

LED照明标准解读

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第1章 LED照明技术概述



LED照明简介

LED技术的发展历史

从发明到应用

LED照明的发展趋势

智能化、定制化

LED在照明领域的应用优势

节能环保、寿命长



LED组成及原理

LED的基本结构和工作原理

发光层

P型半导体

N型半导体



LED的发光机制

电子跃迁

波长决定颜色

发光原理

LED与传统光源的比

较

节能

色彩还原度高

寿命长



01 **LED器件**

灯珠、驱动电路

02 **驱动电源**

直流驱动、交流驱动

03 **光学器件**

透镜、反射罩

LED照明标准概述

LED照明标准是LED产品质量、性能、安全的重要依据。国内LED照明标准体系包括GB、GB/T等标准；国际LED照明标准涵盖IEC、ISO等标准。这些标准规定了LED产品的参数要求、测试方法，对LED行业发展起到指导作用。

中国风



LED照明标准概述

国内LED照明
标准体系

GB、GB/T

标准对LED产
品的要求

参数要求 测试方
法

国际LED照明
标准概况

IEC、ISO等



第2章 LED光电性能参数解 读



The background features a traditional East Asian ink wash painting style. A small figure of a person in white robes stands on a dark, rounded rock in the lower right. The rest of the scene is composed of soft, misty, grey and white washes, suggesting a vast, ethereal landscape with mountains or clouds. The overall mood is serene and contemplative.

01 Definition and measurement methods of luminous flux

Luminous flux measurement standards

02 Calculation and application of illuminance

Illuminance measurement techniques

03 Relationship between LED luminous flux and illuminance

Impact on lighting quality

色温与色彩品质

Concept and classification of color temperature
Correlated color temperature (CCT)
Color rendering index (CRI)

Introduction to color quality parameters
Color fidelity
Gamut area index (GAI)

Impact of color temperature and color quality
Visual comfort
Color perception

光束角与均匀度

Calculation
methods of
beam angle

Beam angle
measurement
techniques

Relationship
between
beam angle
and
uniformity

Impact on light
distribution

Definition
and
assessment
methods of
uniformity

Uniformity
classification



光电参数测定标准

Lighting performance testing standards play a crucial role in evaluating LED lighting products. By understanding the methods used in measuring photometric characteristics and adhering to international guidelines, manufacturers can ensure product reliability and compliance with industry regulations. It is essential to be aware of the differences in photometric testing standards between countries and the importance of following proper measurement procedures to accurately determine light efficiency and quality.



The background features a traditional Chinese ink wash painting style illustration. A small figure of a person in white robes stands on a dark, rounded rock formation in the lower right. The background is filled with soft, misty, greyish-white washes that suggest a vast, atmospheric landscape. The overall mood is serene and contemplative.

01 **Methods for measuring photometric parameters**

Luminous intensity, luminous flux, illuminance

02 **Domestic and international photometric testing standards**

IES LM-79, CIE S 025

03 **Precautions for photometric parameter testing**

Calibration, environmental conditions

第3章 LED照明效果评价



中国风



光照效果评价

在LED照明效果评价中，光照效果评价是一个重要指标。通过测量光照效果，可以评定LED照明产品的亮度、色彩还原性等特征，以确保产品质量达标。评价指标包括光通量、光效等级等，测试方法包括光照度计测量等。对光照效果的评定标准则是确保产品能提供良好的照明效果，满足使用需求。

能效评价及节能效果

LED照明的能效评价方法

节能效果的影响因素

节能效果的计算及实践

能效评价指标

影响节能效果的因素

节能效果测量



The background features a traditional Chinese ink wash painting style. It depicts misty, layered mountains in shades of grey and white. In the lower right foreground, a small, stylized figure of a person in white traditional attire stands on a dark, rocky outcrop, looking towards the left. The overall atmosphere is serene and contemplative.

01 LED产品的良率评价

良率计算方法

02 可靠性评价指标

可靠性测试标准

03 可靠性评价方法

评价流程

环保指标评价

LED产品的环保标准

符合环保要求

低污染材料使用



环保指标的检测方法

环保指标测量

环保标准检验

LED照明对环境的影响及可持续发展策略

减少能耗

循环利用材料



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