

## Application Note: SSR21xx LED Module Family (Digital/PWM)

### Application note for SSR21xx LED Modules Digital/PWM)

(Please refer to the product datasheet on [www.solidstateracing.com](http://www.solidstateracing.com) for full specification)



### **Wiring information:**

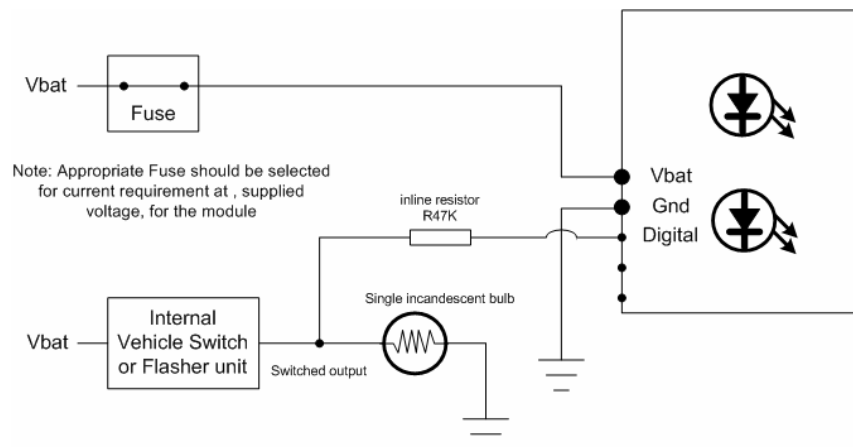
The wiring diagrams in this application note typical show wiring schema for SolidStateRacing's 'Digital/PWM' modules. The 'Digital/PWM SSR21xx LED Module family are suited to:

- Digital switched control direct from a digital module
- 'Piggy-back' installation using an existing switched driver or driven component or light without applying an increased current load on the existing supply.
- A digital PWM (pulse width modulation) either from either a digital module or in a 'piggy-back' type installation, to give simultaneous fade effect.

The following notes and diagrams are to be used as a guide only. All installations should be checked by a qualified electrical technician before use.

The internal protection circuitry of the SSR21xx LED module family makes the SSR21xx LED Module family suitable for connection to a fluctuating (9v to 28v) DC supply for the Battery Supply and Ground connections.

The digital control pin has internal protection suitable for direct connection to most digital outputs (0 – 15v max), or in the case of a piggy back type installation in an automotive or higher voltage environment, an inline resistor can be used, as shown below:

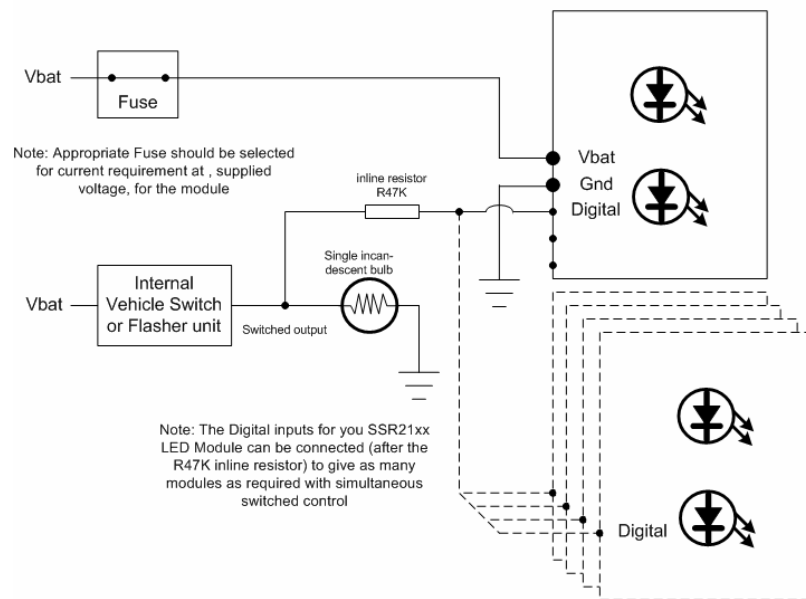


The modules are therefore very suitable for applications in an automotive environment where large supply fluctuations are present during cranking and due to alternator switching as well as contact spikes in

## Application Note: SSR21xx LED Module Family (Digital/PWM)

switches are present, and additionally allow digital control of the SSR21xx LED module(s) via the digital pin for increased application flexibility.

In multiple module applications, digital pins may be connected together to give multiple simultaneously flashing lights. This is particularly suitable for auxiliary lighting for either warning or turn signal applications where the recipient vehicle needs to retain it's original lights. The benefit of using the digital circuit is that many modules can be connected to one switched source (e.g. auxiliary convenience, warning, stop or turn signal lighting for large vehicles, trucks, 18 wheelers and semis).

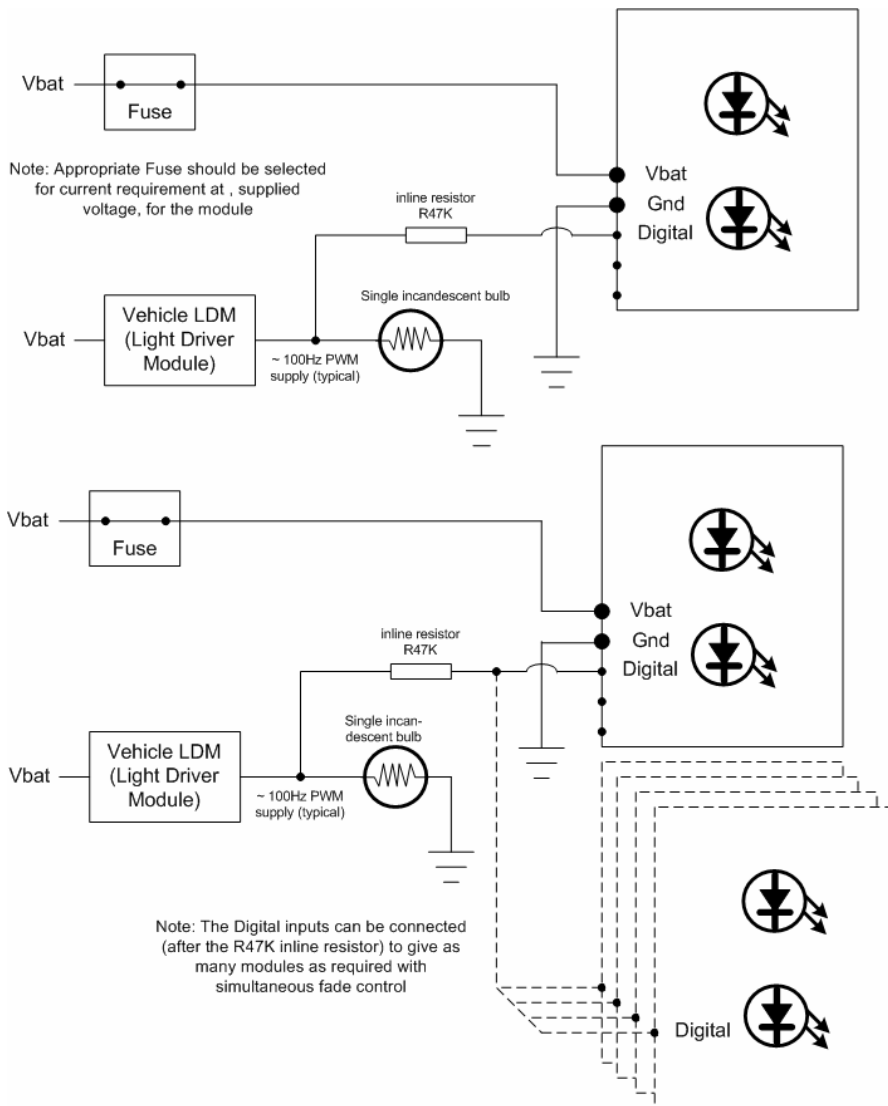


A SSR21xx LED family module can be used as additional lighting in conjunction with or without an existing bulb, where the power supply gives a 'fade' effect on the original light output using a PWM (pulse width modulated) lighting circuit supply (e.g. fading automotive interior lights, dashboards lights, puddle lights or approach lights in mirrors).



## Application Note: SSR21xx LED Module Family (Digital/PWM)

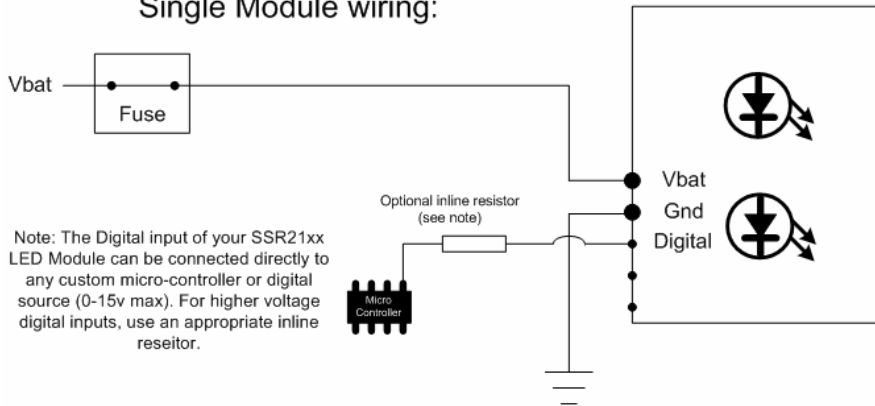
The module can be added by taking a feed from the supply side of the incandescent bulb from the circuit and connecting the SSR21xx LED family module in place. An example application is outlined below, shown for either single or multiple SSR21xx module installations.



For custom light control applications or as warning light for many electronic system applications, the circuit can best be described below. The custom micro-controller application or other digital signal source can be connected directly, as long as the signal voltage specification falls within digital input of the SSR21xx specified.

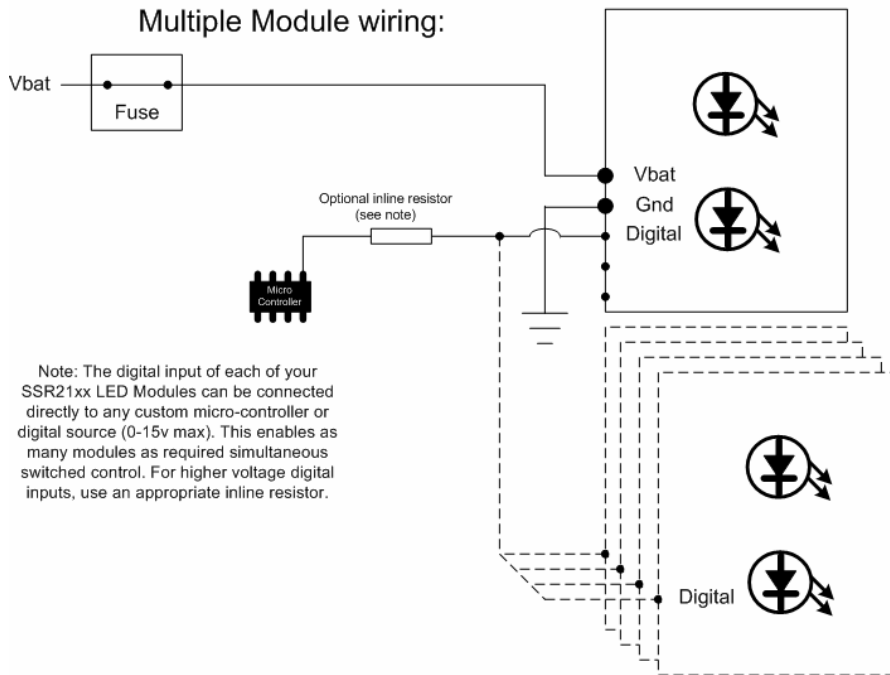
## Application Note: SSR21xx LED Module Family (Digital/PWM)

### Single Module wiring:



Additional modules can again be connected by using a common signal input for all modules. The digital output on any module or system specified to drive a low power signal LED either for a switched function or by PWM dimming, with normally be able to drive the digital input of your SSR21xx Module. e.g. the LED drive output in a desktop computer system for hard-drive activity could be used

### Multiple Module wiring:



### General Information

The modules are LED lighting modules which integrate sophisticated electronics to maximize light output, minimize current draw and provide

robust circuit protection. Any change in voltage (e.g. cranking) is instantly rectified - faster than the naked eye can see!



## Application Note: SSR21xx LED Module Family (Digital/PWM)

---

The ultra high light output (typically 2-3 times higher than an equivalent neon light!) makes for stunning accenting on any reflective or highly polished surface and a 'pure' illumination.

The pure white or colored nature of each light make the modules perfect for when a 'surreal' color element is required. 8 color options are available for indication purposes, to differentiate between modules. Colors can be used to identify individual points from a great distance! E.g. as used on '24-hour' racers to determine the vehicle as entering pit lane at night. The sophisticated electronics, patented technology and robust construction make the SolidStateRacing a breakthrough in both accent-light quality and ease of installation and use.

Many applications, until now the preserve of film and light technicians, are now achievable for daily use!

The vivid colors are aptly described by their given names: Nightfire Blue; Electric Blue; Alien Combustion; Acid white; Toxic Green; Brilliant Amber; Afterburn Red; Crimson Fire.

Each hue its own purpose and living character!

Whether for an illumination, accent, industrial, styling or even architectural application, nothing can match the combination of features of the SolidStateRacing 'Ultra high power LED Module'.

### **Disclaimer**

The data contained herein are furnished for information only and are believed to be reliable. We cannot assume responsibility for the results obtained by others over whose methods we have no control. It is the user's responsibility to determine suitability for the user's purpose of any products supplied and to adopt such precautions as may be advisable for the protection of both property and persons against any or all hazards that may be involved in the handling or use thereof.

In light of the foregoing, **SolidStateRacing specifically disclaims all warranties expressed or implied, including warranties of merchantability or fitness for a particular purpose, arising from sale or use of SolidStateRacing's products. SolidStateRacing specifically disclaims any liability for consequential or incidental damages of any kind, including lost profits.** The discussion herein of various products or applications is not to be interpreted as representation that they are free from domination of patents owned by others or as a license under any SolidStateRacing patents that may cover such products. We recommend that each prospective user test his proposed application before repetitive use, using this data as a guide. This product or it's application may be covered by one or more United States or Foreign patents or patent applications.

The information in this datasheet or information otherwise supplied by SolidStateRacing is subject to change at any time and without notice.

SolidStateRacing is a Trademark of Solid State Racing LLC.