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Phase-Cut Dimming for Solid State Lighting: Basic Compatibility

National Electrical Manufacturers Association

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Foreword

The NEMA Solid State Lighting section has prepared this standard, *Phase-Cut Dimming for Solid State Lighting: Basic Compatibility*. This standard provides compatibility requirements for phase-cut dimming for LED light engines and is suitable for global use.

In the preparation of this standard, input of users and other interested parties has been sought and evaluated. Inquiries, comments, and proposed or recommended revisions should be submitted to the concerned NEMA product subdivision by contacting:

Senior Technical Director, Operations
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Section approval of the standard does not necessarily imply that all section members voted for its approval or participated in its development.

At the time the standard was approved, the Lighting Controls and Light Source sections were composed of the following members:

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Advanced Lighting Technologies
Cree, Inc.
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Section 1
GENERAL

1.1 Scope

This standard provides compatibility requirements when a forward phase-cut dimmer is combined with one or more dimmable LED Light Engines (LLEs). An LLE, for the purposes of this document, comprises one or more LED modules, LED control gear (integral or remote), and a connection to the mains circuit[1]. Three configurations of LED light engines are shown below (Figure 1-1).

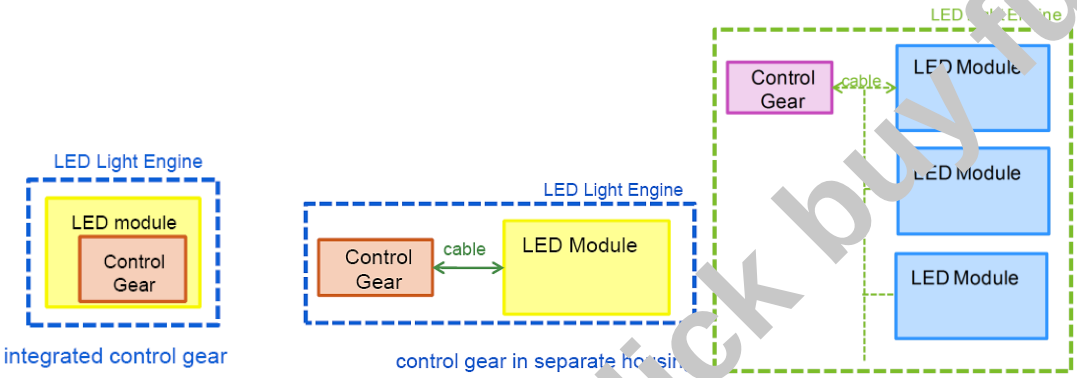

Figure 1-1
LED Light Engine

The requirements in this standard do not limit its use to any specific lighting product type or application, and it is suitable for use globally. For the purposes of this standard, *compatibility* means:

a. The reliability of the dimmer and LLE are not affected by combining them.
b. Dimming behavior meets or exceeds the behavior specified in sections 3 and 4.

Any interfaces between control gear and LED module(s) within the LLE are undefined in this standard. Such an interface may take a variety of forms. For example, it may be a constant voltage interface, a constant current interface, or a low-voltage alternating current interface produced by control gear that is simply a step-down electronic transformer. In all cases, compatibility is only defined for the LLE (which may contain one or more specific combinations of control gear and LED module(s)), and not for either component independently. To be considered compliant with this standard, the control gear and modules shall be operated together. This standard does not preclude future standards that will permit separate qualification of control gear and module components, with interfaces defined between them that ensure a proper SSL 7A LLE interface from the point of view of this standard.

This standard is forward-looking and is intended to be used to design and qualify dimmer and LLE products (including integral or remote control gear) for use with each other. It is not intended for use to determine compatibility with existing products or the installed base of LLEs and phase-cut dimmers. For information on compatibility with the installed base of dimmers, see SSL 6-2010.

NOTE—Any requirement for compliance to this standard does not supersede applicable international or local regulation.

[1] Through an ANSI/IEC base or a non-ANSI/IEC interface.