

1. Features:

- 5V to 24V Power Supply Input Range
 - 12V Automotive Optimized
 - Auto-Shutdown
 - Ultra low power in sleep mode
- iOS and Android App
- 2 Internal 5V Power Supply Outputs
 - Up to 4A per Output
- 8 Voltage Input Triggers
 - 5V to 24V Compatible Inputs
 - Assign functions in software
- Up to 6 LED Output Data Channels
 - Control up to 6 Separate LED strings.
~1000 LEDs / Channel
- Audio Line-Level Input
 - LEDs triggered from music
- Compatible with many addressable LED standards
 - WS2811/WS2812/WS2813, etc
- External Connectivity
 - WIFI
 - CANBus
- Automotive Rated Components
- Compact Robust Enclosure:
 - Water-Resistant IP67 Rated
 - 5.26" x 4.58" x 1.43"
- Designed, Assembled & Tested in USA



2. Applications:

- Automotive Lighting
- Outdoor LED Displays
- Multi-Channel Interactive Art Installation

3. Description:

The GlowCraft LED controller by Current Electric Labs is a versatile and powerful device for creating stunning addressable LED creations.

GlowCraft is a compact and robust device that can natively control up to about 6000 addressable LED pixels. With 6 separate data output channels, your system can mix and match any of the popular standards, such as WS2811/WS2812/WS2813/etc. The 8 user assignable 5-24V input channels can be used to interface with standard automotive triggers like Brake, Turn Signal, Reverse, etc or buttons and switches for real time interactive functionality. Trigger functionality can be extended by using the built-in CANBus interface.

With both iOS and Android app support you can connect to your GlowCraft, trigger show modes, and work on your lights on the go.

The GlowCraft controller uses automotive standard DTM connectors and has a wide input voltage range of 5V to 24V, making it suitable for various power sources, specifically targeting 12V automotive systems. The ultra low current during sleep mode of only 0.4mA won't drain your battery, and the internal 12V supply monitor can alert you if your battery is getting low. GlowCraft has two built in switchable 5V power supply outputs that can drive up to 4A per output to conveniently provide regulated 5V LED power without any other external power supplies. The power supply outputs are internally protected against short circuits and can additionally be used to drive other 5V devices such as relays or switches.

Primary connectivity with the GlowCraft Controller is through a standard WIFI connection and web browser. Additional connectivity options include CANBus.

Designed to withstand harsh environments, the housing comes standard with IP67 water-resistance and automotive rated components and industry standard DTM automotive connectors. Pre-assembled pig-tail connector mates are available. Whether you want to create a dazzling light show for your car, home, or stage, the GlowCraft Controller is the perfect device for you.

4. Cautions and Warnings:

Users are reminded that this product can operate within an automotive electrical system. Proper and safe interfacing with the vehicle's electrical system is crucial for the correct functionality of the product. It is the user's sole responsibility to have a thorough understanding of electrical systems and to ensure that the installation, connection, and operation of this product comply with all relevant safety guidelines, standards, and regulations and any modifications to a vehicle's electrical system should be performed by individuals with the necessary skills and expertise per the vehicle manufacturer's guidelines and specifications. Current Electric Labs disclaims any responsibility for issues arising from improper installation, connection, or use of this product within the vehicle's electrical system. Users assume full responsibility for electrical safety and are encouraged to consult qualified professionals or seek assistance from automotive experts if they are uncertain about the proper procedures for interfacing this product with the vehicle's electrical system.

Current Electric Labs would like to emphasize that this product is specifically designed and intended for aftermarket automotive applications. While the product undergoes rigorous testing and quality assurance processes, it is important to note that it has not been certified to the stringent requirements of the consumer automotive market.

The intended use of this product is for non-critical and non-safety-related applications within the aftermarket automotive sector. This product is not certified for use in critical automotive systems or applications where a failure could result in harm, injury, or significant damage. Users are hereby cautioned against utilizing this product in any critical automotive applications, or any other application where the failure of the product could pose a risk to human life or property. By purchasing and using this product, the user acknowledges and accepts the limitations of the product and agrees to use it solely for aftermarket purposes. Current Electric Laboratories disclaims any liability for damages, injuries, or losses arising from the use of this product in critical automotive applications, and users are encouraged to seek alternative solutions that comply with the required certifications for such critical applications if needed.

Table of Contents

1. Features:	1
2. Applications:	1
3. Description:	1
4. Cautions and Warnings:	2
5. Connections:	5
5.1 Connector Pinout	5
5.1.1 Differential Data Channel Configuration Pinout:	6
5.2 Connector Mates	6
5.3 Connector Accessories	7
5.4 Pre-Made Cable Assemblies	7
6. Getting Started	8
6.1 Powering Up The GlowCraft Controller	8
6.2 Connecting Over Wifi - Access Point (AP) Mode	9
6.3 Connecting Over Wifi - Device Mode	9
6.3.1 Finding the Controller IP Address in WIFI Device Mode	10
6.4 Power-Off Time Delay	10
6.5 Enabling the PSU1 and PSU2 5V Power Supply Outputs	11
6.5.1 Over-Current Fault on the PSU1 and PSU2 Outputs	11
6.5.2 Over-Current Troubleshooting:	12
6.6 Factory Reset	12
6.7 Firmware Updates (“SAFEMODE”)	12
7. Properly Sizing Power and Wiring Components:	14
7.1. Selecting Power Supplies for your LED systems:	14
7.2. Selecting Cables/Wiring for your LED systems:	14
8. System Wiring Examples:	14
8.1 Standard Automotive Inputs - Voltage Triggers:	15
8.1.1 CANBus Connections:	16
8.2 LED Strip 5V: Powered Directly by Controller:	16
8.3 LED Strip 5V: Switched External 5V Supply:	17
8.4 LED Strip 12V: Switched External 12V Supply:	18
8.5 Long 5V Strips: Re-Powered / Power Injection:	19
8.6 Differential Data Link: Data Reliability Over Long Cables	20
8.7 Line Level Audio Input:	21
9. Electrical Specifications:	22
9.1 Absolute Maximum:	22
9.2 Recommended Operating Parameters:	22
9.3 Hardware Circuit Interfacing:	23
9.3.1 Voltage Input Triggers (IN1 to IN8):	23
9.3.2 Data Outputs:	23
9.3.3 Differential Data Outputs:	24



9.3.4 Line Level Audio Interface:	24
9.3.5 CANBus	25
10. Mechanical:	26
11. Document Revisions:	27

5. Connections:

5.1 Connector Pinout

Main Connector = DTM13-12PA-12PB-R008



Pin #	Name	Type	Direction	Description
1	PSU2Gnd	Power	Output	LED Power Supply 2 Ground
2	PSU1Gnd	Power	Output	LED Power Supply 1 Ground
3	D4	Signal	Output	Data Output Channel 4
4	D3	Signal	Output	Data Output Channel 3
5	D5	Signal	Output	Data Output Channel 5
6	PSGnd	Power	Input	Main System Power Supply - (12V Ground)
7	PS+	Power	Input	Main System Power Supply + (+12V Positive)
8	D6	Signal	Output	Data Output Channel 6
9	D1	Signal	Output	Data Output Channel 1
10	D2	Signal	Output	Data Output Channel 2
11	PSU1Out	Power	Output	LED Power Supply 1 Output
12	PSU2Out	Power	Output	LED Power Supply 2 Output
13	IN1	Signal	Input	User Input 1 ⁽¹⁾
14	IN2	Signal	Input	User Input 2 ⁽¹⁾
15	IN3	Signal	Input	User Input 3 ⁽¹⁾
16	IN4	Signal	Input	User Input 4 ⁽¹⁾
17	IN5	Signal	Input	User Input 5 ⁽¹⁾
18	IN6	Signal	Input	User Input 6 ⁽¹⁾
19	IN7	Signal	Input	User Input 7 ⁽¹⁾
20	IN8	Signal	Input	User Input 8 ⁽¹⁾

21	LLAudio	Signal	Input	Line-Level Audio Input
22	CANH	Signal		CANBus High ⁽²⁾
23	CANL	Signal		CANBus Low ⁽²⁾
24	SigGnd	Signal		Signal Ground ⁽²⁾

Notes:

- 1) User Input functions are set through software configuration.
- 2) For best signal integrity, use shielded three conductor cabling with ground and a twisted pair for CANH/CANL.

5.2 Connector Mates

Qty	Location	Color	Key Type	Part Number
1	Connector Pins 1 to 12	Grey	A	DTM06-12SA
1	Connector Pins 13 to 24	Black	B	DTM06-12SB

5.3 Connector Accessories

Type	Description	Size	Part Number
Wedgelock ⁽¹⁾	Pin Retainer		WM-12S
Pins	Crimp ⁽³⁾	14-16 AWG ⁽²⁾	1062-20-062
Pins	Crimp ⁽³⁾	16-22 AWG ⁽²⁾	1062-20-0222

Notes:

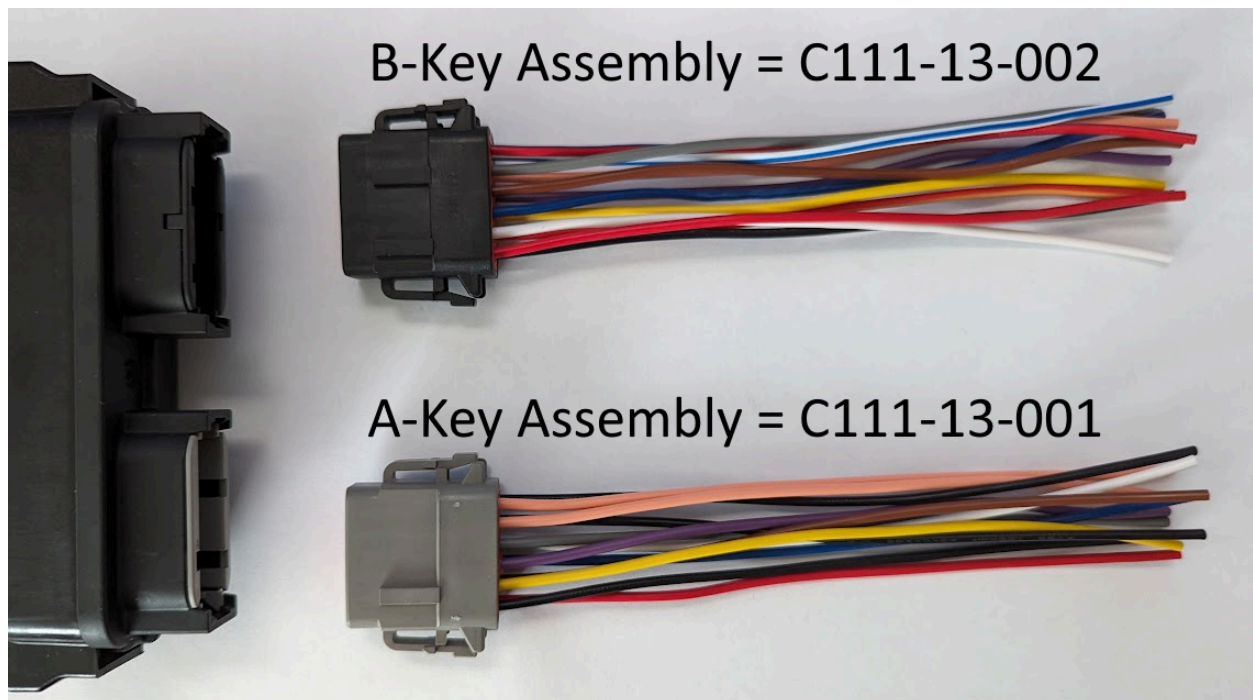
- 1) One Wedgelock required per connector mate
- 2) Select pins based on wire gauge used (Signal vs Power). Total of 24 pins required for both mates.
- 3) Crimper tool recommendation = iCrimp SN-2549

5.4 Pre-Made Cable Assemblies

Available for purchase from Current Labs.

A-Key Assembly (Grey) = C111-13-001

B-Key Assembly (Black) = C111-13-002

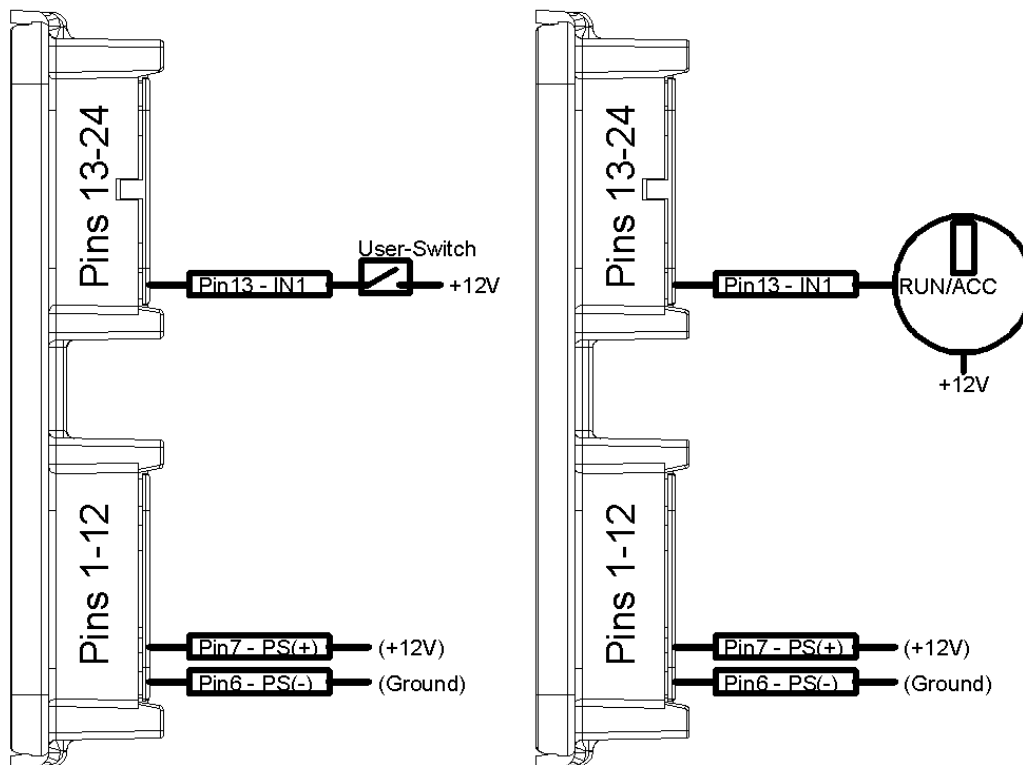


6. Getting Started

6.1 Powering Up The GlowCraft Controller

No one wants to find that they can't start their vehicle because their lights have drained the battery. The GlowCraft LED Controller is designed to limit power draw on your battery system, especially when your system is off. To facilitate this, in addition to applying +12V and ground to the power supply inputs, at least one of the User Input Signals (IN1-IN8) must be pulled high to initially enable the controller. Because all of the User Inputs are electrically identical, any input can be used to enable the controller. As long as at least one input is pulled high the controller will wake up from its sleep mode. The User Inputs have a wide voltage range, so any signal from 5-24V can be used here. You need to determine under what conditions you want your GlowCraft controller to be active and use an input that is also active in those conditions.

This can be accomplished in many ways in the vehicle. Some examples are: Using the accessory or run positions of the key switch or push to start system or using a dedicated "enable" toggle switch.



Because any input will wake up the controller and it will stay active until the set timeout delay even if that input goes inactive, if your brake switch is connected to an input then the controller will wake up and start your brake show even if no other inputs were already active. Same thing for turn signals/flashers.

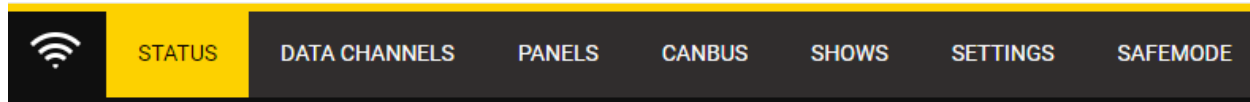
6.2 Connecting Over Wifi - Access Point (AP) Mode

Once the GlowCraft Controller is powered up, have your device (laptop, desktop, tablet, mobile) scan for new wireless networks. A new network with an SSID name resembling “GlowCraft aabbccddeeff” should appear. The second section is the unique network MAC address of your controller. For example: The above SSID has a MAC address of “aa:bb:cc:dd:ee:ff”. You may want to make note of that address as it may be helpful later to uniquely identify your controller.

Once you have discovered the controller’s Wifi network, use your device to connect. **The default password for a new GlowCraft controller is “currentla”.**

Once connected, open a web browser and navigate to the following address [“http://4.3.2.1”](http://4.3.2.1). From here you can fully configure your controller. We recommend you at a minimum change the wireless password to prevent unauthorized access.

Note: The top left corner of the web interface has a connection status icon. The controller is only connected when the icon is white as shown here:



6.3 Connecting Over Wifi - Device Mode

After initially connecting to the GlowCraft Controller in AP mode as described above, you can optionally configure the controller to automatically connect directly to your home WIFI network as a device. In this mode, your controller will get an IP address from your WIFI router and be accessible just like any other device on your network.

To use this mode do the following:

- 1) Connect as normal in AP Mode and write down the AP SSID (MAC Address) of your controller. You may need this number to identify the device on your network later.
- 2) Navigate to the Settings page, and uncheck the “Act as Access Point” box.
- 3) Enter the SSID of your home WIFI network
- 4) Enter the password of your home WIFI network.
- 5) Click the SAVE button.

The GlowCraft Controller will then reboot and attempt to connect to your WIFI network. If successful, then your device will now be on your network and you can navigate to its new IP address in your web browser. If the connection with your home WIFI was not successful then the controller will revert back to AP mode and you should soon see the SSID WIFI network reappear if you scan for networks.

If your GlowCraft controller is out of range of your home wifi for too long it will try to reconnect in device mode for only a short time and will then revert back to AP mode so you can still connect directly while on-the-go. When you get back home it will try to use your home WIFI again after a power cycle.

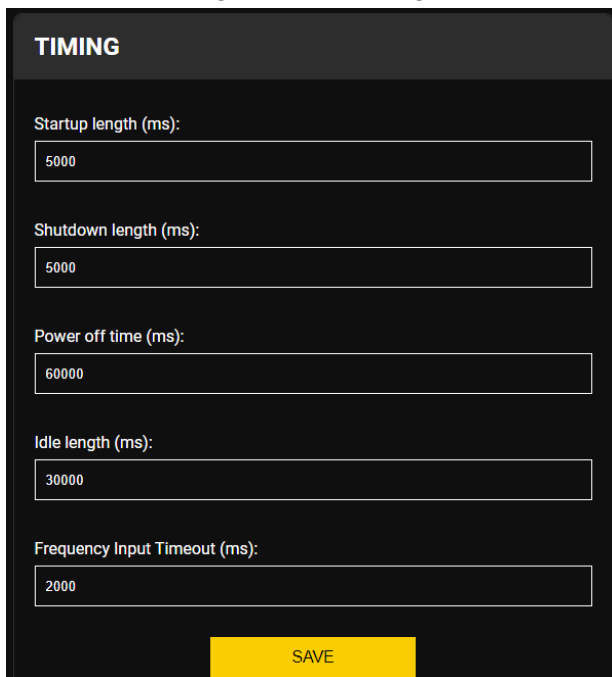
6.3.1 Finding the Controller IP Address in WIFI Device Mode

If your controller successfully connected to your home WIFI network. Here is a list of methods to identify the IP address it was assigned. Unfortunately based on system and network configurations these methods may or may not always work:

- 1) Use the app (Android or iOS): Open the app and scan for devices. If your GlowCraft is within range and powered up it will advertise both it's MAC address and IP address.
- 2) Use the network hostname: In your web browser navigate to the following address "<http://glowcraft>".
- 3) Check your Router's DHCP assignments: Open the interface for your wireless router. There should be a section where it shows you what devices are connected to your network. Match the GlowCraft MAC address you recorded earlier with the list of devices. Use your web browser to navigate to the IP address associated with the MAC.
- 4) Use the "arp -a" command (Both Windows and Mac): From a command prompt, type the following "arp -a". This will return a list of devices on your network. Match the MAC address for your controller that you recorded earlier, and use a browser to navigate to the associated IP address.

6.4 Power-Off Time Delay

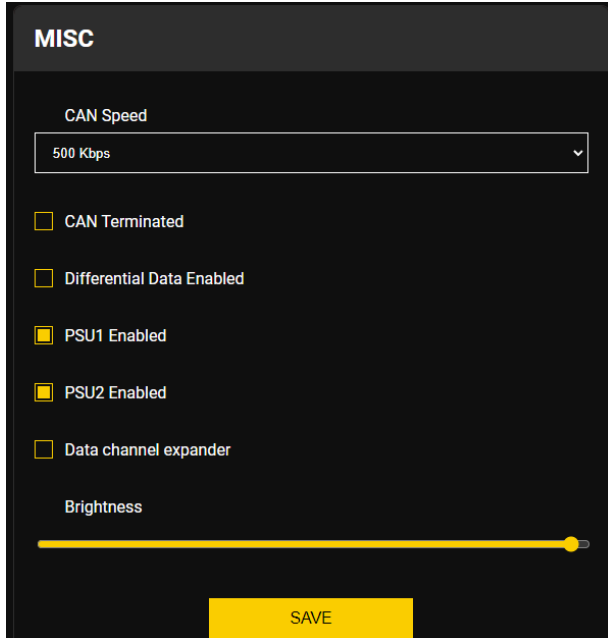
When there are no longer any User Input signals pulled high, the GlowCraft Controller will start its internal timer countdown to enter sleep mode. This time is set through software on the "Settings" page and can be programmed to any value, with the default being 60 seconds. If you want your controller to never go to sleep, you can set this delay to a very large number. Once the controller does enter sleep mode, one of the User Inputs must again be pulled high to wake it back up. The total time from all User Inputs going inactive to the device entering sleep mode is (Shutdown Length) + (Idle Length) + (Power Off Time).



TIMING	
Startup length (ms):	<input type="text" value="5000"/>
Shutdown length (ms):	<input type="text" value="5000"/>
Power off time (ms):	<input type="text" value="60000"/>
Idle length (ms):	<input type="text" value="30000"/>
Frequency Input Timeout (ms):	<input type="text" value="2000"/>
<input type="button" value="SAVE"/>	

6.5 Enabling the PSU1 and PSU2 5V Power Supply Outputs

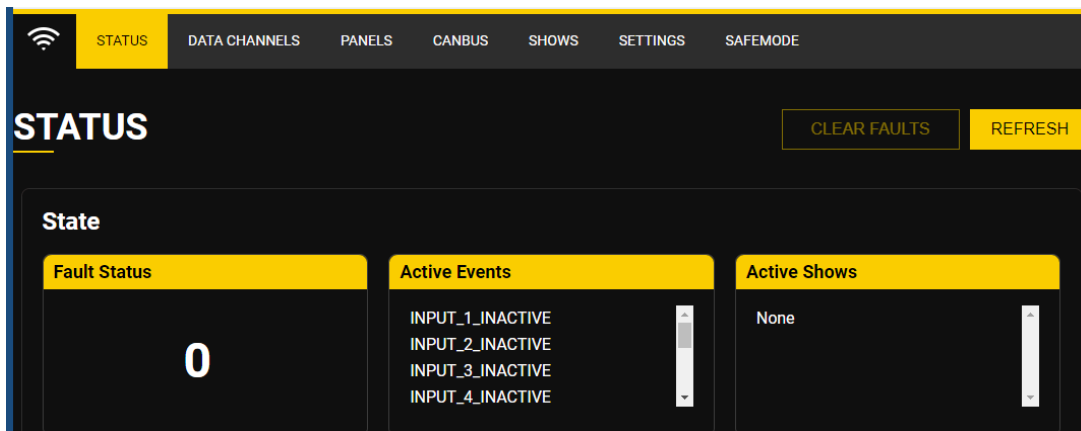
The internal PSU1 and PSU2 5V power supply outputs are disabled by default and must be set to enable-at-power-up through the software interface. Once selected, the power supplies will become active when the controller wakes up from sleep mode.



6.5.1 Over-Current Fault on the PSU1 and PSU2 Outputs

In the condition that more than 4A is drawn from one of the power supply outputs, an over-current fault condition will exist and the controller will automatically protect itself by disabling that power supply output. The “Fault Status” will be listed on the “Status” page of the software interface. Anything other than “0” there signifies a fault condition. There are two ways the user can reset this fault condition:

- 1) Power cycle the controller by removing 12V power supply power, waiting about 10 seconds and reapplying 12V power supply power.
- 2) Use the “Clear Faults” button on the “Status” page.



6.5.2 Over-Current Troubleshooting:

If you are using the internal PSU1/PSU2 power supplies and your LEDs are not turning on, work through these checks to narrow down problems with over-current:

- 1) Check the “Fault Status”. If the status is anything other than 0, there is a fault condition that will disable the power supply outputs. Your LEDs won’t light while there is a fault on the PSx Output they are connected to.
- 2) Click the “Clear Faults” button in the software interface. If the fault status immediately returns to a faulted value, then a persistent fault condition may be present and needs to be addressed.
- 3) Check the power supply output for short circuits, which will show up as over-current faults.
- 4) Confirm the devices connected to the power supply channel will only be drawing 4A maximum. Here is an example based on the WS2813 LED data sheet:

LED Characteristics

	WS2813A
Quiescent Current	0.6mA
RGB Channel Constant Current	18mA

From this, each LED pixel will use 18mA for R, G, and B color, for a total of 54mA at full brightness white color. This means that with a total of 4A, the PSU1/PSU2 outputs can each power about 74 WS2813A LEDs at worst case full brightness white color. Significantly more than that would cause an overcurrent fault and would need to be powered by an external power supply.

6.6 Factory Reset

The following procedure will reset a GlowCraft controller to the factory settings.

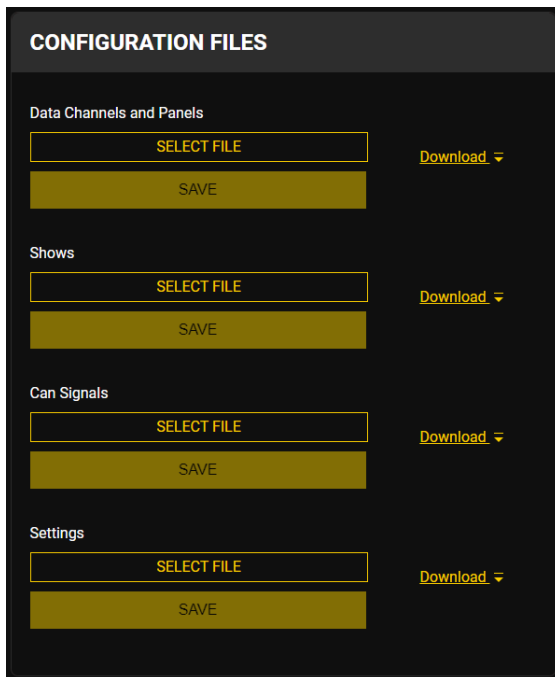
NOTE! This will erase ALL settings including panel, show, and data channel configurations. Make sure you routinely save your configuration to files.

To initiate a factory reset: With the Pin7 12V power supply to the controller disconnected, apply 12V to ALL 8 User Inputs at once (IN1 to IN8). Then apply the 12V power supply to Pin7. Wait for about 10 seconds, then power down the controller and disconnect all the User Inputs. The controller should now be back in the factory reset state and should come up in WIFI AP mode with a network SSID resembling “GlowCraft aabbccddeeff”.

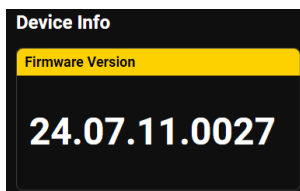
6.7 Firmware Updates (“SAFEMODE”)

We take our software systems seriously here at Current Labs and are committed to both adding new features and fixing issues with our GlowCraft LED controllers. Because of this, we will be providing software updates that can be applied to the controllers. Here is the step by step process for updating a GlowCraft Controller’s firmware:

- 1) Download the latest firmware file from the following link. You will need this file downloaded on your device to complete the update process :
<https://current-labs.com/pages/glowcraft-getting-started>
- 2) Connect to your GlowCraft Controller through the web interface.
- 3) Save a backup of your configurations. While the firmware update process does not normally erase or overwrite settings on the controller, it's a good idea to have a backup copy of your data. Navigate to the "Settings" page and download all the files as a backup.



- 4) Navigate to the "Safemode" page and click the "REBOOT" button to enter firmware update safe mode. This process will restart the GlowCraft controller and it will come back on with a new WIFI network named "SAFEMODE".
- 5) On your device, refresh the WIFI networks until the SSID "SAFEMODE" appears. Connect to this network. **The password in SAFEMODE is "safemode"**.
- 6) On your web browser, navigate to <http://4.3.2.1> . You can then use the "Choose File" dialog to select the firmware .BIN file you downloaded in step 1, and click "UPDATE" to start the firmware update process. The process may take a minute, during which the window will read "Uploading, Please wait..."
Once complete the device will reboot into normal operating mode. If you are running in AP mode, check your WIFI networks list for the SSID you assigned and reconnect. If you are running in WIFI device mode, your controller will automatically reconnect to your network.
- 7) You can confirm your GlowCraft Controller has the correct firmware version by navigating to the "Status" page and checking the "Firmware Version" under "Device Info"



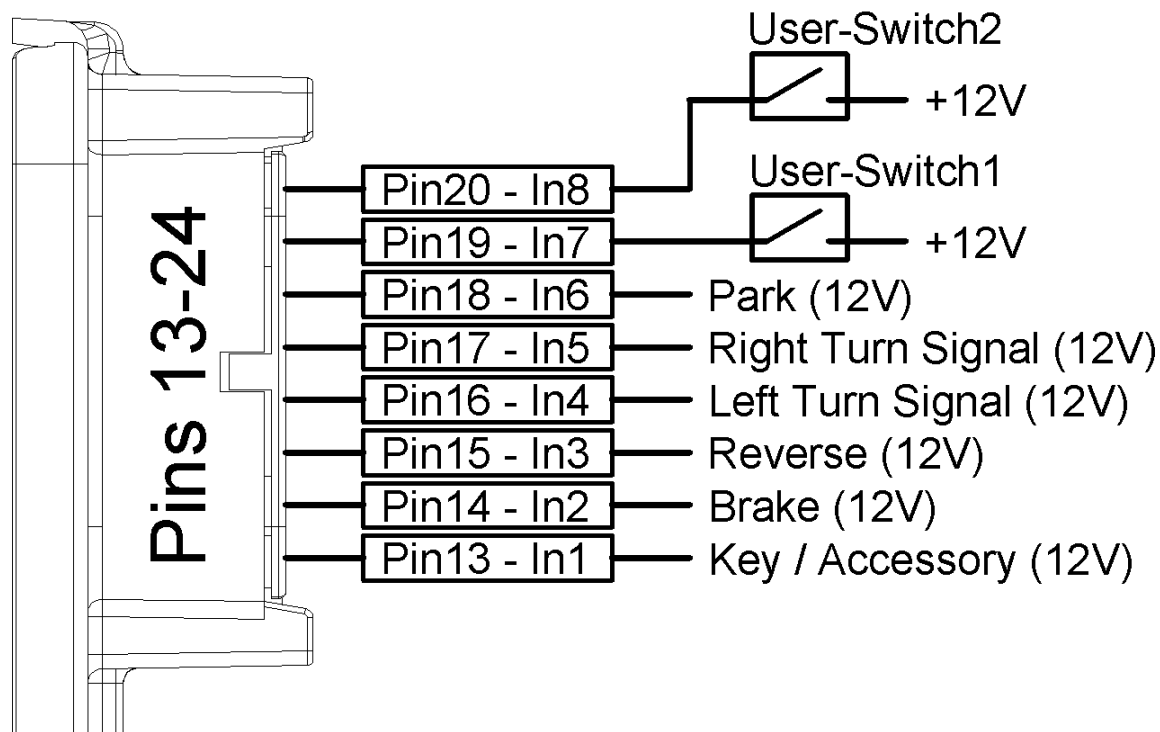
8. System Wiring Examples:

Every system is different, but these basic wiring examples should make a good starting point. Automotive electrical systems, in particular, pose some interesting problems. While the chassis is often used as a system-wide ground, this is non-ideal for applications that have to carry large amounts of high speed data such as this. When possible, run appropriately sized (power, ground, and data) wires as closely together as you can and separate from the chassis. One recommended option is to create a “Star” ground point somewhere close to the GlowCraft LED controller that will be used to wire the grounds for all LED strips.

8.1 Standard Automotive Inputs - Voltage Triggers:

All Inputs are electrically identical and their function can be selected through the software interface. The connections shown here are only given as an example. The inputs are internally pulled to ground with a high value resistor and must have a voltage applied to them to activate (see Hardware Circuit Interfacing section for more detail). Because these are signal inputs and not power inputs, less than 1mA at 12V will flow into the controller so smaller wire gauges can be used and fuses are not required.

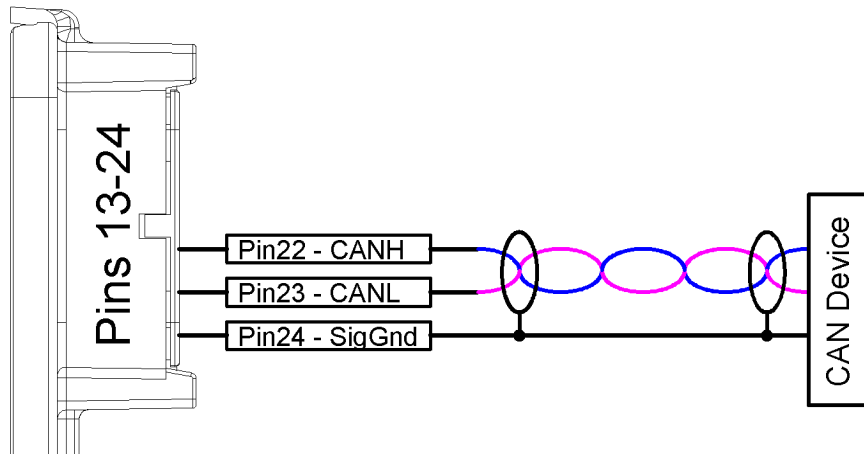
Because all inputs are 5-24V compliant, many sources throughout the vehicle can be connected such as door switches, window switches, etc.



Note: If CANbus triggers are used for some of the vehicle functions such as turn signals and reverse, then those inputs shown here can be used for additional voltage triggers such as more user-switches or buttons.

8.1.1 CANBus Connections:

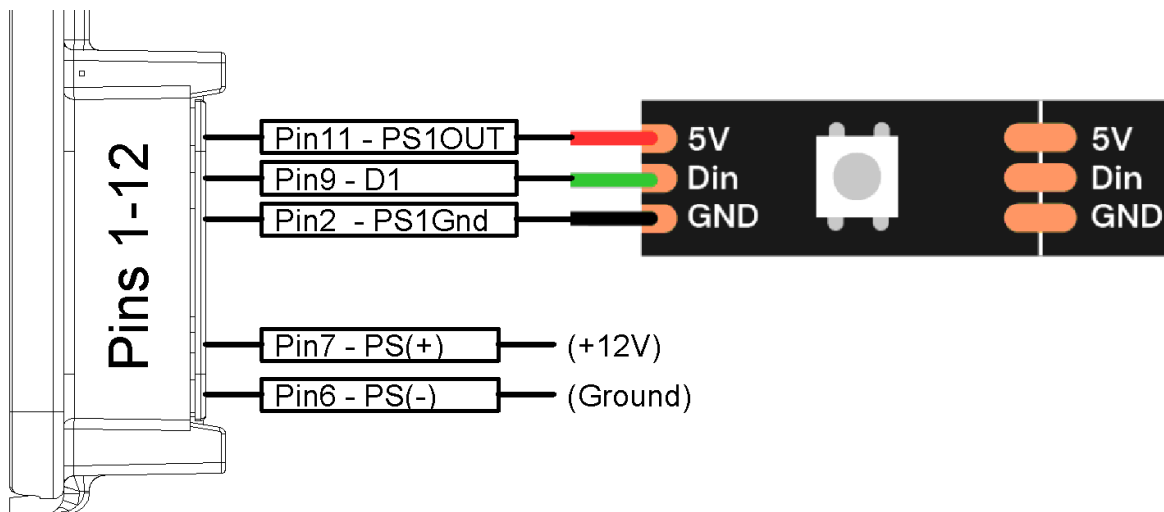
CANBus connections carry high speed data and require special cabling considerations. Use only high quality shielded twisted pair cables rated for CANBus data.



Note: While CANBus is using a two-wire differential type signaling, ground referencing the shield at both ends can often increase signal quality.

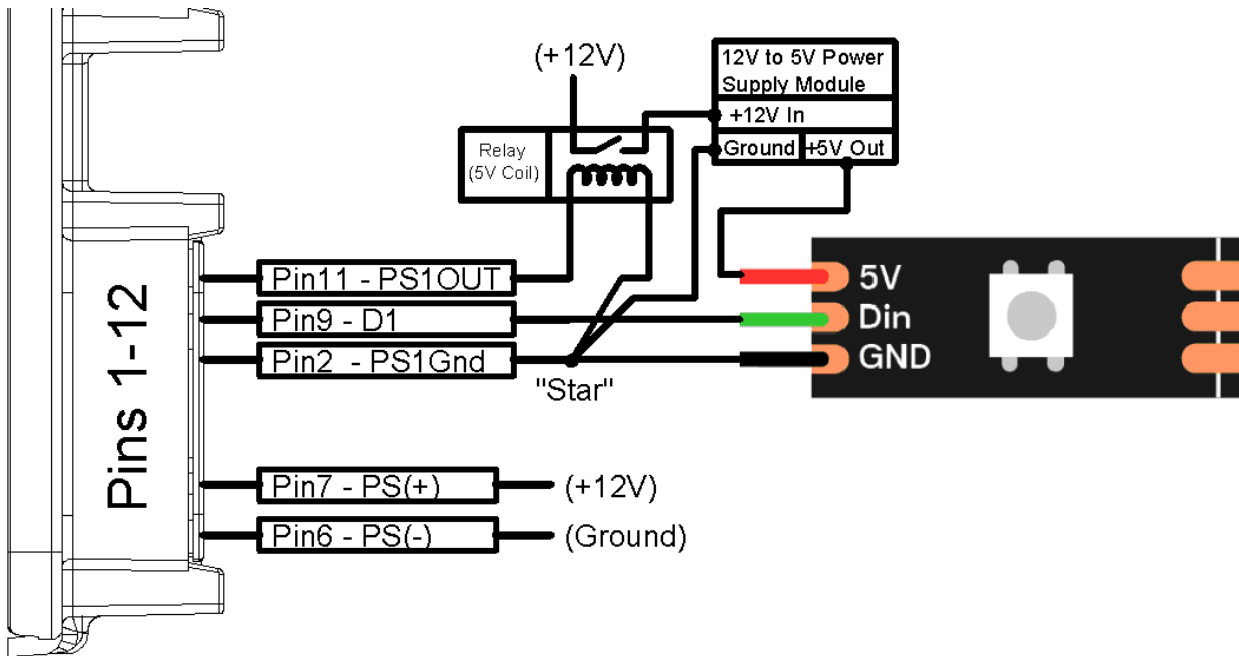
8.2 LED Strip 5V: Powered Directly by Controller:

The GlowCraft Controller's internal PSU1 and PSU2 power supply outputs can drive up to 4A each. Depending on the type, this configuration can power about 130 WS2812B LEDs per channel (4A total / 0.03A per LED at full brightness) without the need for any external power supply modules. If more than 4A is drawn (either intentionally or accidentally like a short), the resulting fault condition can be reset through the software interface without having to replace any fuses. PSU1 and Data1 are shown here for example. Either power supply, and any Data Channel can be used together. As long as the total current draw is not exceeded, the PSU1 and PSU2 outputs can power multiple LED strips each, and also can be run in parallel for almost 8A together to power one thing.



8.3 LED Strip 5V: Switched External 5V Supply:

In this configuration, an external 12V-to-5V power supply module is used to power the LED strip. Because the power supply module and LEDs consume power even when they are not on⁽²⁾, a relay with 5V or 6V coil⁽³⁾ is used to switch power to the module. The GlowCraft controller is used to switch the relay, which ensures the LEDs only consume power when the controller is active. 12V fuse is not shown, but should be added to the relay feed line.

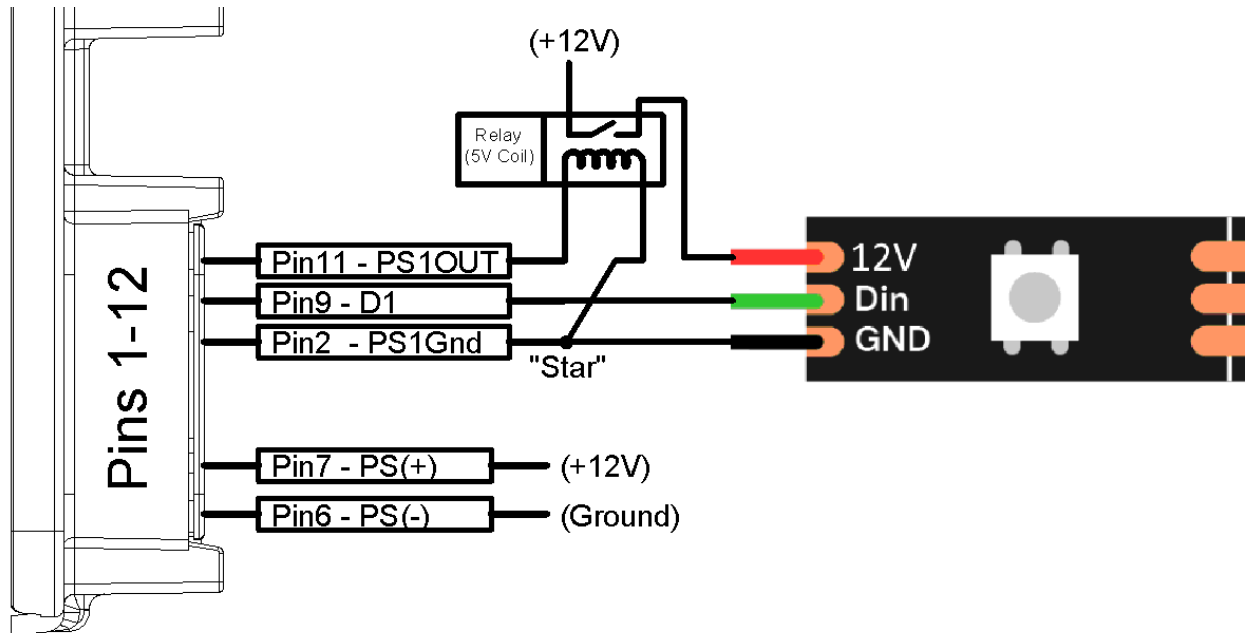


Note:

- 1) Ground connections for controller, relay, and power supply module are made at a single point near the LED controller. Ground wire and data wire to the LED strips are run together.
- 2) The WS2813 data sheets list a Quiescent Current of 0.6mA per LED. That means even when they are doing nothing, 1000 of these LEDs will constantly pull 0.6A from your battery. With a standard 48Ah 12V battery, that will drain your battery from full to dead in 80 hours or 3.3 days! Because of this, it is highly recommended to include a power disconnect relay as shown above that is switched by the GlowCraft controller.
- 3) Many automotive relays have coils that are designed to be driven by 12Vdc. Switching these 12Vdc coil relays with the GlowCraft 5Vdc output may not result in full contact. Because of this, we recommend only relays with coils designed for 5Vdc or 6Vdc operation are used in this way.

8.4 LED Strip 12V: Switched External 12V Supply:

In this configuration an LED strip which operates directly from 12V is being used. Due to the LEDs continuing to draw power even when they are off, an external 12V relay is again used so the GlowCraft controller can switch the power to the strip to prevent battery drain when the system is not active.



Note: Caution should be taken when running LED strips directly from the vehicle 12V supply. The 12V system in a vehicle is a notoriously hostile environment for electronics. During normal operation the voltage can vary between about 11V and 15V, but when an alternator is present certain “extreme events” can cause the voltage to go from 6V to over 60V for short periods of time. Even voltages as high as 120V could be seen during an alternator “load dump”. This isn’t including some accidental situations like hooking the voltage up backwards (jumper cable mistake!). An LED strip hooked directly to the 12V system will have essentially no protection from these events.

The internal power supply in the GlowCraft controller and external 12V to 5V power supply modules act as buffers between the “dirty” 12V system and the regulated 5V output to keep your LEDs happy and safe. There is also the issue of what to do with all the extra voltage considering each individual LED only needs about 3.7V to light up. Anything more than that just makes the LEDs run hotter. Because of this, 5V addressable LEDs will be more efficient than 12V addressable LEDs. While both will work with the GlowCraft controller, and it’s hard to deny that 12V strips are more convenient, we still tend to recommend 5V strips for maximum reliability and efficiency.

8.5 Long 5V Strips: Re-Powered / Power Injection:

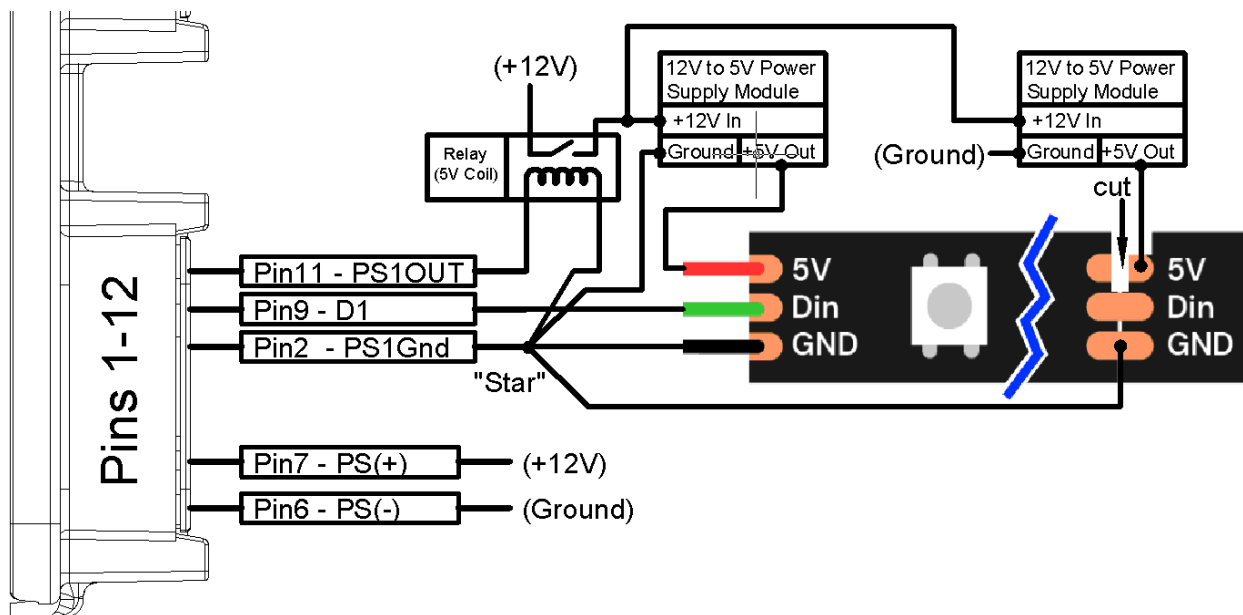
In this configuration a very long strip of 5V LEDs is being used. Because the flexible strip backer that the LEDs are connected to is also acting like the power and ground wires for every LED on the strip and because the thickness of those wires is not very large, longer runs of LEDs will experience a drop in voltage as you go down the strip. It may start as 5V but it will get lower and lower the further down the strip you go.

Eventually a few things may happen.

- 1) The voltage will drop below about 3.5V (or more) and you will start to see LEDs getting corrupted and stop working.
- 2) The strip material, cables, and connectors could get excessively hot and be damaged.
- 3) The 5V power supply module could be overloaded from powering too many LEDs.

To deal with this problem it is recommended that for very long strings of LEDs, multiple power supplies be distributed evenly throughout the length of the strip. This way each new power supply ensures the voltage stays close to 5V and that no one power supply needs to work harder than it is specified.

Specific numbers for when to add another power supply module will depend on the type of LEDs used and other aspects of the system like power supply capacity and connector selections and their specifications. To implement this setup, cut the 5V jumper link between LEDs on the strip and connect the next power supply after the cut as shown. Running additional ground wires from the "Star" point to the re-power locations is recommended. If using an external relay so the GlowCraft controller can reduce sleep mode power consumption, be aware not to exceed the relay's rating if powering multiple modules from one relay.



Note: Care must be taken when adding additional power supply modules without cutting the 5V jumper between LEDs on the strip. Not every power supply module is designed to be added in parallel with another voltage.

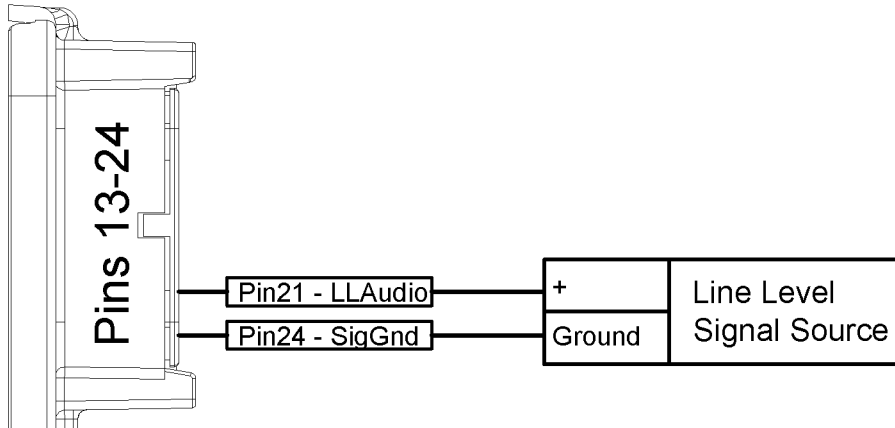
8.6 Differential Data Link: Data Reliability Over Long Cables

It may be required to run LED strip data cables over very long distances. In this condition, with longer cable runs, the data may become too weak or corrupted to reliably communicate with the LED strips. One solution to this problem is to use Differential Data Signaling with the GlowCraft LED controller. This solution will require additional data drivers and receivers.

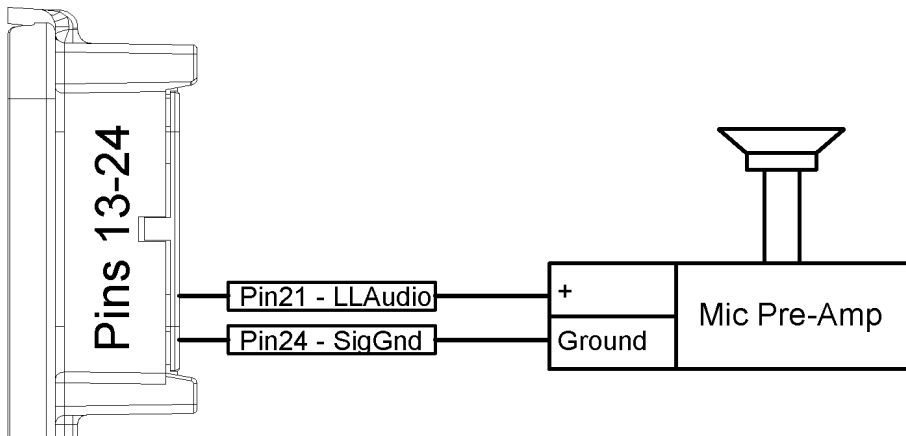
If you think you are having data reliability issues due to longer cables, contact Current Labs for more information about implementing this differential data mode.

8.7 Line Level Audio Input:

The GlowCraft LED controller includes an input for Line-Level Audio signals. You can connect this interface directly to compatible signal sources such as car stereo systems and other music players. The voltage range is about 1.2V peak-peak. Once connected, LED effects can be added to animations that modulate the LEDs based on the music.



A microphone can also be used, but this configuration requires the addition of an external microphone preamp to interface with the GlowCraft Controller.



9. Electrical Specifications:

9.1 Absolute Maximum:

	Min	Max	Units
Power Supply Input Voltage (PS+ to PSGnd)	-28 ⁽¹⁾	28	V
Power Supply Input Current	0	12 ⁽²⁾	A
Internal Operating Temperature ⁽³⁾	-20	85 ⁽³⁾	C
LED Power Supply Output Current (PSU1OUT, PSU2OUT)		4.8 ⁽⁴⁾	A

Notes:

- 1) Contains internal reverse polarity protection on Power Supply input.
- 2) Power Supply input is internally fused at 12A. This fuse is not user serviceable.
- 3) 105C rated option available. Contact factory.
- 4) Short circuit protected at 4.8A.

9.2 Recommended Operating Parameters:

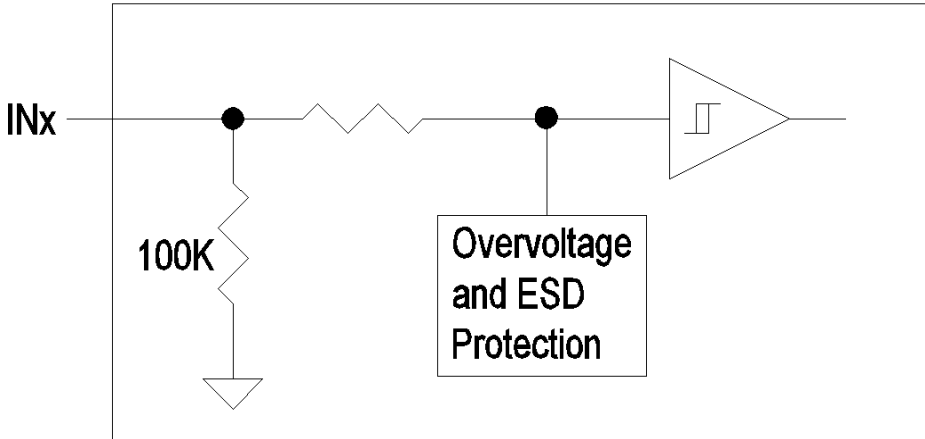
	Min	Typ	Max	Units
Power Supply Input Voltage (PS+ to PSGnd)	5	12	24 ⁽¹⁾	V
Signal Input Voltage (IN1 ... IN8)	0		PS+	V
LED Power Supply Output Current (PSU1OUT, PSU2OUT)			4 ⁽¹⁾	A

Notes:

- 1) Total 5V PSU current output may be limited at elevated power supply input voltages.

9.3 Hardware Circuit Interfacing:

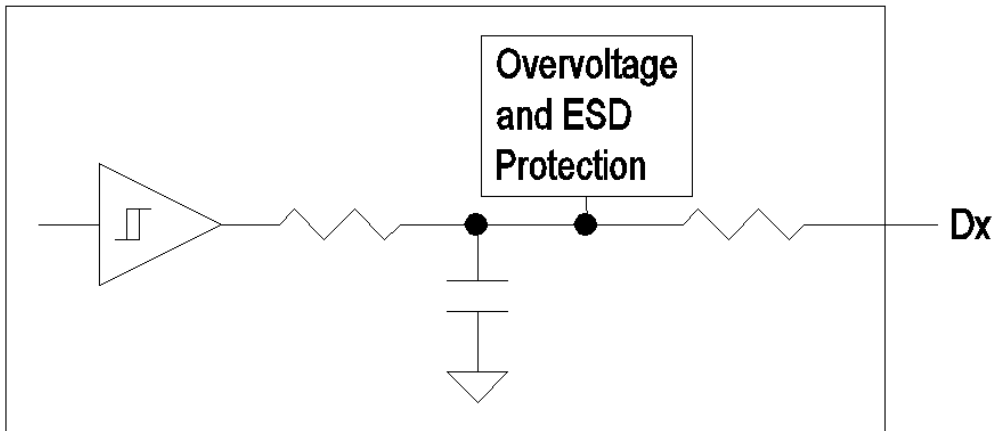
9.3.1 Voltage Input Triggers (IN1 to IN8):



Notes:

- 1) Contact factory for input pull-up options

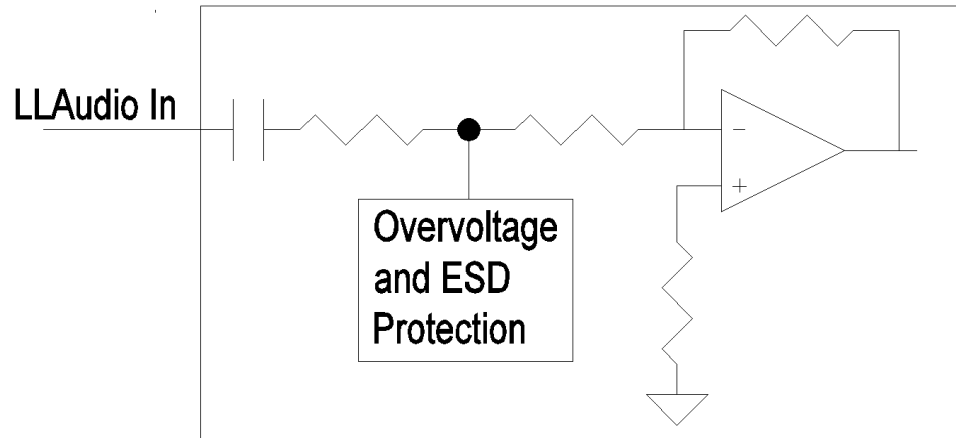
9.3.2 Data Outputs:



Notes:

- 1) Outputs are short circuit protected
- 2) Default One-Wire single-ended configuration shown here.

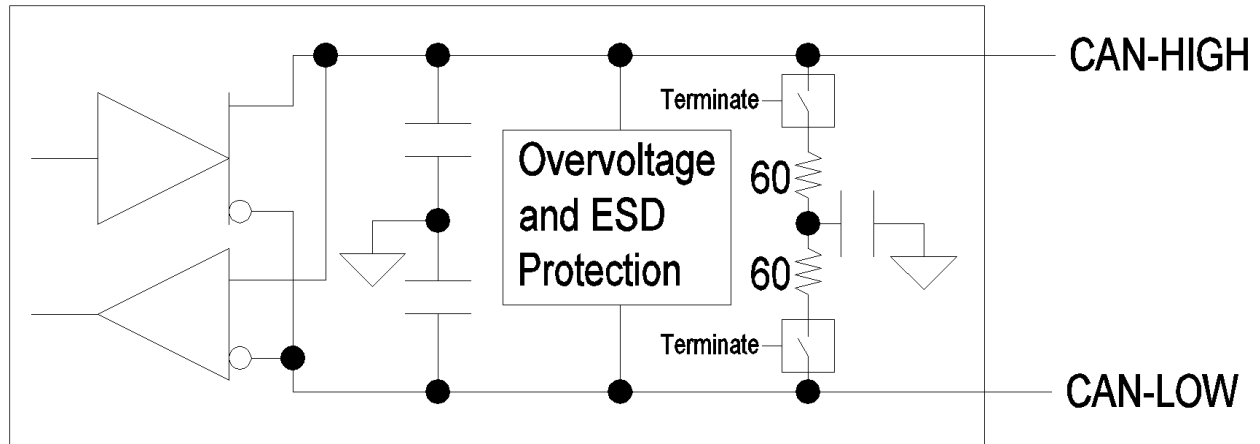
9.3.4 Line Level Audio Interface:



Notes:

- 1) +/-1.2Vpp Signal Amplitude
- 2) AC Capacitor Coupled

9.3.5 CANBus

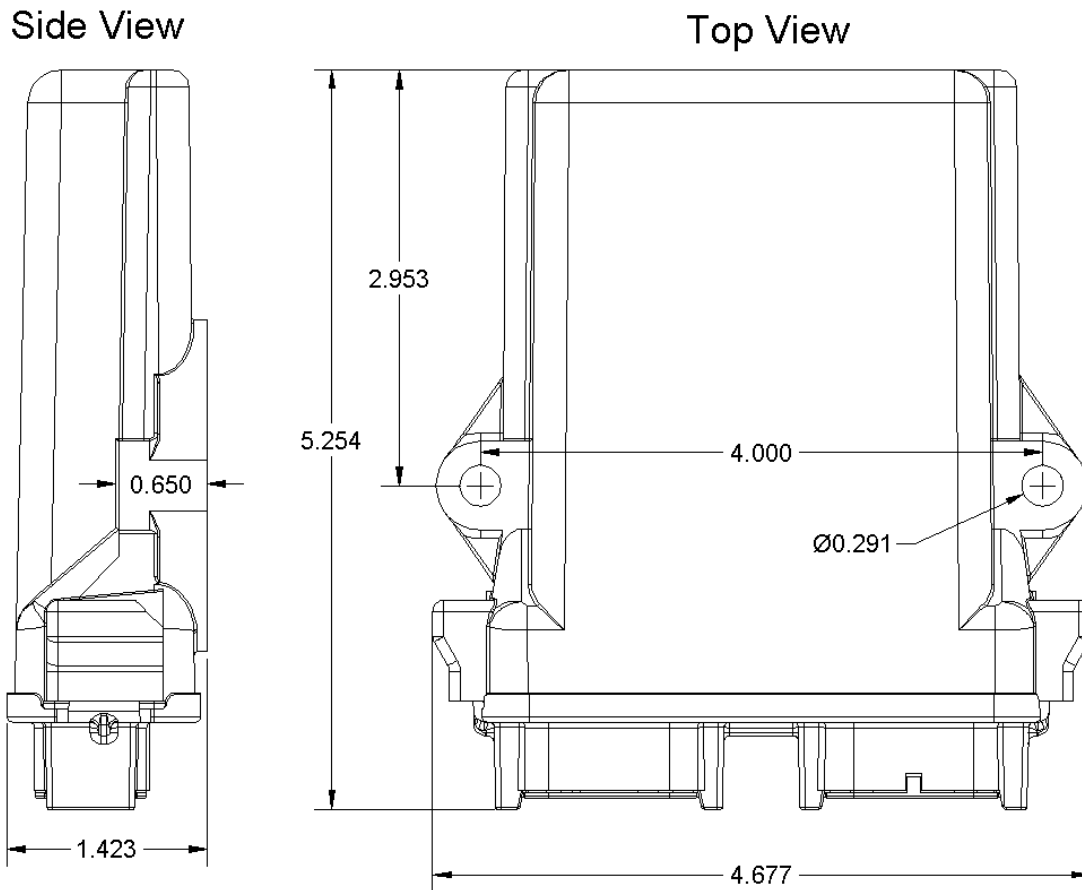


Notes:

- 1) CANBus termination is selected through software. To enable CAN termination, navigate to the "Settings" page and in the "Misc" section click "CAN Terminated". This will switch in the standard 120 Ohm (60 + 60) split termination resistors as shown above.

10. Mechanical:

All dimensions in Inches.



11. Document Revisions:

Date	Rev	Revision Notes
June 26, 2024	R1	Initial Revision
October 17,2024	RA	Release