

### FEATURES

<b>CHANNELS</b>	4: R, G, B, and X
<b>INPUT SIGNAL</b>	DMX-512 199 Digital Signal
<b>OUTPUT SIGNAL</b>	0 - 100% PWM Signal (Can Drive 5A per Channel, 20A total)
<b>VOLTAGE</b>	24V DC
<b>POWER OUTPUT</b>	24V, 180W Max. Load
<b>CASE DIMENSIONS</b>	7" x 1.63" x 1.25"
<b>WEIGHT</b>	0.54 lbs (247 g)
<b>LISTING</b>	Dry Location Only
<b>TEMPERATURE RATING</b>	0°C to 70°C (32°F to 158°F)

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<b>RGBW: LLED8600 or LLED8650</b>	Page 6: Setup & Operation Page 7: Typical Layouts
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### PRODUCT INFORMATION

- Compatible with DMX-512 1990
- 256 level brightness and full color control
- 4 output channels, constant voltage, 3A maximum each
- Each channel is controlled by a Pulse with Modulation (PWM) signal
- 256 gray levels
- Mode, suspension protection, output short circuit protection
- DMX address setting via DIP switches
- Up to 28 Decoders may be daisy chained together using RJ45 cables

### ELECTRICAL

- DMX-RGBX requires a 24 Volt DC remote electronic transFORMER (TRA-E)
- To calculate transformer size, determine Watts per Foot of LED lighting  
**Example:** 4.5W per Foot
- Determine Length in Feet  
**Example:** 10'
- Calculate Load: Multiply Watts per Foot x Length in Feet  
**Example:** 4.5W x 10' = 45W
- Choose an electronic transFORMER from catalog  
**Example:** TRA60-E
- Determine maximum distance using Maximum Wire Length Table on transformer page  
**Example:** 45 watts is between 40W and 60W. Using #14 wire, maximum distance is 37' from electronic transFORMER to first LED

### INSTALLATION RECOMMENDATIONS

- Do not connect to a transformer larger than 320W
- DMX-RGBX must be mechanically attached directly to mounting surface using screws.
- Do not install in locations without proper ventilation
- Do not mount device on wood or plastic
- Do not install in wet or damp locations

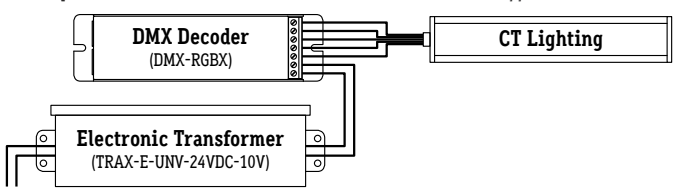
### INSTALLATION TOOLS REQUIRED

- Electric Hammer Drill
- 14.4 to 28 Volt Cordless Drill
- Phillips Bits
- Utility Knife
- Electrical Cord
- Marker
- Wire Stripper
- Long Nose Pliers
- Drill Bits - Concrete or Wood
- Electrical Three Ways
- Safety Glasses
- Measuring Tape
- Chalk Line

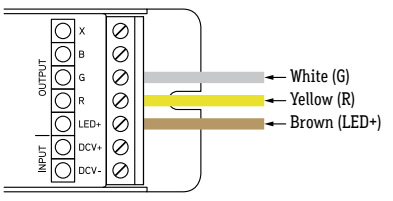
Setup of Decoder (CT Lighting - LLED8300 or LLED8350)

1. Determine which configuration best suits your application. Refer to Typical Layouts for details.

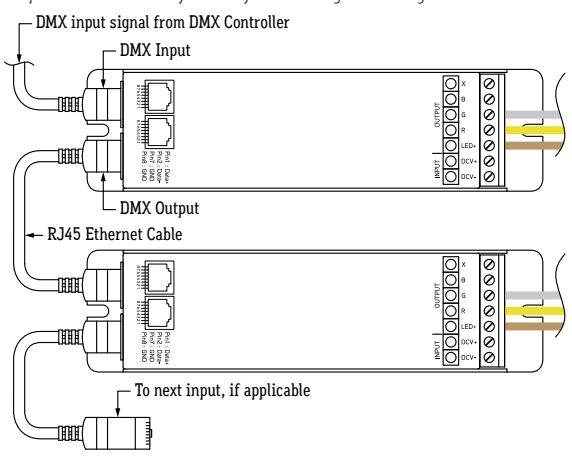
2. Calculate load. Use the below diagram as a reference to the calculations that follow. Calculate load by multiplying watts per foot by length in feet. Add 1W for each decoder used. Example: 5.5W per foot x 8' = 44W + 1W = 45W. Determine size of electronic transformer needed. It is recommended that transformers are only loaded up to 80%. 45W is approximately 80% of 60W. Example: 60W x 0.20 = 12 - 60 = 48W. Choose TRA60-E for this application.



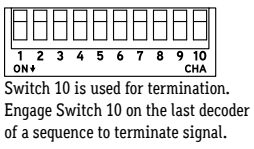
3. Connect RGBW lighting to DMX-RGBX. Connect the brown, yellow, and white wires to the corresponding contacts on the output terminal of the decoder.



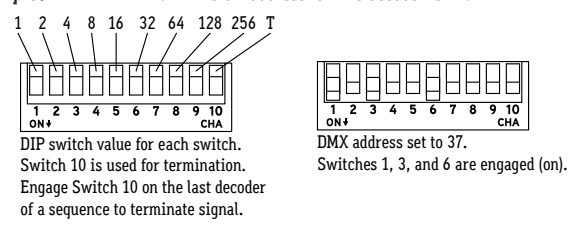
4. If using multiple decoders, use an RJ45 Ethernet cable to connect decoders. Refer to Typical Layouts for details. Note: Up to 28 Decoders may be daisy chained together using RJ45 cables.



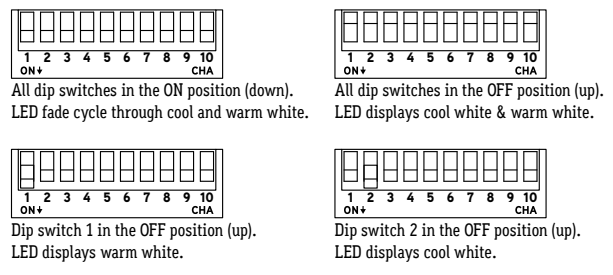
5. Engage Switch 10 on the last decoder in sequence to terminate the signal run. The DMX signal must be terminated for all applications.



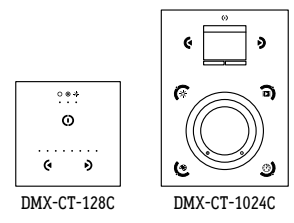
6. Set DMX address using DIP switches on the side of decoder. The sum of the value of each engaged DIP switch creates the DMX address. Engage switch 10 to terminate, if applicable. Example: 1 + 4 + 32 = 37. DMX start address for this decoder is 37.



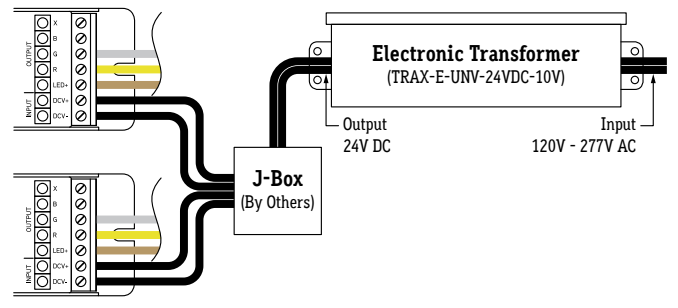
7. The decoder is able to control the lighting without the use of a DMX controller, but the capabilities are greatly limited. It is recommended to use a DMX controller.



8. If applicable, connect DMX-RGBX to DMX controller. Refer to DMX-CT-128C or DMX-CT-1024C for details on setup and wiring of controllers. Note: Click on controller image below to see spec sheet.



9. Connect DMX-RGBX to 24V DC power source. Multiple decoders can be wired to a single power source, given the load of the decoders does not exceed the load of the transformer. Use a J-box to make wiring connections. Note: Must use electronic transformer (TRA-E)



**OVERVIEW**

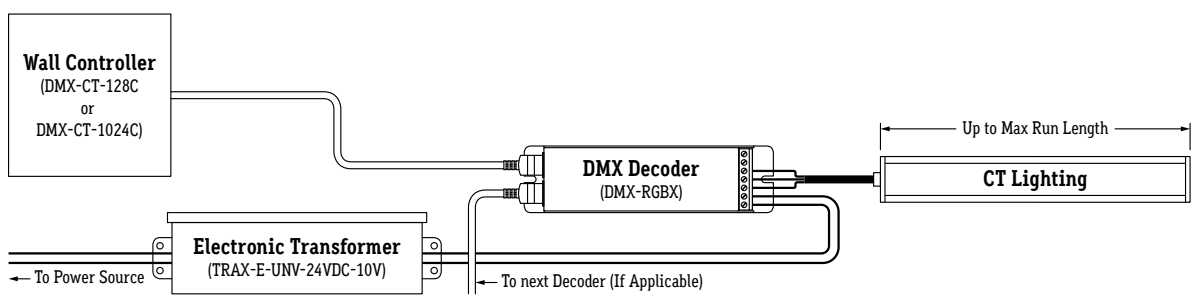
- Color changing works best when using DMX Wall Controller (DMX-CT-128C or DMX-CT-1024C)  
A Master DMX Controller (by others) may also be used
- Scenes can be set using DIP switches on DMX Decoder (DMX-RGBX) but are greatly limited
- A single DMX Decoder (DMX-RGBX) can be loaded up to 180 Watts
- Up to 28 Decoders may be daisy chained together using RJ45 cables

**NOTE**

- Diagrams on this page are for conceptual purposes only and are not to be used for wiring  
Always refer to wiring diagrams before connecting wires and parts
- Only make connections based on the provided diagrams
- Consult factory for advanced wiring applications

**SINGLE RUN**

- Each fixture has its own Decoder and Transformer
- The DMX signal from the controller can be relayed from Decoder to Decoder using RJ45 cables
- The total wattage of the run must be within the Decoder Max Load

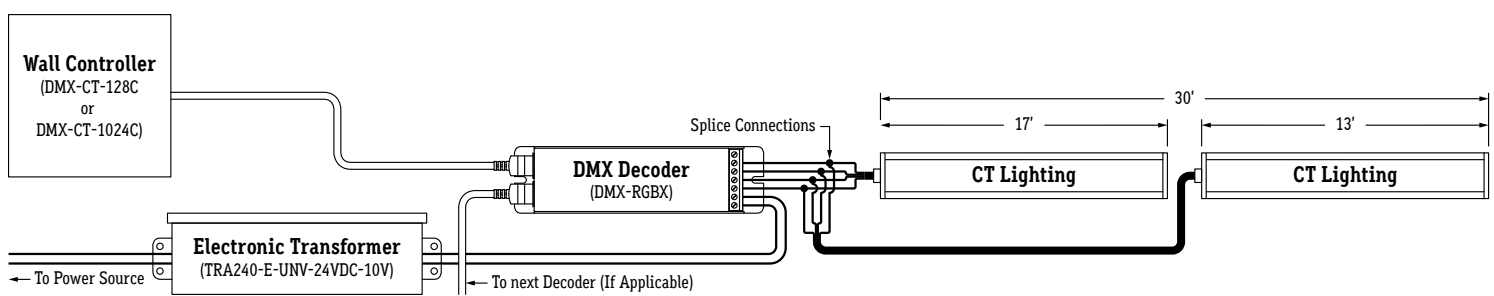


**SPLIT RUN**

- Multiple fixtures that compose a single run can share a Decoder and Transformer  
This is typical when a run that exceeds the max run length is required
- Connect fixture lead wires using splice connections
- The DMX signal from the controller can be relayed from Decoder to Decoder using RJ45 cables
- The total wattage of all fixtures must be within the Decoder Max Load

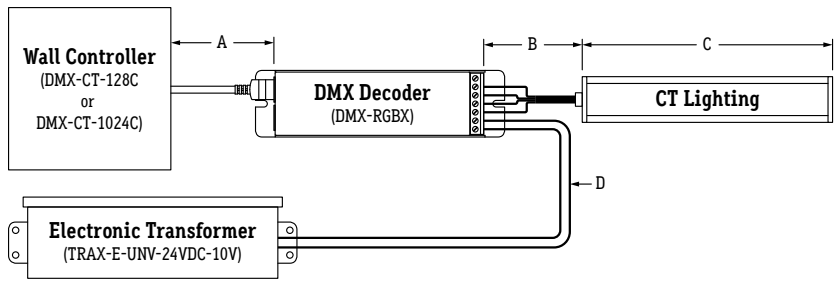
**EXAMPLE**

- 30' Run (21' + 9') @ 4.5W (Class 2)
- **Calculate Load of Fixtures:**  
21' x 4.5W = 94.5W  
9' x 4.5W = 40.5W  
94.5W + 40.5W = 135W  
Both fixtures can share a Decoder because the combined wattage is within the 180W max load
- Both fixtures can share a power source
- Only load Transformers to 80%. Use TRA240-E for this example



**MAXIMUM DISTANCES**

- Refer to the table on the right for descriptions and distance limitations.



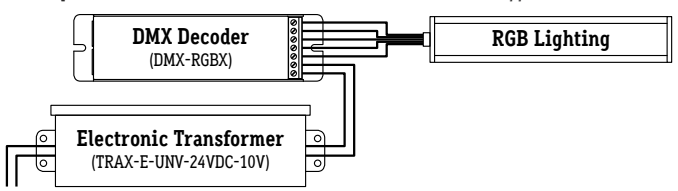
KEY	DESCRIPTION	MAX DISTANCE
A	Distance from DMX Controller to first Decoder	300' <sup>*1</sup>
B	Distance from Decoder to First LED	Determined by Load of Lighting <sup>*2</sup>
C	Max Run of CT Lighting	Class 1: 26' (4.5W) Class 2: 21' (4.5W)
D	Distance from TRA-E Output to Decoder Input	1'

<sup>\*1</sup> Max distance from DMX Controller to first Decoder is 300'.  
Max distance of cumulative signal run (RJ45 cables) is 1000'  
<sup>\*2</sup> Refer to Electronic Transformer Remote Driver (TRA-E) page of installation to determine max distance.  
Use the table titled "Watts (VA) per Circuit..."

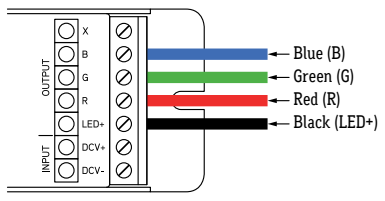
## Setup of Decoder (RGB Lighting - LLED8500 or LLED8550)

1. Determine which configuration best suits your application. Refer to Typical Layouts for details.

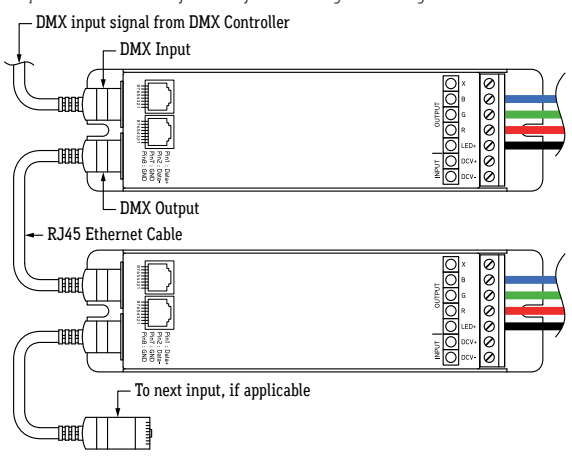
2. Calculate load. Use the below diagram as a reference to the calculations that follow. Calculate load by multiplying watts per foot by length in feet. Add 1W for each decoder used.  
**Example:** 5.5W per foot x 8' = 44W + 1W = 45W.  
 Determine size of electronic transformer needed. It is recommended that transformers are only loaded up to 80%. 45W is approximately 80% of 60W.  
**Example:** 60W x 0.20 = 12 - 60 = 48W. Choose TRA60-E for this application.



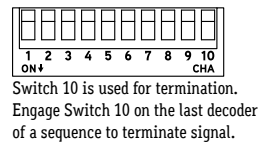
3. Connect RGBW lighting to DMX-RGBX. Connect the red, green, blue, and black wires to the corresponding contacts on the output terminal of the decoder.



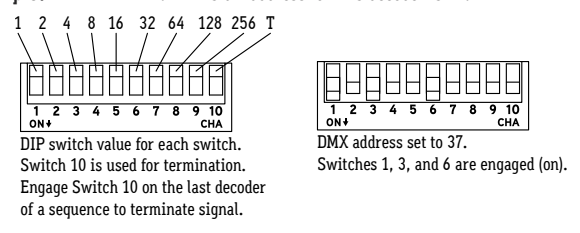
4. If using multiple decoders, use an RJ45 Ethernet cable to connect decoders. Refer to Typical Layouts for details.  
**Note:** Up to 28 Decoders may be daisy chained together using RJ45 cables.



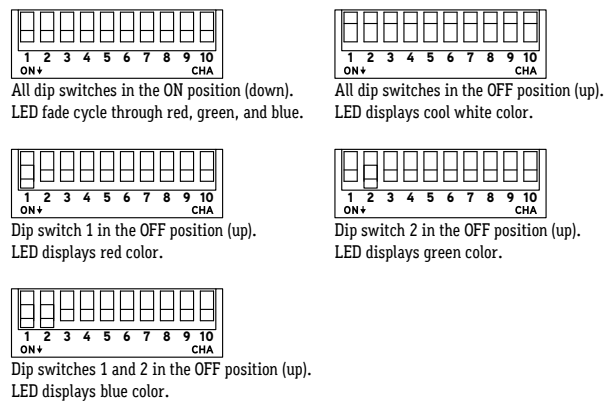
5. Engage Switch 10 on the last decoder in sequence to terminate the signal run. The DMX signal must be terminated for all applications.



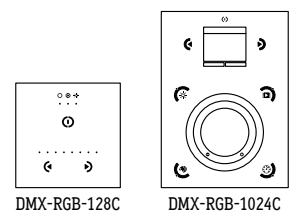
6. Set DMX address using DIP switches on the side of decoder. The sum of the value of each engaged DIP switch creates the DMX address. Engage switch 10 to terminate, if applicable.  
**Example:** 1 + 4 + 32 = 37. DMX start address for this decoder is 37.



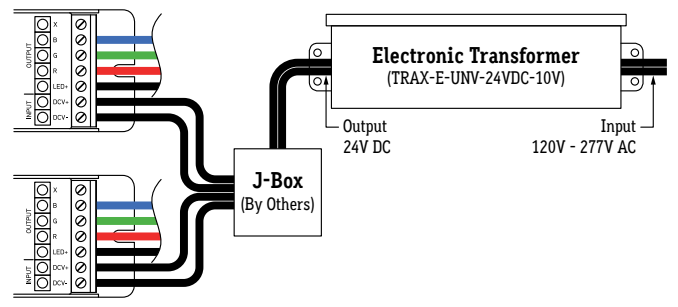
7. The decoder is able to control the lighting without the use of a DMX controller, but the capabilities are greatly limited. It is recommended to use a DMX controller.



8. If applicable, connect DMX-RGBX to DMX controller. Refer to DMX-RGB-128C or DMX-RGB-1024C for details on setup and wiring of controllers.  
**Note:** Click on controller image below to see spec sheet.



9. Connect DMX-RGBX to 24V DC power source. Multiple decoders can be wired to a single power source, given the load of the decoders does not exceed the load of the transformer. Use a J-box to make wiring connections.  
**Note:** Must use electronic transformer (TRA-E)



**OVERVIEW**

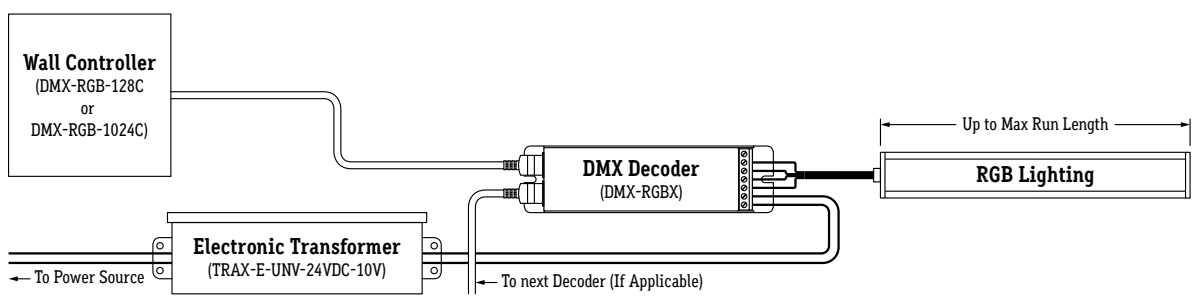
- Color changing works best when using DMX Wall Controller (DMX-RGB-128C or DMX-RGB-1024C) A Master DMX Controller (by others) may also be used
- Scenes can be set using DIP switches on DMX Decoder (DMX-RGBX) but are greatly limited
- A single DMX Decoder (DMX-RGBX) can be loaded up to 180 Watts
- Up to 28 Decoders may be daisy chained together using RJ45 cables

**NOTE**

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- Only make connections based on the provided diagrams
- Consult factory for advanced wiring applications

**SINGLE RUN**

- Each fixture has its own Decoder and Transformer
- The DMX signal from the controller can be relayed from Decoder to Decoder using RJ45 cables
- The total wattage of the run must be within the Decoder Max Load

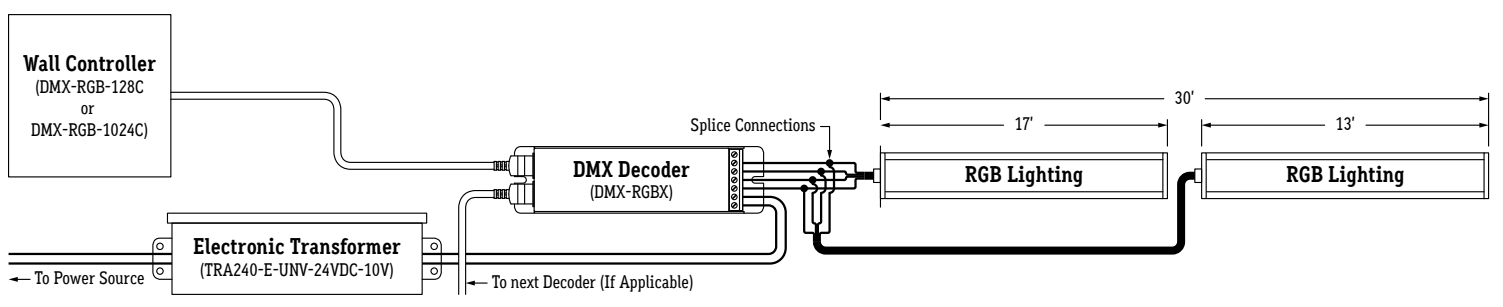


**SPLIT RUN**

- Multiple fixtures that compose a single run can share a Decoder and Transformer. This is typical when a run that exceeds the max run length is required
- Connect fixture lead wires using splice connections
- The DMX signal from the controller can be relayed from Decoder to Decoder using RJ45 cables
- The total wattage of all fixtures must be within the Decoder Max Load

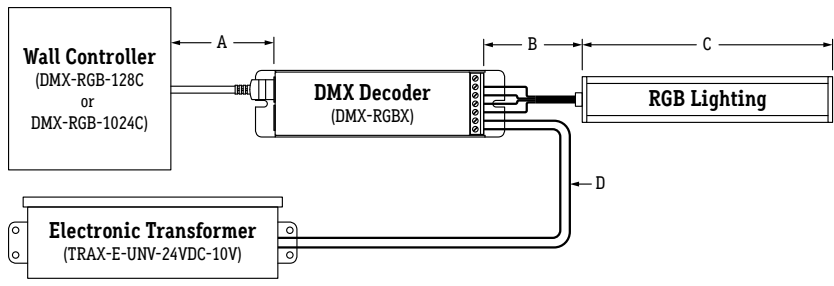
**EXAMPLE**

- 30' Run (17' + 13') @ 5.5W (Class 2)
- **Calculate Load of Fixtures:**  
 $17' \times 5.5W = 93.5W$   
 $13' \times 5.5W = 71.5W$   
 $93.5W + 71.5W = 165W$   
 Both fixtures can share a Decoder because the combined wattage is within the 180W max load
- Both fixtures can share a power source
- Only load Transformers to 80%. Use TRA240-E for this example



**MAXIMUM DISTANCES**

- Refer to the table on the right for descriptions and distance limitations.



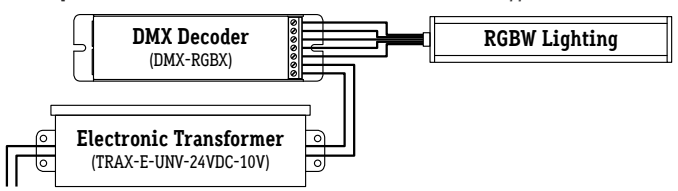
KEY	DESCRIPTION	MAX DISTANCE
A	Distance from DMX Controller to first Decoder	300* <sup>1</sup>
B	Distance from Decoder to First LED	Determined by Load of Lighting* <sup>2</sup>
C	Max Run of RGB Lighting	Class 1: 36' (2.5W), 21' (5.5W) Class 2: 36' (2.5W), 17' (5.5W)
D	Distance from TRA-E Output to Decoder Input	1'

\*<sup>1</sup> Max distance from DMX Controller to first Decoder is 300'. Max distance of cumulative signal run (RJ45 cables) is 1000'  
 \*<sup>2</sup> Refer to Electronic Transformer Remote Driver (TRA-E) page of installation to determine max distance. Use the table titled "Watts (VA) per Circuit..."

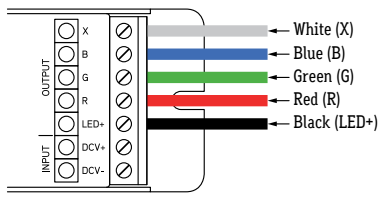
## Setup of Decoder (RGBW Lighting - LLED8600 or LLED8650)

1. Determine which configuration best suits your application. Refer to Typical Layouts for details.

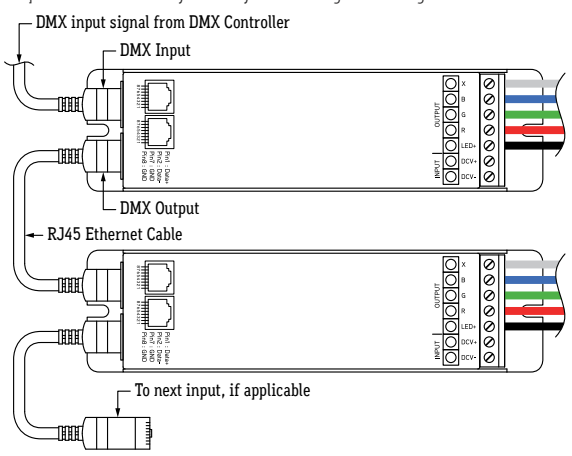
2. Calculate load. Use the below diagram as a reference to the calculations that follow.  
Calculate load by multiplying watts per foot by length in feet. Add 1W for each decoder used.  
**Example:** 5.5W per foot x 8' = 44W + 1W = 45W.  
Determine size of electronic transformer needed. It is recommended that transformers are only loaded up to 80%. 45W is approximately 80% of 60W.  
**Example:** 60W x 0.20 = 12 - 60 = 48W. Choose TRA60-E for this application.



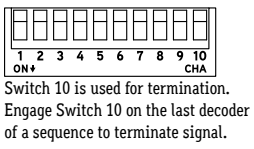
3. Connect RGBW lighting to DMX-RGBX. Connect the white, blue, green, red, and black wires to the corresponding contacts on the output terminal of the decoder.



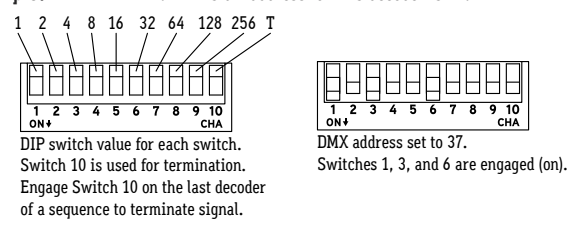
4. If using multiple decoders, use an RJ45 Ethernet cable to connect decoders. Refer to Typical Layouts for details.  
**Note:** Up to 28 Decoders may be daisy chained together using RJ45 cables.



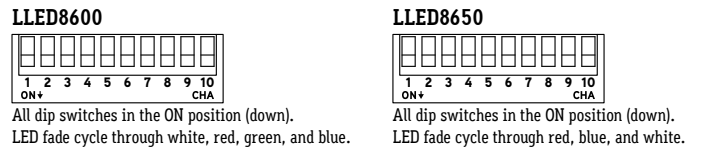
5. Engage Switch 10 on the last decoder in sequence to terminate the signal run. The DMX signal must be terminated for all applications.



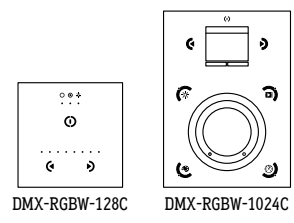
6. Set DMX address using DIP switches on the side of decoder. The sum of the value of each engaged DIP switch creates the DMX address. Engage switch 10 to terminate, if applicable.  
**Example:** 1 + 4 + 32 = 37. DMX start address for this decoder is 37.



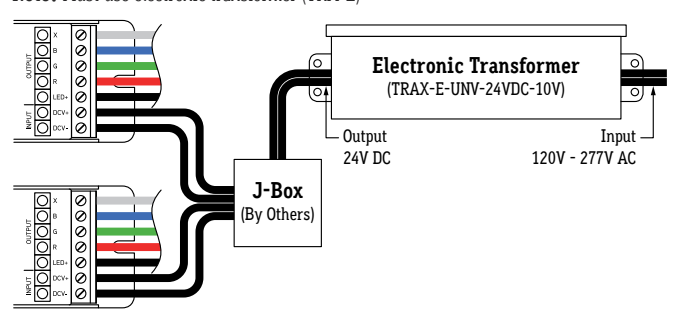
7. The decoder is able to control the lighting without the use of a DMX controller, but the capabilities are greatly limited. It is recommended to use a DMX controller.



8. If applicable, connect DMX-RGBX to DMX controller. Refer to DMX-RGBW-128C or DMX-RGBW-1024C for details on setup and wiring of controllers.  
**Note:** Click on controller image below to see spec sheet.



9. Connect DMX-RGBX to 24V DC power source. Multiple decoders can be wired to a single power source, given the load of the decoders does not exceed the load of the transformer. Use a J-box to make wiring connections.  
**Note:** Must use electronic transformer (TRA-E)



**OVERVIEW**

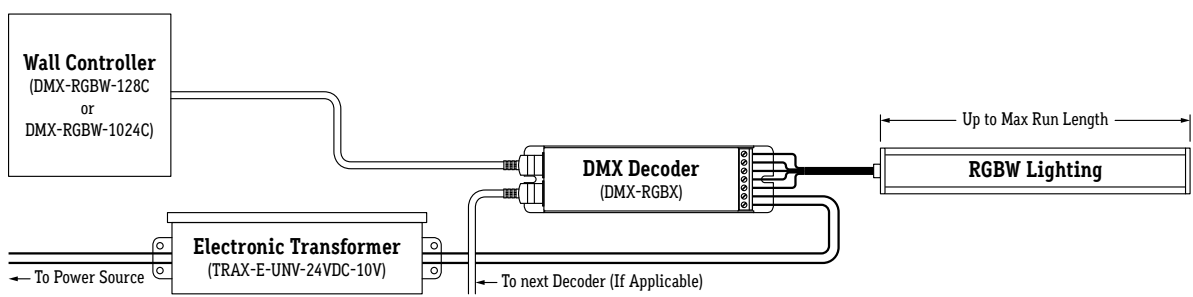
- Color changing works best when using DMX Wall Controller (DMX-RGBW-128C or DMX-RGBW-1024C) A Master DMX Controller (by others) may also be used
- Scenes can be set using DIP switches on DMX Decoder (DMX-RGBX) but are greatly limited
- A single DMX Decoder (DMX-RGBX) can be loaded up to 180 Watts
- Up to 28 Decoders may be daisy chained together using RJ45 cables

**NOTE**

- Diagrams on this page are for conceptual purposes only and are not to be used for wiring. Always refer to wiring diagrams before connecting wires and parts
- Only make connections based on the provided diagrams
- Consult factory for advanced wiring applications

**SINGLE RUN**

- Each fixture has its own Decoder and Transformer
- The DMX signal from the controller can be relayed from Decoder to Decoder using RJ45 cables
- The total wattage of the run must be within the Decoder Max Load

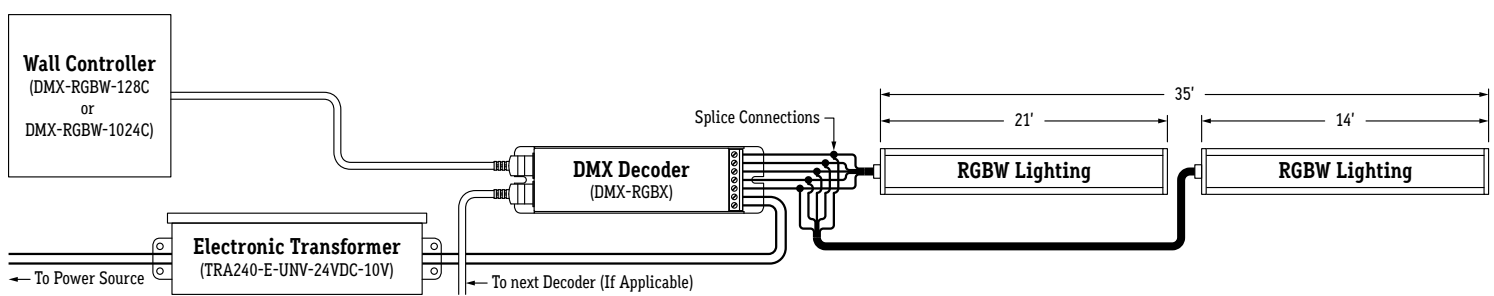


**SPLIT RUN**

- Multiple fixtures that compose a single run can share a Decoder and Transformer. This is typical when a run that exceeds the max run length is required
- Connect fixture lead wires using splice connections
- The DMX signal from the controller can be relayed from Decoder to Decoder using RJ45 cables
- The total wattage of all fixtures must be within the Decoder Max Load

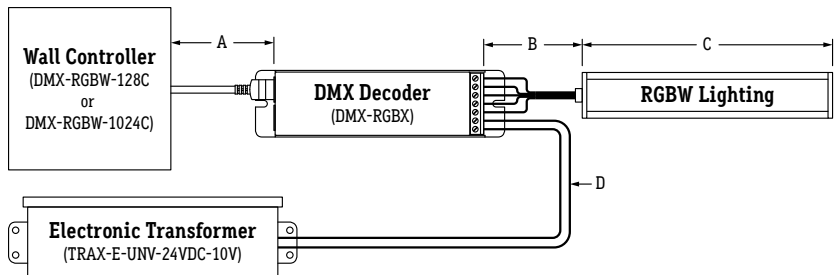
**EXAMPLE**

- 35' Run (21' + 14') @ 4.5W (Class 2)
- **Calculate Load of Fixtures:**  
 $21' \times 4.5W = 94.5W$   
 $14' \times 4.5W = 63W$   
 $94.5W + 63W = 157.5W$   
 Both fixtures can share a Decoder because the combined wattage is within the 180W max load
- Both fixtures can share a power source
- Only load Transformers to 80%. Use TRA240-E for this example



**MAXIMUM DISTANCES**

- Refer to the table on the right for descriptions and distance limitations.



KEY	DESCRIPTION	MAX DISTANCE
A	Distance from DMX Controller to first Decoder	300' <sup>*1</sup>
B	Distance from Decoder to First LED	Determined by Load of Lighting <sup>*2</sup>
C	Max Run of RGBW Lighting	Class 1: 26' (4.5W), 21' (5.5W) Class 2: 21' (4.5W), 17' (5.5W)
D	Distance from TRA-E Output to Decoder Input	1'

<sup>\*1</sup> Max distance from DMX Controller to first Decoder is 300'. Max distance of cumulative signal run (RJ45 cables) is 1000'  
<sup>\*2</sup> Refer to Electronic Transformer Remote Driver (TRA-E) page of installation to determine max distance. Use the table titled "Watts (VA) per Circuit..."

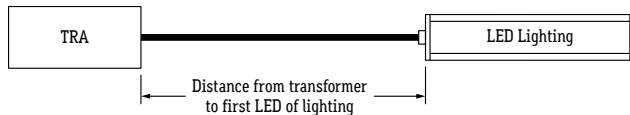
### MAXIMUM RUN BASED ON 80% LOAD OF ELECTRONIC TRANSFORMER (TRA-E) MAXIMUM WATTAGE

TRANSFORMER WATTAGE	80% LOAD	1.5W MAX RUN	2W MAX RUN	2.5W MAX RUN	3.6W MAX RUN	4W MAX RUN	4.5W MAX RUN	5W MAX RUN	5.5W MAX RUN	6W MAX RUN	6.5W MAX RUN
16	12.8W	8.5'	6.4'	5.1'	3.5'	3.2'	2.8'	2.5'	2.3'	2.1'	1.9'
25	20W	13.3'	10'	8'	5.5'	5'	4.4'	4'	3.6'	3.3'	3.1'
40	32W	21.3'	16'	12.8'	8.8'	8'	7.1'	6.4'	5.8'	5.3'	4.9'
60	48W	32'	24'	19.2'	13.3'	12'	10.6'	9.6'	8.7'	8'	7.3'
80	64W	42.6'	32'	25.6'	17.7'	16'	14.2'	12.8'	11.6'	10.6'	9.8'
90	72W	48'	36'	28.8'	20'	18'	16'	14.4'	13.1'	12'	11.1'
96	76.8W	51.2'	38.4'	30.7'	21.3'	19.2'	17.1'	15.36'	13.9'	12.8'	11.8'
120	96W	64'	48'	38.4'	26.6'	24'	21.3'	19.2'	17.4'	16'	14.7'
150	120W	80'	60'	48'	33.3'	30'	26.6'	24'	21.8'	20'	18.4'
185	148W	98.6'	74'	59.2'	41.1'	37'	32.8'	29.6'	26.9'	24.6'	22.7'
240	192W	128'	96'	76.8'	53.3'	48'	42.6'	38.4'	34.9'	32'	29.5'
320	256W	170.6'	128'	102.4'	85.3'	64'	56.8'	51.2'	46.5'	42.6'	39.3'

### PREVENTING VOLTAGE DROP

The maximum wire length to prevent voltage drop refers to the wire that is used between the transformer and 1st LED of the lighting fixture. If the gauge wire is too small, the fixture will not receive correct voltage.

**Example:** LED luminaire requires 24VDC to operate effectively. If the wire gauge is too small to carry the 24VDC current from the transformer, the voltage can shrink to 16VDC, which is insufficient to power the lighting.



### WATTS (VA) PER CIRCUIT (Maximum wire length to prevent voltage drop)

WIRE SIZE	VOLTAGE	16 VA	25 VA	40 VA	60 VA	80 VA	90 VA	96 VA	120 VA	150 VA	185 VA	240 VA	320 VA
14GA	12V	46'	42'	37'	32'	28'	25'	23'	21'	18'	16'	11'	4'
14GA	24V	93'	84'	75'	66'	56'	51'	47'	42'	37'	33'	23'	9'
12GA	12V	74'	66'	59'	52'	44'	40'	37'	33'	29'	26'	18'	7'
12GA	24V	147'	132'	118'	103'	89'	81'	74'	67'	59'	52'	37'	15'
10GA	12V	117'	106'	94'	82'	71'	65'	59'	53'	47'	41'	30'	12'
10GA	24V	235'	211'	188'	165'	141'	129'	118'	106'	94'	83'	59'	24'
8GA	12V	186'	168'	149'	130'	112'	102'	93'	84'	74'	65'	46'	18'
8GA	24V	374'	336'	299'	262'	224'	205'	187'	168'	149'	131'	93'	37'

### TRANSFORMER CARE

- Do not submerge transformers in any liquid
- Do not leave any exposed wires
- Do not cover transformer without proper ventilation
- Do not install damaged transformer
- Do not exceed maximum load

### MOUNTING INSIDE AN ENCLOSURE

- Only mount drivers inside enclosures rated for your application
- Always ground drivers to enclosure
- Do not mount drivers without an enclosure
- Use enclosure knockouts and water-tight cordgrips when applicable

### DIMMER TRIM VALUES

- Set dimmer trim value as needed to prevent flickering and irregular dimming
- **Note:** Review dimmer specs for trim value adjustment

