

# HF<sup>2</sup>Chain

## Hi-flux 2nd Generation LED Module



The OSRAM SYLVANIA HF<sup>2</sup>Chain LED module offers alternatives to traditional neon sources. The main advantage of the LED module over neon sources is reduced manufacturing and maintenance cost, durability, and small size.

The HF<sup>2</sup>Chain LED module is ideally suited to fit contours and curves typical to advertising spaces and channel letters. They can also be used for general signage applications.

This new versatile system packages hi-flux LED light sources in an extremely flat module enabling you to design smaller sleeker signs.

In continuing with its leadership in the lighting industry by providing complete system solutions, OSRAM SYLVANIA offers a wide range of 24V power supplies that operate the HF<sup>2</sup>Chain modules.

- Available in a 12-foot chain with 18 metal core circuit boards
- Each board consists of two hi-flux LEDs – total of 36 LEDs per chain
- 120 degree viewing angle to provide uniform illumination
- Wire interconnects allow flexible mounting
- Listed in the UL Sign Accessory Manual (SAM)
- Conformally coated to protect against moisture, dripping water and condensation
- Each board contains screw holes for proper mounting and for easy installation
- Size of entire module (L x W) 12 ft. x 0.79 in. (3.6m x 20.07mm)
- Optimal operation with OPTOTRONIC® 24V power supplies (Literature code ECS050R1)
- No ultraviolet or infrared radiation
- Service life of up to 50,000 hours when temperature at the Tc point is maintained at 40°C
- Chain can be subdivided every three boards totaling 2 ft. (0.61m)
- Low profile (<7mm height)

### Product Availability

Product	Wattage (W)	Color
HF2Chain/36/W3-865	52	6500K - White

### Application Information

#### Applications

Backlighting advertising panels  
Signs, channel letters and displays  
General lighting

#### Power Supply Information

The HF<sup>2</sup>Chain is compatible with the OT20/120-240/24S (NAED 51512), OT75/120/24 (NAED 51513) and OT75/120-277/24E (NAED 51514) power supplies. Contact your OSRAM SYLVANIA representative for specific information on these products and possible updates to this list.

## Application Information (continued)

### Application Notes

1. Installation of the HF<sup>2</sup>Chain 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". (A Tc-Point temperature of 40°C should be sufficient to enable a service life of 50,000 hours.)
2. The HF<sup>2</sup>Chain has been designed with a metal core board which allows a 30,000 hour service life at a Tc point of 70°C.
3. 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>Chain module should be adhered to a flat, metal surface which has enough surface area to transfer the heat from the LED to the surrounding air. The metal surface can be part of the mass of the sign itself.
4. 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.
5. The sign or fixture should be tested in an appropriate environment while monitoring the temperature at the Tc-Point, which should be allowed enough time to reach thermal equilibrium. 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](http://www.omega.com)) or equivalent.

### Minimum and Maximum Ratings

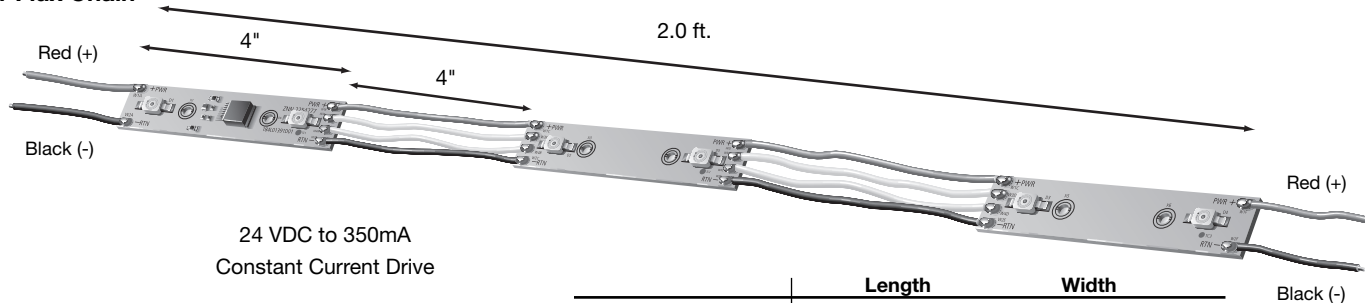
Parameter	Symbol	Values
Operating Temperature at Tc-Point	T <sub>op</sub>	-30...+70°C (-22...+158°F)
Storage Temperature Range	T <sub>stg</sub>	-30...+85°C (-22...+185°F)
Voltage Range	V <sub>max</sub>	23 – 25 V <sub>dc</sub>
Reverse Voltage	V <sub>R</sub>	25 V <sub>dc</sub>

#### 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 may damage the LED module.
4. Not intended for use with constant current power supplies.

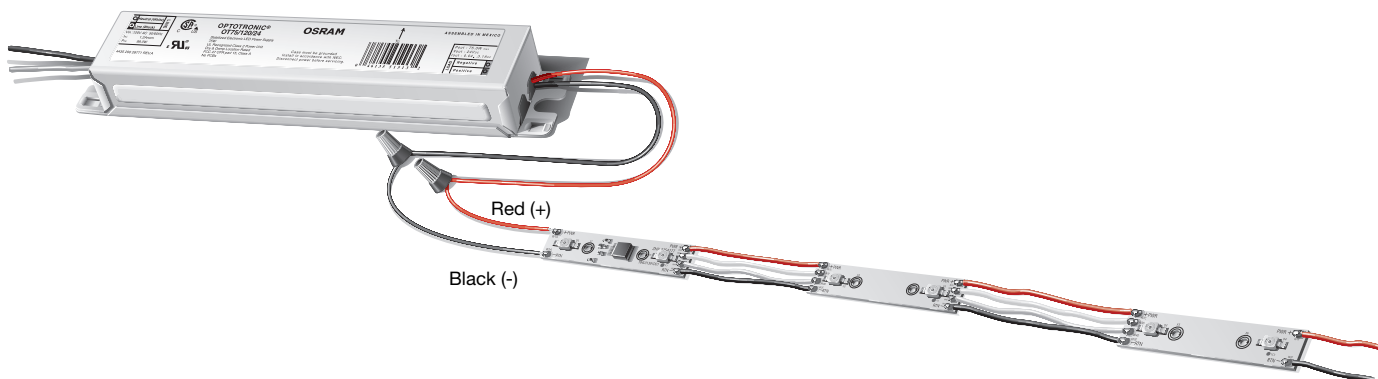
### Dimensions

#### Hi-Flux Chain



	Length	Width
Entire PCB	12.0 ft. (3.6m)	0.79 in. (20mm)
Wire Length	4.0 in. (101.6mm)	

### Wiring Diagram



## Safety Information

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**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 and all of its components must not be subject to mechanical stress.
2. Assembly must not damage or destroy the conducting paths on the circuit board.
3. The LED module incorporates no protection against short circuits, overload or overheating. Therefore, it is absolutely necessary to operate the modules with an electrically stabilized power supply offering protection against the above mentioned safety risks. OSRAM OPTOTRONIC power supplies are specifically designed with protection features for safe operation. Use of third party power supplies is not recommended.
4. Correct electrical polarity needs to be observed. Incorrect polarity may destroy the module.
5. All LED modules, up to the maximum number allowable for the power supply, should be installed in a parallel electrical connection (red to red and black to black).
6. Pay attention to standard Electro Static Discharge precautions when handling and installing the module.
7. Only install according to the heat sinking parameters outlined in the Application Notes section.
8. Modules may be hot to touch; use caution.
9. The module itself is protected against condensation with a polymeric conformal coating. Supplementary soldering on any solder pad will destroy the conformal coating and with it protection against condensation.

The LED Module incorporates no protection against short circuits, overload or overheating. Therefore it is 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 should be verified 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

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1. The module should be installed onto flat surfaces to facilitate intimate contact between the circuit board and the substrate material. The module should not be installed onto curved surfaces.
2. The mounting of the module is carried out by attaching it at the mounting holes. The adhesive backing on the boards is for temporary placement only. The mounting of the module is facilitated by means of a #6 bolt/screw (standard) or M3 bolt/screw (metric). Length is dependent on the application.
3. Heat sink compounds may be used to facilitate heat transfer from the module to the heat sink material.

## Ordering and Specification Information

Item Number	Ordering Abbreviation	Color	Power (W)*	Volts (V DC)	Viewing Angle(°)*	Number of LEDs	Color Temp (K)	Luminous Flux (lm)*	Lumens per Foot
70165	HF2Chain/36/W3-865	White	52	24	120	36	6500	1320	110

\*All data is related to the entire module. Data reflects statistical mean values. Actual data may differ depending on variances in the manufacturing process.

## Power Supply Ordering Information

LED Item Number	OPTOTRONIC® 20W (51512)			OPTOTRONIC 75W (51513, 51514)		
	Max. Length (ft.)	LED Load Watts	No. of Boards	Max. Length (ft.)	LED Load Watts	No. of Boards
70165	4	17	6	16	69	24

Packaging Notes: Case quantity – 10 pcs. Minimum order quantity – 1 pc.  
Dimensions – 18.0" L x 41.25" W x 18.25" H

## Ordering Guide

<b>HF2Chain</b>	/	<b>36</b>	/	<b>W3-865</b>
HF2Chain Module		Number of LEDs		Color code: Color Temperature W3-865=White, 6500K

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