Gumstick

User Manual

Better Way Lighting

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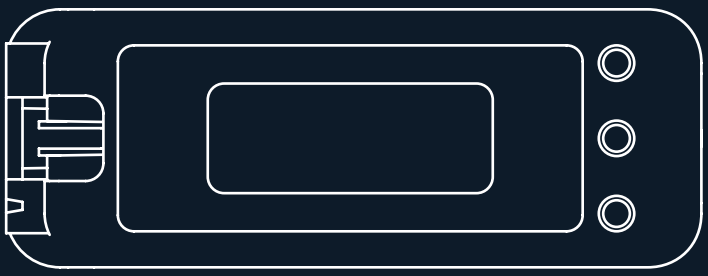
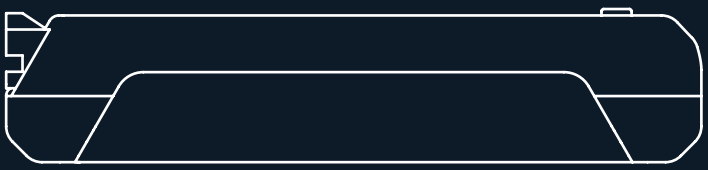
Table of Contents

Introduction

The 2-Channel Decoder is a device with a small form factor designed for use in theatrical and film productions. It functions both as a wireless CRMX decoder and as a basic manual controller.





Specifications

Channels	2
Wireless Technology	LumenRadio CRMX
Input Voltage	12-48VDC
Bit Depth	8, 16
Frequency	5, 10, 20kHz
Current Rating	Up to 3A per pin, 6A total
Ambient Temperature	0-45 C
Dimming Control	PWM
Load Type	12-48V LED, Constant Voltage
Body Dimensions	H 14 mm x L 65 mm x W 24 mm
Weight	19.5 g
Wire Gauge	26 AWG (0.1288 mm²)

Safety

No user serviceable parts

Do not open the housing

Not intended for permanent installation

For use in dry location only

Store in a cool, dry environment

Do not operate outside of rated temperature

Do not operate if broken or deformed

Factory Settings

Listed below are the default values each parameter is set to when using the device for the first time.

CRMX Control

Basic

- Linking › Unlinked
- Start Address › 1
- Mode › Direct

Advanced

- Bit Depth › 8
- Fade Value › 1
- PWM Frequency › 5 kHz
- Gamma Curve › 5

Manual Control

Basic

Mode › Direct

Mode Specific Settings

Direct

- Ch1 Manual › 0
- Ch2 Manual › 0

Bicolour

- Manual Intensity › 0
- Manual Temp. › 2800
- Min. Temp. › 2800
- Max. Temp. › 6900

Flicker

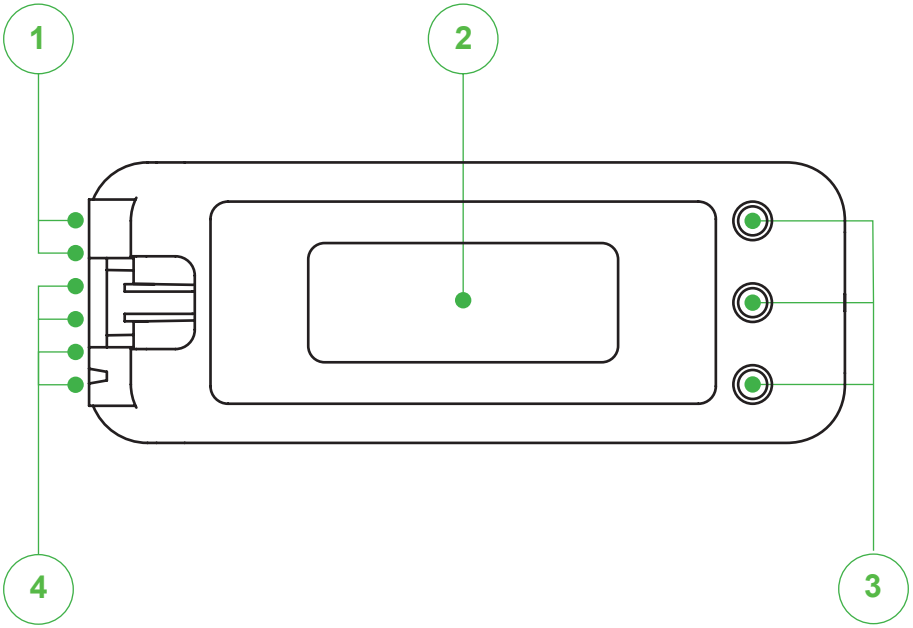
- Presets › Preset 1
- Intensity › 0%
- Variance › 100%
- Speed › 0%
- Smoothing › 0%
- Advanced Opts.
  - Intensity split › 50%
  - Ch 1 Weight › 50%
  - Ch2 Weight › 50%

Advanced

- PWM Frequency › 5 kHz
- Gamma Curve › 5

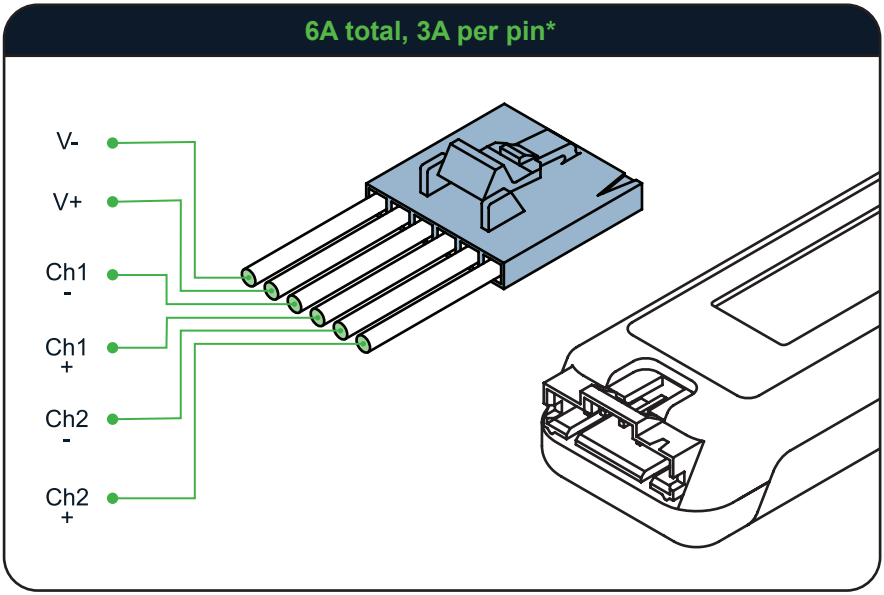
Device Overview

1	V-, V+ from Power-Source
2	Menu Display
3	Navigation Buttons
4	Output to LED



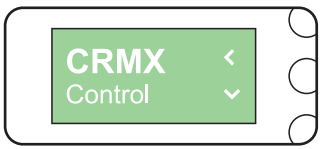
Device Startup

To begin, connect the device to a 12-48VDC Battery or Power Supply and it will automatically turn on.



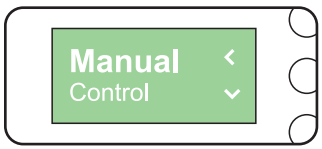
* + Pins are common and can be wired together to achieve the 6A device total.

Select Control Type



CRMX Control

If a wireless CRMX transmitter is being used, select CRMX Control and go to **page 9**.



Manual Control

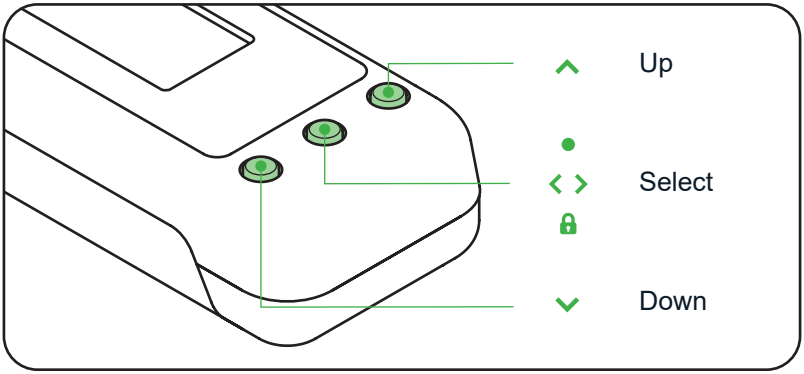
To use as a basic manual controller, select Manual Control and go to **page 15**.

Menu Navigation

Navigation Buttons

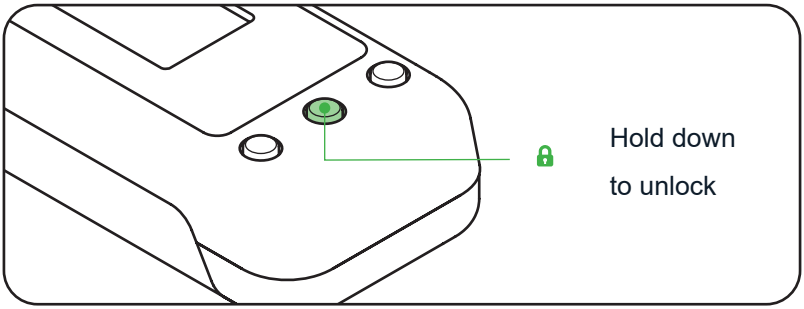
Use the three buttons for menu navigation and option selection.

Follow the navigation icons displayed on the screen.



Navigation Lockout

The device will lock after a period of inactivity.



Screen Sleep

The screen will sleep after a period of inactivity. Press any button to wake the screen.

CRMX Control • **Basic Settings**

Use CRMX Control when using a wireless CRMX transmitter to send DMX data to the device. The device will function as a wireless 2 channel decoder.

Linking

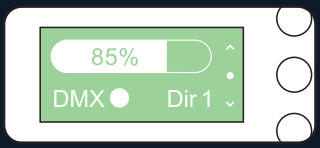
Prior to the linking procedure, ensure that the decoder is powered on and unlinked from any previously used CRMX transmitter.

Linking is initiated by the CRMX transmitter. Refer to your CRMX transmitter manual for the linking procedure.

Status Screen

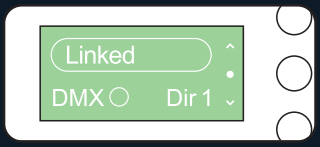
This screen is intended as a diagnostic tool to aid in troubleshooting performance issues. It displays information about the signal strength, whether or not DMX data is being received from the transmitter, the operating mode, and the assigned starting address.

Dir • Direct mode Bi • Bicolour Mode Flk• Flicker Mode

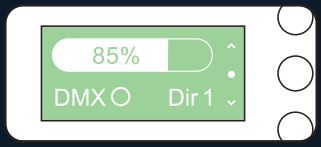


Decoder is operating in Direct Mode on Ch1 and receiving DMX.

Not linked to a transmitter. Proceed with linking procedure.



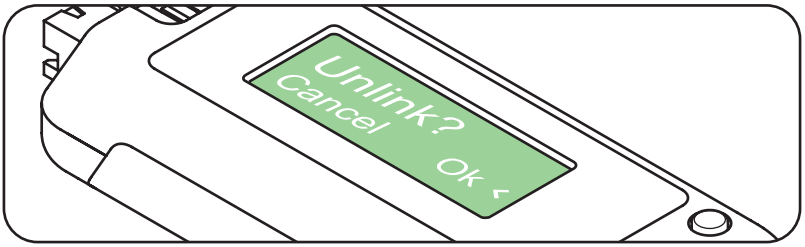
Linked to a Transmitter that is either not present or not sending a signal.



Linked to a Transmitter that is sending a signal but is not sending DMX data.

Unlinking

Can be initiated by the decoder. Once the decoder is unlinked, it is ready to link with a new CRMX transmitter.



Tip The decoder always remembers the previous transmitter that it was linked with and will not link with a new transmitter until unlinked.
Powering the device off and on will not unlink the decoder, you must go through the unlinking procedure on the decoder.

Starting Address

Select the DMX starting address for the LED light source(s).

Number of Used Addresses

Mode	8 Bit	16 Bit
› Direct	2	4
› Bicolour	2	4
› Flicker	7	14

Mode

Choose Mode depending on your desired usage.

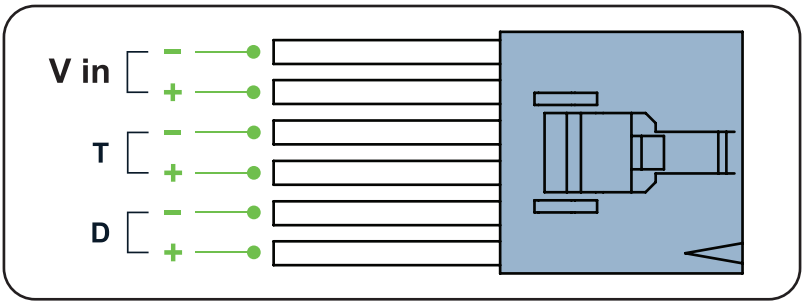
Direct: A general purpose mode for use with any light source. Channels 1 and 2 directly control dimming values on the output.

Bicolour: This mode is designed for use with tungsten-daylight fixtures. The device controls the colour temperature and light intensity of the output.

8 Bit		16 Bit	
Uses 2 addresses.		The device uses 4 addresses:	
Ch. 1	Intensity	Ch. 1, 2	Intensity (course, fine)
Ch. 2	Colour Temp.	Ch. 3, 4	Colour Temp (course, fine)

It is important that the tungsten and daylight channels on the light source are wired to the correct channels on the decoder, as shown on the following diagram.

Wiring Diagram for Tungsten-Daylight LED



Flicker Mode

In Flicker Mode, the output channels flicker according to parameters which generate organic flicker effects.

Intensity › Sets the maximum brightness of the flicker

Variance › Sets the difference between the min. and max. brightness.

Speed › Sets the speed of the flicker.

Smoothing › Sets the smoothness.

Intensity split › Biases one channel to be more intense than the other.

Ch1 / Ch2 Weight › Specifies a bias towards the min. or max. level.

See **page 19** for more details and example flicker settings.

Send CRMX data according to the following fixture profile to control the flicker parameters wirelessly.

Address	8 Bit	16 Bit	Parameter
	1	1 & 2	› Intensity
	2	3 & 4	› Variance
	3	5 & 6	› Speed
	4	7 & 8	› Smoothing
	5	9 & 10	› Intensity Split
	6	11 &12	› Ch1 Weight
	7	13 & 14	› Ch2 Weight

PWM Frequency

Adjust this setting to eliminate on-camera banding caused by a mismatch between the speed of the LED's duty-cycle and the camera's capture speed settings.

Tip The highest frequency will eliminate visible banding for most camera settings. However, we recommend doing a camera test and setting the PWM frequency as low as possible. This is because lower PWM frequencies allow for finer intensity adjustments and decrease the device's operating temperature.

5 kHz	14 bit resolution
10 kHz	13 bit resolution
20 kHz	12 bit resolution

Bit Depth

Adjust this setting to change the resolution of control. More steps translates to finer control.

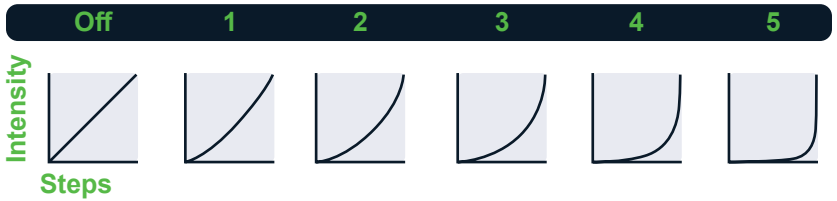
8 Bit	256 levels
16 Bit	65536 levels

Tip

- Some controllers do not support 16-bit mode. To improve dimming performance in 8-bit mode, add a Gamma Curve.
- 16-Bit Control is helpfull when fine-tuning a RGB source.

Gamma Curve

Adjust this setting to manipulate the size of the dimming steps and optimize the usage of bits. The more aggressive the gamma curve, the more resolution you have at the lower end of light intensity where the human eye is most perceptive to change. The trade-off is the loss in granularity of control on the upper end of light intensity.



Tip **8 Bit Mode** We suggest using #5 as a starting point. It's the most aggressive gamma curve, providing the maximum bit resolution on the low end of light intensity. If less low-end granularity is required, use one of the less aggressive gamma curve settings.

16 Bit Mode We suggest using the "Off" setting as the starting point when in 16-bit mode. This is because the intensity increments are typically beyond human perception.

Fade

Adjust this setting to increase the time between dimming steps and create the perception of smoothness as the light intensity changes.

Transition time in miliseconds

0	Instantaneous jump (No fade)	3	100 ms	7	500 ms
		4	170 ms	8	640 ms
1	20 ms	5	260 ms	9	810 ms
2	50 ms	6	370 ms	10	1000 ms

Manual Control • **Basic Settings**

Use Manual control when there are no transmitter sending data to the LED light-source. The device functions as a basic 2 Channel Controller.

Mode

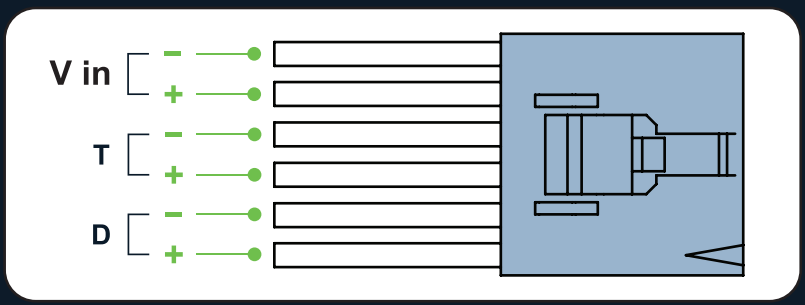
Choose Mode depending on your desired usage.

Direct: A general purpose mode for use with any light source. Channels 1 and 2 directly control dimming values on the output.

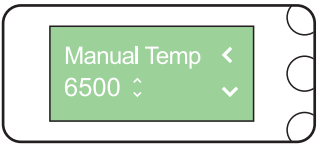
Bicolour: This mode is designed for use with tungsten-daylight fixtures. The device controls the colour temperature and light intensity of the output.

It is important that the tungsten and daylight channels on the light-source are wired to the correct channels on the decoder, as shown on the following diagram.

Wiring Diagram for Tungsten-Daylight LED



Prior to adjusting the “Temp” setting, ensure that the Upper Temp and Lower Temp parameters are set correctly on the decoder. Go to the CCT Range settings on page 17 for more information.



Flicker Mode

In Flicker Mode, the output channels flicker according to preset parameters to generate organic flicker effects.

Presets › Sets the default parameters based on the desired effect.

Intensity › Sets the maximum brightness of the flicker

Variance › Sets the difference between the min. and max. brightness.

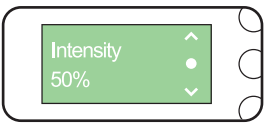
Speed › Sets the speed of the flicker.

Smoothing › Sets the smoothness.

Intensity split › Biases one channel to be more intense than the other.

Ch1 / Ch2 Weight › Specifies a bias towards the min. or max. level.

See page 19 for more details and example flicker settings.

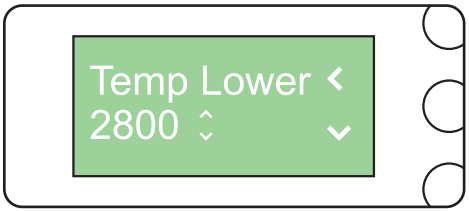


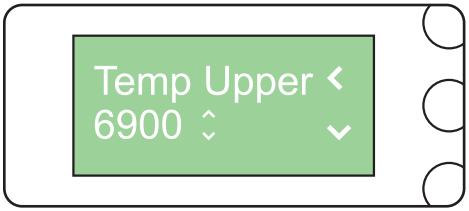
CCT Range (Manual Bicolour Mode only)

Set the CCT Range to match the tunable range of the bicolour LED light source. There are two settings to establish the range: Temp Lower and Temp Upper.

Temp. Lower	Warmest end of the CCT range.
Temp. Upper	Coolest end of the CCT range

Note Setting CCT range is only neccessary when specific colour temperatures are required.
It is not essential if adjusting by eye.





Manual Control • **Advanced Settings**

PWM Frequency

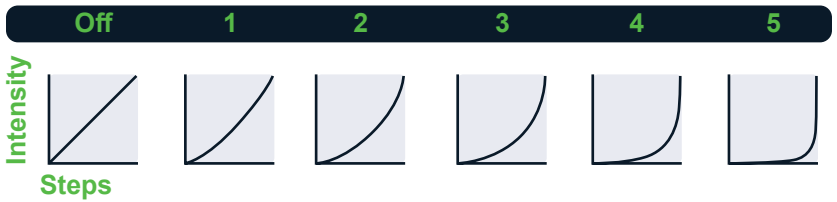
Adjust this setting to eliminate on-camera banding caused by a mismatch between the speed of the LED's duty-cycle and the camera's capture settings.

Tip The highest frequency will eliminate visible banding for most cameras. However, we recommend doing a camera test and setting the PWM frequency as low as possible. This is because lower PWM frequencies allow for finer intensity adjustments and decrease the device's operating temperature.

5 kHz	14 bit resolution
10 kHz	13 bit resolution
20 kHz	12 bit resolution

Gamma Curve

Adjust this setting to manipulate the size of the dimming steps and optimize the usage of bits. The more aggressive the gamma curve, the more resolution you have at the lower end of light intensity where the human eye is most perceptive to change. The trade-off is the loss in granularity of control on the upper end of light intensity.

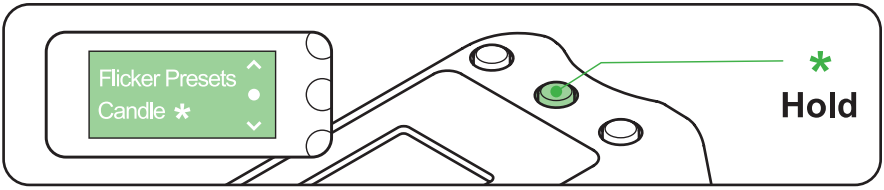


Tip In Manual Control, we suggest using the #5 setting as a starting point. It's the most aggressive gamma curve, providing the maximum resolution on the low end of light intensity.

Flicker Mode

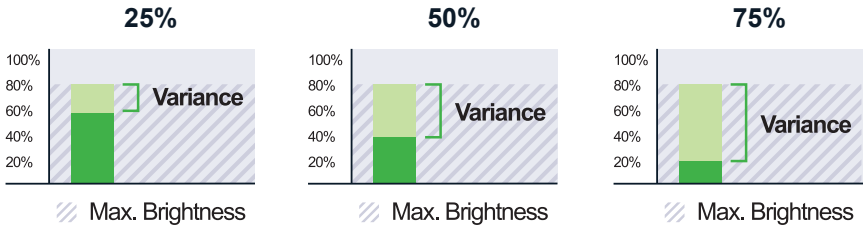
In flicker mode, the device generates highly customizable, randomized flicker effects using simple parameters. The device randomly switches between configured Maximum and Minimum levels for each channel to simulate organic motion.

Tip After editing a preset, an star will appear next to it, meaning the values have been changed and they are no longer the original. To reset it back to its original state, press and hold the middle button while looking at the option.



Intensity › Sets the maximum brightness of the flicker

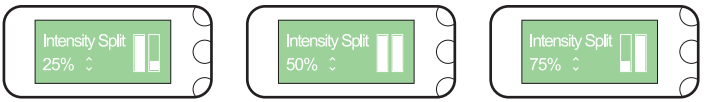
Variance › Sets the difference between the min. and max. brightness.
For example, with a variance of 80%, the maximum brightness will be 100% and the minimum 20%.



Speed › Sets how fast the flicker is.

Smoothing › Sets how smooth the flicker is.

Intensity split › Biases one channel to be more intense than the other.

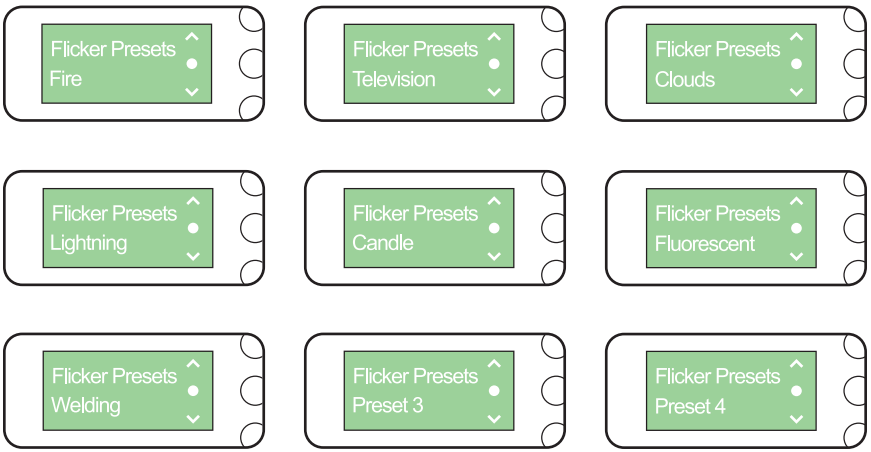


eg.
An intensity split of 80%, would have Ch2 with a 100% brightness, and Ch1 with 25%

Ch1 / Ch2 Weight › Set a bias towards the minimum or maximum level for a channel.

For example, a weight of 0% means only the minimum level will be shown.
A weight of 100% means only the maximum level will be shown.
50% means it will spen an equal amount of time on both (max. and min.)

Flicker Examples



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