the target image area.
3. *Set the boundaries* (on page 9) of the projected image.
4. *Perform calibration* (on page 9) so the image clearly fills the target area.

Configuring the stacking solution

Select stacking as the solution you want to configure several projection images onto the same shape for brighter output.

1. To open a new project, from the Auto Warp homepage, click **New**.
2. From the Solution Mode screen, select **Stacking**.
3. Click **Next**.
4. From the Resolution Mode list, select the required resolution.
5. From the Layout list, select the required layout.
6. In the Stack No field, enter the stack number.
7. Under Network, double-click the IP address and modify the IP address as required.
8. Click **OK**.
9. To close the window, click **Exit**.

Setting up the camera

Set up the camera so the image appears clearly within the target image area.

1. To open the camera, from the Auto Warp homepage, click **Camera**.
2. From the Camera list, select **Logitech HD Pro Webcam C920**.
3. Click **Open Camera**.
4. To increase or decrease the magnification of the image so it fits within the image box, adjust the **Zoom** slider.
5. To move the image, use the **T+/-** or **P+/-** controls .
6. To focus the image, adjust the **Focus** slider.
Christie recommends the default (minimum value) for focus.
7. Select **Advance**.

8. To make the image solid white, press **Auto Tune**.
If Auto Tune cannot find the best value, adjust the **Exposure, Brightness, Gain, and Contrast** parameters to make the image clear.
9. To close the window when the image is clear, click **Exit**.

Setting the boundaries of the projected image

Set the boundaries of the projected image so the image is displayed within the limits of the webcam projection.

1. To open the Boundary Setting page, from the Auto Warp homepage, click **Boundary**.
2. To set the grid number, adjust the **Grid Number** slider.
Christie recommends setting the grid to 2 x 2.
3. Select the warping mode: **Curve** or **Linear**.
4. Move the cursor to the blue circle on the image and click.
The point turns to a yellow circle.
5. Drag the boundary to the required location, making sure the two solid yellow lines are within the overlap area.
6. To fine tune the boundary, adjust the grid number slider to a larger number.
7. Repeat steps 4 and 5.
8. Under Pattern, choose a suitable pattern.
9. Magnify the image by scrolling the mouse or adjusting the **Zoom** setting.
10. To close the window, click **Exit**.
To reset to the default boundary configuration, click **Reset Boundary**.

Calibrating the image

Calibrate the image so it clearly fills the defined area.

1. To open the calibration page, from the Auto Warp homepage, click **Calibration**.
Calibration starts.
2. If the image is fine, close the application.
3. If the image is not as expected, to recalibrate the image, click **Re-calibration**.
 - a) Adjust the sharpness value until the white area is a full solid area.
 - b) When the image is as expected, click **Next**.
 - c) Adjust the sharpness value again until the white area is a full solid area.
 - d) Click **Done**.
Auto correction starts.
 - e) If the image is as expected, *return to the Boundary page* (on page 9) to compare the image.
 - f) If the image is still not as expected, repeat step 3 to retry recalibrating the image again.To save time, recalibrate the image with photos stored on the computer.

Auto blending solution

When the user needs to project large content on the wall, crop the content into X number of parts, project them by X units, and use the blending function to blend all projection images into a complete image.

Follow these steps to configure the auto blending solution.

1. *Set Blending as the solution you want to configure* (on page 10).
2. *Set up the camera* (on page 8) so it appears clearly in the target image area.
3. *Set the boundaries* (on page 9) of the projected image.
4. *Perform calibration* (on page 9) so the image clearly fills the target area.

Configuring the auto blending solution

Select the auto blending solution when you want to project large content on the wall.

1. To open a new project, from the Auto Warp homepage, click **New**.
2. From the Solution mode screen, select **Blending**.
3. Click **Next**.
4. From the Resolution Mode list, select the required resolution.
5. In the Layout field, select the type of blending.
 - Horizontal blending = 1 Row x 2 Column
 - Vertical blending = 2 Column x 1 row
6. Under Network, double-click the IP address and modify the IP address as required.
7. Click **Next**.
8. Click **Preview** and check the image.

The blue line from the right image must exceed the yellow line from the left image. The yellow line from the left image must exceed the blue line from the right image.
9. When the overlap area is correct, click **OK**.

Setting up the camera

Set up the camera so the image appears clearly within the target image area.

1. To open the camera, from the Auto Warp homepage, click **Camera**.
2. From the Camera list, select **Logitech HD Pro Webcam C920**.
3. Click **Open Camera**.
4. To increase or decrease the magnification of the image so it fits within the image box, adjust the **Zoom** slider.
5. To move the image, use the **T+/-** or **P+/-** controls .

6. To focus the image, adjust the **Focus** slider.
Christie recommends the default (minimum value) for focus.
7. Select **Advance**.
8. To make the image solid white, press **Auto Tune**.
If Auto Tune cannot find the best value, adjust the **Exposure**, **Brightness**, **Gain**, and **Contrast** parameters to make the image clear.
9. To close the window when the image is clear, click **Exit**.

Setting the boundaries of the projected image

Set the boundaries of the projected image so the image is displayed within the limits of the webcam projection.

1. To open the Boundary Setting page, from the Auto Warp homepage, click **Boundary**.
2. To set the grid number, adjust the **Grid Number** slider.
Christie recommends setting the grid to 2 x 2.
3. Select the warping mode: **Curve** or **Linear**.
4. Move the cursor to the blue circle on the image and click.
The point turns to a yellow circle.
5. Drag the boundary to the required location, making sure the two solid yellow lines are within the overlap area.
6. To fine tune the boundary, adjust the grid number slider to a larger number.
7. Repeat steps 4 and 5.
8. Under Pattern, choose a suitable pattern.
9. Magnify the image by scrolling the mouse or adjusting the **Zoom** setting.
10. To close the window, click **Exit**.
To reset to the default boundary configuration, click **Reset Boundary**.

Calibrating the image

Calibrate the image so it clearly fills the defined area.

1. To open the calibration page, from the Auto Warp homepage, click **Calibration**.
Calibration starts.
2. If the image is fine, close the application.
3. If the image is not as expected, to recalibrate the image, click **Re-calibration**.
 - a) Adjust the sharpness value until the white area is a full solid area.
 - b) When the image is as expected, click **Next**.
 - c) Adjust the sharpness value again until the white area is a full solid area.
 - d) Click **Done**.
Auto correction starts.
 - e) If the image is as expected, *return to the Boundary page* (on page 9) to compare the image.

- f) If the image is still not as expected, repeat step 3 to retry recalibrating the image again. To save time, recalibrate the image with photos stored on the computer.

Auto blending and stacking solution

When a user needs to project large content on the wall with sufficient output brightness, crop the content into X number of parts, project them by Y units ($Y > X$), and use the blending function to blend all of the projected images into a complete image.

Follow these steps to configure the stacking solution.

1. *Set Stacking as the solution you want to configure* (on page 13).
2. *Set up the camera* (on page 8) so it appears clearly in the target image area.
3. *Set the boundaries* (on page 9) of the projected image.
4. *Perform calibration* (on page 9) so the image clearly fills the target area.

Configuring the auto blending and stacking solution

Select the auto blending and stacking solution when you want to project large content on the wall with sufficient output brightness.

1. To open a new project, from the Auto Warp homepage, click **New**.
2. From the Solution mode screen, select **Stacking & Blending**.
3. Click **Next**.
4. Select the required resolution.
5. In the Layout field, select the type of blending.
 - Horizontal blending = 1 Row x 2 Column
 - Vertical blending = 2 Column x 1 row
6. In the Stack No field, enter 2 for the stack number.
7. Under Network, double-click the IP address and modify the IP address as required.
8. Click **Next**.
9. Click **Preview** and check the image.

The blue line from the right image must exceed the yellow line from the left image. The yellow line from the left image must exceed the blue line from the right image.
10. When the overlap area is correct, click **OK**.

Setting up the camera

Set up the camera so the image appears clearly within the target image area.

1. To open the camera, from the Auto Warp homepage, click **Camera**.
2. From the Camera list, select **Logitech HD Pro Webcam C920**.
3. Click **Open Camera**.
4. To increase or decrease the magnification of the image so it fits within the image box, adjust the **Zoom** slider.
5. To move the image, use the **T+/-** or **P+/-** controls .
6. To focus the image, adjust the **Focus** slider.
Christie recommends the default (minimum value) for focus.
7. Select **Advance**.
8. To make the image solid white, press **Auto Tune**.
If Auto Tune cannot find the best value, adjust the **Exposure**, **Brightness**, **Gain**, and **Contrast** parameters to make the image clear.
9. To close the window when the image is clear, click **Exit**.

Setting the boundaries of the projected image

Set the boundaries of the projected image so the image is displayed within the limits of the webcam projection.

1. To open the Boundary Setting page, from the Auto Warp homepage, click **Boundary**.
2. To set the grid number, adjust the **Grid Number** slider.
Christie recommends setting the grid to 2 x 2.
3. Select the warping mode: **Curve** or **Linear**.
4. Move the cursor to the blue circle on the image and click.
The point turns to a yellow circle.
5. Drag the boundary to the required location, making sure the two solid yellow lines are within the overlap area.
6. To fine tune the boundary, adjust the grid number slider to a larger number.
7. Repeat steps 4 and 5.
8. Under Pattern, choose a suitable pattern.
9. Magnify the image by scrolling the mouse or adjusting the **Zoom** setting.
10. To close the window, click **Exit**.
To reset to the default boundary configuration, click **Reset Boundary**.

Calibrating the image

Calibrate the image so it clearly fills the defined area.

1. To open the calibration page, from the Auto Warp homepage, click **Calibration**.

Calibration starts.

2. If the image is fine, close the application.
3. If the image is not as expected, to recalibrate the image, click **Re-calibration**.
 - a) Adjust the sharpness value until the white area is a full solid area.
 - b) When the image is as expected, click **Next**.
 - c) Adjust the sharpness value again until the white area is a full solid area.
 - d) Click **Done**.

Auto correction starts.
 - e) If the image is as expected, *return to the Boundary page* (on page 9) to compare the image.
 - f) If the image is still not as expected, repeat step 3 to retry recalibrating the image again.

To save time, recalibrate the image with photos stored on the computer.

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