LIGHTING GLOBAL
Catalyzing Markets for Modern Lighting
AN INNOVATION OF IFC International Finance Corporation World Bank Group
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Technical Notes

Issue 5 May 2011

Interpreting Standardized Specification Sheets (SSS)

This Technical Note discusses the standardized specification sheet developed by Lighting Africa for uniform performance and quality reporting. Highlighting key portions of the format, this guide helps buyers use SSS to evaluate off-grid lighting products.

The Information contained in this article builds on previous Technical Notes. See also: http://www.lightingafrica.org/resources/briefing-notes.html

Introduction

In order to assist the buyers of off-grid lighting products, Lighting Global has developed a standardized specification sheet (SSS) that manufacturers are encouraged to utilize when describing their products' performance. The format has been developed to present all of the most important information about the system's performance (including lighting service, charging capability, and battery life) in a simple, standardized layout.

There are two mechanisms to ensure the accuracy of information on specification sheets. First, rather than being comprised of information that is solely manufacturer self-reported, the information on the specification sheet is mainly based on testing results from independent testing laboratories. The performance and quality measurements are made using Lighting Global's Quality Test Method (QTM) with random samples. Second, the specification sheets also include a link to the original version on a Lighting Global maintained website, enabling buyers to confirm that information in a specification sheet is verified by Lighting Global.

Every product in the SSS program has met Lighting Global's basic minimum standards [1] for truth in advertising and quality. The quality standards include:

IP class[2]: ≥ 20 for fixed indoor products (can include external solar modules), ≥ 41 for portable products with external solar modules, ≥ 43 for products with integrated solar modules

Lumen maintenance: ≥ 2000 hours (lumen output maintained above 70% of initial level).

General: Passes basic mechanical durability and workmanship screening.

Standardized specification sheets are NOT an endorsement (or criticism) by Lighting Global of product performance. They are simply a statement of fact based on actual test results. People interested in a product should always review the information in the SSS to determine if its performance and quality meet their needs. The next page of this document shows an example specification sheet along with explanations of the various sections and metrics, which are included.

[1] The details on the Minimum Standards can be found at: http://www.lightingafrica.org/resources/technical-research.html

[2] IP class is the Ingress Protection Classification, read more at: http://en.wikipedia.org/wiki/IP_Code

Example Product

Verify specifications at: (16)
www.lightingafrica.org/specs/EX_01

(1) **Overall Performance**

"High" setting: 25 lumens for 4 hours after one day of solar charging

(2) **General Information**

Manufacturer	Example Corporation, Inc.
Product Name	Example Lamp 3000+
Model Number	ABC12345
Contact	janedoe@examplecorp.com
Website	www.examplecorp.com
Warranty	6 months for lamp, 1 year for solar module; see detailed terms for more information.

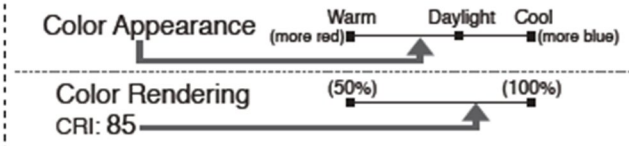
Run Time

(3) Autonomous Run Time (full battery)	6.0 hours on "high" setting
(4) Lighting hours per solar day (PV only)	4.0 hours on "high" setting

(5) **Lighting System**

(6) Lamp type	LED
(7) Light output	25 lumens on "high" setting
(8) Light output at 2000 hours	23 lumens on "high" setting

(9) Light Distribution: Omni



(10) **Charging System**

Charge type(s)	Solar PV

(11) **Storage System**

Storage Type	Rechargeable NiMH (3x AA in package)
Nominal Battery Voltage	3.6 volts DC
(12) Battery Capacity	650 milliamp hours
(13) Battery Protection	Active HVD and LVD
Easily Replaceable Battery?	No

(14) **Additional Information & Special Features**

Lamp Housing: Injection molded ABS

Standard feature: Mobile phone charging with six connectors
Factory Certification: ISO9001

(15) **Date of Sample Procurement for Testing** January 2011

Revision 2011.01

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Number	Description
1	This section provides a brief summary of the project's light output (lumens) and run time (hours) two key performance indicators for end users. More detail on both of these is provided below.
2	This section provides general information on the manufacturer and the product.
3	The autonomous runtime is the length of time that the product can be expected to run at the specified light level after the battery is fully charged.
4	The lighting hours per solar day is the length of time that a product can be expected to run at the specified light level after being charged by its PV module for a full, sunny day.
5	This section provides information on several important lighting characteristics. For more detailed descriptions of the lighting metrics discussed here, please refer to Lighting Global's "LED Lighting Basics" Technical Note.
6	The type of lamp, listed here, largely determines the efficiency and characteristics of the light emitted by a product. LED = light emitting diode CFL = compact fluorescent lamp
7	The product's light output is provided here in lumens. Lumens are a measure of the amount of light generated by a light source. This is not to be confused with lux or foot-candles, which are measurements of how bright the light is on a surface a particular distance and direction away from the lamp.
8	Light output is also reported after 2000 hours of operation. This is an important measurement because all light sources degrade over time and while many products have been shown to have light outputs that degrade slowly, some are greatly reduced after they have been in use for only a short while.
9	Products are characterized as having a "narrow", "wide" or "omni" (i.e. light going in all directions) distributions. Additionally, two light quality measurements are listed - the color appearance (also known as color temperature) and color rendering index (CRI). Color appearance is a measure of how "warm" or "cool" a light appears. CRI is a measure of how accurately colors appear under a given light source – daylight has a CRI of 100 (the maximum number). LEDs with low CRI scores (<60) will not show different colors accurately; this effect is most pronounced in the red colors which will appear dull and muted.
10	This section describes the type of charging system utilized by the product (e.g. PV, grid, mechanical)
11	This section describes the product's storage (e.g. battery) system.
12	It is useful for end users or distributors interested in battery replacement to know the technical details of batteries. This section shows the battery type, nominal operating voltage, and overall battery capacity.
13	Batteries can become damaged and/or age prematurely if they are allowed to either overcharge or completely discharge. This section indicates if the product has a high voltage disconnect (HVD) that prevents battery overcharging and a low voltage disconnect (LVD) that protects against excessive discharge. Also indicated is whether this protection is "active" (i.e. a microcontroller turns the system on and off when over or under charge conditions are present) or "passive" (i.e. the system is designed such that it is simply not possible to overcharge or over discharge it).
14	This section provides additional information that was not covered in the previous section as well as other special features that the manufacturer wishes to highlight about the product.
15	Each report includes the date of procurement of the tested product; because manufacturers often update their products, this section indicates how up-to-date the information is.
16	In an effort to prevent counterfeiting, Lighting Africa is maintaining a website that contains up-to-date specification sheets for products that have been tested in accordance with Lighting Africa's test standards. Go to the website indicated to verify that the specification sheet is in fact authentic. This is a static, unique web address so that one can check the contents of the sheet with the source.