

HF²Chain

High Flux LED Module Ideal for Signage Applications



The SYLVANIA HF²Chain LED module offers a cost effective alternative to traditional white neon sources. The primary advantage of the LED module over neon sources is reduced manufacturing and maintenance costs, durability and small size. The HF²Chain LED module is ideally suited to fit contours and curves typical of advertising spaces and channel letters.

Each HF²Chain consists of eighteen metal circuit boards, each with two high-flux LEDs. Available in a standard version (25 LPW, 110 lumens/ft.) or a high efficiency version (70 LPW, 154 lumens/ft.), this versatile product enables the design of smaller and sleeker signs.

Key Features & Benefits

- Available in a standard version (25 LPW, 110 lumens/ft.) or as a high efficiency version (70 LPW, 154 lumens/ft.)
- Narrow profile and wide beam angle (120°) allow for uniform illumination of backlit surfaces
- Flexible cables enable luminance to be adjusted
- Each HF²Chain can be cut every three boards to fit any application
- 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
- Single board add-ons are available to adjust length and fine tune light output

Product Offering

Ordering Description	Wattage (W)	Color
HF2Chain/36/W3-835	52	3500K
HF2Chain/SB/02/W3-835	3	3500K
HF2Chain/36/W3-865	52	6500K
HF2Chain/SB/02/W3-865	3	6500K
HF2Chain/36/W3-865/HE	26	6500K

Application Information

Applications

- Signs, channel letters and displays
- Backlighting advertising panels
- General lighting

Specifications and Certifications



The SYLVANIA HF²Chain is UL2108 Listed for US and Canada Class 2 Unit (UL file # E258264)

RoHS Compliant

Listed in the Sign Components Manual (SAM)



Specification Data

Catalog #	Type
Project	
Comments	
Prepared by	Date

Ordering Information

Item Number	Ordering Abbreviation	Module Length	No. of LEDs	Power* (W)	Voltage (Vdc)	Current per Module (A)	Color** (K)	Initial Lumens per Module (lm)	Lumens/ft	Watts/ft
70179	HF2Chain/36/W3-835	12 ft.	36	52	24	2.15	3500	1320	110	4
70177	HF2Chain/SB/02/W3-835	3.75 in.	2	3	24	0.21	3500	74	–	–
70165	HF2Chain/36/W3-865	12 ft.	36	52	24	2.15	6500	1320	110	4
70234	HF2Chain/SB/02/W3-865	3.75 in.	2	3	24	0.21	6500	74	–	–
70400	HF2Chain/36/W3-865/HE	12 ft.	36	26	24	1.08	6500	1850	154	2.2

* All data is related to entire module at Tc point of 25°C.

** 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

HF2Chain	/	SB	/	02	/	W3	–	8		35	/	HE
High Flux Second Generation Chain Module		Single Board		Number of LEDs		Color Code		CRI 8 > 80		Color Temperature 35 = 3500K 65 = 6500K		High Efficiency

Power Supply Information

OPTOTRONIC 20W (51512)					OPTOTRONIC 50W (51598)				OPTOTRONIC 75W (51513, 51514)			
LED Item Number	Max Length (ft)	LED Load Watts	Max. No. of Boards	Max. No. of Modules and SB	Max Length (ft)	LED Load Watts	Max. No. of Boards	Max. No. of Modules and SB	Max Length (ft)	LED Load Watts	Max. No. of Boards	Max. No. of Modules and SB
70179,70165	4	17	6	0.3 Modules or 0 Modules + 6 SB	11	48	16	0.3 Modules or 0 Modules + 16 SB	16	69	24	1.3 Modules or 1 Module + 6 SB
70400	8	17	12	0.6 Modules	22	48	30	1.7 Modules	32	69	48	2.6 Modules

OPTOTRONIC 96W (51510, 51511)					OPTOTRONIC 240W* (51515)			
LED Item Number	Max Length (ft)	LED Load Watts	Max. No. of Boards	Max. No. of Modules and SB	Max Length (ft)	LED Load Watts	Max. No. of Boards	Max. No. of Modules and SB
70179,70165	21	90	32	1.6 Modules or 1 Module + 12 SB	54	234	81	4.5 Modules or 4 Modules + 9 SB
70400	42	90	64	3.2 Modules	108	234	162	9 Modules

*OT240 is a power supply with three 80W Class 2 power output.

Notes:

1. The HF²Chain SB is a single board designed to give greater control and flexibility over chain length. An HF²Chain module at any given length, can be lengthened by adding one of two HF²Chain single boards, if desired.
2. SYLVANIA OPTOTRONIC power supplies are specifically designed with protection features for safe operation.

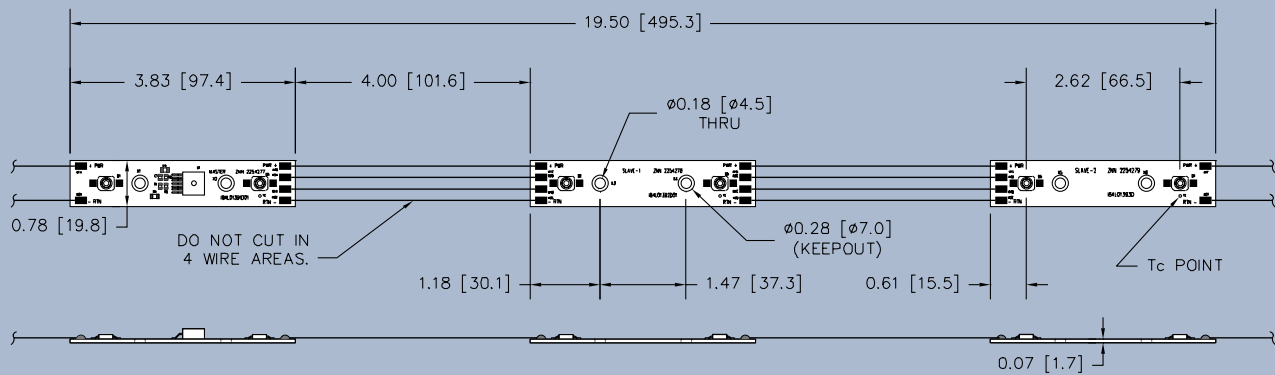
Minimum and Maximum Ratings

Parameter	Symbol	Values
Operating Temperature at Tc Point	T_{op}	-30... +70°C (-22 to +158°F)
Storage Temperature	T_{stg}	-30... +85°C (-22 to +185°F)
Voltage Range	V_{max}	23 – 25Vdc
Maximum Reverse Voltage	V_R	25Vdc

Notes:

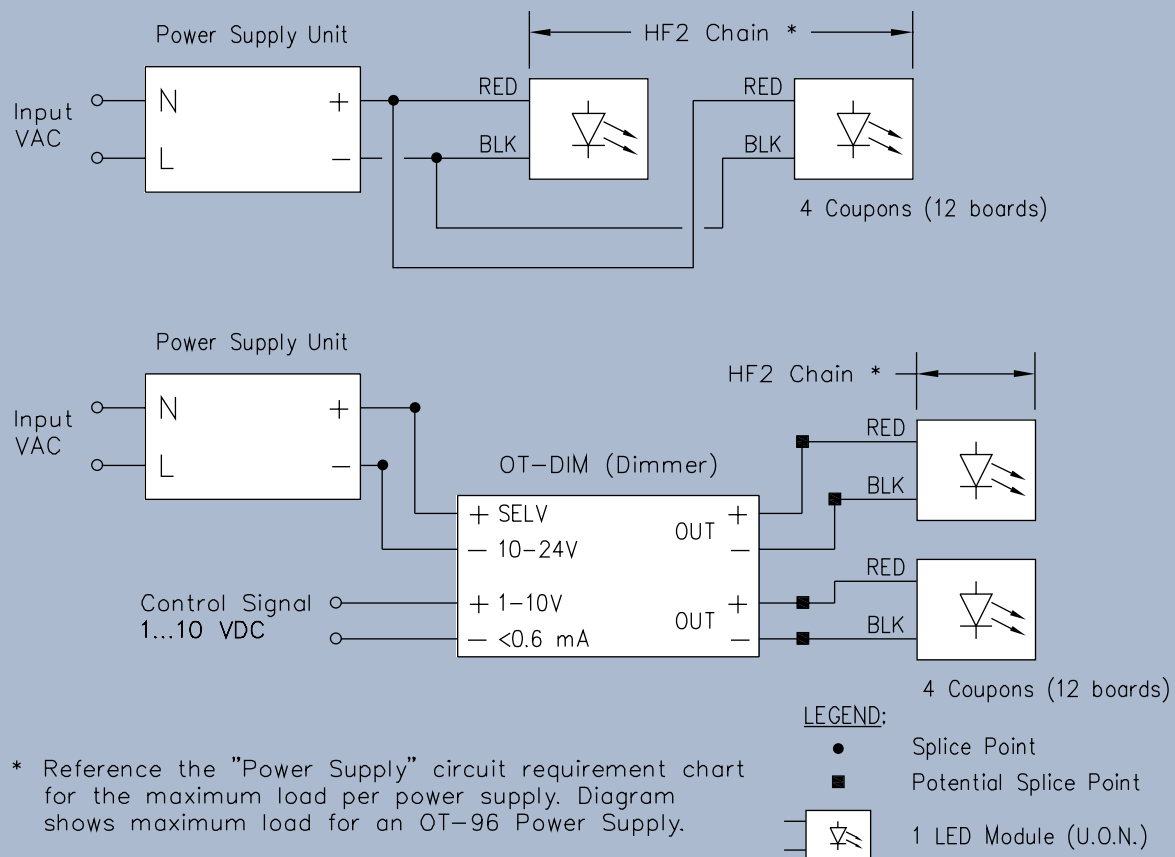
1. Exceeding maximum ratings may damage the LED module and cause potential safety hazards.
2. Elevated operating temperatures can be expected to reduce the service life in terms of lumen output.

Assembly Diagram



NOTE: All dimensions are typical and are measured: inches [mm].

Wiring Diagram



* Reference the "Power Supply" circuit requirement chart for the maximum load per power supply. Diagram shows maximum load for an OT-96 Power Supply.

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. Observe correct electrical polarity, incorrect polarity may destroy the light engine. (Depending on the product, incorrect polarity may lead to emission of red, or no light)
3. Electrostatic Discharge (ESD) precautions shall be incorporated when handling or installing the module.
4. Circuit boards should be attached securely to the intended substrate, but do not over-tighten screws or rivets. Heavy vibration should be avoided.
5. The module itself is protected against condensation water with a polymeric conformal coating. Supplementary soldering on any solder pad will destroy the conformal coating and with it protection against water.
6. Modules may be hot to the touch. Use caution when handling.

Application Information

Application Notes

1. Single board add-ons are available to adjust length and fine tune light output.
2. The installation of the HF²Chain must include provisions for thermal management to obtain expected service life. Service life (i.e. lumen maintenance) 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.
3. The HF²Chain is designed with a metal core board which allows a 30,000 hour service life at a Tc point of 70°C.
4. There is no exact prescription to obtaining an appropriate Tc point temperature due to variations in fixture designs. In general, the HF²Chain module should be adhered to a flat metal surface which has enough surface area to transfer the heat from the LED module to the surrounding air. The metal surface can be part of the mass of the sign itself.
5. The HF²Chain may be cut where boards are connected by red and black wires only.
6. For complete application information, see the HF²Chain installation guide (LED054).
7. Loose wires at the end of the module must be capped off with UL Listed wire connectors.
8. Guidelines for proper UL 2108 installation:
 - 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 HF²Chain modules based on the recommended max number of modules listed
 3. Heat Sinks if applicable
 - 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 connectors are necessary, wires are to be UL Listed, minimum 18 AWG, and connectors must be UL Listed, 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.

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