The top half of the page features a complex, abstract background of overlapping, semi-transparent blue triangles and polygons in various shades of blue, creating a dynamic, crystalline effect. This pattern transitions into a white background at the bottom.

User Guide
020-102080-06

H Series, HS Series, and GS Series

Auto Warp

CHRISTIE®

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Danger messages indicate a hazardous situation which, if not avoided, results in death or serious injury.



Warning messages indicate a hazardous situation which, if not avoided, could result in death or serious injury.



Caution messages indicate a hazardous situation which, if not avoided, could result in minor or moderate injury.



Notice messages indicate a hazardous situation which, if not avoided, may result in equipment or property damage.



Information messages provide additional information, emphasize or provide a useful tip.

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Auto Warp application installation

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

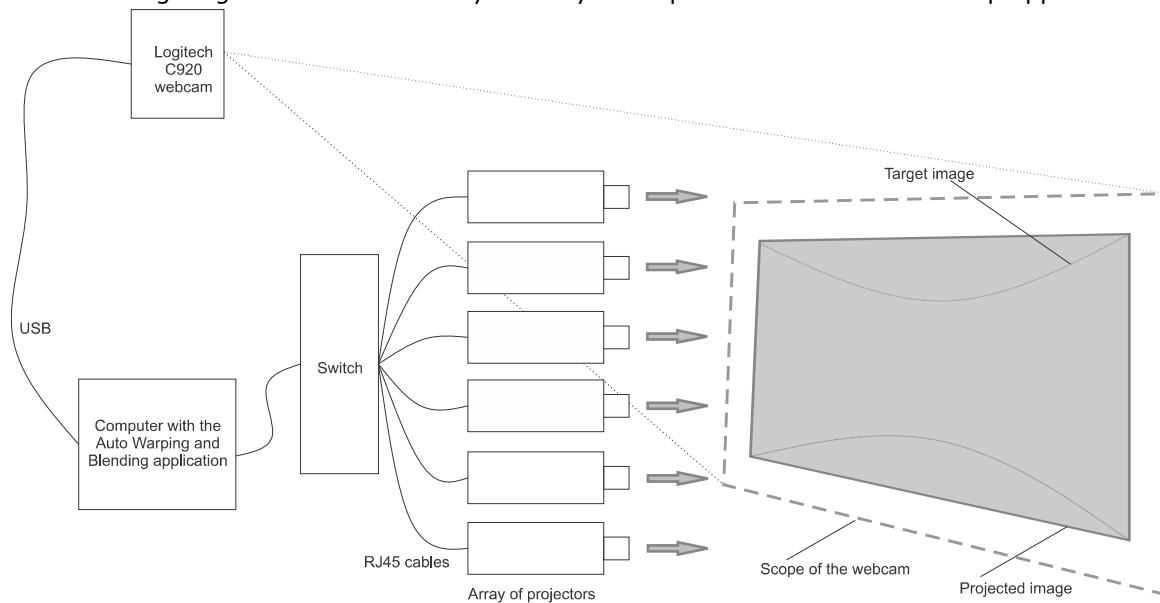
Affected products

The following products can use the Blending and Warping application.

- **GS Series**
 - DHD635-GS and DWU635-GS
 - DHD700-GS and DWU700-GS
 - DHD850-GS and DWU850-GS
 - DHD1075-GS and DWU1075-GS
- **HS Series**
 - 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 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. Select **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. Select **Download**.
5. In the Opening dialog, select **Save File**.
6. Navigate to where you downloaded the file and double-click **lws251.exe**.
7. Select **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, select **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, select **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, select **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, select **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 7).
2. *Set up the camera* (on page 7) so it appears clearly in the target image area.
3. *Set the boundaries* (on page 8) of the projected image.
4. *Perform calibration* (on page 8) 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, select **New**.
2. From the Solution Mode screen, select **Stacking**.
3. Select **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. Select **OK**.
9. To close the window, select **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, select **Camera**.
2. From the Camera list, select **Logitech HD Pro Webcam C920**.
3. Select **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, select **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, select **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, select **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 select.
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, select **Exit**.
To reset to the default boundary configuration, select **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, select **Calibration**.
Calibration starts.
2. If the image is fine, close the application.
3. If the image is not as expected, to recalibrate the image, select **Re-calibration**.
 - a) Adjust the sharpness value until the white area is a full solid area.
 - b) When the image is as expected, select **Next**.
 - c) Adjust the sharpness value again until the white area is a full solid area.
 - d) Select **Done**.
Auto correction starts.
 - e) If the image is as expected, *return to the Boundary page* (on page 8) 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 9).
2. *Set up the camera* (on page 7) so it appears clearly in the target image area.
3. *Set the boundaries* (on page 8) of the projected image.
4. *Perform calibration* (on page 8) 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, select **New**.
2. From the Solution mode screen, select **Blending**.
3. Select **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. Select **Next**.
8. Select **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, select **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, select **Camera**.
2. From the Camera list, select **Logitech HD Pro Webcam C920**.
3. Select **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, select **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, select **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, select **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 select.
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, select **Exit**.
To reset to the default boundary configuration, select **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, select **Calibration**.
Calibration starts.
2. If the image is fine, close the application.
3. If the image is not as expected, to recalibrate the image, select **Re-calibration**.
 - a) Adjust the sharpness value until the white area is a full solid area.
 - b) When the image is as expected, select **Next**.
 - c) Adjust the sharpness value again until the white area is a full solid area.
 - d) Select **Done**.
Auto correction starts.
 - e) If the image is as expected, *return to the Boundary page* (on page 8) 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 12).
2. *Set up the camera* (on page 7) so it appears clearly in the target image area.
3. *Set the boundaries* (on page 8) of the projected image.
4. *Perform calibration* (on page 8) 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, select **New**.
2. From the Solution mode screen, select **Stacking & Blending**.
3. Select **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. Select **Next**.
9. Select **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, select **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, select **Camera**.
2. From the Camera list, select **Logitech HD Pro Webcam C920**.
3. Select **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, select **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, select **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, select **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 select.
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, select **Exit**.
To reset to the default boundary configuration, select **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, select **Calibration**.

Calibration starts.

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

Auto correction starts.
 - e) If the image is as expected, *return to the Boundary page* (on page 8) 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.