

# HF<sup>2</sup>Stick

## High Brightness Linear LED Modules



HF<sup>2</sup>Stick LED modules are high performance, high brightness linear LED modules. Offered in a broad range of color temperatures, light output and efficacies, the HF<sup>2</sup>Stick module provides a comprehensive solution to challenging linear lighting applications. Ranging from the efficient S4 series to the powerful S3 series, the HF<sup>2</sup>Stick is a preferred solution for general illumination, retail display and freezer case applications.

Each board contains integrated 5-pin mating connectors that allow for easy installation and board to board connection. Optional spacing connectors are also available. HF<sup>2</sup>Stick modules are optimally paired with SYLVANIA OPTOTRONIC® 24Vdc power supplies.

### Key Features & Benefits

- High brightness LED package for high efficiency and performance
- 43 LPW to 66 LPW performance
- Size of entire module is 11.5" x .875" x 0.27"
- Service life up to 50,000 hours (L<sub>70</sub>) when temperature at Tc point is maintained at 60°C for the S4 series or 50°C for the S3 series, minimizing maintenance frequency
- No ultraviolet or infrared radiation
- Contains integrated connectors that allow for easy installation and board-to-board connection
- Dimmable by pulse width modulation, a method that maintains consistent lumen output and color
- Circuit boards are conformally coated to protect against dust, moisture and condensation

### Product Offering

Ordering Abbreviation	Wattage	Color
L10LRE/24V/827/S3	10	2700K
L10LRE/24V/830/S3	10	3000K
L10LRE/24V/835/S3	10	3500K
L10LRE/24V/841/S3	10	4100K
L10LRE/24V/857/S3	10	5700K
L4LRE/24V/830/S4	4	3000K
L4LRE/24V/835/S4	4	3500K
L4LRE/24V/841/S4	4	4100K
L4LRE/24V/857/S4	4	5700K

### Application Information

#### Applications

- Box signs
- Color matching display kiosks
- End cap display case
- Jewelry showcase
- Reach in cooler lighting
- Refrigeration
- Street lighting
- Under cabinet lighting

#### Specifications and Certifications



The SYLVANIA HF<sup>2</sup>Stick is UL2108 Listed for US and Canada Class 2 Unit (UL file # E247649)



This light source meets restrictions on hazardous substances.

SEE THE WORLD IN A NEW LIGHT **SYLVANIA**



## Specification Data

Catalog #	Type
Project	
Comments	
Prepared by	Date

## Ordering Information

Item Number	Ordering Abbreviation	Module Length (in.)	No. of LEDs	Power (W)	Voltage (Vdc)	Current (mA)	Color Temperature**	Initial Lumen (lm)*	Beam Angle/°	LPW
70301	L10LRE/24V/827/S3	11.5	4	10	24	429	2700K	440	90	43
70358	L10LRE/24V/830/S3	11.5	4	10	24	429	3000K	483	90	47
70302	L10LRE/24V/835/S3	11.5	4	10	24	429	3500K	483	90	47
70303	L10LRE/24V/841/S3	11.5	4	10	24	429	4100K	483	90	47
70304	L10LRE/24V/857/S3	11.5	4	10	24	429	5700K	536	90	52
70359	L4LRE/24V/830/S4	11.5	4	4	24	154	3000K	216	90	58
70313	L4LRE/24V/835/S4	11.5	4	4	24	154	3500K	216	90	58
70314	L4LRE/24V/841/S4	11.5	4	4	24	154	4100K	216	90	58
70316	L4LRE/24V/857/S4	11.5	4	4	24	154	5700K	235	90	66

\*Data is related to entire module measured at Tc point of 25°C. Data reflects statistical mean values. Actual data may differ depending on variances in the manufacturing process. End users need to put into account the lumen depreciation as the temperature rises with various thermal management solutions involved.

\*\*All white color temperatures have a CRI >80. Due to the special conditions of the manufacturing processes of LEDs, the typical data of technical parameters can only reflect statistical figures and do not necessarily correspond to the actual parameters of each single product which could differ from the typical data.

## Ordering Guide

L	10	L	R	E	/	24V	/	8	27	/	S3
LED	Wattage	Linear	Rigid	Engine		Voltage		CRI>80	Color Temperature 2700K		Series

## Power Supply Information

### Max. Number of Modules Per Power Supply

Item Number	Series	OT6 (51503)	OT17 (51622)	OT20 (51512)	OT50 (51598)	OT75 (51514)	OT96 (51520, 51522, 51626)	OT240 (51627)
70301, 70358, 70302, 70303, 70304	S3	0	1	1	3	4	6	5
70359, 70313, 70314, 70316	S4	1	3	4	11	16	21	17

Notes:

1. The OT-240 has 3 channels each rated at 80 watts. The numbers displayed in this column indicate the maximum load for 1 channel.
2. These numbers are based on calculated "Maximum Board Wattage" value. This calculated "Maximum Board Wattage" value for the HF2Stick S3 series is 15.6W and for the S4 series the value is 4.5W.

### Maximum product load for a single run:

L10LRE/24V/8xx/S3 = 4 Modules

L4LRE/24V/8xx/S4 = 8 Modules

Note: This number is stated as a maximum limit for a single run. Parallel combinations can be wired to meet the full power supply load, but this maximum limit must not be exceeded on any single run.

## Minimum and Maximum Ratings

Parameter	Values
Operating Temperature at Tc point	-30... +70°C (-22 to +158°F)
Storage Temperature	-30... +85°C (-22 to +185°F)
Voltage Range	23-25 Vdc
Maximum Reverse Voltage	0 Vdc

Notes:

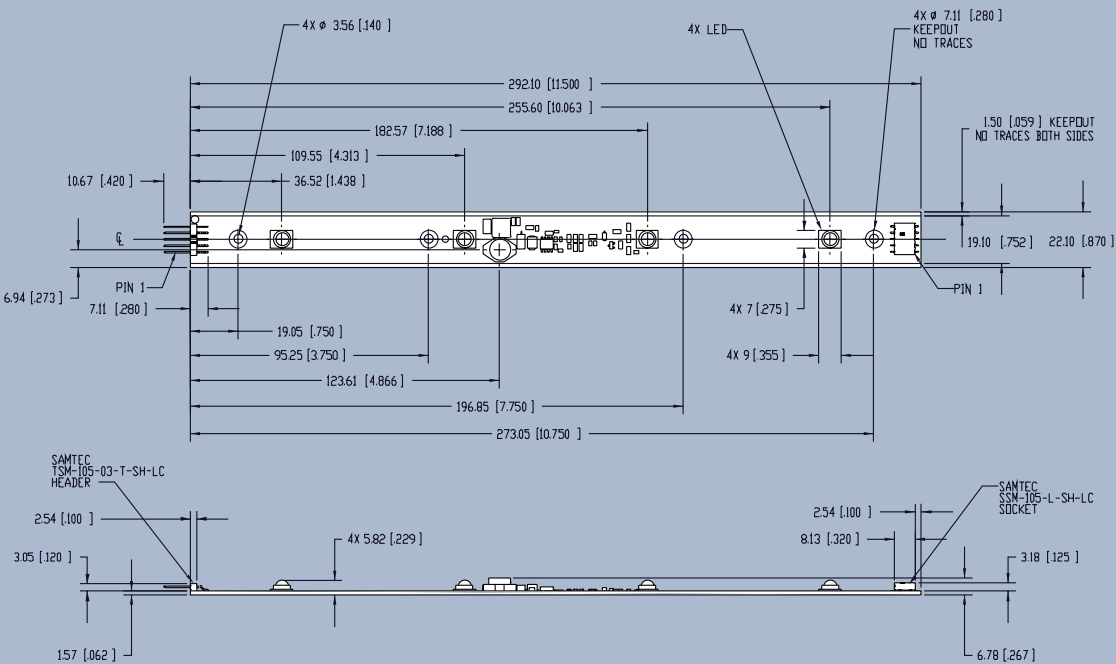
1. Exceeding maximum ratings may damage the LED module and cause potential safety hazards.
2. Service life up to 50,000 hours (L<sub>70</sub>) when temperature at Tc point is maintained at 60°C for S4 Series or 50°C for the S3 Series. Elevated operating temperatures can be expected to negatively impact the service life in terms of lumen output.

Accessories

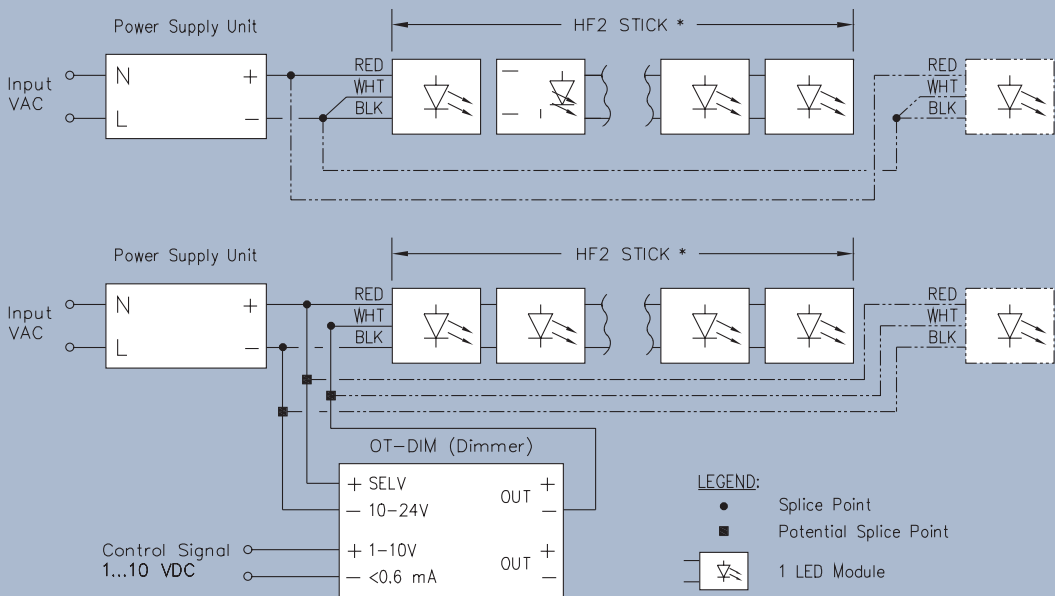


Item Number	Ordering Abbreviation	Description	Length (in.)
70311	LAC-C/SX/IC/5P/12IN	Input Connector	12
70315	LAC-C/SX/IC/5P/60IN	Input Connector	60
70312	LAC-C/SX/BB/5P/4IN	Board-to-Board Connector	4
70085	LAC-C/SX/BB/5P/2IN	Board-to-Board Connector	2
70086	LAC-C/SX/BB/5P/8IN	Board-to-Board Connector	8

Assembly Diagram



Wiring Diagrams



\* Reference the "Maximum Product Load" circuit requirement charts for the maximum power supply and maximum single run product loads.

## Safety Information

### **WARNING: ONLY QUALIFIED PERSONNEL SHOULD PERFORM INSTALLATION.**

### **TO AVOID ELECTRICAL SHOCK OR COMPONENT DAMAGE, DISCONNECT POWER BEFORE ATTEMPTING INSTALLATION OF THE POWER SUPPLIES AND/OR MODULES.**

Failure to install the power supplies and/or LED modules in accordance with the National Electric Code (NEC), all applicable Federal, State and local electric codes as well as the specific Underwriter's Laboratories (UL) safety standards for the installation, location and application may cause serious personal injury, death, property damage and/or product malfunction.

1. The LED module itself and all its components shall not be subjected to mechanical stress and assembly must not damage or destroy conducting paths on the circuit board.
2. Installation of LED modules shall be made with regard to all applicable electrical and safety standards. Only qualified personnel should be allowed to perform installations.
3. Observe correct electrical polarity, incorrect polarity may destroy the module. (Depending on the product, incorrect polarity may lead to emission of red or no light.)
4. Ensure the power supply is of adequate power to operate the total load.
5. Electrostatic Discharge (ESD) precautions shall be incorporated when handling or installing the module. (For more information, reference document # LED093 ESD Protection for LED Systems.)
6. Modules may be hot to the touch. Use caution when handling.
7. Damage by corrosion and improper heat sinking will not be honored as a materials defect claim. It is the user's responsibility to ensure adequate heat sink and protection against corrosive agents such as moisture, condensation and other harmful elements.

## Assembly Information

1. Installation of the HF<sup>2</sup>Stick module must include provisions for thermal management to avoid premature failure of the product and to obtain expected service life. Service life (i.e. lumen depreciation) is primarily a function of LED temperature which is to be monitored on the circuit board at the designated "Tc point." (For the S4 series, a Tc point temperature of 60°C should be sufficient to enable a service life of 50,000 hours (L<sub>70</sub>). For the S3 series, a Tc point temperature of 50°C should be sufficient to enable a service life of 50,000 hours (L<sub>70</sub>).
2. The mounting of the module is carried out by attaching it at the mounting holes.
3. Heat sink compounds may be used to facilitate heat transfer from the module to the heat sink material.
4. Please ensure the power supply is of adequate power to operate the load. See the requirements under the section titled Power Supply Ordering Information.
5. Electrical connection from the power supply to the LED modules is made using the HF<sup>2</sup> 5-Pin Connector system.
6. There is no exact installation prescription to obtaining an appropriate Tc point temperature due to variations in fixture designs. In general, the HF<sup>2</sup>Stick module should be adhered to a flat, metal surface area to transfer the heat from the LED to the surrounding air. The metal surface can be part of the mass of the fixture itself.
7. Concerning fixture design, it is important to understand that once heat is transferred to a "heat sink", that heat must still be allowed to escape the "system". A heat sink transferring the thermal energy to the inside of the enclosed cavity may ultimately be of little use.
8. Definition of a UL 2108 listed Low Voltage Lighting System as it pertains to this module includes: 1. A UL Listed Class 2 power supply. 2. An appropriate number of SYLVANIA's HF<sup>2</sup>Stick modules based on the recommended max number of modules listed. 3. The connectors/cable systems. 4. Heat Sink.

The power supply must be mounted, wired, and grounded in accordance with all applicable NEC and ANSI standards.

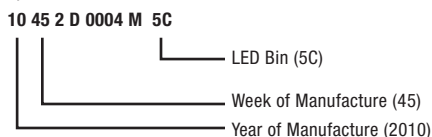
All modular connections on the secondary side of the power supply must be made using SYLVANIA connectors. If additional wires and/or splice connections are necessary, wires are to be UL Listed, minimum 22 AWG and splice connectors must be UL rated and chosen of appropriate size for number of wires to be connected. WARNING: the low voltage secondary circuit shall not be grounded.

This information shall not supersede the requirement to follow all other safety, assembly and any other instructions listed in this document.

### **Recommended practice for maintaining color consistency when installing this product inside a fixture and/or in a linear application:**

Each module is equipped with a unique identification code label. If modules shall be connected in a serial fashion, similar to the stated applications, it is vitally important that these identification codes match.

Identification code example:



Installation example: If this product is installed inside a 4 ft. fixture. The "Year of Manufacture", "Week of Manufacture" and the "LED Bin" numbers must match for all of the modules installed inside that fixture.

SYLVANIA is a registered trademark of OSRAM SYLVANIA Inc.  
OPTOTRONIC is a registered trademark of OSRAM AG.  
Specifications subject to change without notice.

## Warranty

SYLVANIA LED products are covered by our LED Module, OPTOTRONIC® Power Supply and/or Control warranty.

The HF<sup>2</sup>Stick module is covered under warranty as long as the temperature at the Tc point does not exceed 70°C; exceeding this temperature will void all warranties.

For additional information or to download the warranty registration form, refer to the latest version of the warranty available in the Literature section of [www.sylvania.com/LED](http://www.sylvania.com/LED).

Module Warranty: 3 years

System Warranty: 5 years

### **United States**

#### **OSRAM SYLVANIA**

100 Endicott Street  
Danvers, MA 01923

#### **Trade**

Phone: 1-800-255-5042

Fax: 1-800-255-5043

#### **National Accounts**

Phone: 1-800-562-4671

Fax: 1-800-562-4674

#### **OEM/Special Markets**

Phone: 1-800-762-7191

Fax: 1-800-762-7192

#### **Display/Optic**

Phone: 1-888-677-2627

Fax: 1-800-762-7192

#### **SYLVANIA Lighting Services**

Phone: 1-800-323-0572

Fax: 1-800-537-0784

### **Canada**

#### **OSRAM SYLVANIA LTD.**

2001 Drew Road  
Mississauga, ON L5S 1S4

#### **Trade**

Phone: 1-800-263-2852

Fax: 1-800-667-6772

#### **OEM/Special Markets/Display/Optic**

Phone: 1-800-265-2852

Fax: 1-800-667-6772

#### **SYLVANIA Lighting Services**

Phone: 1-800-663-4268

Fax: 1-866-239-1278

### **Mexico**

#### **OSRAM MEXICO**

Headquarters

Tultitlan/Edo de Mexico

011-52-55-58-99-18-50

[www.sylvania.com](http://www.sylvania.com)