

Luxium Wireless DMX User Guide

Luxium lighting instruments are available with ZMX[®] wireless control as an option. Lights with this capability can be set up to operate in a DMX512 universe by using a Luxium developed wireless DMX transmitter called ShowCast ZMX that broadcasts command signals from the control console to the lamps. The DMX signals are sent over the air using digital spread spectrum communications in the 2.4GHz band to an unlimited number of lamps that have been paired with the transmitter. Once the transmitter is paired with each lamp, a permanent relationship is established until a lamp is reset.

NOTE: If a light has been paired with a transmitter it must be un-paired for use in wired mode or before using it with a different transmitter.



OVERVIEW:

For communication with any DMX controller, a 5-pin DMX cable is connected to the ZMX input via the XLR jack on the back of the transmitter. The ZMX radio can then stream DMX512 data to all Luxium wireless DMX lamps that have been paired with the transmitter. The user interface consists of a menu screen and control knob for choosing settings. The user can also run preset LightShows from the menu.

Note: Luxium products may have DMX addresses set remotely using the Luxium mobile app. A mobile device and Luxium light communicate bidirectionally using Bluetooth wireless mode. In some Luxium products a DIP switch is used to set the DMX address.

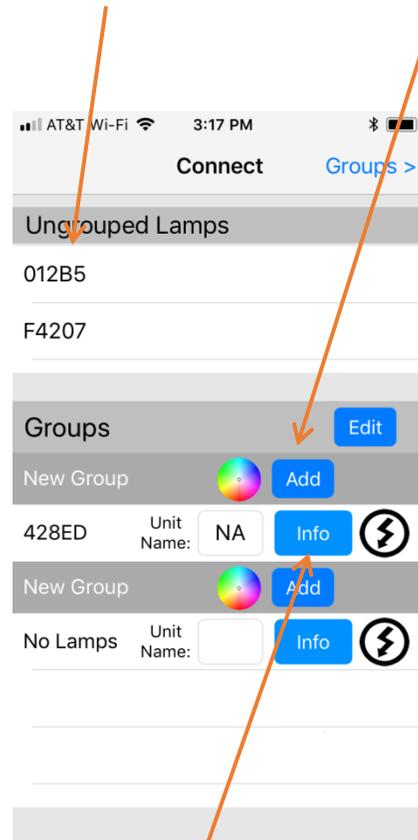
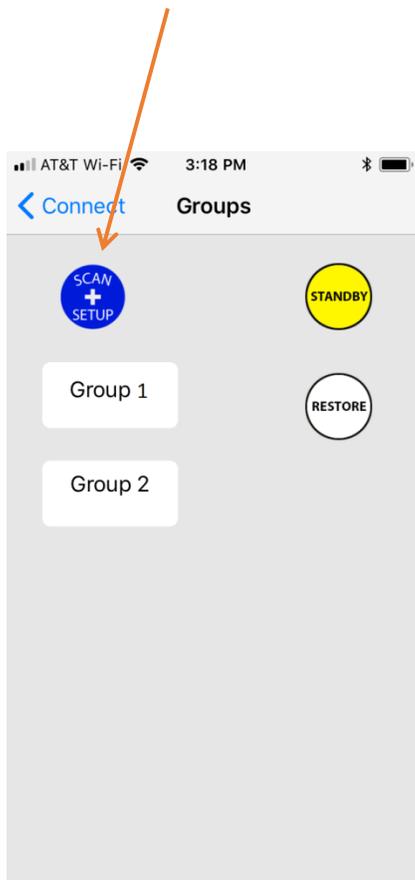
WIRELESS SYSTEM:

The system can send and receive DMX 512 signal on several frequencies in the unlicensed ISM band. The communication between the ZMX transmitter and the receiver in each light uses a digital spread spectrum communication method to send DMX commands to each light, according to IEEE 802.15.4. This DSSS method is similar to both WiFi and Zigbee but is distinct in that it has a very low latency and a very long communication range, up to 1800 feet.

USING THE MOBILE APP:

To set the DMX address for a Luxium product, that is equipped with a Bluetooth radio:

1. Search for Luxium at the App Store or on Google Play.
2. Download the Luxium app to your mobile device.
3. At the home screen, press the “Scan and Setup” button:
4. To place a unit into a group touch a unit number, then touch “Add”:



At this point you will have at least one unit in a group.

To confirm or change the DMX512 address setting, touch INFO for the chosen unit:

5. “Set” the DMX address for the unit being connected on the INFO page.

NOTE: DMX addresses start at 1 and go through 512. For Luxium units it is generally required that you have 4 consecutive addresses for each unit, e.g. channels 1,2,3, and 4 would be assigned to Red, Green, Blue, White (RGBW).

The DIP switch, encoded as a binary value, starts at '0' which is equal to DMX address 1.

ZMX® Technical Characteristics

Frequency Range	2.4 GHz ~ 2.483 GHz (ISM band)
Number of Channels	16, user selectable
Transmitter Range	500 meters / 1500 feet (open air)
DC power in	5V at 200mA
Dimensions (W x H x D), Weight	88 x 100 x 40mm, 150g (0.3 pounds)
DMX in and thru	XLR 5-pin connectors
Built in Sequences	6-Color, 2-Color, Fixed Color

USER INTERFACE:

Status Indicator

Lights with ZMX receivers have a green status LED in the system. This indicates the pairing, radio signal, and DMX data status:

- Solid On - Light has not been paired
- Fast Blink (½ second) - The light has been paired, but it not receiving a signal from the paired transmitter.
- Slow Blink - The light is paired and receiving a signal but not getting DMX data.
- Off - The light is paired and receiving DMX data from the paired transmitter.

Main Menu

Turn the selector knob to the desired function and press it to select it. The main menu has 8 functions.

Pair

Selecting PAIR and clicking knob causes the ZMX transmitter to send out an invite signal. Any unpaired lights that receive the invite signal will pair themselves to the transmitter, thus using that transmitter's channel so will not respond to other transmitters. The pairing process can take up to 10 seconds.

Un-Pair

Selecting UNPAIR puts any lights paired to the transmitter back to the unpaired state, allowing it to be paired to a new transmitter. Unpair will work even if the light is on a different channel.

Unpair All

UNPAIR ALL works the same as Unpair, except will unpair lights even when they are paired to other transmitters. Lights must be powered on for successful pairing and unpairing. Click and hold for 2 seconds, and when you release knob, the display will read ... 30 seconds).

Light Show

Light show is able to send DMX data to the lights without the need for a separate DMX controller. It can show solid colors, 2 color fades, 6 color fades, and more. See the separate section on Light Show for more details.

Power

The power menu allows the user to control the output power of the transmitter. There are 20 levels of power ranging from 0dBm to 20dBm. Increasing the power level will increase the range of the transmitter. This can be useful in venues where there are obstacles or large distances between the transmitter and the lights.

CAUTION: Extended close-up bodily exposure (e.g. within 20 inches) for power levels over 15dBm should be avoided.

Channel

There are 16 different channels available. Changing the transmitter's channel makes it use a different frequency to transmit the DMX data. Any lights that are turned on will get notified of the change and use the new frequency. Any lights that are off when the channel is changed will miss the change notification and will not receive DMX data when they are turned on.

Best Freq

Best Freq tries to indicate which channels may be best to use. It displays a bar graph with 16 vertical bars, with channel 1 on the left, up to channel 16 on the right. Short bars indicate less power on a channel which means better signal quality may be possible if you choose that channel, rather than a channel that has a lot of traffic and a high bar indicator.

Version

Selecting Version displays the transmitter version number, the transmitter version number, and the FCC ID of the radio module.

NOTE

ZMR Receiver Instructions:

Pairing the ZMR RECEIVER with a ZMX TRANSMITTER:

- Operation is the same as pairing and unpairing with any light.
- Indicator LED on the ZMR will be Red when Unpaired, will show Yellow when PAIRED, but there is no DMX signal being received, and will show Green when paired and there is a DMX signal present and sent to the XLR output connector.

SETTING UP THE ZMX:

Use these instructions to pair the ZMX transmitter with ZR, ZG or TR series lights that are configured with Luxium wireless ZMX receivers.

Initial Settings

Setting the lamp to factory conditions:

- Begin with the power turned off to both the ZMX transmitter and the light.
- Set DIP switch to desired DMX unit # (all switches off = DMX channels 1-4 = RGBW)
- Turn power on to the light and plug the power adapter on to the transmitter
- Make sure that the DMX console settings match the lighting unit address
- Units are often paired at the factory, so you may be able to start using ZMX immediately.

Connecting to wireless DMX Lights

Overview on how to Pair and Unpair, using the ZMX1 and TRX1 wireless DMX transmitters

Main Menu

Turn the selector knob to the desired function and press it to select it. The main menu has several functions.

Pair

Select PAIR and click the knob to cause the ZMX transmitter to send out an invite signal. Any unpaired lights that receive the invite signal will pair themselves to the transmitter, thus using that transmitter's channel so they will not respond to other transmitters. The pairing process can take up to 10 seconds. Lights must be powered on for successful pairing and unpairing.

Un-Pair

Selecting UNPAIR puts any lights paired to the transmitter back to the unpaired state, allowing them to be paired to a new transmitter. Unpair will work even if light is on a different channel.

Unpair All

UNPAIR ALL works the same as Unpair, except will unpair lights even when they are paired to other transmitters. Click and hold for 2 seconds, and when you release knob, the display will read: **UNPAIR ALL DEVICES! (30 seconds)**.

Pairing Details

Pairing the ZMX transmitter with a lamp:

- Turn on the power to an unpaired lamp that needs to be paired with the transmitter

- Rotate the selector knob on the ZMX transmitter, one step clockwise, and the '>' should point to PAIR.
 - At this point push the knob to get a positive switch click.
 - The ZMX display will read "Pairing" and will finish the pairing operation in 10 seconds.
- The ZMX transmitter is now paired with the lamp.
 - Note: multiple lamps can be paired simultaneously.
- For situations where radio interference may interrupt the signal a channel change feature is available.
 - See the section on "Advice for Transmitter use"

Un-Pairing Details

Unpairing several lamps (with any ZMX transmitter)

- Turn on the power to lamps, they can be paired or unpaired, it won't matter
- Rotate the selector knob on the ZMX transmitter to find the UNPAIR setting
- Click the knob and wait for the lamps to unpair
 - If it is desired to globally unpair all lamps, use the UNPAIR ALL setting
 - If it is desired to unpair only from a specific transmitter, use the UNPAIR setting
- The lamps will be unpaired within 10 to 30 seconds

Unpairing a Lamp (using DIP Switch)

- Start with power off to the lamp
- Set DIP SW to 1011 1100
- Turn power on to the light
 - Lamp will flash Lime-Green-Dark in sequence.
- Lift the rightmost switch
 - DIP switch setting will be 1011 1101

At this time the lamp flashes red for a few seconds. The unit is now unpaired

Un-Pairing a Lamp (using Luxium mobile app on iphone, ipad or android phone)

- Start with lamp powered on
- Identify the lamp to be un-paired and using INFO button, navigate to DMX address page
- Touch UNPAIR button, check status LED to confirm unit is unpaired

Advice for Transmitter Use

- Always use the provided power supply.
- In the event of a radio communication problem, follow the instructions for Unpairing, then Pair the lighting units again.

LIGHT SHOW:

Shows

Light Show is able to control the lights without the need for an external DMX controller.

The default colors used in the shows are:

Color 1	Color 2	Color 3	Color 4	Color 5	Color 6
Red	Yellow	Green	Cyan	Blue	Magenta

These defaults can be changed using the “options” menu item.

The show commands work on groups of lights. Groups are collections of Light Unit numbers. By default, Unit #1 (DMX address 1) is in Group 1, Unit #2 (DMX address 5) is in Group 2, continuing up to Unit #6 which is in Group 6.

So by default, a light’s unit # is the same as the group number. It is possible to reassign a light to a different group using the options menu.

Solid

Displays each of the default colors. All lights in Group 1 show Color 1 which is red by default. Group 2 shows color 2 (Yellow), continuing up to Group 6 which shows Color 6 (Magenta).

6-Color Fade

Each light in the six groups fades through each of the default colors. The beginning color for the fade depends on which group the light is in. Lights in Group 1 begin their fade at Color 1 (Red) and fade through Color 2, 3, 4, 5, and 6 in order (yellow, green, cyan, blue, magenta). Group 2 begins its fade at Color 2 and fades through colors 3, 4, 5, 6 and 1 in order.

Similarly, for Groups 3, 4, 5 and 6. If six lights, set to unit 1 through 6, are placed in a row, running the 6 Color fade show will create an effect where the colors appear to drift along the row of lights.

2-Color Fade

Each light in a group fades between two colors shown in the following table:

Group	1	2	3	4	5	6
1st Color	1 (red)	2 (yellow)	3 (green)	4 (cyan)	5 (blue)	6 (magenta)
2nd Color	2 (yellow)	1 (red)	4 (cyan)	3 (green)	6 (magenta)	5 (blue)

Fade Strobe

Each light fades through the six colors, then does a rapid color change creating a strobe effect.

Chase

Lights one light in a series of 6 lights at a time, creating the effect of a light traveling down a row of lights.

OPTIONS:

The options item in the Light Show menu allows more advanced control of the different shows.

Dwell

Dwell commands in a show cause the state of the lights to stay for the dwell time. The default dwell time is ½ second.

Fade

Each show is composed of series of fade commands. A fade command causes a group of lights to transition from its current color to a new color over a certain amount of time. The default fade time is 1.5 seconds. To change the default fade time, Click Fade in the options menu, turn the selector knob to the desired time, and Click again.

Groups

Groups provide a way for fade commands to control multiple units at a time. Any unit # can be assigned to any of the groups from 1 to 6. By default, the groups have the following units:

Group	Unit #	Switch settings	DMX address	Additional Unit # assigned to the group
1	1	0000000	1	7,13,19,25,31,37,43,49,55,61,67,73,79,85,91,97,103,109,115,121,127
2	2	0000001	5	8,14,20,26,32,38,44,50,56,62,68,74,80,86,92,98,104,110,116,122,128
3	3	0000010	9	9,15,21,27,33,39,45,51,57,63,69,75,81,87,93,99,105,111,117,123
4	4	0000011	13	10,16,22,28,34,40,46,52,58,64,70,76,82,88,94,100,106,112,118,124
5	5	0000100	17	11,17,23,29,35,41,47,53,59,65,71,77,83,89,95,101,107,113,119,125
6	6	0000101	21	12,18,24,30,36,42,48,54,60,66,72,78,84,90,96, 102,108,114, 120,126

Color 1 - Color 6

Most of the shows use the variable colors Color1 through Color6.

The default values for these colors are:

- Color1 - Red
- Color2 - Yellow
- Color3 - Green
- Color4 - Cyan
- Color5 - Blue
- Color6 - Magenta

Each of these colors can be changed by modifying the color's red, green, blue and white components. To change any of the default colors for a show, select the color: Color1 to Color6, turn the selector knob to change the amount of red, click to accept then repeat the adjustments for the green, blue, and white components.

FREQUENTLY ASKED QUESTIONS:

Q . What is the maximum distance between transmitter and receiver?

A. In free air, the receivers can reach up to 1800 feet away when set at the maximum power, 20dBm. Inside a building there are reflections and losses which make it hard to predict the range. Usually the lights remain connected and in communication within a theater, church or gymnasium without any issue. If possible, locate the transmitter strategically, away from metal enclosures and other RF obstructions.

Q. How does radio frequency RF interference affect the performance of ZMX?

A. There can be a momentary loss of communication, but because DMX is a streaming protocol that repeats frequently, usually the loss of single packet is not noticeable.

Q. What kind of communication does ZMX use?

A. Digital spread spectrum DSSS, according to the IEEE 802.15.4 standard

Q. What is the radio frequency band of ZMX?

A. 2.4 to 2.5GHz range.

Q. What are the channels for?

A. Up to 16 different channels are available and can easily be changed on the transmitter. When the channel is changed at the transmitter, all lighting units will automatically follow.

Q. Can I use both wireless and wired DMX with the same light fixture?

A. Yes, but not at the same time. In order to use a wired connection, the lighting unit must be unpaired.

Q. How might ZMX interfere with other wireless equipment?

A. In some rare situations there can be interference with ham radios, but this is not expected.

Q. Is ZMX compatible with other wireless DMX systems?

A. Usually not, ZMX is a proprietary Luxium system.

Q. Can the ZMX system be used on a wi-fi system?

A. No, although there are ways to bridge a DMX signal to a WiFi network.

Q. How can I increase the performance of my ZMX system?

A. There is a signal strength adjustment in the menu of the ZMX transmitter. It will be factory set to +20dBm, the highest power output allowed by FCC for the ISM band. Place the transmitter where it can be near the lighting units and avoid placing it near large metal objects or surfaces.

Q. The ZMX does not pair with my lights: what is happening?

A. It is possible the lights were previously paired with another transmitter. Please follow the Unpair ALL instructions to reset the lights so they can be paired with the new transmitter.