coolstrate™

Up to Seven Times the Light Output in the Same Form Factor

Enables a Dramatic Increase in Power and Lumens in Directed Light Down-Light and Track Lighting Fixtures

- LED Cooler Capable of Cooling up to 150 Watts
- No Audible Noise
- Operating Life of 50,000 Plus Hours
- No Need for a Separate Power Supply
- Ideal for CMH and Halogen Replacement
- Broad Range of Standard Products

SPECIFICATION SUMMARY

Operating Voltage	5-44 VDC (can be the same supply powering the LED array). Contact Cooliance for optional voltage capability up to 150V.
Operating Power	Typically less than 1.5% of total lighting system power
LED Cooling Capability (Figures 1 and 2)	Up to 150 Watts
Acoustic Noise (from one meter)	Less than 20 dbA for Q1, 16 dbA for Q2
Overtemp Protection	Nominal 80ºC but selectable from 50-125ºC (optional shutdown or power reduction--i.e. output dimming)

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TEMPERATURE PERFORMANCE CURVES

Following are temperature performance curves for the Coolstrate™ 5000 and 8000 series products. By first selecting the desired LED substrate temperature for the application one can then determine how much power the Coolstrate™ product can dissipate.

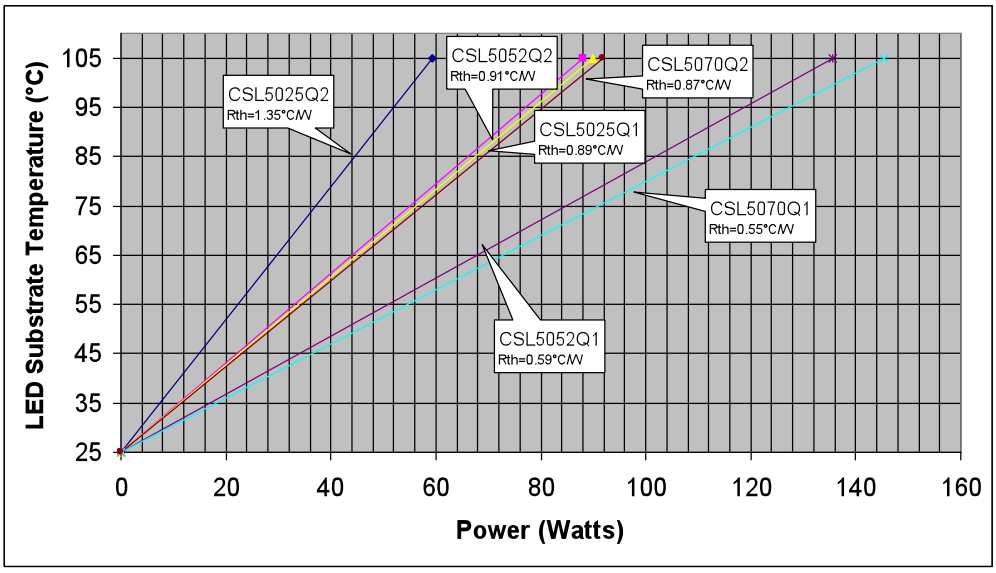


Figure 1. 50mm diameter Coolstrate™ Series Selector Chart

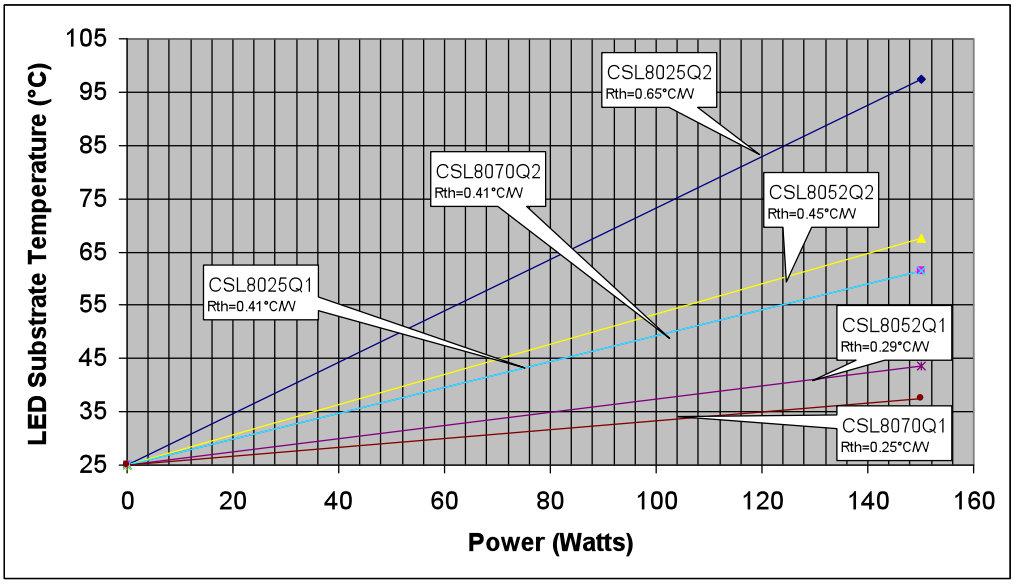
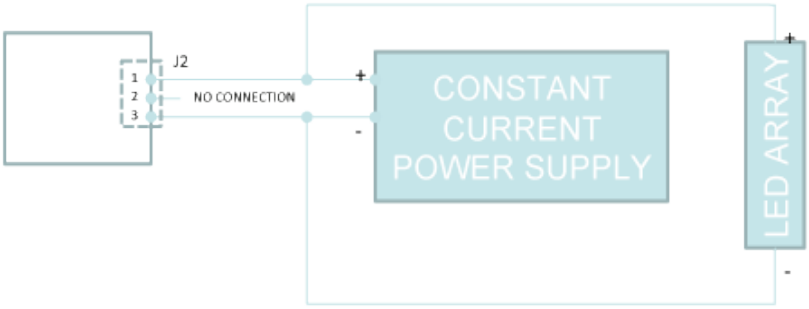


Figure 2. 80mm diameter Coolstrate™ Series Selector Chart

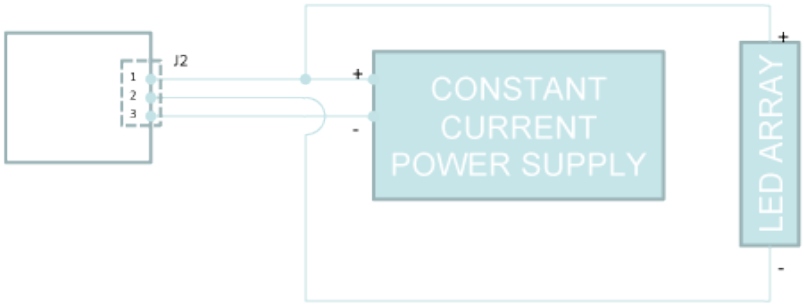
CONNECTION DIAGRAMS



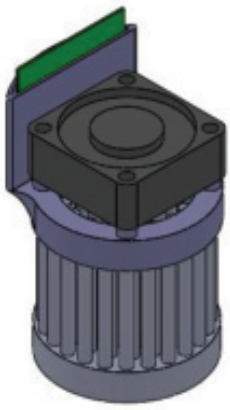
STANDARD CONNECTION

OPTIONAL OVERTEMP CONNECTION*

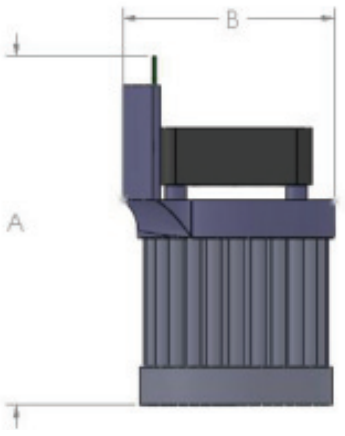
- *Cuts power if LED case temperature reaches a nominal 85°C
- NOTE: Contact Cooliance if there is a need to customize the LED temperature control e.g. dimming in the event of LED over temp
- J2 – 3-Pin Molex 22-05-032 mates with Molex 5102-N



MECHANICAL DIMENSIONS



Part No.	A	B
CSL5025	67mm	56mm
CSL5052	92mm	56mm
CSL5070	111mm	56mm
CSL8025	67mm	82mm
CSL8052	92mm	82mm
CSL8070	111mm	82mm



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OPERATING MODES AND DESCRIPTIONS

STANDARD OPERATION

In this mode, plus and minus output terminals of the power supply are connected to the plus and minus terminals of the LED array and at the same time to the ***Coolstrate*** module circuit J2 connector. Turning on the power supply will activate LEDs to the intended power and lumen level and activate the cooling module. Whether operating power is supplied to the ***Coolstrate*** module circuit via connections made at the power supply or at the LED array is immaterial and simply a choice of convenience by the user, as long as both LED array and ***Coolstrate*** module are connected to the power supply.

OPTIONAL-- OVERTEMP SHUTDOWN

In this mode, the addition of an optional internal ***Coolstrate*** sensing circuit monitors the temperature of the heat sink and if it exceeds a certain level (85°C is the nominal factory setting) an internal power circuit switches off (in a latched-off condition), disconnecting the LED array from power. If the fault is eliminated, the system can be reset by momentarily powering off the power supply and turning it back on.

OVERTEMP POWER REDUCTION (i.e. DIMMING)

In applications where it is desirable to significantly reduce power to the LED array in the event of a thermal fault rather than powering off completely, Cooliance can customize the ***Coolstrate*** sensing circuit or work customers to suggest the most appropriate dimming option. Please contact customer service for further information and customized dimming support.

Coolstrate MODULE

The ***Coolstrate*** module consists of a controller circuit, a special low noise, high efficiency fan and an ultra low thermal resistance heat sink. The controller circuit comes with either a standard circuit or an optional circuit.
The standard circuit converts any input voltage from 7 to 44 volts to a fixed lower voltage as required by the fan. The input voltage is derived from the same voltage used to power the LED array. Upon special request, this voltage can be extended up to 150V. A second part of the circuitry senses the heat sink temperature and provides a signal which can be used, if the cooling is any way compromised, to disconnect power from the LED array or drop it to a much lower, safer power level so the LED array does not burn out.

An optional companion circuit protects against system faults or operating conditions which might cause overheating of the LED array. If selected, this circuit will cut power to the LED's when the temperature of the heat sink reaches 85°C.

Customization of this temperature cutoff circuit is possible. Please contact Cooliance for your customized temperature protection requirements.

LED POWER SUPPLY

In high power LED lighting it is necessary to drive the LED array with a constant current power supply. Such a supply is necessary to set the exact operating current for the LEDs in order to achieve the desired lighting level without exceeding the expected LED junction temperatures. It is very important to choose an LED power supply for both its output voltage rating as well its constant-current rating and to match them to the LED's being used.

LED ARRAY

In any LED systems above 5 watts, there is a need for multiple LED chips since at this time, there is no single chip white LED, which is available from any of the principal LED makers, capable of producing over about 3 watts. In such systems, the multiple LEDs may be connected in series or parallel or a combination of both. However, it is usually desired that a series string be used to guarantee that all LEDs have identical current and corresponding near-identical brightness. Experienced designers usually know how to intelligently employ parallel-connected or series-parallel arrangements but these latter approaches tend to be infrequently used because of performance tradeoffs. However, several firms now offer a single mechanically attachable LED package in which there are a large number of very small, closely matched LED chips arranged in a series/parallel configuration. These packages, although available in a limited range of specifications and requiring rather large focusing optics, can often simplify design where there is little or no need to have a narrow beam angle.

COOLIANCE SOLUTIONS AND SUPPORT

Cooliance can assist with selecting of the power supply as well as the design, integration and selection of LED's into the Luminaire solution. Please contact Cooliance for questions or support.

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