RC4 Series 3 Quick Start Guide LumenDim4 and LumenDimM4

Contents

Disclaimers

WIRING AND INSTALLATION OF BATTERIES, DIMMERS, AND LOADS MUST BE IN ACCORDANCE WITH APPLICABLE LOCAL AND NATIONAL ELECTRICAL CODES.

RC4 Wireless devices and equipment are operated at the user's own risk and RC4 Wireless accepts no liability, either direct or consequential, as a result of using this equipment.

Not for Use Where Human Safety May Be At Risk

RC4 Wireless accepts no liability for direct, indirect, or consequential damages resulting from the use of any RC4 Wireless product or group of products. RC4 Wireless does not guarantee the suitability of any product for any purpose; user assumes all risk. RC4 dimmers must be used strictly in accordance with manufacturer's instructions and cannot be used for unsupervised operation. RC4 Wireless products must be installed and operated only by qualified technicians, as outlined in the manufacturer's documentation, and should be inspected and tested on a regular basis to ensure proper and safe operation.

Not for Control of Pyrotechnical Devices

RC4 Wireless products should not be used to control pyrotechnics of any kind. A brief output surge on dimmer outputs during power-up could trigger these devices. RC4 Wireless accepts no liability if RC4 equipment is used for this or any other purpose.

Product Safety

RC4 receiver/dimmers are capable of controlling very large currents at up to 35VDC. Dimmers should not be allowed to operate at dangerous temperatures. Appropriately sized wire and connectors must be used, along with suitable ventilation to dissipate heat, and external fuses rated for the load being operated.

This guide is not intended to provide comprehensive electrical safety instructions. RC4 devices should be used only by qualified personnel.

RC4 Wireless Dimming

If you are unsure about what wireless dimming is used for, explore expert examples with pictures and information at www.wirelessdimming.com. Highlights include *The Rockettes*, *Katy Perry*, *Wicked – The Musical*, The Who's *Tommy*, and much more.

Tutorial videos to help you use and understand RC4 technology are available at http://www.theatrewireless.com/category/support/video/. Seeing the process is sometimes easier than reading a manual.

The most important thing is this: wireless dimming with professional and reliable results is easy – *it's easier than you think!*

The RC4 Series 3 User Interface

The RC4 Series 3 User Interface consists of numerous LEDs and recessed pushbuttons. All LED are behind small round holes. All buttons are behind small slotted openings. A small tool, like a bent paperclip, is required to press the recessed buttons.

Never insert a tool into a round hole – buttons are only behind slotted holes.

> *Never insert a tool into a round hole – buttons are only behind slotted holes.*
> *Poking tools into round holes may void the product warranty.*

Restore Defaults

If you are unsure of the settings in an RC4 Series-3 device, or if it is not responding as expected, you can restore default settings to a power device at any time:
Hold the recessed *Func* **button while you press and release the** *SetA* **recessed button. The DimA indicator will blink, and most settings will be cleared to defaults.**   Some firmware versions leave the PWM frequency and RC4 Digital Persistence^{TM} setting unchanged after loading defaults.

To restore original factory settings including PWM frequency and Digital Persistence:
Hold both the *Func* **and the** *SetA* **buttons while powering on the device, and hold them for more than 5 seconds.**   The COP indicator will light for 5 seconds in bootloader mode before reverting to normal operation. Hold the two buttons for this entire time.

> *Restoring defaults is easiest with two bent paperclips, one for each button.*

DMX Controller and Transmitter

RC4 Wireless devices are DMX controlled. You need a **DMX controller** (sometimes called a DMX Console, or a DMX Desk) to get started. If you're setting up in a theatre space, you probably have a DMX controller in the lighting booth.

Next, you need a CRMX transmitter. It doesn't have to be a Lumen Radio transmitter, but it must transmit the Lumen Radio CRMX wireless protocol. A list of compatible brands – and there are many – can be found at http://www.lumenradio.com/partners.php.

At the time of this writing, Lumen Radio receivers, including RC4 LumenDim devices, are also compatible with Wireless Solution W-DMX transmitters, but without wireless RDM (remote device management) support.

Be sure your transmitter sends Lumen Radio CRMX or
Wireless Solution W-DMX data.

Make the DMX Connection

Connect a DMX data output from your DMX controller to the DMX data input on your wireless DMX transmitter. Be sure your transmitter is powered on and operating. In most cases, that's all you need to do. Your DMX universe will now be out on the airwaves.

Battery and Dimmer

RC4 Series 3 dimmers have a wide voltage input range: 6V – 35VDC. Connect a battery or DC power supply within this range to the Vin terminals and the device will power on.

All RC4 Wireless DC power inputs are protected against reverse polarity.
If you connect the battery backwards, nothing bad will happen.

It is difficult to protect dimmer circuits from power connected to the output terminals. Do NOT do this! Connect your battery or power supply ONLY to the Vin terminals.

Each RC4 dimmer has an output indicator, so you don't need to connect anything more to see things work right away.

Pairing Receivers with Transmitters

RC4 LumenDim devices must be paired with a compatible DMX transmitter before they can be used wirelessly. The transmitter must send CRMX or W-DMX data.

RC4 Series 3 dimmers use small recessed pushbuttons that cannot be accidentally pressed when the device is inside a prop, set piece, or costume. You will need a bent paperclip or other small tool to operate these buttons.

> *Buttons are behind short slotted openings. LEDs are behind small round holes (not slots). Do not poke anything into the round holes. Only insert your tool into slotted openings.*

Follow these simple steps:

- Ensure that the transmitter and the LumenDim device are powered on and near each other.
- If the LumenDim was previously paired to a different transmitter, press and hold the recessed RF Connect button on the dimmer for at least 5 seconds. The blue RF Connect indicator should go off (not on, and not blinking).
- Press the **Link** button on the transmitter (depending on the make and model, this transmitter button might be marked as **Function** or **Connect**). An indicator on the transmitter will start flashing. The blue RF Connect indicator on the LumenDim will also start flashing.
- While indicators are flashing, briefly press the RF Connect button on the LumenDim. When the transmitter stops flashing, the blue RF Connect indicator on the LumenDim will remain lit, indicating that pairing is completed.
- If DMX data is supplied to the W-DMX transmitter, the yellow DMX indicator on the LumenDim will be on.

> *When the yellow DMX data indicator is on, you have DMX control of your wireless dimmers.*

The LumenDim will remain paired to the same transmitter until it is changed using the same procedure with a different transmitter. Consult Lumen Radio CRMX documentation, or documentation for the transmitter you are using, for additional information.

Make Something Light Up!

On your DMX controller, fade DMX channels 1, 2, 3, and 4 up and down. You will see the DimA, DimB, DimC, and DimD indicators on your LumenDim device fading up and down on command, in real-time.

*Wireless dimming really **IS** easy!*

Assign DMX Channels

You probably don't want to run all your wireless dimmers on DMX channels 1 through 4. RC4 OneTouch™ makes it easy to assign any DMX channel and dimmer curve to any dimmer with a single press of a single button. You need a working DMX controller and transmitter, a LumenDim that has been paired to your transmitter, and a bent paperclip or other small tool for pressing small recessed buttons.

The yellow DMX Data indicator on the LumenDim must be on. If it is not on, then DMX data is not present at your transmitter or you have not properly paired your devices.

Start by clearing all your DMX channels to zero on your controller. Be sure this includes any "special" channels, like house lights and work lights, and be sure you are not using fixture profiles that "home" some channels at levels other than zero. For example, some moving light fixture profiles will send X and Y motion to a midpoint when the console is "cleared." That midpoint is not zero; for our purposes, you need actual zero.

> *If you are unsure if all channels are really at zero, check your DMX line with a tester, like a Goddard DMXter or a Fleenor Gizmo. These are very handy devices to have around, for all kinds of reasons. Put this on your wish-list!*

Now, bring up the level of one DMX channel – any channel you like – to 30% (if you can't decide on what channel to try, use channel 92). If you're using a simple fader, put it about 1/3 of the way up. If you can type in a channel level, use 30%. Now, go to your LumenDim and press the SetA button. You'll see the DimA indicator come on at about 30% brightness. When you let go of the button, the dimmer should stay on. It is now assigned to the channel you have up.

Fade the channel up and down from your DMX controller. The wireless dimmer will track it exactly. It will remember your channel assignment after you cycle the power. It remembers forever, until you change it.

> ***If the dimmer came on brightly when you pressed the button, and did not stay on after you released the button, the data connection to the transmitter is not working. Go back to the previous steps and get it working with default settings for wireless control on DMX channels 1, 2, 3, etc.***

Setting the channel to 30% tells the dimmer to use a combination of options that make LEDs look great, ideal for viewing the little indicator on the dimmer device itself.

You can set the channel to levels other than 30% to select configurations that are optimized for other kinds of loads. Each dimmer can be set to a channel, curve, PWM frequency, and RC4 Digital Persistence level, accommodating the different needs of multiple loads connected to the same device.

***Did we mention* easy?**

RC4 OneTouch^{TM} Channel, Curve, and Digital Persistence^{TM} Assignment

When an RC4 Series 3 device is connected to an active transmitter with DMX data streaming in, the Set buttons provide RC4 OneTouch^{TM} dimmer configuration. Press a dimmer Set button to assign it to the first DMX channel that is at a level of 20% or higher. The level of the DMX channel determines the dimmer curve and RC4 Digital Persistence time.

Dimmer Curves

Using RC4 OneTouch^{TM}, three different dimmer curves can be selected: Inverse Square Law (ISL), Linear, and Non-Dim.

The ISL Curve is optimized for light emitting diodes (LEDs). You must use the ISL curve to make LEDs dim smoothly; do not use the linear curve for LEDs.

The Linear Curve is perfect for incandescent (including halogen) lighting – traditional filament bulbs.

The Non-Dim Curve is ideal for relays, solenoids, AC inverters, and anything else that needs cleanly switched DC power.

RC4 Digital Persistence^{TM}

The ISL dimming curve is only part of how to make LEDs look great. RC4 Digital Persistence^{TM} makes LEDs look as pleasing as incandescent lighting, with no visible stepping, by emulating the natural filament persistence of vintage lamps.

Using RC4 OneTouch^{TM}, the ISL curve can be selected with or without RC4 Digital Persistence by using the ISL-Slow or ISL-Fast dimmer curve.

PWM Frequency

All RC4 Series 3 dimmers provide a range of PWM frequencies. Low frequencies must be used with high-power loads, particularly incandescent lamps. Higher frequencies are best for LEDs, to eliminate visible flicker. Using RC4 OneTouch^{TM}, the default frequency for the Linear Curve is 77Hz; the default for the ISL Curves is 615 Hz. (These defaults are user selectable – see the complete RC4 Series 3 User Manual for additional details.)

Easy RC4 OneTouch^{TM} Channel Level Chart

Dimmer Curve, RC4 Digital Persistence^{TM} (DP), PWM Frequency	Level % (0-100)	Level Dec (0-255)	Level Hex (0-FF)
Non-Dim, Off (no Digital Persistence), No Modulation	**100%** (80% or higher)	255 (205 or higher)	0xFF (0xCD or higher)
Linear, Off (no Digital Persistence), 77Hz PWM	**70%** (60% - 79%)	180 (154-204)	0xB4 (0x9A-0xCC)
ISL Fast, Off (no Digital Persistence), Default is 615Hz PWM	**50%** (40% - 59%)	128 (103-153)	0x80 (0x67-0x99)
ISL Slow [1], Default DP is Fast Medium [2], Default is 615Hz PWM [2]	**30%** (20% - 39%)	77 (52-102)	0x4D (0x34-0x66)
Channel Ignored (No change to current settings)	Less than 20%	Less than 52	Less than 0x34

1. If you are unsure about which curve to use, try the ISL Slow curve. If your load is drawing a lot of power and the dimmer is getting too hot, use the Linear curve.
2. Default PWM frequency and RC4 Digital Persistence^{TM} time are user adjustable. See the complete RC4 Series 3 User Manual for details.

> *Download the complete RC4 Series 3 User Manual for complete details about all Series 3 features and functions at:*
> *http://www.theatrewireless.com/support/manuals/*
>
> *Numerous tutorial and demonstration videos are also available at*
> *http://www.theatrewireless.com/category/support/video/*

How to Reach RC4 Wireless

Physical Address

RC4 Wireless is a registered trade-name of
Soundsculpture Incorporated of North Carolina.

Soundsculpture Incorporated / RC4 Wireless
13604 Heathwood Court
Raleigh, NC, 27615
USA

Telephone / Fax

Toll Free 1-866-258-4577 (North America)

North Carolina, USA, Local 919-229-9950

London, UK +44 (0)20 3289 8765

Emergency Cellular 919-400-3961

Toll Free Fax 1-866-237-6641 (North America)

Internet

Email moreinfo@theatrewireless.com

Skype RC4 Sales and Technical Support rc4smd

Skype RC4 Administration rc4acw

Website www.theatrewireless.com