

Cermax Lamp Engineering Guide



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Printed in U.S.A.

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1.0 Introduction

1.1 Cermax Lamps

IIL's Cermax high-intensity arc lamps are rugged and compact xenon short-arc lamps with fixed internal reflectors. Patented and trademarked by IIL Technology, Inc., their primary distinguishing characteristics are focused output, extremely high brightness, and safe operation. Cermax lamps also provide broadband and stable output spectra. Their high brightness makes them ideal for applications such as fiberoptic illumination, video projection systems, and analytic instruments. Except for some specialized low-wattage, high-pressure mercury lamps, Cermax lamps provide greater brightness levels than any other commercially available incoherent light source and in some cases replace lasers. The mechanical integrity of Cermax lamps far exceeds that of any other type of short-arc lamp.

The purpose of this guide is to provide the system designer with the information needed to efficiently incorporate Cermax lamps into optical systems and achieve maximum performance. This guide describes the lamp construction details; the mechanical, optical, and electrical characteristics; operation details, including

operating hazards and lamp lifetime; and specific applications.

1.2 Major Lamp Characteristics

Cermax lamps are similar in many ways to quartz xenon short-arc lamps, though they appear quite different (see Figure 1). The two types of lamps share spectral characteristics and often run from the same power supplies. Similarities also include stable color characteristics, excellent color rendition, instant-on with no color shift, and modulation capability. The fundamental efficacies of Cermax and quartz xenon lamps are close, about 20–30 lumens per watt below 1000 watts. This compares to about 70–100 lumens per watt for typical metal halide lamps. However, Cermax and quartz xenon lamps are rarely used in situations where raw luminous flux is the only important characteristic. Because Cermax and quartz xenon lamps have small arc gaps and high arc brightness, their light can be focused more easily onto small targets. In the case of Cermax lamps, the reflector collects more of the light than the typical metal halide lamp reflector. Consequently, in many applications Cermax lamps focus more light on the target than similar-wattage metal halide lamps.



Figure 1. Typical Cermax lamp (left) and quartz xenon short-arc lamp (right). (Photos not to scale.)

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