

Light Strokes for iPad User Guide

Version 2.0

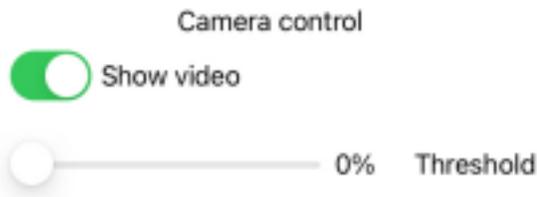
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Quick Start

When you first open Light Strokes, give it permission to use your camera and dismiss the Unlock screen. It will immediately begin painting, using whatever is in the camera's field of view as your brush. Depending on how large and bright that is, the whole screen might immediately fill with paint, or it might not change at all. So the first thing you may need to do is to adjust the camera's input:

1. Tap  to open the settings panel.
2. Under **Camera control**, turn on **Show Video** and reduce the **Threshold** to 0%:



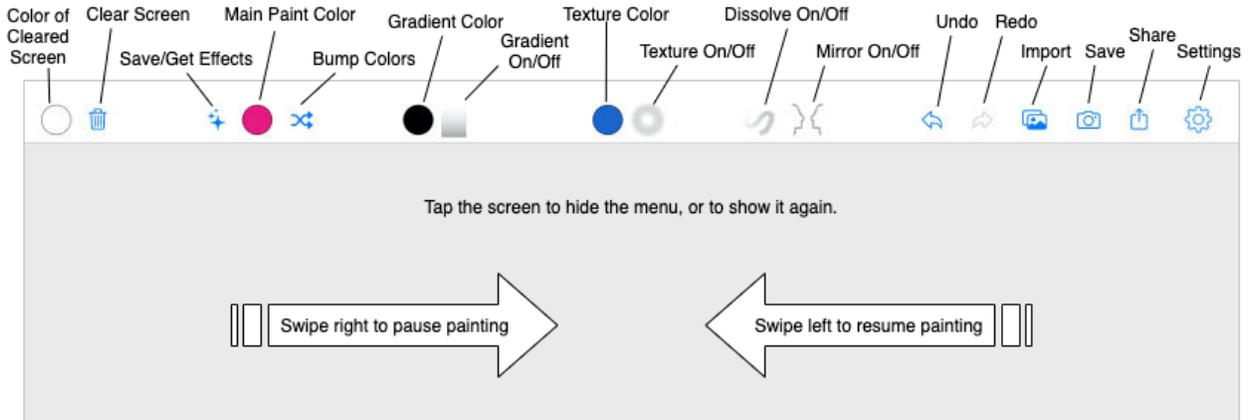
3. Point the iPad at the objects you want to paint with, and adjust the **Zoom** until they're the size you'd like.
4. Adjust the **ISO** until the brightest parts of those objects are white.
5. Raise the **Threshold** until the background disappears, and only the objects you want to paint with are visible.
6. Turn off **Show video** to go back to painting, and touch the screen to close the settings panel.
7. Tap  to clear the screen and begin a new painting.

You should now be able to paint by moving those objects, or your iPad, around.

See page 9 for more information about the camera settings.

If you'd like to make the Light Strokes hardware, see [this Instructable](#).

Main Menu



Clear Screen – Erase your current painting to start again with an empty screen.

Color of Cleared Screen – Set the color to which the screen will clear, when you touch the Clear Screen button.

***Save/Get Effects** – Save the current combination of colors and effects or get a previously saved combination.

Main Paint Color – Set the main painting color and its opacity.

***Bump (Randomize) Colors** – Make a small random change to the main paint color. Does the same to the gradient and texture colors, when those effects are turned on.

Gradient Color – Set the color that’s mixed in a gradient with the main paint color, when gradient is turned on.

Gradient On/Off – Turn on or off the gradient effect, in which the gradient color is blended with the main paint color, along the length or width of the brush.

Texture Color – Set the color that’s mixed with the main paint color, based on the brightness of each pixel in the video input, when texture is turned on. Darker pixels, like those nearer the edges of the brush, will show more of the texture color and brighter ones more of the main paint color.

Texture On/Off – Turn on or off the texture effect, in which the texture color is blended with the main paint color, depending on the brightness of the input.

Dissolve On/Off – Turn on or off the effect in which the painting dissolves away continually to the color of the cleared screen.

Mirror On/Off – Turn on or off the effect in which the input on one side of the screen is also mirrored to the other side.

***Undo** – Remove the most recent remaining painted stroke, up to the last 50. Note, a stroke does not end until there is no brush or other bright object in the camera’s field of view. Also undoes screen clears and image imports.

***Redo** – Replace a stroke previously removed via Undo.

***Import** – Open a photo, previously saved Light Strokes painting, or other images saved on your iPad.

Save – Save the current painting in progress.

Save – Share the current painting in progress, via AirDrop, Mail, etc.

Settings – Change settings that effect how painting happens.

*** These features are locked out unless you unlock them with an in-app purchase or free trial.**

Color Picker

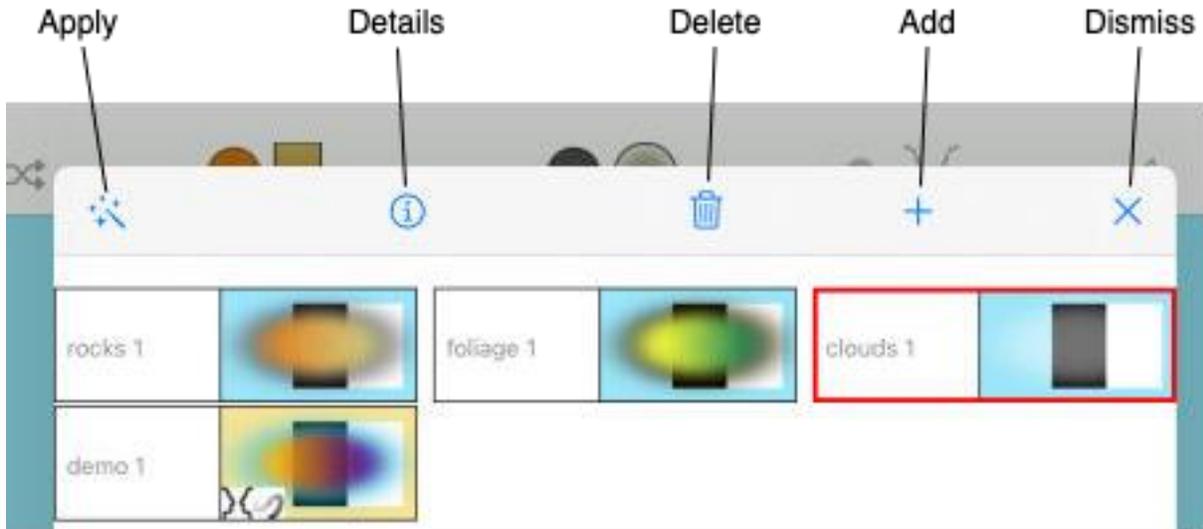


Bring up the color picker by touching the **Main Paint Color** button, as shown above, or any of the other three color buttons. They all work the same way, except that the others do not have the **Opacity** slider.

Select a new hue by moving the rainbow-colored slider. Select a new lightness and saturation by dragging the small circle in the pane above it. The indicator at top left shows your current color compared to the new one. You can also select a color that already appears in your current painting, by dragging the eyedropper at top right to the part of the screen containing the desired color, and then releasing it.

The **Opacity** slider allows you to adjust how transparent or opaque your paint is. It affects not only the main paint color, but the gradient and texture colors, when those effects are turned on. **Note that if the Opacity is set very low, your painted strokes may not be visible at all, especially on non-contrasting backgrounds.**

Effects Panel



Bring up the effects panel by touching the **Save/Get Effects** button. It will initially contain just the four example effects shown above. When you have many effects saved, you may need to scroll to see them all.

Add - Save the current combination of colors and effects. After touching the Add button, enter the name you'd like for the effect and press done. If you enter a name of an existing effect, you'll be asked whether or you want to replace it.

Each effect is shown by name and with a thumbnail suggesting what a single painted stroke would look like on the cleared-screen color, as well as on black and on white. Note that a very low **Opacity** can make that stroke almost invisible. If Dissolve and/or Mirror are on, their icons will also appear in the thumbnail.

Dismiss – Dismiss the effects panel. You can also simply touch anywhere outside of the effects panel to dismiss it.

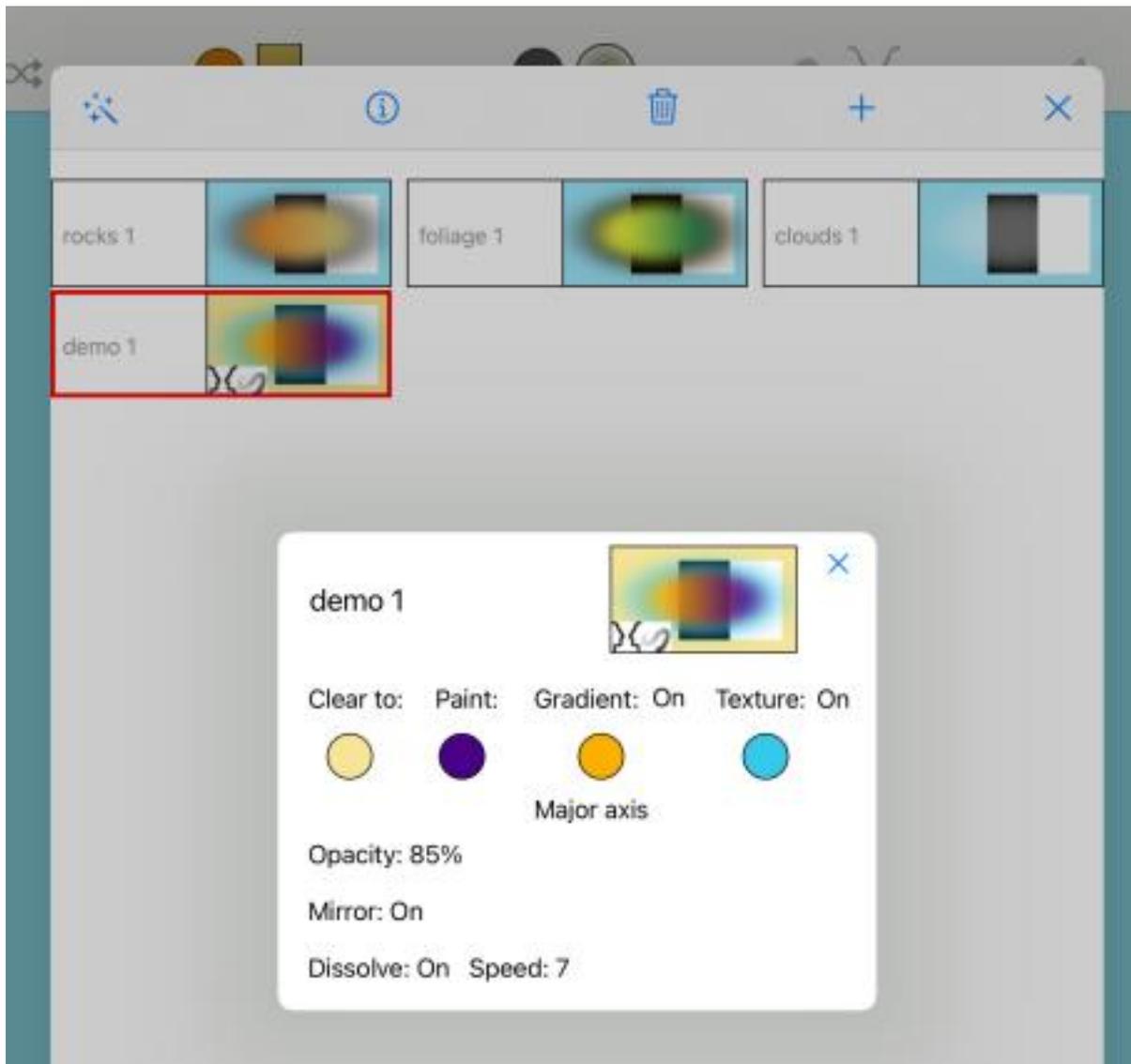
When you touch an effect to select it, it's outlined in red. You may then do any of the following:

Apply – Use the colors and settings of that selected effect. You can also double-tap an effect to apply it.

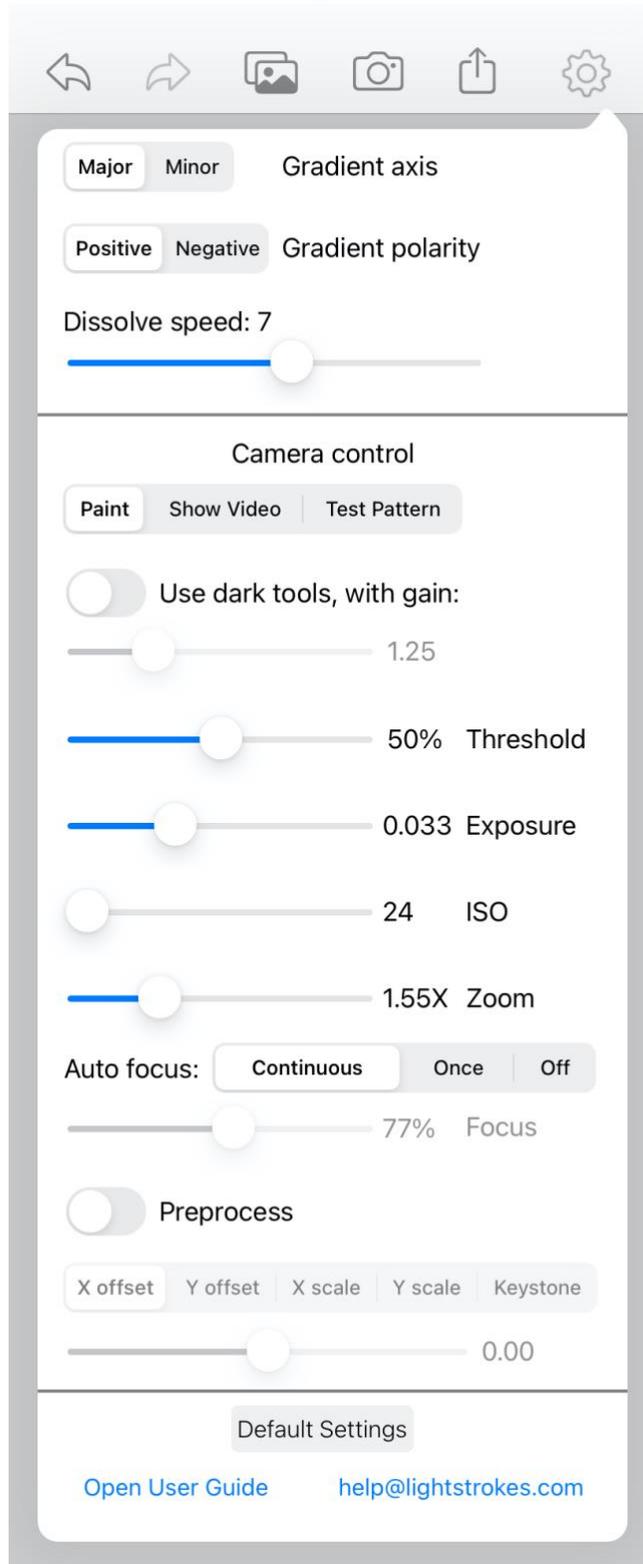
Delete – Permanently remove the selected effect.

Details – Show the complete contents of the selected effect, as below:

Effect Details



Settings Panel



Bring up the settings panel by tapping the **Settings** button.

Gradient axis – When **Major** axis is selected, the gradient effect is applied along the length of a brush's footprint. When **Minor** axis is selected, it's applied across the width. The **Gradient On/Off** button will also change to indicate the selected direction.

Gradient polarity – Select whether the gradient color appears at the top or bottom, or left or right, of the brush footprint. Note that when a brush is rotated within a stroke, the gradient will follow it, but the next stroke will still start with the polarity selected here.

Dissolve speed – Determine how quickly your painting will dissolve away when the dissolve effect is turned on.

Camera Control

Paint – Select this for painting.

Show Video – Select this to display the video input. That's often helpful when adjusting the other camera settings below.

Test Pattern – Displays the video input quantized (posterized) to 8 levels, with a red test pattern superimposed. It's useful for aligning the camera when using the Light Strokes hardware.

Use dark tools, with gain – Turn this on if you have a bright background and want to paint with dark objects. When it's on, you can also adjust the gain as needed to increase the sensitivity to those dark tools.

Threshold – Set how bright the video input needs to be to cause painting. With higher thresholds, only the brightest parts of the video will be painted. With very low thresholds, any video input may cause painting. It's often helpful to set this low temporarily when adjusting the other camera controls below.

Exposure – Set the exposure time (in seconds). Longer exposures allow for darker inputs, but exposure times greater than 0.033 s will cause the frame rate to go below its maximum of 30 fps.

ISO – Set the sensitivity. Higher **ISO** values allow for darker inputs, but will also increase noise.

Zoom – Set the field of view.

Auto focus:

Continuous – Select this to have the camera continuously seek the best focus.

Once – Select this to have the camera seek the best focus once, and then to turn auto focusing off.

Off – Select this to turn auto focusing off and revert to the last focus set manually or via the **Once** option. When auto focus is off you can adjust the focus manually via the slider.

Preprocess – Turn on or off the video pre-processing needed for the Light Strokes hardware. If that extra hardware is not being used, this should be left off. When it is on, the following settings can also be adjusted. (Note: the settings panel always opens with X offset selected):

X offset – Adjusts the position of the processed video in the horizontal direction.

Y offset – Adjusts the position of the processed video in the vertical direction.

X scale – Adjusts the width of the processed video.

Y scale – Adjusts the height of the processed video.

Keystone – Adjusts the degree to which vertical lines in the processed video converge or diverge.

When you dismiss the settings panel, the Camera Control settings will be saved, and they will then be used the next time you open the Light Strokes app (except that it always opens in the **Paint** mode).

Default Settings – Select this to replace all your current Camera Control settings with their original, default values. A popup will ask you to confirm that choice by selecting “Get Defaults”.

Open User Guide – Opens this document in your browser.

help@lightstrokes.com – Starts an email to send to lightstrokes.com to request help.

Troubleshooting

Problem	Possible Cause	Possible Solution
Screen just stays black	Light Strokes has not been given permission to use the camera	In the iPad's Settings app, search or scroll to Light Strokes, and turn on the switch that says ALLOW LIGHT STROKES TO ACCESS Camera
No painting happens	No bright objects in field of view	Point the camera at some bright objects
	Threshold too high	Lower the Threshold setting, p. 9
	ISO or Exposure too low	Raise the ISO or Exposure settings, p. 9
	Opacity too low	Raise the Opacity, p. 5
	Too little contrast between paint and background	Select more contrasting colors to paint with, p. 5
Too much painting happens, or screen immediately fills with paint after clearing it	Bright objects fill the field of view	Reduce the Zoom , p. 9, aim the camera away from those objects, or reduce their illumination
	Threshold too low	Raise the Threshold setting, p. 9
	ISO or Exposure too high	Lower the ISO or Exposure settings, p. 9
Painting gradually disappears	Dissolve is turned on	Turn off Dissolve , p. 3
Undo doesn't work	Bright objects staying in camera's field of view	Make sure the camera's view has gone completely dark at the end of the stroke. Even if the bright spots are small or along the edge (or hidden under the main menu), that may be enough to prevent the stroke from truly ending.
Gaps appear in the middle of strokes	Background iPad activity is taking precedence over paint processing	Close any apps that are running in the background, especially those that use WiFi (e.g. Safari, Mail, News, YouTube) or Bluetooth