

APP918

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Application Note – PP860 Heat Output

The PP860 has a linear circuit to produce the constant current output. This means that it generates heat which needs to be dissipated.

Heat Output Per Channel

For a continuous output current the heat output is given by:

$$\langle \text{heat output} \rangle = \langle \text{output current} \rangle * (\langle \text{supply voltage} \rangle - \langle \text{voltage across lighting} \rangle)$$

where:

output current	Set by the user
Supply voltage	Voltage across VS+ and VS-
Voltage across lighting	Voltage across CH0+ and CH0- (for channel 0)

This is usually easy to calculate as the voltage across the lighting is usually the voltage rating of the light given in its specification or can be measured using a voltmeter.

For a pulsed output the heat output is given by:

$$\langle \text{heat output} \rangle = \langle \text{output current} \rangle * (\langle \text{supply voltage} \rangle - \langle \text{voltage across lighting when pulsing} \rangle) * \langle \text{duty cycle} \rangle$$
$$\langle \text{duty cycle} \rangle = \langle \text{pulse width in seconds} \rangle * \langle \text{trigger frequency in Hertz} \rangle$$

When overdriving, the voltage across the lighting is more difficult to measure, unless you have an oscilloscope. In most cases it is reasonable to use the voltage rating of the light.

Total Heat Output

The heat output for the PP860 is given by adding the heat output for all channels, as calculated above.

There are several ways to reduce the heat output from the PP860:

- Use pulse mode. If the output is only on when you need it then you can dramatically reduce the heat output. Feed the camera trigger into the PP860 and pulse the lights.
- Turn the light off when not needed using RS232 commands.
- Reduce the output current if possible.
- Reduce the supply voltage if possible. Most PSUs have some adjustment in their output voltage.
- Connect lights in series instead of parallel. If you have an array of lights or LEDs in parallel then changing the arrangement to serial will increase the voltage across them but reduce the overall current.

If the case temperature exceeds 60°C then heatsinking is required. The PP860 can be bolted to a solid piece of metal to dissipate the heat. Fan cooling can also be used.

Feedback

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