Product Information Bulletin

HF² Flood

LED Module

- Compact hi-flux LED light source with an onboard optic for spot lighting applications
- Luminous intensity of up to 700 candelas for white light
- Sleek, innovative design for compact fixtures
- Assembly to metallic heat-sink surface with an M3 screw
- Pre-wired with 15.7 inch polarized cables
- Better efficacy than incandescent or halogen light sources
- Long service life when installed with proper thermal management
- No ultraviolet or infrared radiation
- Optimal operation with OPTOTRONIC 24V power supplies
- Service life of up to 50,000 hours when temperature at Tc-point is maintained at 40°C
- ROHS compliant

The new OSRAM SYLVANIA HF² Flood LED module for spotlighting applications.

With the addition of its new HF² Flood LED modules, OSRAM SYLVANIA is rapidly bridging the gap between the requirements of white light illumination and the capabilities of LED technology. This new module offers bright and intense light for spotlighting applications such as landscape lighting, display shelves, under cabinet lighting, reading lights and other general illumination applications.

The HF² Flood LED modules were developed using a single high performance OSRAM OSTAR®. The module is more efficient than incandescent or halogen light sources with a similar luminous intensity. It comes pre-wired with polarized wires for easy installation.

In continuing with leadership in the lighting industry by providing complete system solutions, OSRAM SYLVANIA offers OPTOTRONIC® constant voltage power supplies to operate the new HF² Flood modules.

Product Availability

Product	Wattage (W)	Color
HF²Flood/25/C006A/W3-733	12.0	White-3300K
HF²Flood/25/C006A/W3-847	12.0	White-4700K
HF²Flood/25/C006A/W3-854	12.0	White-5400K
HF²Flood/25/C006A/W3-865	12.0	White-6500K
HF²Flood/38/C006A/W3-733	12.0	White-3300K
HF²Flood/38/C006A/W3-847	12.0	White-4700K
HF²Flood/38/C006A/W3-854	12.0	White-5400K
HF²Flood/38/C006A/W3-865	12.0	White-6500K

Application Information

Applications

Down lighting
Accent lighting – cove lighting, outdoor/landscape lighting
Vehicle cabin lighting – RV, truck, boat, airplane
Solar powered installations

Power Supply Information

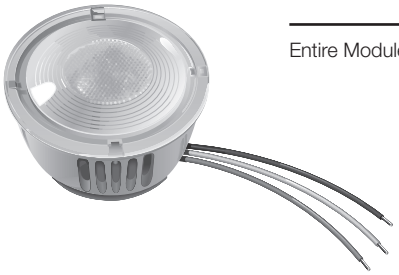
Compatible Power Supplies and Controls
OT20/120-240/24S (NAED 51512)
OT75/120/24 (NAED 51513)
OT75/120-277/24E (NAED 51514)
OT96/120-277/24 (NAED 51511)
OTDIM (NAED 51516)
OT240/120-240/24/CH3 (NAED 51515)

Maximum Ratings For HF² Flood (all colors)

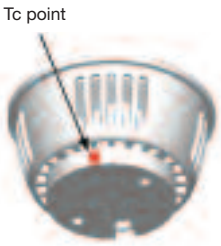
Parameter	Rating
Operating Temperature at Tc-Point	-30…+110°C (-22…+185°F)
Storage Temperature	-30…+110°C (-22…+185°F)
Voltage Range	23-25 Vdc
Maximum Reverse Voltage	25 Vdc

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.

Dimensions



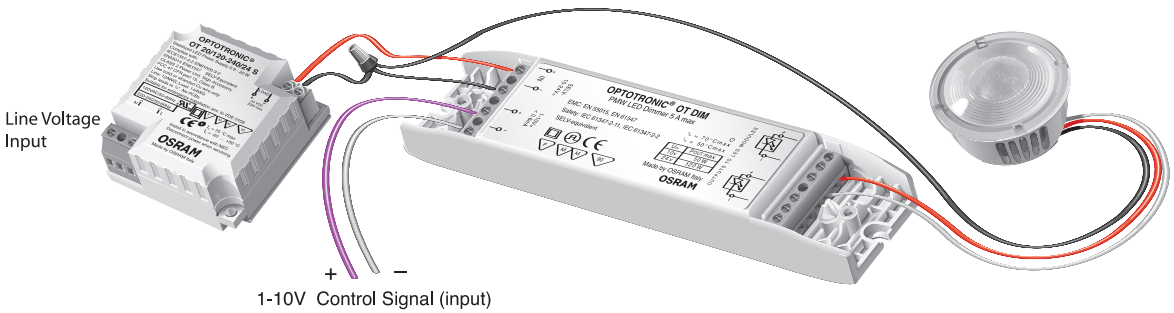
	Height in (mm)	Diameter in (mm)
Entire Module	29.2mm	50mm



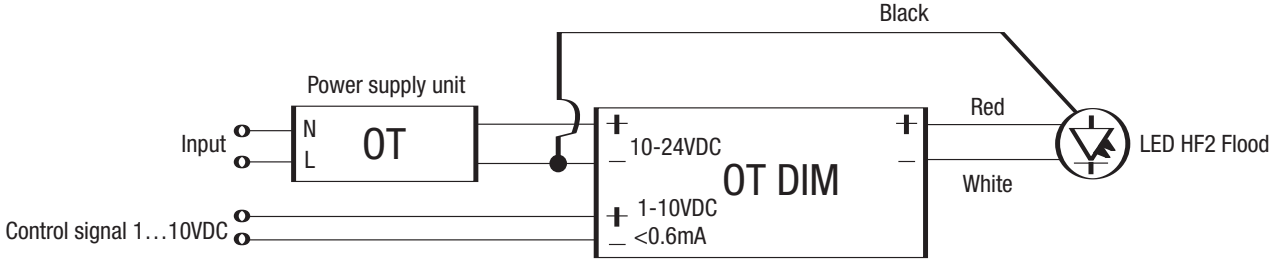
Wiring Diagrams

Single Connection - Non Dimming

Dimming Connection



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 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 subjected to mechanical stress.
2. Assembly must not damage or destroy conducting paths on the circuit board.
3. Installation of LED modules (with power supplies) should adhere to all applicable electrical and safety standards. Only qualified personnel should perform installations.
4. Correct electrical polarity needs to be observed. Wrong polarity may destroy the module.
5. Parallel connection is required for multiple pack assemblies. Do not exceed the maximum load of the power supply. See power supply ordering information for maximum allowed modules.
6. Pay attention to standard ESD precautions when installing the module.
7. Dimming of the HF² Narrow Flood is possible using the Pulse Width Modulation (PWM) functionality of the OPTOTRONIC OT DIM. Dimming through the regulation of current amplitude will result in a spectral color shift.
8. 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.
9. Modules may be hot to the touch. Use caution when handling.

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 mounting of the module is facilitated by means of a M3 (8mm) screw which fits to a threaded hole in the rear of the HF² Narrow Flood housing. The length of the screw depends on the thickness of the heat sink used.
2. 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.
3. 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.
4. Module is intended for use with OPTOTRONIC constant voltage 24Vdc power supplies. The module is not intended for use with constant current power supplies.
5. Installation of the HF² Narrow Flood 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".
6. There is no exact installation prescription to obtaining an appropriate Tc-Point temperature because every fixture design is different. In general, the HF² Narrow Flood 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.
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 an enclosed cavity may ultimately be of little use.
8. The fixture maker's 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 emperical 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.
9. Please ensure the power supply is of adequate power to operate the load. See the requirements under the section titled Power Supply Ordering Information.
10. Parallel connection is required from the power supply to the LED load. Do not exceed the allowed maximum LED modules per power supply. Operation in excess of the allowed amount will will exceed the current and power capacity of the power supply.

Ordering and Specification Information

NAED	Ordering Abbreviation	Color**	Voltage (Vdc)	Current (mA)*	Power (W)*	Radiance Angle (°)*	Lum. Intensity (cd)*
70244	HF²Flood/25/C006A/W3-733	White-3300K	24	500	12	25	700
70243	HF²Flood/25/C006A/W3-847	White-4700K	24	500	12	25	700
70242	HF²Flood/25/C006A/W3-854	White-5400K	24	500	12	25	700
70241	HF²Flood/25/C006A/W3-865	White-6500K	24	500	12	25	600
70255	HF²Flood/38/C006A/W3-733	White-3300K	24	500	12	38	***
70256	HF²Flood/38/C006A/W3-847	White-4700K	24	500	12	38	***
70257	HF²Flood/38/C006A/W3-854	White-5400K	24	500	12	38	***
70258	HF²Flood/38/C006A/W3-865	White-6500K	24	500	12	38	***

* 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.

*** Data and product will be available in Summer of 2007.

Packaging information: Case qty: 20 pcs Min. order qty: 20 pcs

† Please contact your OSRAM SYLVANIA representative on availability.

Power Supply Ordering Information

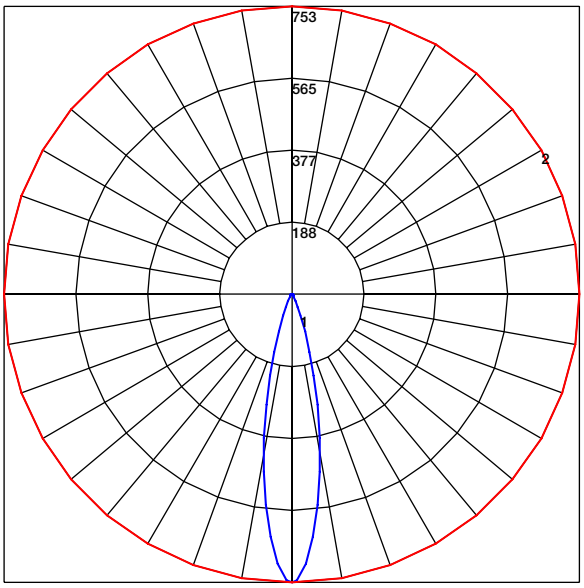
LED Description	Max. Allowed LED Modules	Power Supply Description	NAED	Dimming Requirement: Dimming Module	NAED	Interface
HF²Flood/C006A/W3-XXX†	1	OT20/120-240/24S	51512	OTDIM	51516	0-10Vdc
HF²Flood/C006A/W3-XXX†	6	OT75/120/24	51513	OTDIM	51516	0-10Vdc
HF²Flood/C006A/W3-XXX†	6	OT75/120-277/24E	51514	OTDIM	51516	0-10Vdc
HF²Flood/C006A/W3-XXX†	8	OT96/120-277/24	51511	OTDIM	51516	0-10Vdc

† XXX represents color temperature designation. Consult Ordering and Specification Information table above for specific details.

Ordering Guide

HF²Flood	/	OS	/	C006A	/	W3-865
HF²Flood		OSRAM		ID Number		Color code- Color Temperature W2/W3-865= White, 6500 K W2/W3-854= White, 5400 K W2/W3-847= White, 4700 K W2/W3-833= White, 3300 K

Polar Graph



Maximum Candela = 753 Located At Horizontal Angle = 0, Vertical Angle = 0
1 - Vertical Plane Through Horizontal Angles (0 - 180) (Through Max. Cd.)
2 - Horizontal Cone Through Vertical Angle (0) (Through Max. Cd.)

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