XICATO

Application Note – XSM Modules – Use Without a Heatsink

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Background

Xicato has designed a number of reference heatsinks that customers can integrate into their luminaire design. In many cases, the space behind the module in application is constrained, and there may not be enough room to fit a heatsink. A good example of this is under cabinet lighting.

In some of these situations, specifically for applications in which the XSM is running at a power equivalent to a thermal class A, no additional thermal management beyond the module is necessary.

Because of the nature of running a module with no heatsink, special care should be taken when implementing the module into a design. This document serves as a guide for when and how to properly use any XSM module, which is rated at a thermal class A, without a heatsink.

Module Details

The XSM is 45mm diameter by 17mm tall. The XSM has a maximum Tc temperature of 90ºC. In order to operate without a heatsink, a XSM *must* be run at a power that is equivalent to a thermal class A. The following is a list of modules that can be used without a heat sink in a 40ºC ambient:

Module	Drive Current	Lumen Output
XSM80-400	350	220
XSM80-400	500	300
XSM80-700	350	280
XSM80-700	500	380
XSM80-1000	350	380

Module Installation

The XSM, while running at a thermal class A, can be attached to any material that can safely reach 90ºC. These materials include, but are not limited to, metals, plastics, and wood. It is important to note that although no dedicated heatsink is required and the XSM can be directly attached to many different materials, regional and local codes for electrical, fire, and safety codes still apply and must be considered. The use of traditional M3x0.5 machine screws may not be appropriate for securing the module to non-metal surfaces. Investigation into alternate attachment methods (other screw types, adhesives, and tapes…etc.) should be carried out based on application.

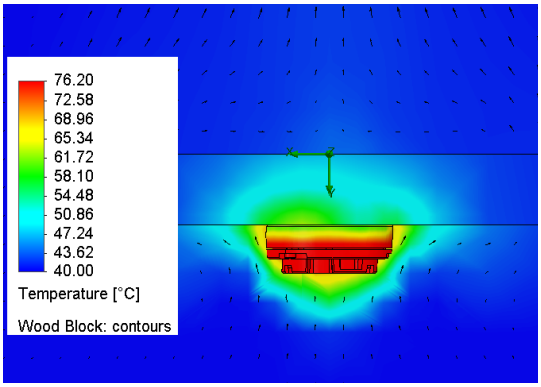

Figure 1 – XSM-400-C (300lm), Mounted to Wood.

Module/Surface Interface

No special surface preparation of mounting material is necessary. Use of the XSM, as shipped with the included thermal pad, is appropriate.

Other Considerations

Temperature of materials

The XSM running at a thermal class A, will typically reach a Tc of approximately 70-80ºC when attached to wood or plastic, but can reach up to 90°C. It is important to make sure these materials, along with any others, can tolerate these temperatures without burning or melting. Again, attention to electrical, fire, and safety codes must be taken into consideration.

In general, the attachment of secondary optics (reflectors, lenses, globes) will not have a significant effect on module temperature, but secondary optics should be included (if applicable) during tests.