HF²X
LED for Directional Lighting Applications

Key Features & Benefits

- Small form factor enables integration into small and compact structures
- Dimmable by pulse width modulation, a method that maintains consistent lumen output and color
- Higher efficiency leading to energy savings
- Long life: 50,000 hours (L_{70}) when temperature at Tc point is maintained at 40°C
- Bright and intense LED light uniquely suited for ambient accent and specialty lighting

The HF²X LED module is rapidly bridging the gap between the requirements of white light illumination and the capabilities of LED technology. These modules offer bright and intense light for specialty illumination, including architectural and retail, as well as solar luminaires and fixtures.

The HF²X LED module consists of a hi-flux LED on a metal core circuit board, which acts as a heat sink.

In continuing its leadership in the lighting industry by providing complete system solutions, HF²X is optimally paired with OPTOTRONIC® constant current power supplies.

Product Offering

Ordering Abbreviation	Wattage	Color
L1DE/350C/854/X*	1.2	5400K

*Product has lead wires

Application Information

Applications

- Accent lighting
- Display case lighting
- Landscape lighting
- Safety lighting
- Shelf lighting
- Signs
- Task lighting
- Vehicle cabin lighting

Specifications and Certifications

c UL us The HF²X is UL2108 Recognized for US and Canada Class 2 Unit (UL file # E258264)

Listed in Sign Components Manual (SAM)

RoHS compliant

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	Power (W)	Current (mA)	Luminous Intensity (cd)	Color Temperature	Beam Angle (degrees)	CRI
70184*	L1DE/350C/854/X	1.2	350	20	5400K	120	80

Packaging Notes: Case qty. – 120 pcs. Minimum order qty. – 6 pcs.
*Product has lead wires

Ordering Guide

L	1	D	E	/	350C	/	8	54	/	X
LED	Wattage	Directional Family	Engine		Current		CRI > 80	Color Temperature 5400K		LED Module HF²X

Power Supply Information

Max. No. Modules per Power Supply

LED Description	OT3 (51524)	OT9 (51525, 51526)	OT10 (51635)
NAED 70184	2	6	8

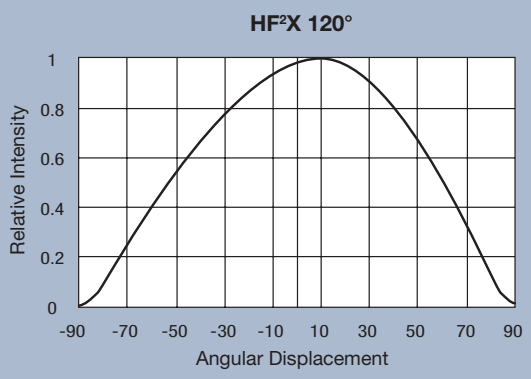
Notes:
1. A maximum of 6 LED modules can be operated on a single feed.
2. OPTOTRONIC® power supplies are optimally paired with SYLVANIA LED modules and are specifically designed with protection features for safe operation.
3. The module is designed to work with constant current power supplies only. Reference the Power Supply PIB # ECS052 for product specific information.

Minimum and Maximum Ratings

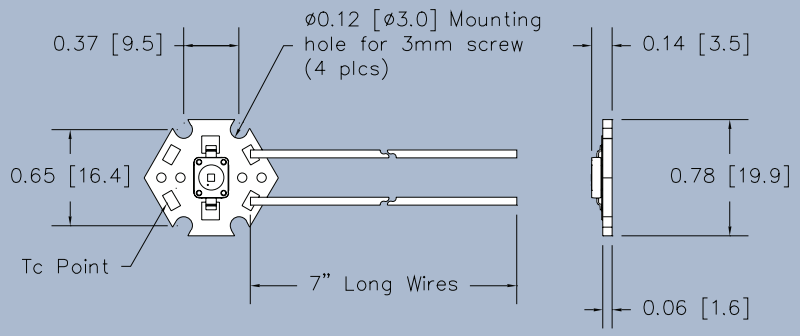
Parameter	Values
Operating Temperature at Tc point	-30... +85°C (-22 to +149°F)
Storage Temperature	-30... +90°C (-40 to +185°F)
Maximum Allowable Current (dc)	0.5A
Maximum Reverse Voltage	0V

Notes:
1. Exceeding maximum ratings may damage the LED module and pose potential safety hazards.
2. Elevated operating temperatures can be expected to negatively impact service life in terms of lumen output.

Optical Specifications

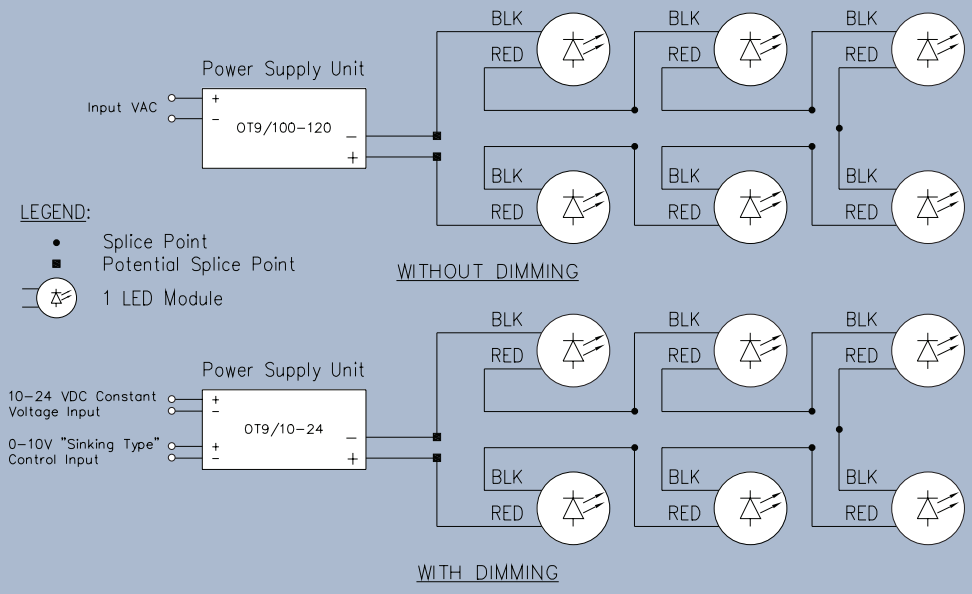


Assembly Diagram



Dimensions: inches [mm]

Wiring Diagram



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 Underwriters 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. 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.
7. Modules may be hot to the touch. Use caution when handling.

Assembly Information

1. The module should be in good thermal contact with the designed metallic mounting surface. Use of an appropriate heat sink compound is recommended to eliminate air gaps. The LED module can be mounted using m3 screws and the screw holes/slots on the metal core circuit board.
2. To obtain maximum LED-lifetime please read carefully the recommended procedures concerning thermal management in our application note "Lifetime of LED modules" before beginning construction of luminaires. This application note is available from your SYLVANIA representative.
3. Module is intended for use with 350mA constant current drive condition (see PIB ECS052 for details). The module is not intended for use with constant voltage power supplies, including other SYLVANIA LED power supplies.
4. Installation of the HF²X 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".
5. There is no exact installation prescription to obtaining an appropriate Tc point temperature because every fixture design is different. In general, the HF²X module should be mounted on a clean, flat metal surface with enough surface area to transfer the heat from the module to the surrounding air. The metal surface can be part of a conventional finned heat sink or can be part of the mass of the fixture itself.
6. 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 an enclosed cavity may ultimately be of little use.
7. Module should be securely mounted to the heat sink. Heavy vibrations should be avoided.

Warranty

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

The HF²X Modules are covered under these warranties as long as the temperature at the Tc point does not exceed 40°C; exceeding this temperature will void all warranties.

For additional information, refer to the latest version of the warranty at www.sylvania.com.

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www.sylvania.com

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