

Product Information Bulletin

HF²Eye

Hi-Flux 2nd Generation Module



The new OSRAM SYLVANIA HF²Eye LED module for spotlighting applications.

With the addition of its new HF²Eye LED modules, OSRAM SYLVANIA is rapidly bridging the gap between the requirements of white light illumination and the capabilities of LED technology. These new modules offer bright and intense light for spotlighting applications such as landscape lighting, display shelves, under cabinet lighting, reading lights and other general illumination applications.

The HF²Eye LED modules consist of a hi-flux LED enclosed in a metal housing, which acts as a heatsink, and has an integrated optic. It comes pre-wired with polarized wires for easy installation.

In continuing with its leadership in the lighting industry by providing complete system solutions, OSRAM SYLVANIA offers OPTOTRONIC constant current power supplies to operate the new HF²Eye modules.

- Compact hi-flux LED light source with an on-board optic for spot-lighting applications
- Sleek, innovative light source design for compact fixtures
- Metal housing allows for a 20,000 hour service life without additional heatsinking
- Pre-wired with 7.9 inch polarized cables (red for +, black for -)
- Better efficacy than incandescent or halogen light sources
- IP65 rated for use in outdoor applications
- No ultraviolet or infrared radiation
- Dimensions (H x Dia.): 1.3 in X 0.9 in
- Optimal operation with OPTOTRONIC®, constant current power supplies (Literature ordering code ECS052R2)
- Service life of up to 50,000 hours when temperature at T_c point is maintained at 40°C

Product Availability

Product	Wattage (W)	Wavelength (nm) Color Temp. (K)
HF2Eye/W3-833	1.2	White - 3300K
HF2Eye/W3-854	1.2	White - 5400K

Application Information

Applications

Task lighting – reading lights, under cabinet lighting
Accent lighting – outdoor/landscape lighting
Shelf lighting
Display case lighting
Vehicle cabin lighting – RV, truck, boat, airplane
Solar powered installations

Power Supply Information

The HF²Eye is presently compatible with the OT9/100-120/350 E (NAED 51525), OT9/10-24/350 DIM E (NAED 51526) and OT3/120-240/350 (NAED51524) power supply products. Contact your OSRAM SYLVANIA representative for specific information on these products and possible updates to this list.



Maximum Ratings For HF²Eye (all colors)

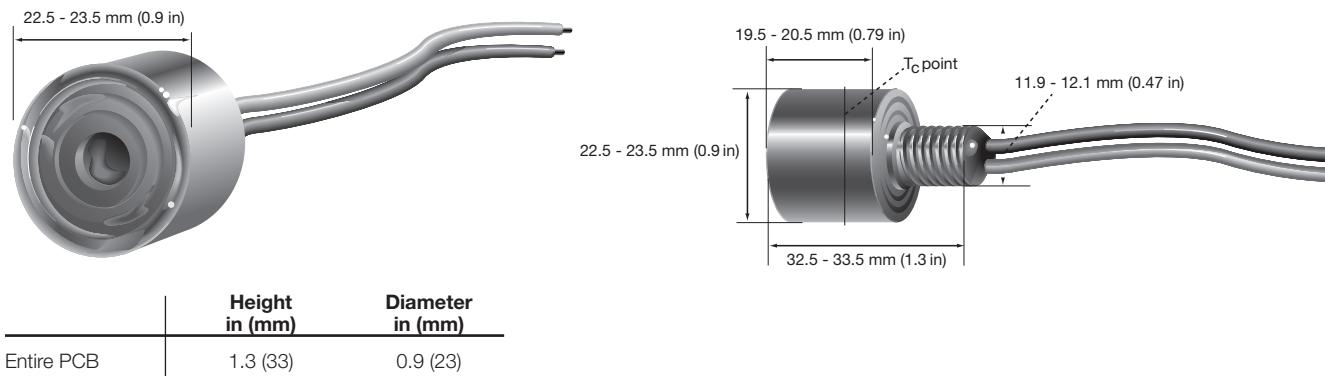
Parameter	Rating
Operating Temperature at T _c -Point	-30...+65°C (-22...+149°F)
Storage Temperature	-40...+85°C (-40...+185°F)
Maximum Allowable Current (dc)	0.5 A
Maximum Reverse Voltage	0 V

Notes:

1. Exceeding maximum ratings may damage the LED module and cause potential safety hazards.
2. Elevated operating temperatures can be expected to negatively impact the service life in terms of lumen output.
3. Incorrect wiring (i.e. reverse polarity) with constant current power supplies may damage the LED module.
4. Not intended for use with constant voltage power supplies.

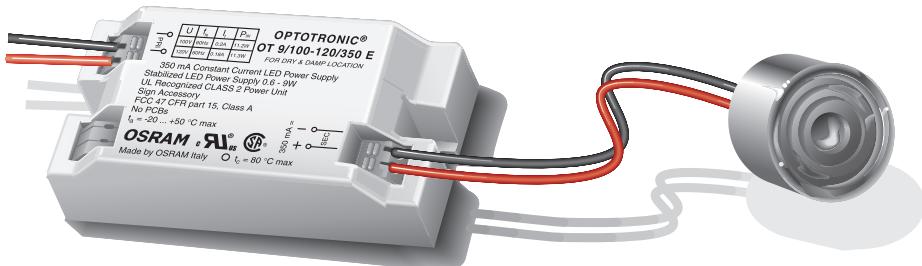
Dimensions

(All dimensions in mm)

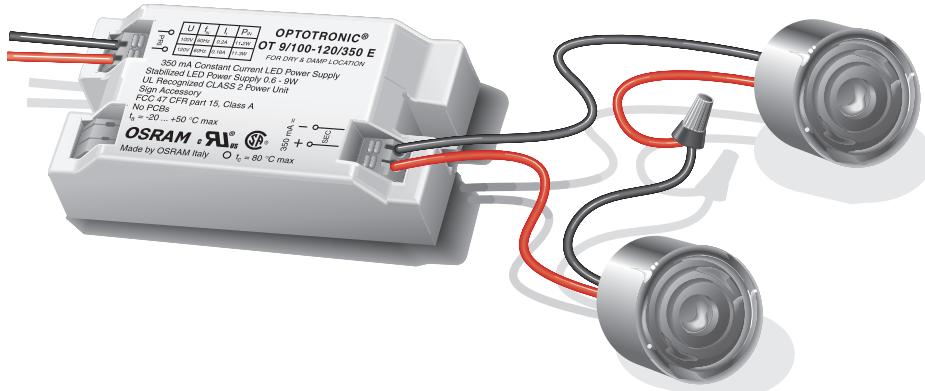


Wiring Diagrams

Single Connection



Multiple HF²Eye Assembly



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. These instructions are guidelines for installation of OSRAM LED modules and power supplies. Installation requirements may vary depending on the application. Licensed electricians should provide all installation services for connection of both primary and secondary (input/output) of the power supplies.

1. The LED module itself and all its components must not be mechanically stressed.
2. Assembly must not damage or destroy conducting paths on the circuit board.
3. Installation of LED modules (with power supplies) needs to be made with regard to all applicable electrical and safety standards. Only qualified personnel should be allowed to perform installations.
4. Correct electrical polarity needs to be observed. Wrong polarity may destroy the module and will result in no light emission.
5. Serial/electrical connection is recommended for the HF²Eye modules. Parallel electrical connection is not recommended. Unbalanced voltage drop can cause hazardous overload and damage the LED module.
6. Please ensure that the power supply is of adequate power to operate the total load. For the OT 09/100-120/350E, OT09/10-24/350DIM/E and OT3/120-240/350 power supplies, the maximum number of HF²Eye modules per OT9 watt power supply is 6 modules and 3 modules per OT3 watt power supply.
7. Pay attention to standard ESD precautions when installing the module.
8. Dimming of the HF²Eye is possible using the Pulse Width Modulation (PWM) functionality of the OPTOTRONIC OT 09/10-24/350 DIM/E. Dimming through the regulation of current amplitude will result in a spectral color shift.
9. Damage by corrosion will not be honored as a materials defect claim. It is the user's responsibility to provide suitable protection against corrosive agents such as moisture and condensation and other harmful elements.
10. Modules may be hot to touch. Use appropriate caution.

The LED Module incorporates no protection against short circuits, overload or overheating. Therefore it is absolutely necessary to operate the modules with an electronically stabilized power supply offering protection against the above mentioned safety risks.

OSRAM OPTOTRONIC power supplies are specifically designed with protection features for safe operation.

When using power supplies other than OPTOTRONIC the following basic safety features are required in addition to any other application specific concerns and local safety codes:

- Short circuit protection
- Overload protection
- Overheat protection
- Correct output voltage, including consideration for ripple and spikes.

Assembly Information/Application Notes

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.
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 luminaries. This application note is available from your OSRAM SYLVANIA representative.
3. Module is intended for use with 350 mA constant current drive condition as is provided by the OT9/100-120/350, OT9/10-24/350 DIM E and OT3/120-240/350 (see PIB ECS052R2 for details). The module is not intended for use with constant voltage power supplies, including other OSRAM LED power supplies.
4. Installation of the HF²Eye must include provision 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 HF²Eye module should be mounted to a clean, flat metal surface which has 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. The fixture makers' strategy should be to design a prototype fixture and test that fixture in an appropriate ambient environment while monitoring the temperature at the Tc-Point which should be allowed enough time to reach thermal equilibrium. In the end, the heat sink areas from the chart below only represent a starting point for initial design work while the Tc-Point temperature serves as the empirical test of proper thermal management. Tc-Point temperature can be measured with a standard thermocouple in direct contact with the circuit board at the Tc-Point or by use of ML4C Series non-reversible OMEGALABELS (www.omega.com) or equivalent.

Assembly Information/Application Notes (continued)

8. The HF²Eye has been designed in a metal housing which allows for 20,000 hours service life at an operating temperature no greater than 65°C.
9. In environments with significant vibrations we recommend securely mounting the module.
10. A bore hole of 12mm and an m10 screw nut must be taken into consideration during assembly.
11. To assure the IP protection of the module, the ends of the wires must be protected according to IP65 as well.

Ordering and Specification Information

Item Number	Ordering Abbreviation	Color	Number of LEDs	Current (mA)*	Power (W)*	Radiance Angle (°)*	Wavelength(nm) Color Temp (K)*	Lum. Intensity (cd)*
70199	HF2Eye/W3-833	White	1	350	1.2	15	3300K	230
70200	HF2Eye/W3-854	White	1	350	1.2	15	5400K	310

*All data are related to the entire module.

**CRI>70 for the 3300K. All other white color temperatures have a CRI>80. Due to the special conditions of the manufacturing processes of LED, 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.

Power Supply Ordering Information

**OPTOTRONIC® OT9/100 – 120/350 E (51525)
or OT9/10-24/350 DIM E (51526)**

OPTOTRONIC® OT3/120 – 240/350 (51524)

LED Item Number	Color	No. of Modules per Supply	LED Item Number	Color	No. of Modules per Supply
70199	White	6	70199	White	3
70200	White	6	70200	White	3

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Visit our website: www.sylvania.com

Ordering Guide

HF2Eye
HFEye
LED module

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W3-854

Color code – Color Temperature
W3-854= White, 5400 K
W3-833= White, 3300 K