



TRIMLIGHT CUSTOMER TRAINING MANUAL

IC CHIPPED



UNDERSTANDING THE CONCEPTS



IC Chipped Definition

Each diode has a unique address. The signal wire dictates what color each pixel should be compared to the surrounding pixels. The controller is able to send the signal out up to 2048 pixels per output. All diodes are directional and must follow the ARROW away from the controller

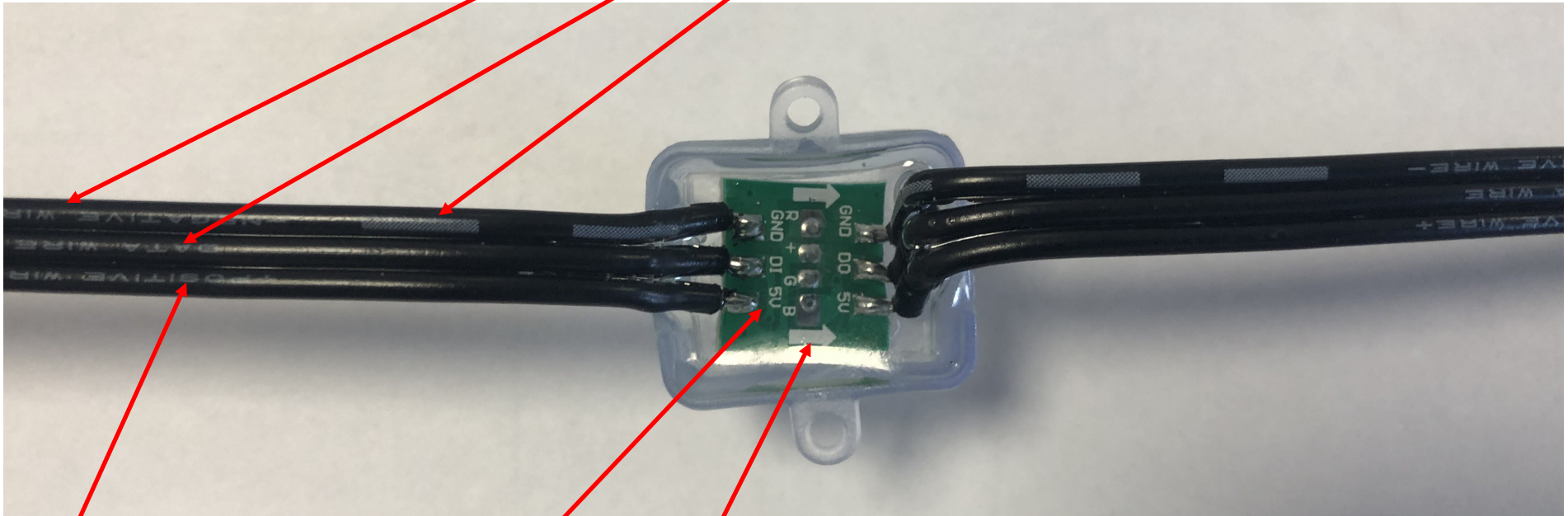




IC Chipped Definition

Features of the Trimlight PIXEL light

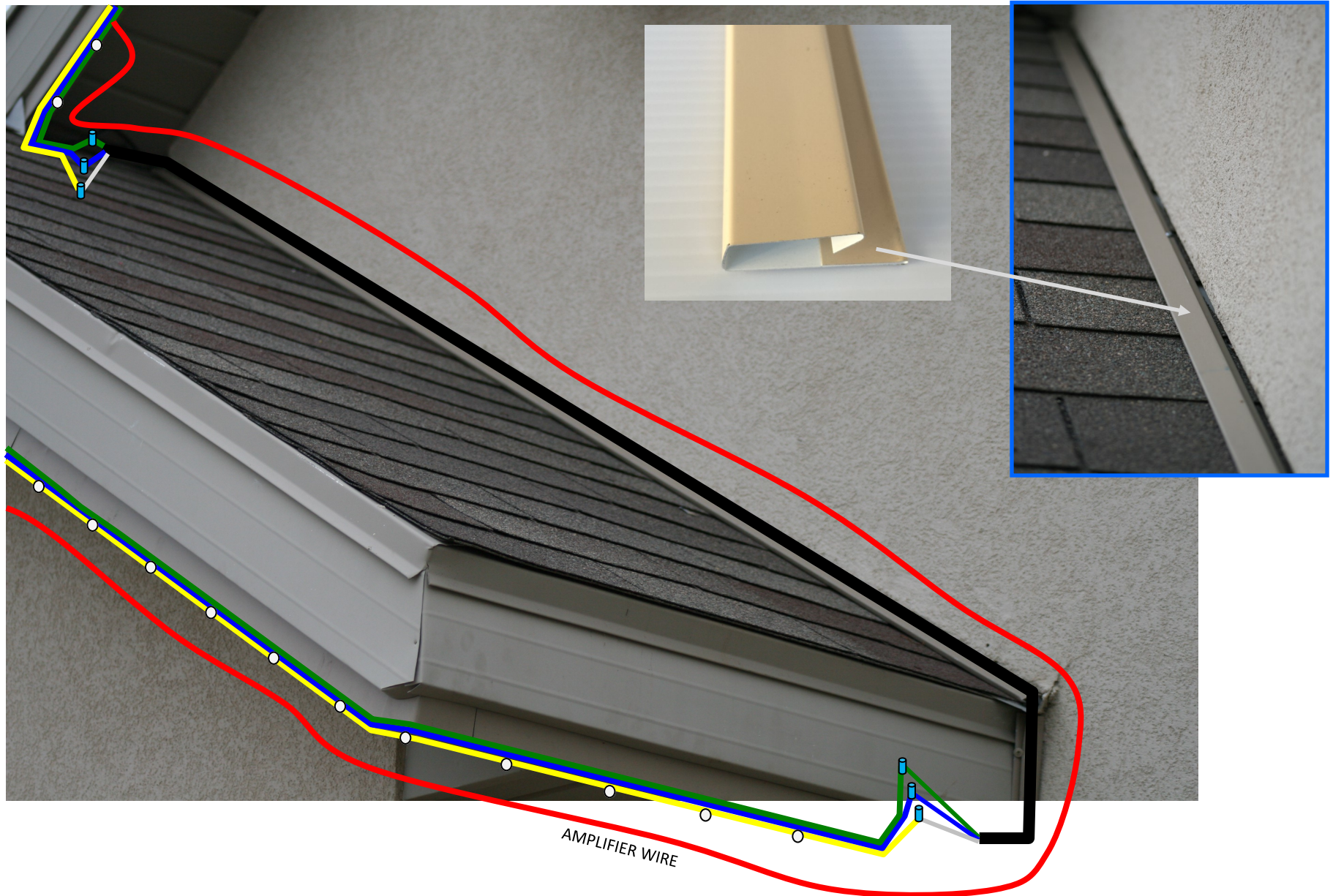
- All wires are 18 AWG to allow for more amperage to carry farther
- Middle wire is the signal wire (CANNOT TEE INTO THIS WIRE)
- V- is the Negative wire. This is shown with White Stripes on the wire



- V+ Is labeled Positive wire.
- Voltage of the light system is marked on the chip
- Arrow is printed to show the direction of the signal. This arrow should always be flowing away from the controller.

Each Diode is .6 watts

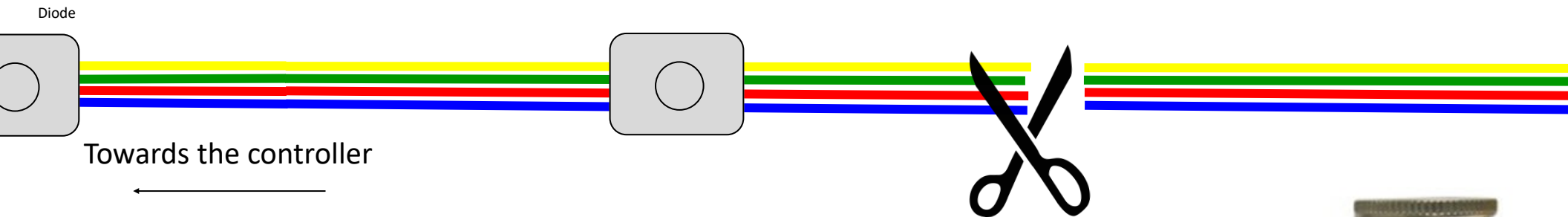
Jumper Wire Example on a IC chipped system



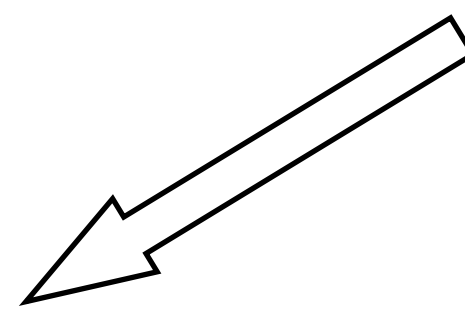
ENDING A STRAND

When finishing a run. Cut the diodes that are not needed from the end and seal the end with liquid tape. Any exposed end should be sealed properly.

STEP #1



STEP #2



Coat the ends with Liquid Tape for proper sealing around all wires and conductors



LAYOUT SAMPLES
for understanding amplification
and output layouts.



IMPORTANT!

- 1. Always choose a location for the controller that is closest to the first light.**
- 2. All initial runs should be going the same direction for the entire house. If you are starting on the left of a section, ALL sections should start on the left.**
- 3. Never have more than the required amount of lights on a run without an amplification point or initial power point within proper distance.**
- 4. Always position the controller as far away from power heavy devices. Ex: Solar Stations, Electric Car Charging Stations, 240 Volt outlets and equipment, Breaker boxes, Anything that could potentially cause electrical interference.**



IC Chipped System

(Voltage and Ground should be amplified periodically)
Connections should be in intervals of 100 pixels if initial power uses 16/2—Data Signal should use DATA WIRE

Connection lengths on page 11





One Sided Location Control Box Layout Single Output








TO NOTE:

Control Boxes mounted far from the living space or wifi network can experience troubles connecting with local wifi network. Centrally located boxes are ideal.

NOTE:

Avoid long distances of 12/2 Amp wire.

	Signal Wire with Amp Wires
	Power Connection and Controllers
	Connection to Amplifier Wire on VCC and GRD
	Trimlight with Diodes
	Amplifier Wire 16/2 Wire

LIMITATION:






Length between amplification connections are based on PIXELS not FOOTAGE.

Centrally Located Control Box Layout With Attic Access (Single Output)



NOTE:

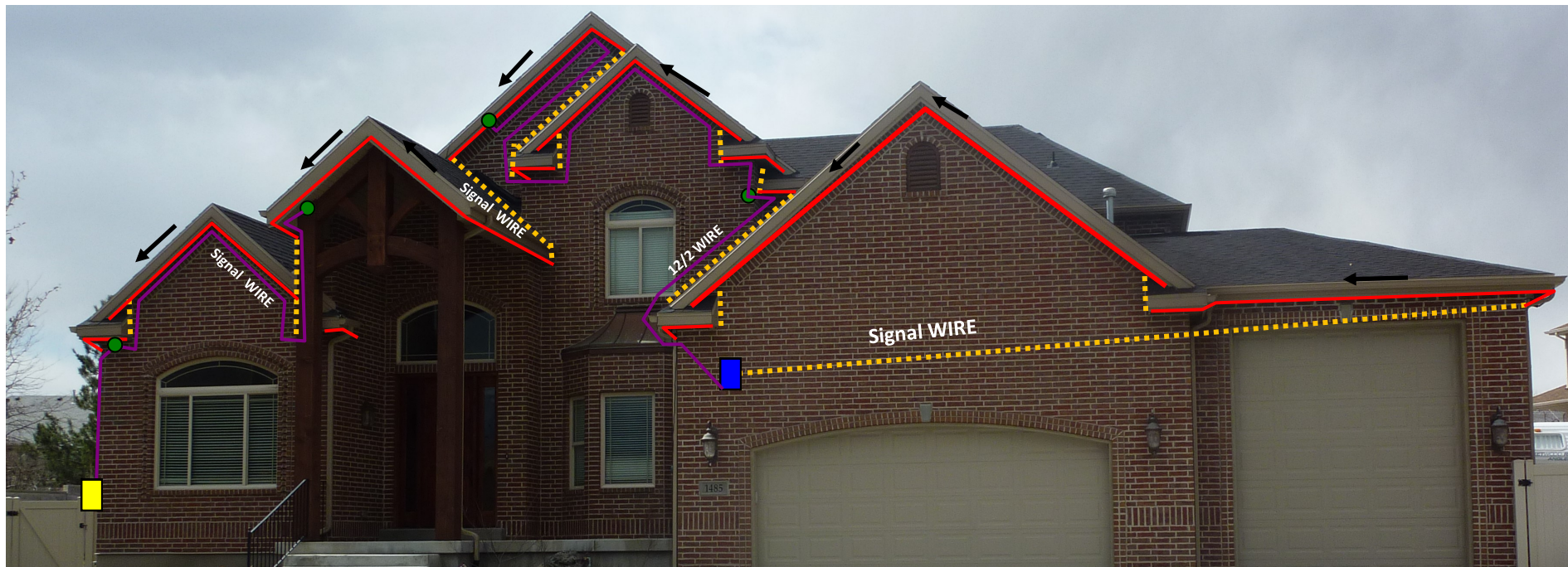
Avoid long distances of 16/2 Amp wire.







	Signal Wire with Amp Wires
	Power Connection and Controllers
	Amplifier Locations (Approximately 40' from power source or previous amplifier)
	Trimlight with Diodes
	Amplifier Wire 16/2 Wire—Home Run to Control Box

LIMITATION:

Length between amplification connections are based on PIXELS not FOOTAGE.

Multiple Power Location Control Box Layout



	Signal Wire with Amp Wires
	Power Connection and Controller
	Amplification Locations (Wire size dependent on distance from transformer and load requirements)
	Trimlight with Diodes
	Amplifier 12/2 Wire
	Secondary Power Supply

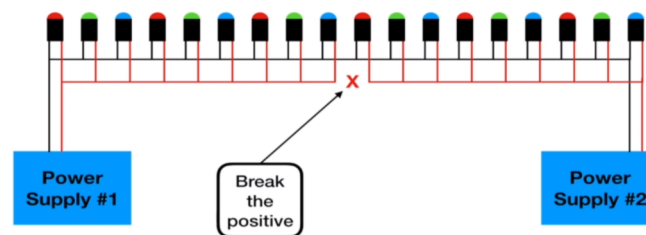
NOTE:

Avoid long distances of 16/2 Amp wire.

LIMITATION:

All runs are sequential from the first diode. No TEES allowed into the signal wire.

Multiple Power Supplies





Signal Layout From Outputs Concept







TO NOTE:

Control Boxes mounted far from the living space or wifi network can experience troubles connecting with local wifi network. Centrally located boxes are ideal.

NOTE:

Avoid long distances of 12/2 Amp wire.

	AMP wire with 16/2 Stranded Copper Wire
	Power Connection and Controllers
	Output #1
	Output #2

LIMITATION:

Length between amplification connections are based on PIXELS not FOOTAGE.



Signal Layout From Outputs Concept







TO NOTE:

Control Boxes mounted far from the living space or wifi network can experience troubles connecting with local wifi network. Centrally located boxes are ideal.

NOTE:

Avoid long distances of 12/2 Amp wire.

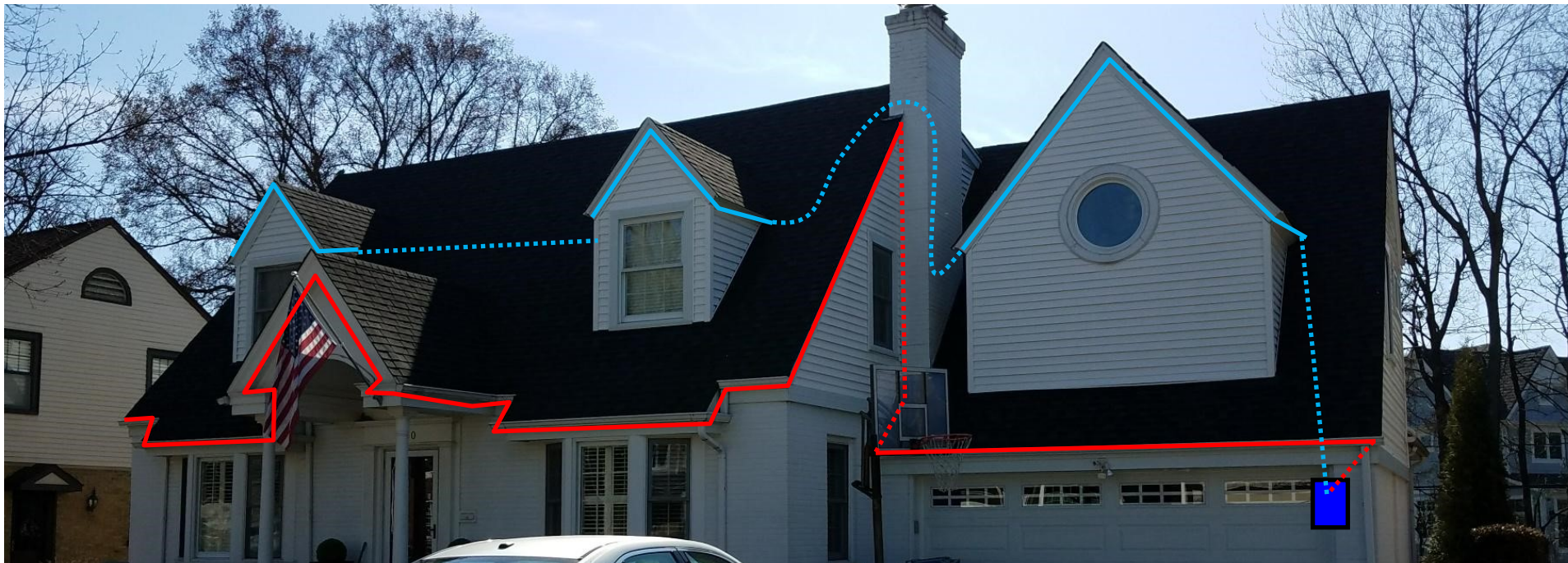
	AMP wire with 16/2 Stranded Copper Wire Needed if Output #1 has more than 100 diodes
	Power Connection and Controllers
	Output #1
	Output #2

LIMITATION:

Length between amplification connections are based on PIXELS not FOOTAGE.



Signal Layout From Outputs Concept







TO NOTE:

Control Boxes mounted far from the living space or wifi network can experience troubles connecting with local wifi network. Centrally located boxes are ideal.

NOTE:

Avoid long distances of 12/2 Amp wire.

	AMP wire with 16/2 Stranded Copper Wire Needed if Output #1 has more than 100 diodes
	Power Connection and Controllers
	Output #1
	Output #2

LIMITATION:

Length between amplification connections are based on PIXELS not FOOTAGE.



Spider Branching from Outputs

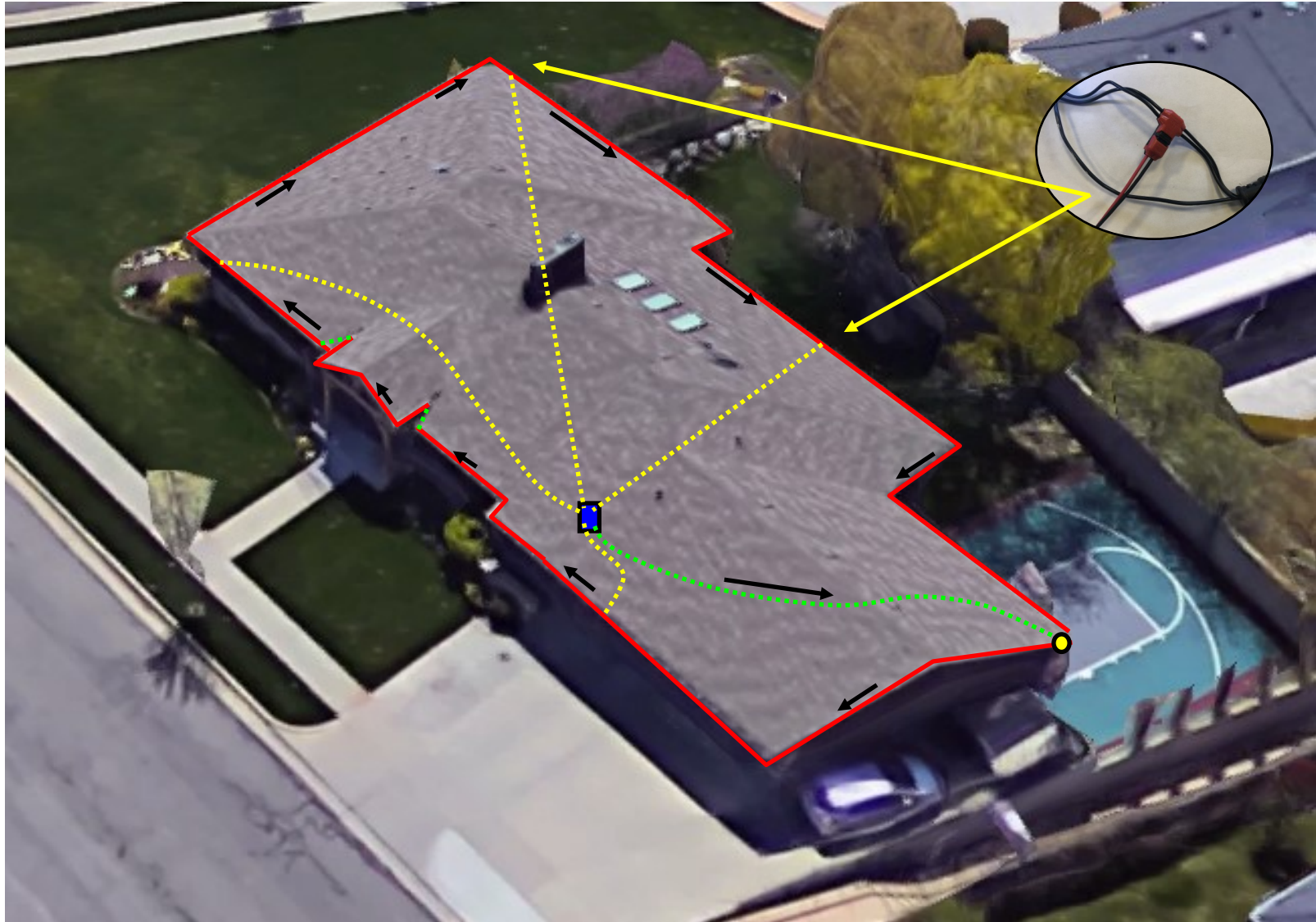


All diodes are directional

This design shows each output line is starting on the leftside and running right directionally. Yellow line shows the signal wire and 16/2 power wire, Pink wire shows amplification wire of 16/2.



Internal Spidering for Amplification Wire

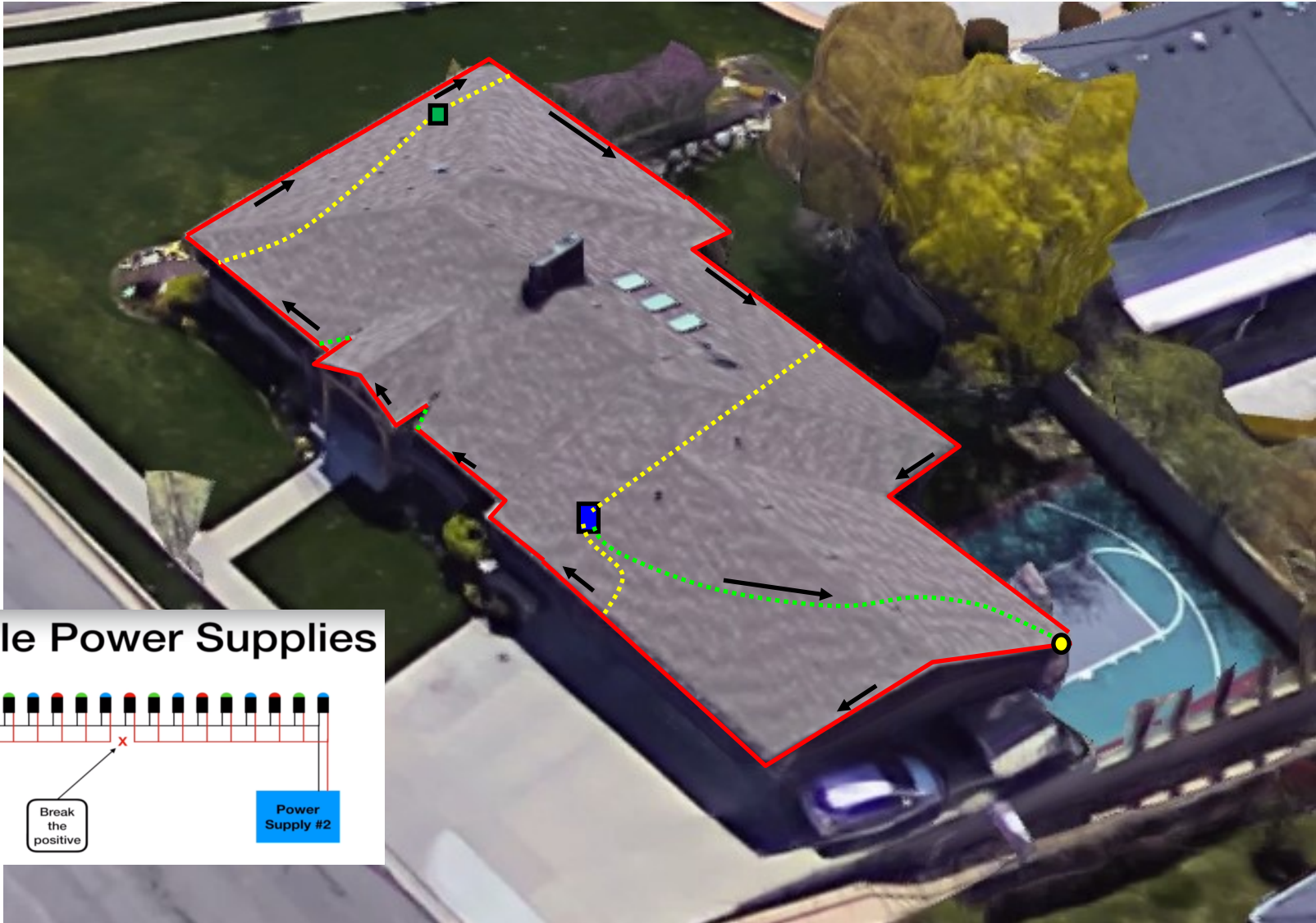


Directional layout with amplifier wire

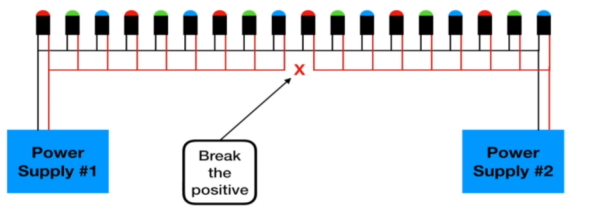
Amplifier wire in the attic to inject V+ and V-



Secondary Power Supplies



Multiple Power Supplies



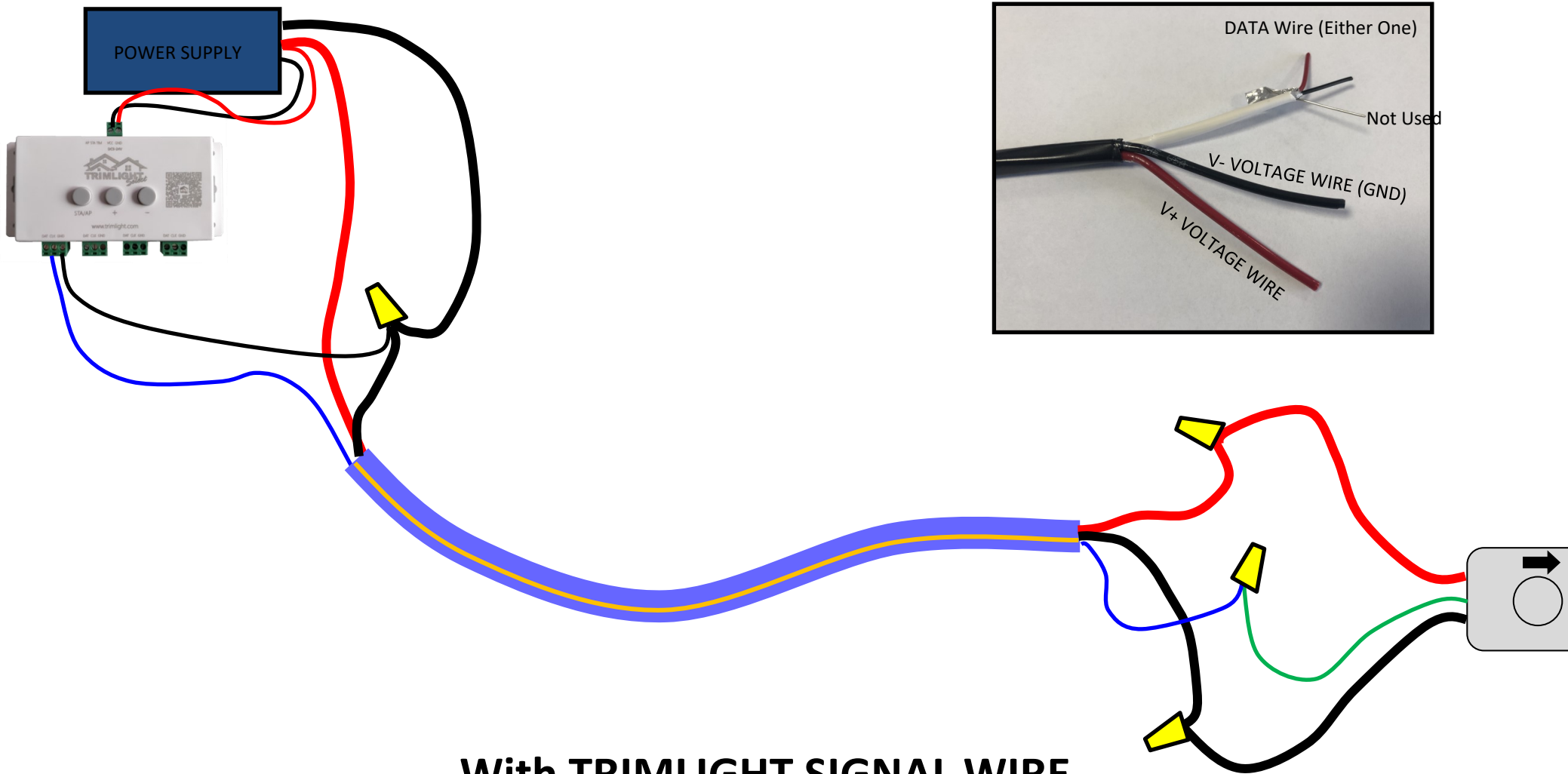
Directional layout with amplifier wire

Amplifier wire in the attic to inject V+ and V-



**INITIAL CONNECTIONS, JUMP
CONNECTIONS, and
AMPLIFICATION CONNECTIONS
for understanding amplification
points**

Example of using TRIMLIGHT SIGNAL wire for the INITIAL CONNECTIONS



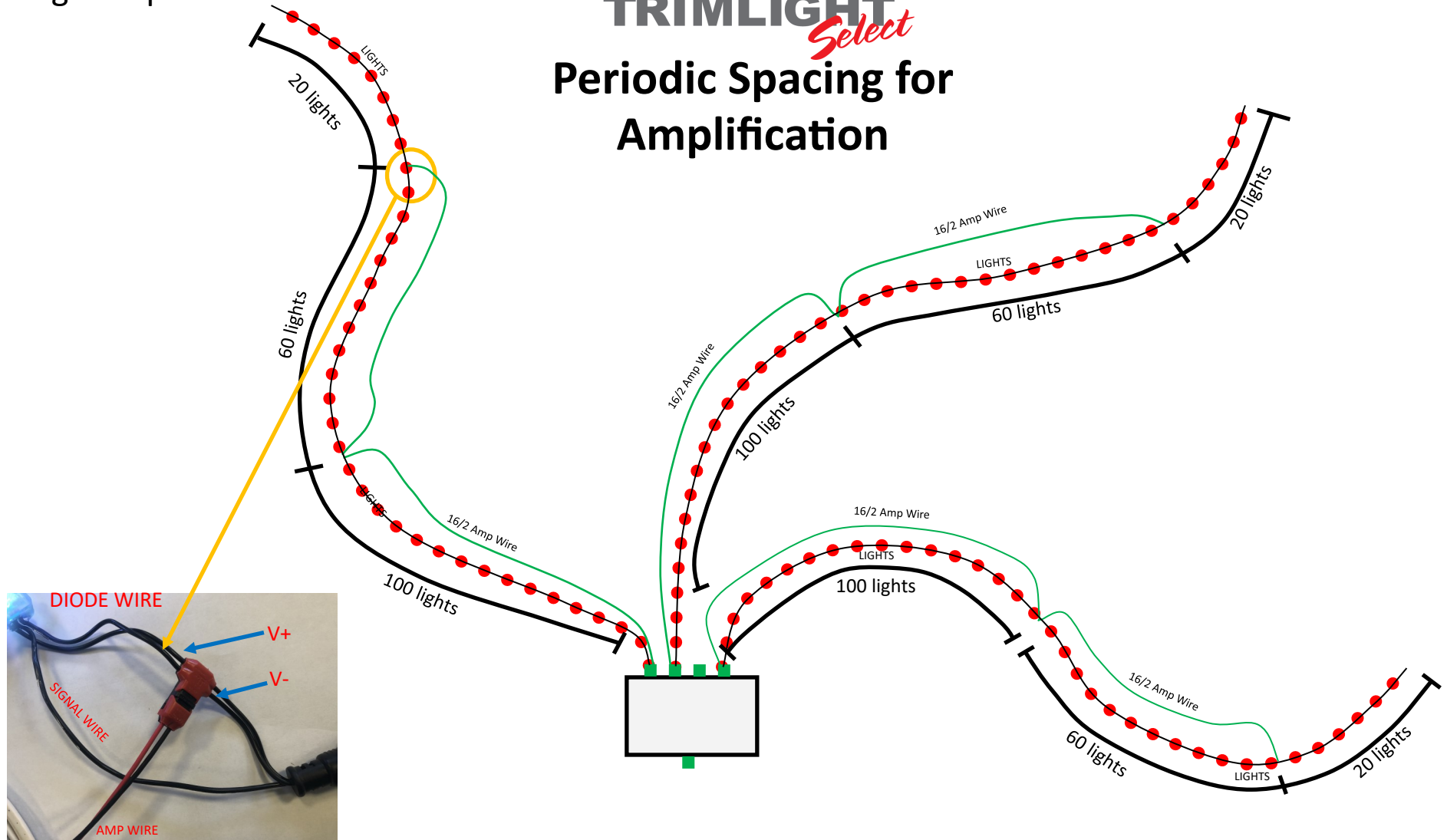
There are 2 wires of 16 awg for the voltage and 1 data wire for the DATA signal

With Standard 16/2

Gauge Amp wire



Periodic Spacing for Amplification



Sample of a "TEE" Connection into the diode wire on V+ and V-.

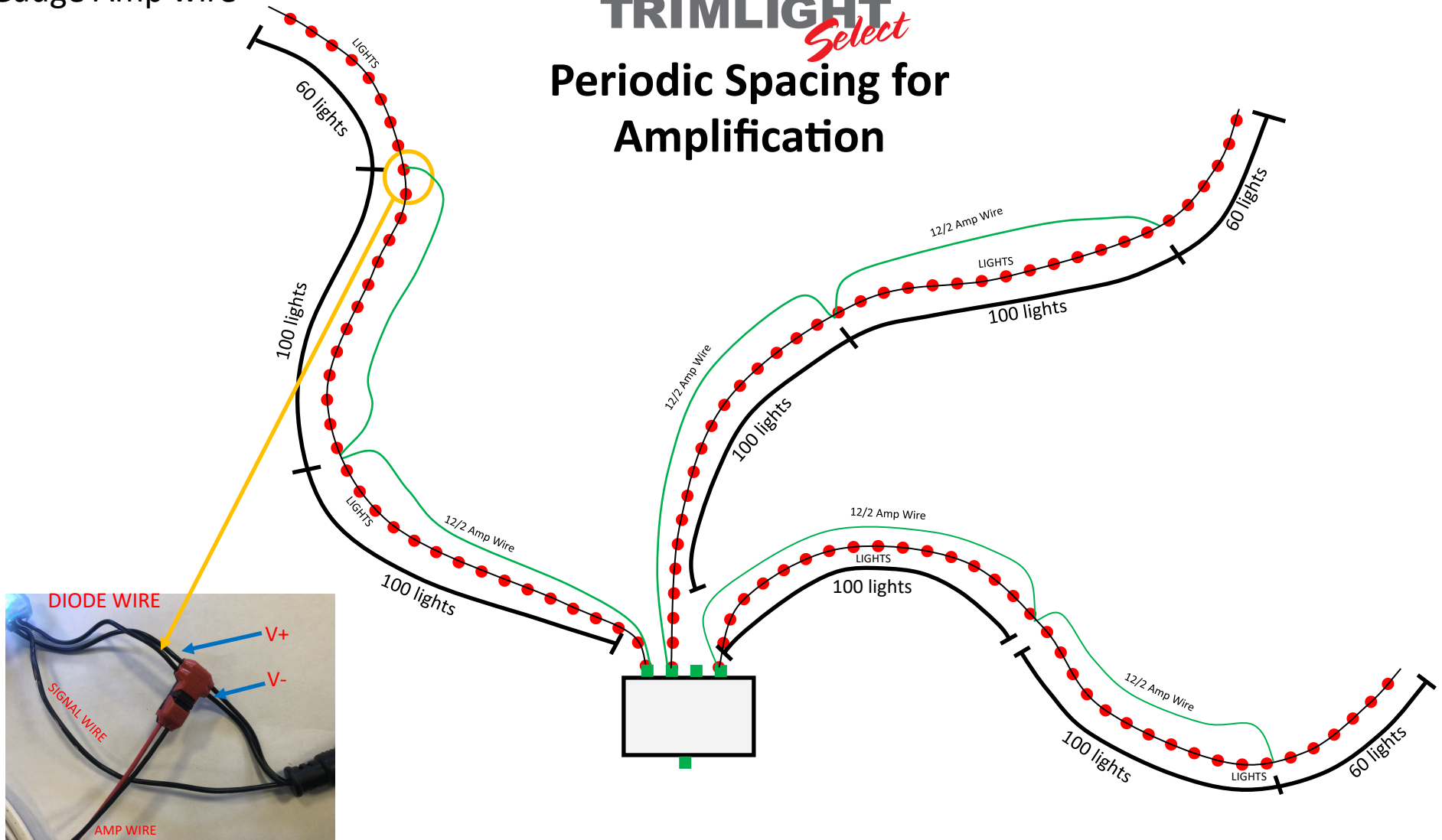
Running Single Runs per Output (Maximum 180 lights)

With 12 Volt and 16/2 Amplifier wire

With LARGE 12/2
Gauge Amp wire



Periodic Spacing for Amplification

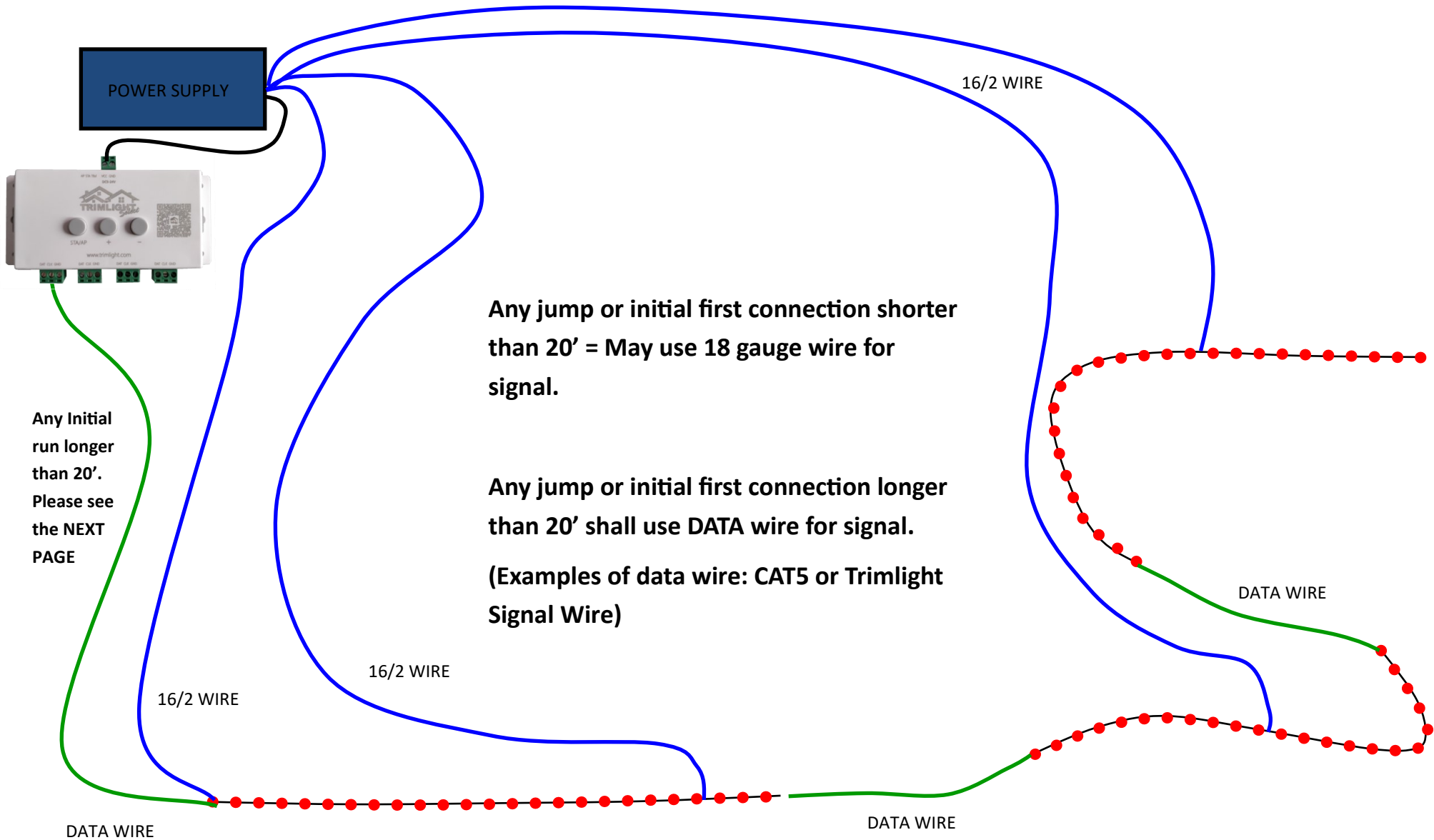


Sample of a "TEE" Connection into the diode wire on V+ and V-.

Running Single Runs per Output (Maximum 260 pixels)

With 12 Volt and 12/2 Amplifier wire

Signal Wire Connections—FOR DATA SIGNAL



Any jump or initial first connection shorter than 20' = May use 18 gauge wire for signal.

Any jump or initial first connection longer than 20' shall use DATA wire for signal.

(Examples of data wire: CAT5 or Trimlight Signal Wire)

Any Initial run longer than 20'. Please see the NEXT PAGE

DATA WIRE

DATA WIRE

16/2 WIRE

16/2 WIRE

16/2 WIRE

DATA WIRE



Quantity of diodes from the first single connection before an amplification is required

Feet from the controller with Signal Wire	Quantity of diodes from the first single connection before an amplification is required		
	18 AWG	16 AWG	12 AWG
10'	100	100	100
20'	80	100	100
30'	60	80	100
40'	40	60	100
50'	20	40	100
60'	20	40	100
70'	20	20	80
80'	20	20	80
90'	10	20	60
100'	10	20	60
110'	10	20	40
120'	10	20	40
130'	10	10	40
140'	10	10	40
150'	10	10	40
160'	-	10	40
170'	-	10	20
180'	-	10	20
190'	-	10	20
200'	-	10	20
210'	-	-	20
220'	-	-	20
230'	-	-	20
240'	-	-	20
250'	-	-	20
260'	-	-	20
270'	-	-	20
280'	-	-	20
290'	-	-	20
300'	-	-	20
	18 AWG	16 AWG	12 AWG

INITIAL Signal Wire Limitations

With VOLTAGE DROP on long runs from the controller to the first diode.

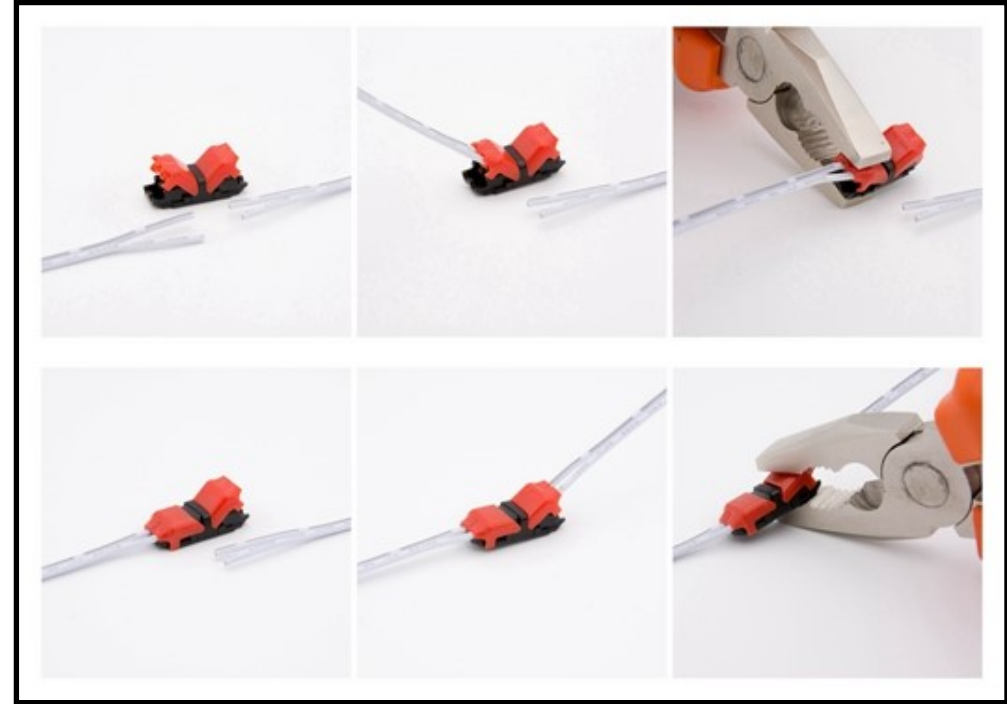
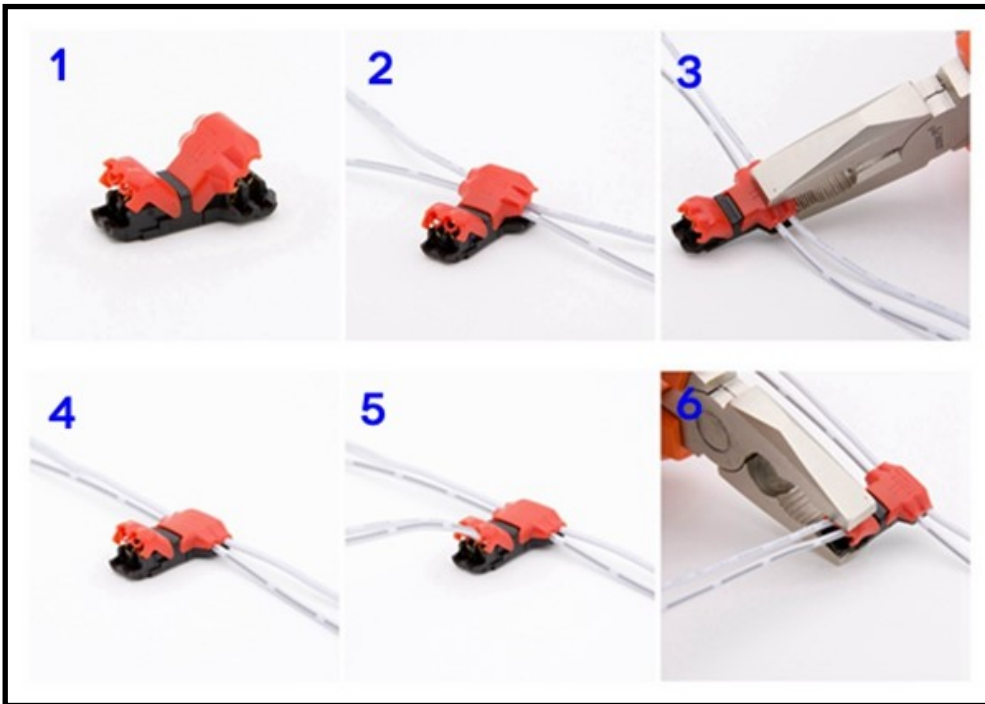
The signal can get corrupted when there is not enough voltage and sufficient amperage at each diode. This corruption could look like Flashing lights, Random Colors, Patterns not acting properly.

Here is a safe guideline of how long the run is (Shown in GREEN) compared to where you should amplify the voltage.

* **Notice** that the bigger gauge wire will carry the load longer and power more diodes.

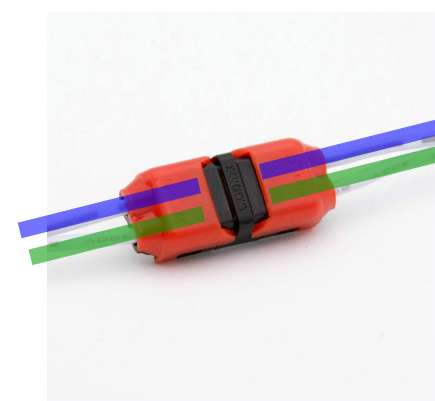
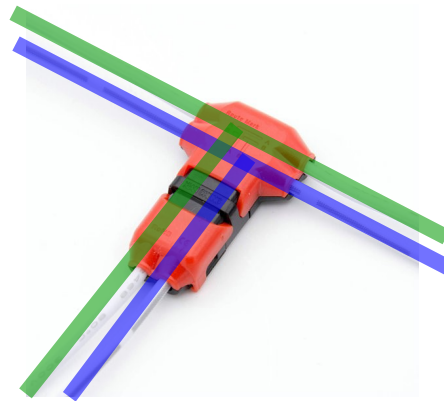


Red NON-STRIP connector instructions

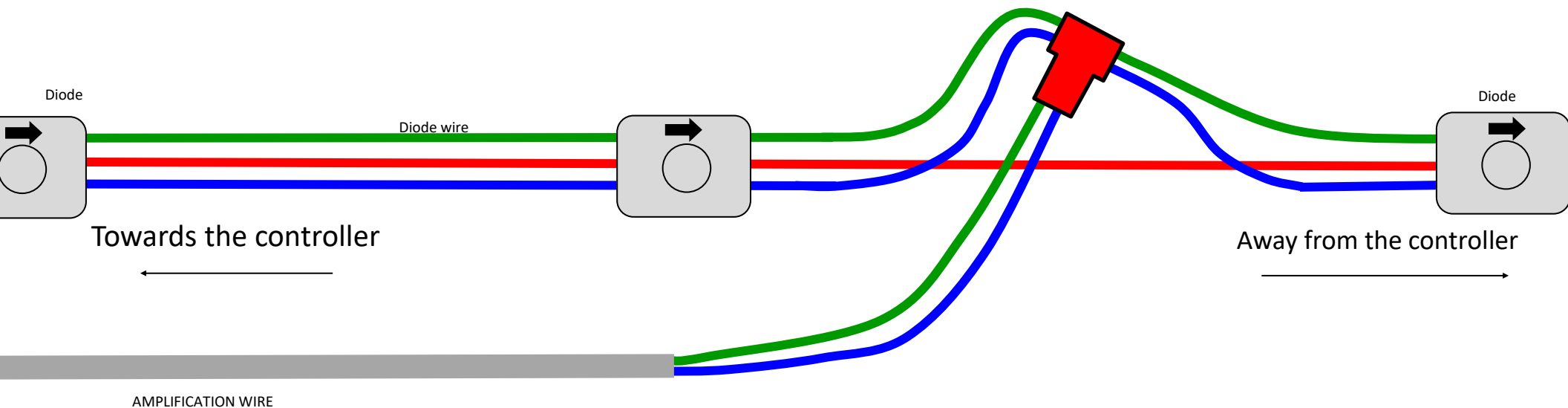


CONNECTIONS:

1. Do not strip the wires first unless using Trimlight Signal Wire on 16 awg Voltage Wires.
2. Follow the diagram that is embedded on the connector for proper connectivity of wires.
3. Use a pair of pliers to pinch the cover onto the clips.



IC Diode Connection Power Amplification for V+ and V- wires.

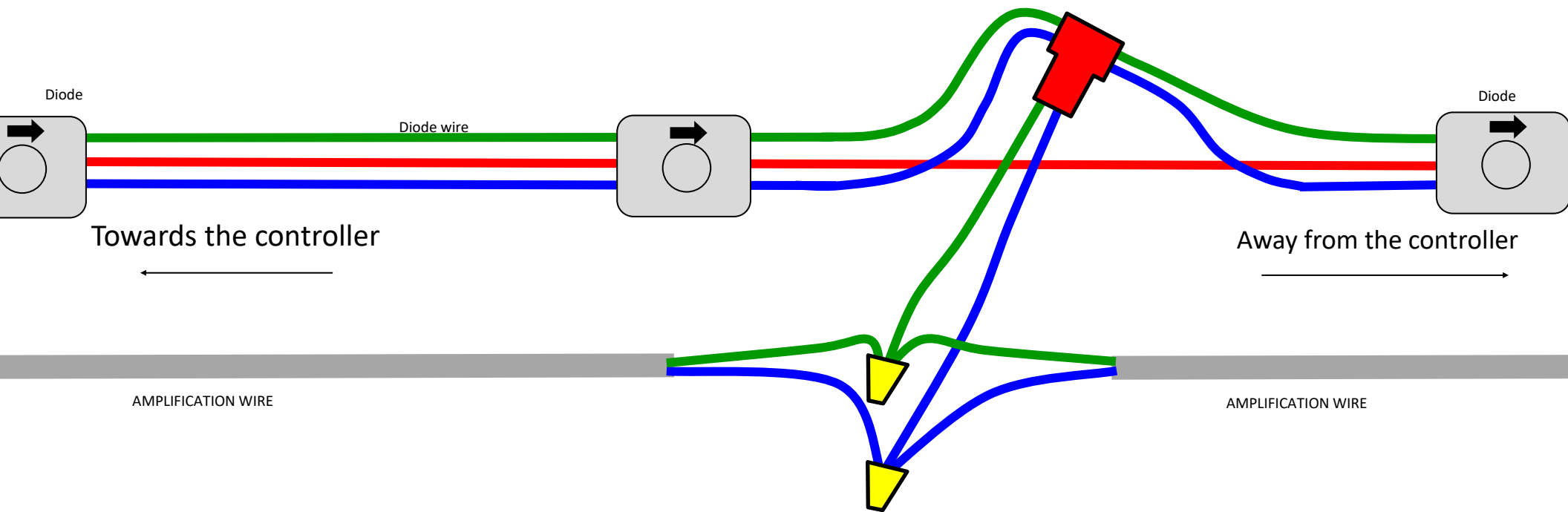


Maximum 100 DIODES from original connection.

(Maximum 60 additional diodes if **16/2** wire is used at connection from power supply)

(Maximum 100 additional diodes if **12/2** wire is used at connection from power supply)

IC Diode Connection Power Amplification for V+ and V- wires.

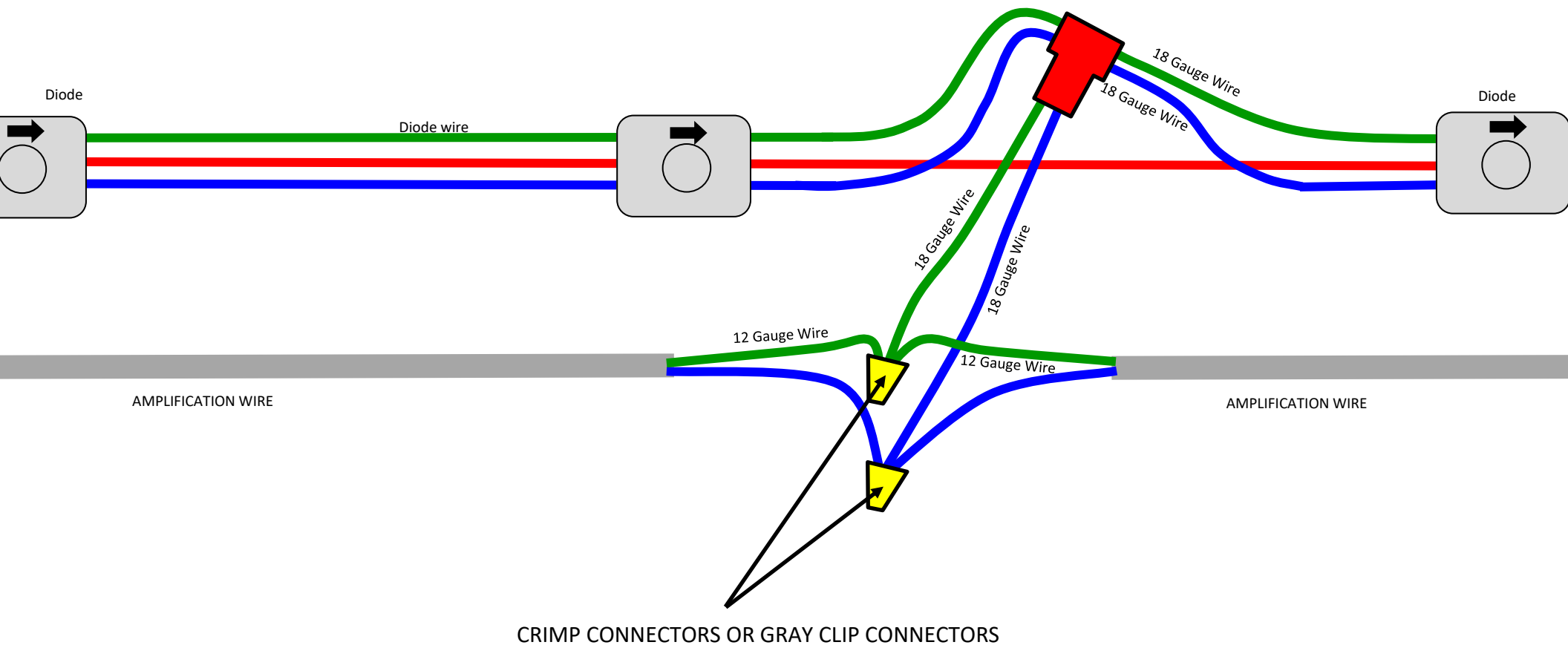


Maximum 100 DIODES from original connection.

(Maximum 60 additional diodes if **16/2** wire is used at connection from power supply)

(Maximum 100 additional diodes if **12/2** wire is used at connection from power supply)

If using 12/2 or 14/2 wire that does not work with the RED snap connectors. Try using a crimp connector or other larger connector with a small run of wire to make a bridge.





Control Panel Installation



Ensuring Proper Voltage to the Power Supply



50 and 100 Watt Power Supply

All 50 watt and 100 watt power supplies do not have a switch to transfer main voltage to 120 volt. It has an automatic internal switch that detects the voltage. No need to adjust these units.



200 Watt Power Supply

On a 200 Watt power supply the voltage switch is external and easy to see and access. Gently switch the controller to the correct power being supplied. The 300 Watt power supply includes this same feature.



**PLAN .6 WATTS per Diode
and 8 WATTS per downlight**

Selecting Proper Wattage for the Power Supply

50 Watt Power Supply



120 volt input with 12 volt output. For Small systems of less than 60 diodes.

SUPPORTS UP TO:



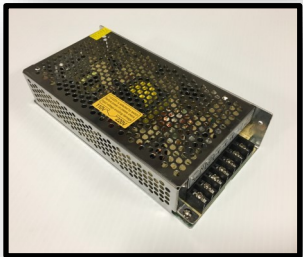
60 DIODES

OR



5 DOWNLIGHTS

100 Watt Power Supply



120 volt input with 12 volt output. For Small systems of less than 140 diodes



140 DIODES

OR



10 DOWNLIGHTS

200 Watt Power Supply



120 volt input with 12 volt output. For Medium to Large systems of less than 280 diodes



280 DIODES

OR



20 DOWNLIGHTS

300 Watt Power Supply



120 volt input with 12 volt output. For Large to X-Large systems of less than 450 diodes



450 DIODES

OR

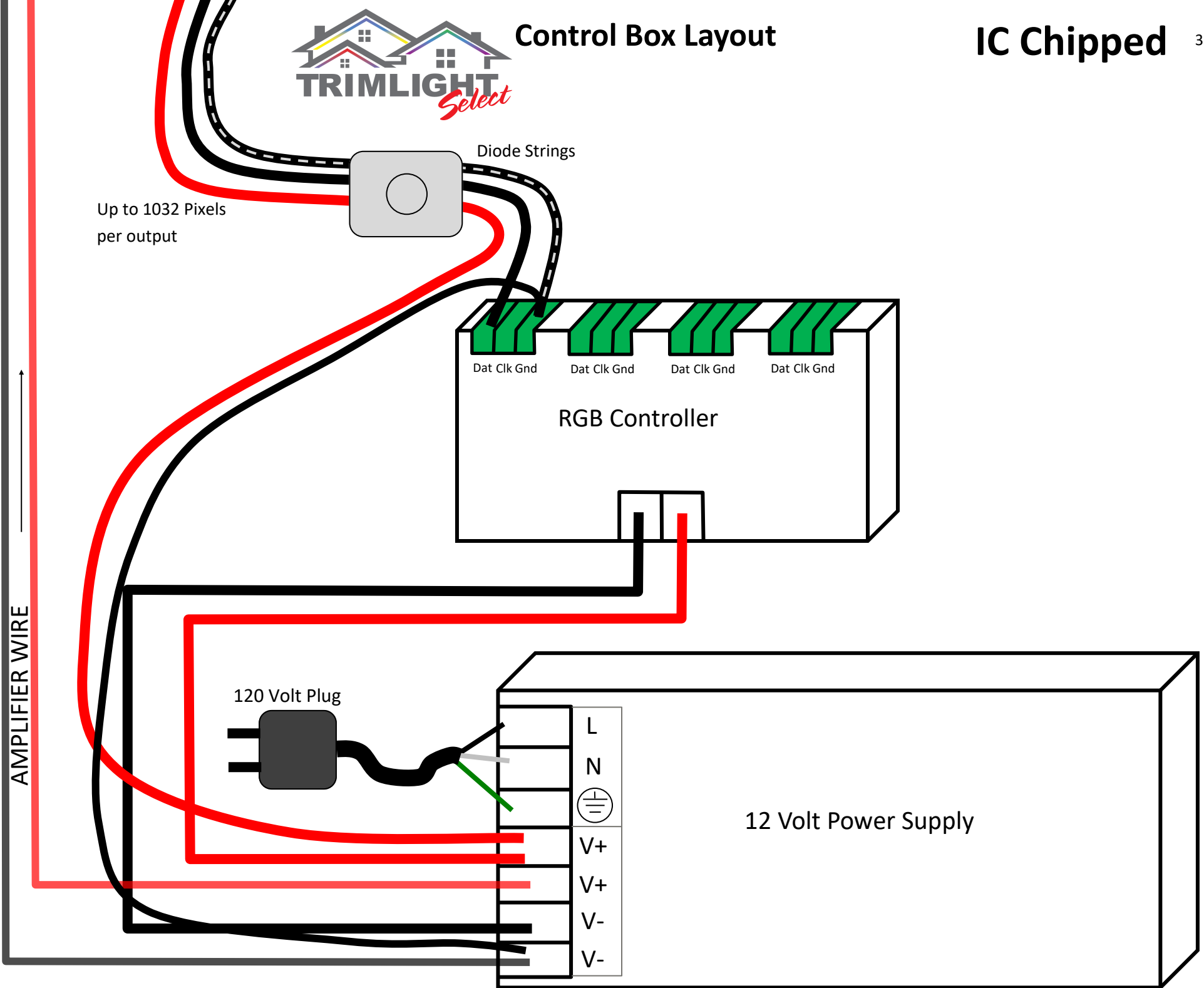


30 DOWNLIGHTS

Possible secondary power supplies required for X-Large systems.



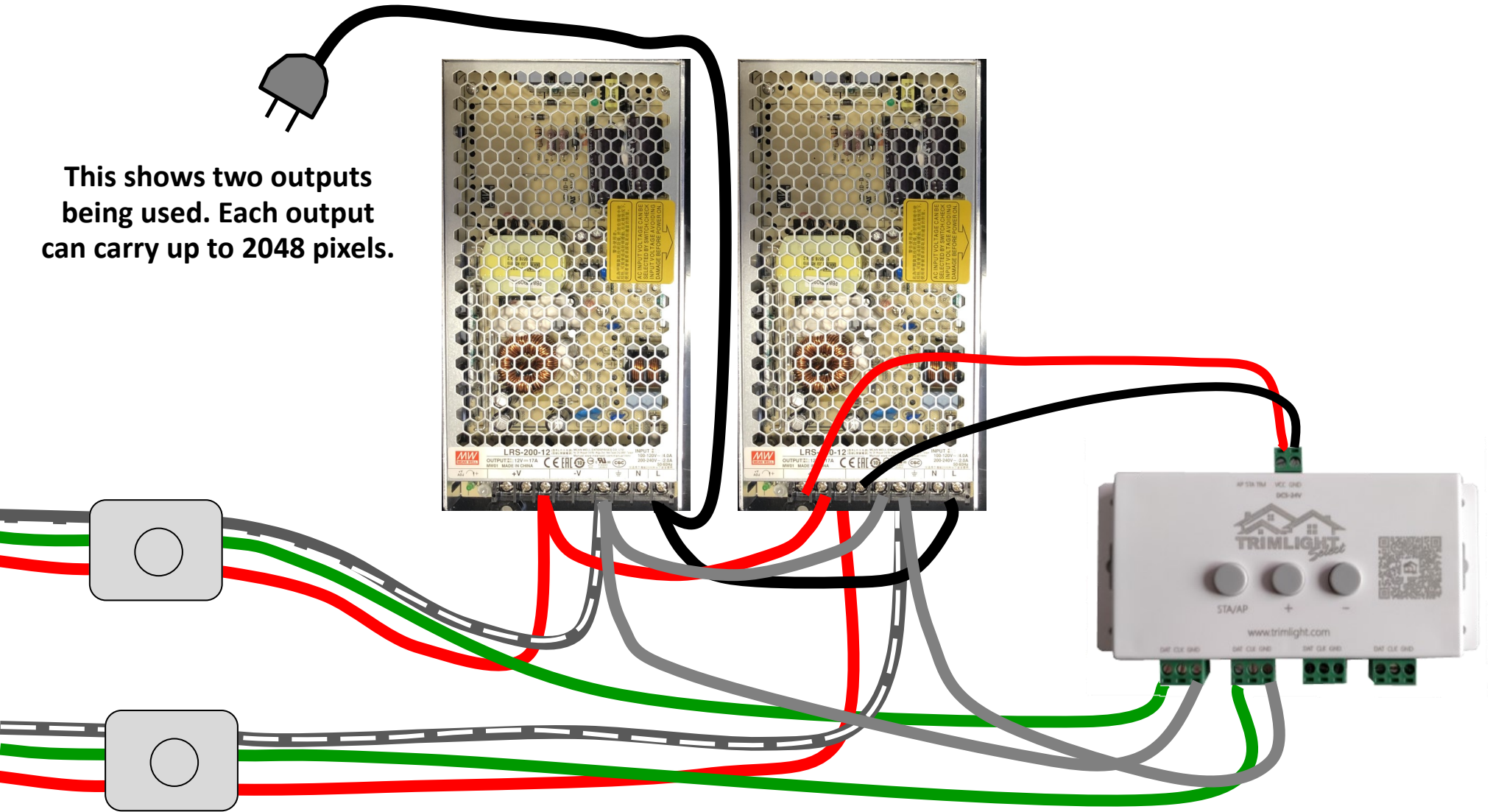
Control Box Layout





Wiring Multiple Power Supplies for large systems

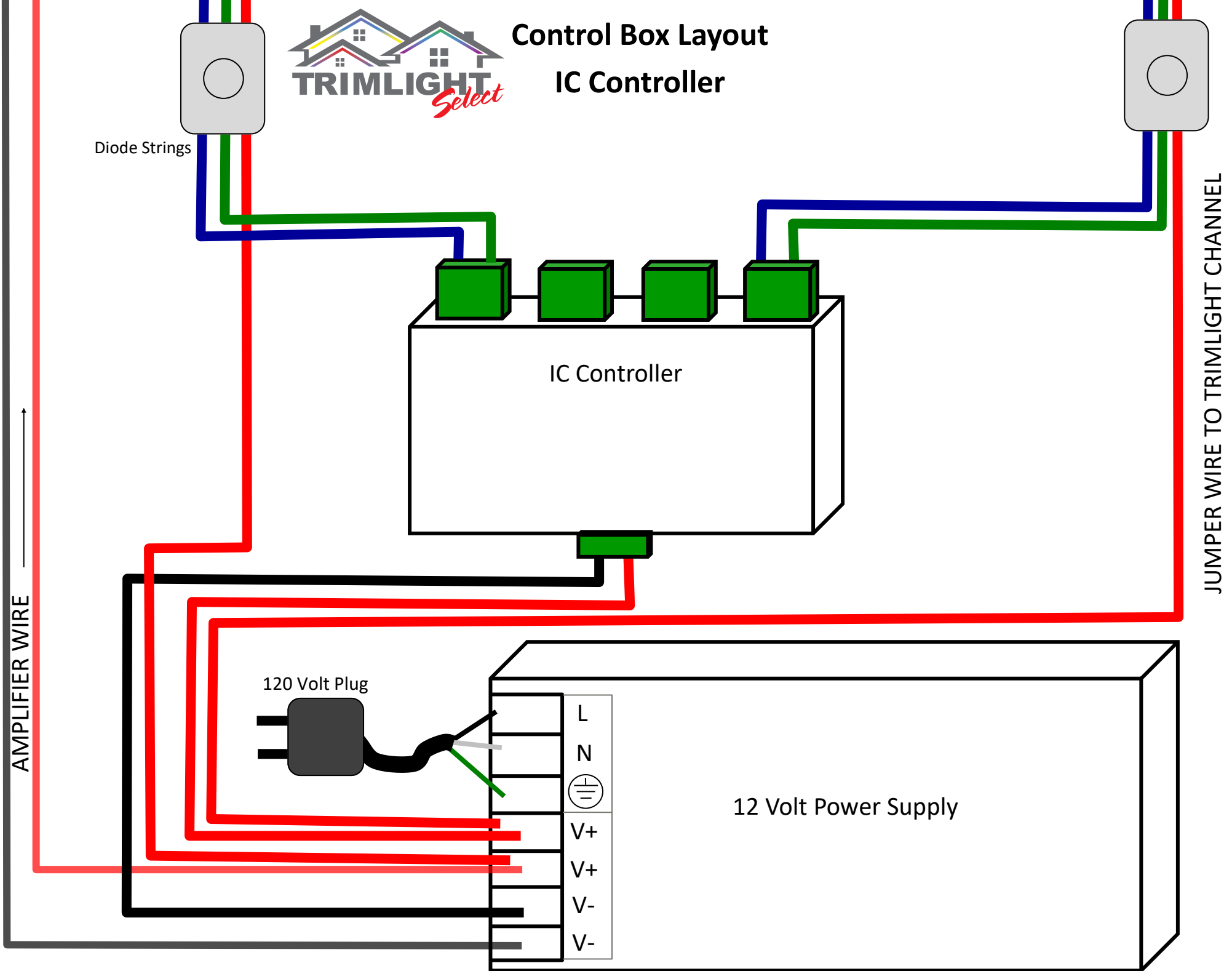
This shows two outputs being used. Each output can carry up to 2048 pixels.





Control Box Layout

IC Controller



Diode Strings

IC Controller

120 Volt Plug

12 Volt Power Supply

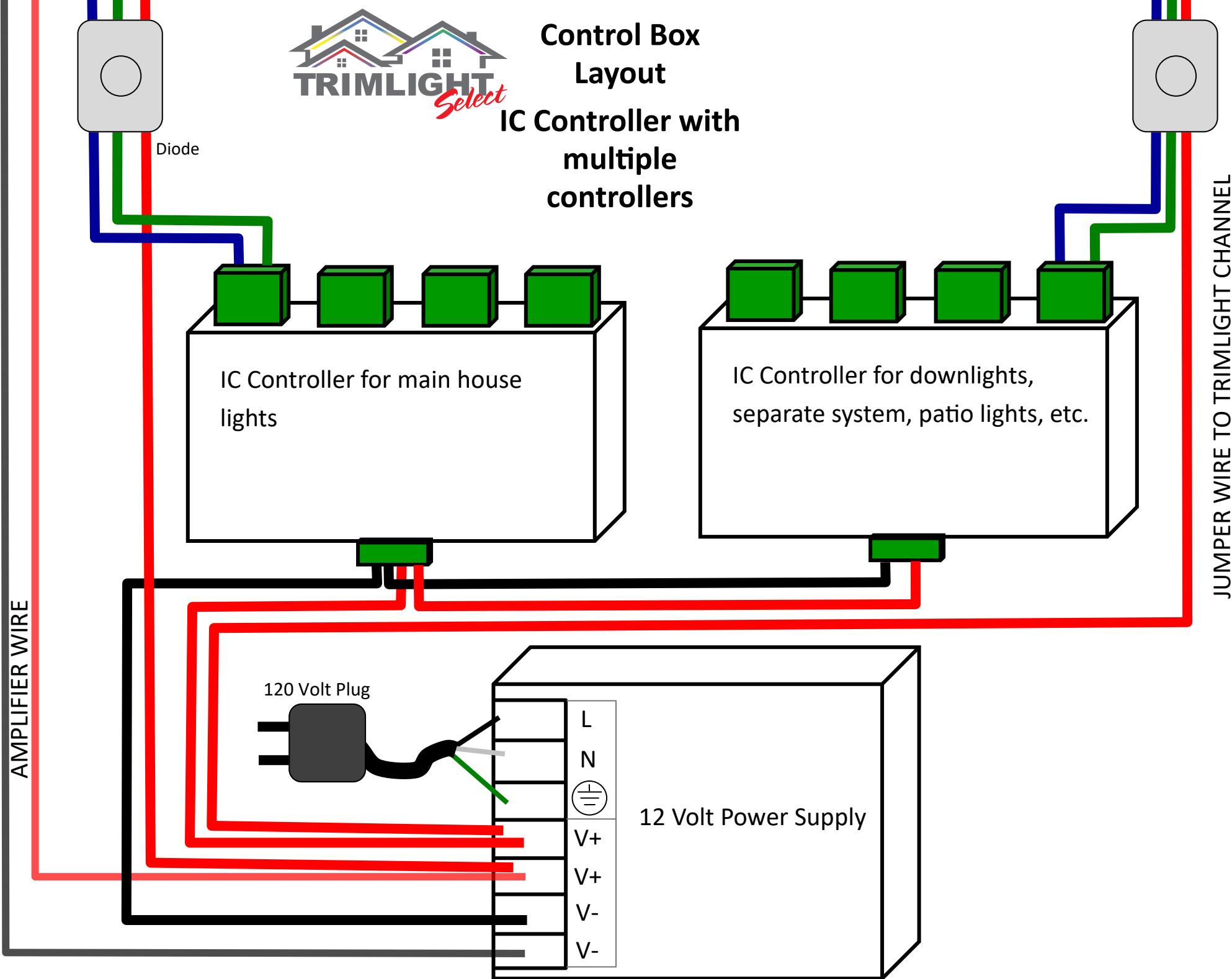
AMPLIFIER WIRE

JUMPER WIRE TO TRIMLIGHT CHANNEL



Control Box Layout

IC Controller with multiple controllers



AMPLIFIER WIRE

JUMPER WIRE TO TRIMLIGHT CHANNEL

Diode

IC Controller for main house lights

IC Controller for downlights, separate system, patio lights, etc.

120 Volt Plug

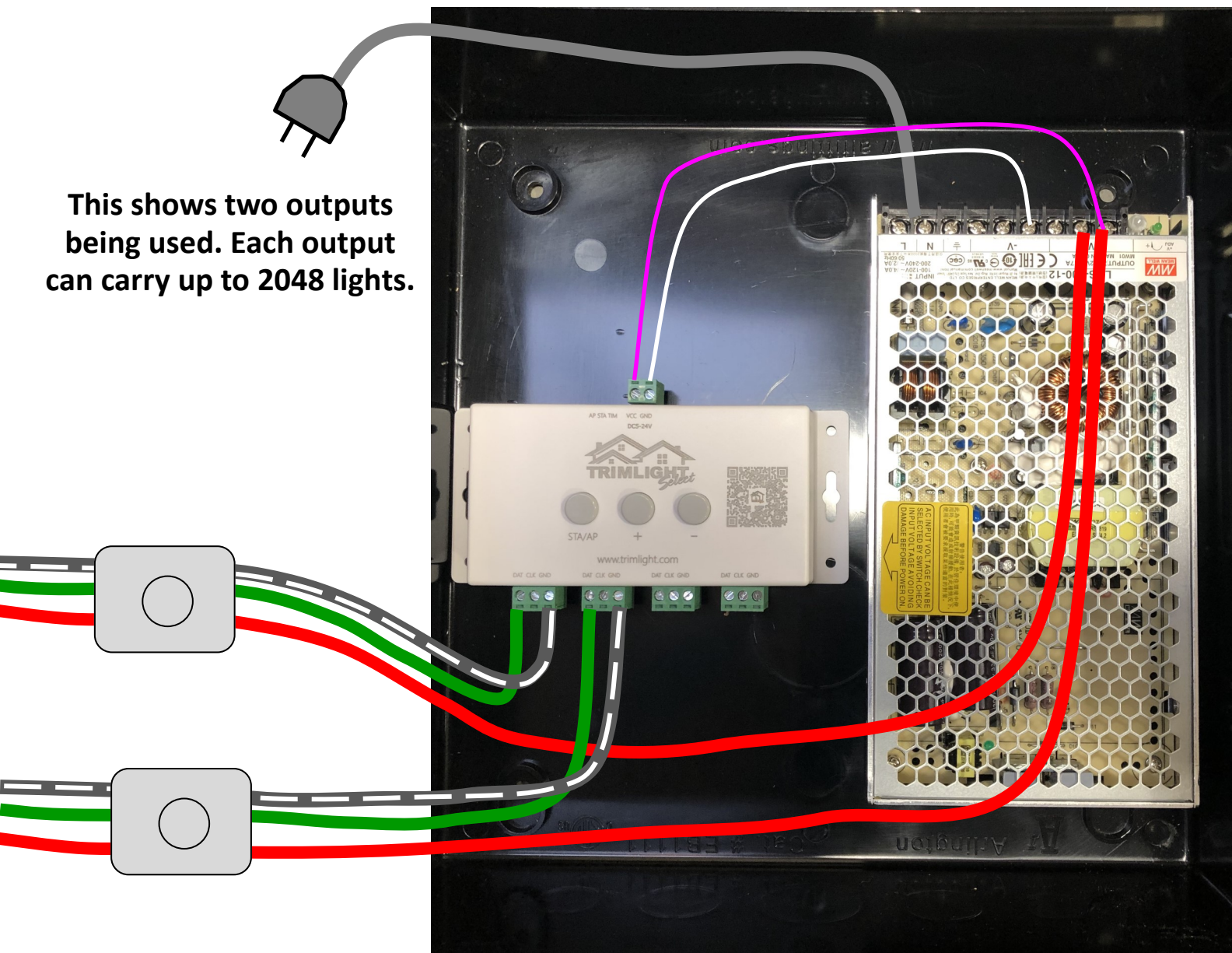
L
N
⊕
V+
V+
V-
V-

12 Volt Power Supply



Control Panel Example on a Single Controller System

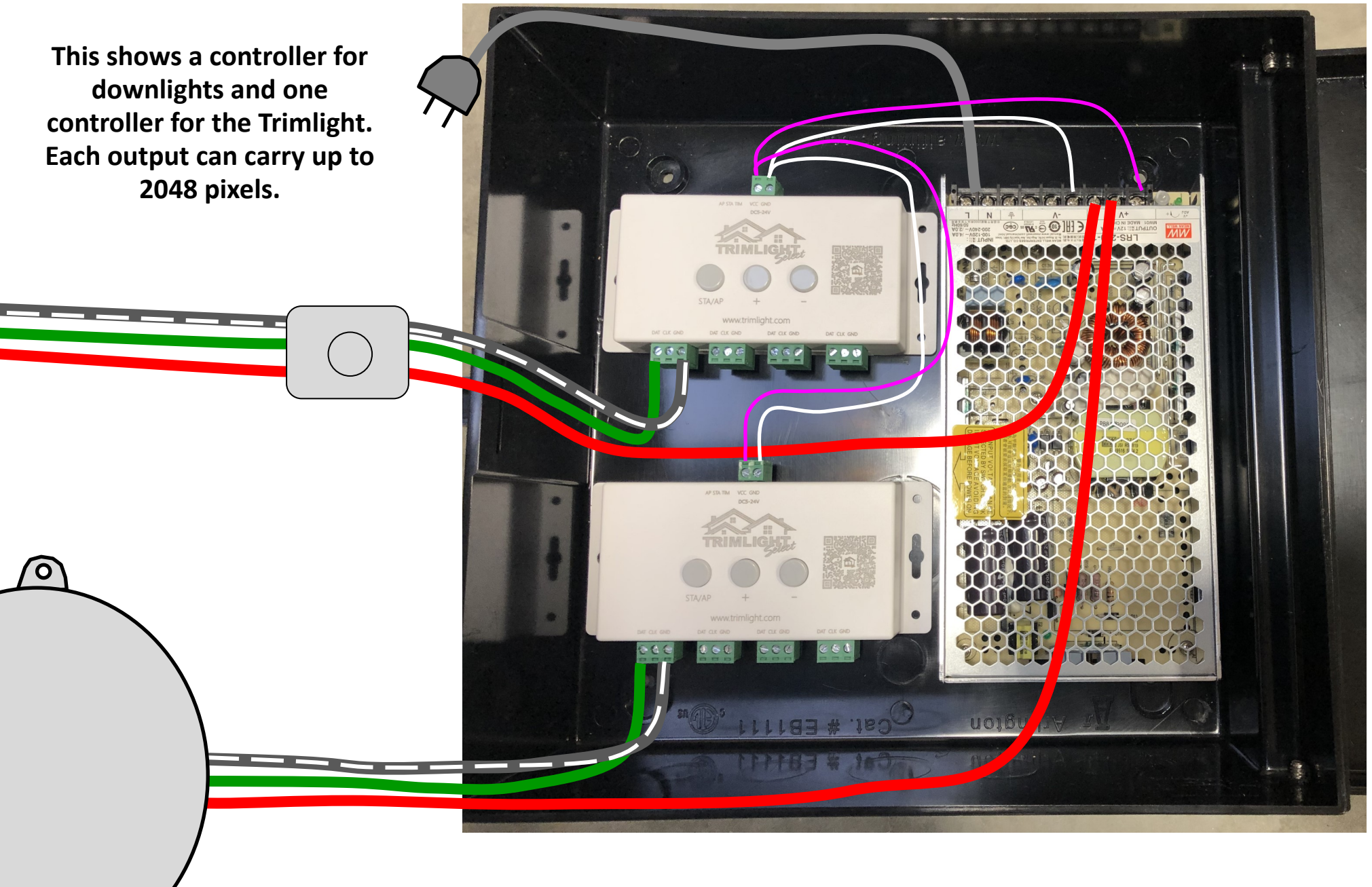
This shows two outputs being used. Each output can carry up to 2048 lights.





Control Panel Example on a two Controller System

This shows a controller for downlights and one controller for the Trimlight. Each output can carry up to 2048 pixels.





TROUBLESHOOTING



Troubleshooting

Problem	Solution
At time of initial setup. The chosen pattern does not operate all the way to the last diode.	Check the quantity of diodes on the system compared to the amount of diodes that are programmed on the device menu page OR a bad diode in the system where the correct pattern stops continuing through with signal.
One diode looks funny and does not work like the rest	It is a bad bulb. Cut the bad diode out and replace it with a new one.
System worked properly before but now a portion of the lights have stopped showing the chosen pattern.	Bad diode at the affected at the last working diode. Cut out the last good diode and the affected diode and splice in new diodes. Ensure the arrows for signal direction match the removed lights.
Directly after a jump. My lights change colors and do not function properly.	You have a bad connection in the wires of your jump. Check the connections on the upper and lower side of the jump.
The lights look yellowish when on white	Insufficient power. Add a secondary power supply or another amplifier wire back to the power supply to reduce the amperage load on the affected wires.
The entire light strand is acting erratically	There is a short. Check all connections and jumps. Use a process of elimination by slowly disconnecting strands until the problem goes away. Once you have located which strand is affecting the system. Replace the entire strand or find the bad diode that is affecting the system
The entire light strand is acting erratically and the previous suggestion was not helpful.	Check the last cut diode on all the system's runs. Ensure that each end is properly sealed so no short against the aluminum channel is exposed. Use dolphin connectors, electrical tape, liquid tape, heat shrink end seals to seal the wires.



Troubleshooting

Problem	Solution
The lights are dim in some spots or on the ends of the runs	Ensure there is sufficient voltage to all the diodes. Use a multi-meter to test the voltage at each connection to ensure no more than 2 volts of drops
Everything works great until I dial into pure white.	Insufficient power. Ensure the system has the proper sized power supply or that the power supplied is correctly switched to 115 volt with the switches on the unit. Also look at the previous solution for voltage drop issues.
The system was large and required secondary power supplies for multiple amplifier spots but doesn't seem to work in those areas.	Ensure the power to the outlets is on. Ensure the power supply is properly functioning.
Have had multiple diode failures, amplifier failures, and power supply failures on the same home throughout the year.	Usually caused by unreliable electrical grid or lightning strikes within the area. Use a power surge protector and/or a low voltage protector unit to ensure that the system will be turned off if a flux of voltage or a brown out occurs.
Its all wired properly but no lights are on in the control panel.	Check the outlet for 120 volt power. If the outlet is live, check the 120 volt plug. If the prongs are properly connecting to the 18 gauge wire. Check the power supply for potential damage or possible defect. Replace the power supply to eliminate the possibility of other factors.
Everything is wired right and lights are on in the panel but no diodes of Trimlight are operating.	First make sure that you have turned the system on through the app. Also ensure proper connections to the jump wire that goes out to the first string of diodes.



Troubleshooting

Problem	Solution
The controller will not connect properly or it times itself out when searching for the network on the app.	Reset the device by unplugging the system and plugging it back in. Then wait 1 minute and try connecting again.
The controller will not stay connected properly or it times itself out when searching for the network on the app.	This is most likely due to lack of proper wifi signal where the controller is located. Please extend the users wifi signal with boosters available from local electronics retailers (Best Buy, Amazon, etc.)
The home network does not show up on the list of available networks to connect	The controller is only able to connect to 2.4G wireless networks. It is unable to connect to a 5g network. If a 2.4g network is not available from the correct router, speak to an I.T. specialist for the 2.4G network to be activated on the network.
The Trimlight Controller will not pair with the home network.	Reboot the Trimlight controller and force close the application. Try the process again. If the problem continues, Try rebooting the phone. If problem continues, the home network router is not allowing the controller to connect due to security protocols. The user will have to always connect through the controller signal until the wifi router is replaced by user .
Everything is working properly but when on white, it slightly dims near the end of the system.	Voltage drop has occurred. Use a volt meter to determine the amount of volts the power supply is producing compared to the voltage at the last diode. If the amount is barely under 10 volts. Use a screw driver to adjust the voltage up slightly on the power supply near the terminal blocks where labeled "V+ ADJ"
The system acts erratically during the winter even though the control box is in my garage or it is protected outside.	The system may need our heater with thermostat connected inside the panel. The controls can lag behind when introduced to severe cold. Maintain the temperature of the control box to be above 36 degrees Fahrenheit.



Troubleshooting

Problem	Solution
<p>The system is plugged into an external timer but will not turn on during the day when I try with the application or remote.</p>	<p>An external timer will cut the power completely to the system. The timer will need to be manually switched ON or bypassed to operate the system outside of the specified time schedules.</p>
<p>Lights do not operate properly after long jumps or long runs from an output</p>	<p>Data signal is affected. Ensure data wire is being used for all jumps.</p>