

LINEARlight POWER FLEX

Flexible High Light Output LED Modules



LINEARlight POWER FLEX LED modules are suitable alternatives to conventional sources used in linear and curved architecture and display lighting applications. The module consists of high brightness, white LEDs uniformly spaced on a flexible, self adhesive substrate.

LINEARlight POWER FLEX modules have a service life of 50,000 hours with proper thermal management. The module is optimally paired with OSRAM OPTOTRONIC® 24Vdc power supplies. Connector accessories are also available to simplify installation. To facilitate easy installation, optional connector assemblies and mounting tracks are available in 18" and 56" lengths. These may be paired with diffuser accessories to modify and soften light distribution.

Key Features & Benefits

- High brightness, flexible, linear LED alternative to conventional sources
- Flexible printed circuit board has self adhesive backing for easy installation
- Size of entire module (L x W x H) 9.19 ft x 0.4 in x 0.12 in.
- Conveniently field cut with scissors every 6 LEDs
- Electrical connectors, mounting tracks and optical diffusers available for easy installation
- Long life: Up to 50,000 hours when temperature at Tc point is maintained at 40°C
- 120° beam angle
- Optimal operation with OPTOTRONIC 24Vdc power supplies
- No UV or IR radiation
- RoHS Compliant
- The OSRAM Advance Power TOPLED delivers high luminous flux

Product Offering

Ordering Description	Wattage (W)	Color
LNRPWFLX/LM10P/W3F-727 9FT	72	2700K
LNRPWFLX/LM10P/W3F-830 9FT	72	3000K
LNRPWFLX/LM10P/W3F-835 9FT	72	3500K
LNRPWFLX/LM10P/W3F-840 9FT	72	4000K
LNRPWFLX/LM10P/W3-847 9FT*	72	4700K
LNRPWFLX/LM10P/W3F-854 9FT	48	5400K
LNRPWFLX/LM10P/W3-865 9FT*	72	6500K

*Available while supplies last. Contact your OSRAM SYLVANIA representative for availability.

Application Information

Applications

- Cove lighting
- Edge lighting transparent/diffuse materials
- Border marking
- Commercial signs
- Emergency/rescue signs
- Path and contour marking
- Backlighting complex contours
- Refrigeration cases
- Display shelves
- Recessed lighting

Specification Data

Catalog #	Type
Project	
Comments	
Prepared by	Date

Ordering Information

Item Number	Ordering Abbreviation	Module Length (ft)	No. of LEDs	Power (W)	Voltage (Vdc)	Current per module (A)	Correlated Color Temperature (K)**	Initial Lumens per module (lm)*	Lumens/ft	Watts/ft
70268	LNRPWRFLX/LM10P/W3F-727 9FT	9	120	72	24	3	2700K	1500	166	8
70331	LNRPWRFLX/LM10P/W3F-830 9FT	9	120	72	24	3	3000K	1900	211	8
70325	LNRPWRFLX/LM10P/W3F-835 9FT	9	120	72	24	3	3500K	2450	272	8
70328	LNRPWRFLX/LM10P/W3F-840 9FT	9	120	72	24	3	4000K	2450	272	8
70137	LNRPWRFLX/LM10P/W3F-847 9FT***	9	120	72	24	3	4700K	1900	211	8
70098	LNRPWRFLX/LM10P/W3F-854 9FT	9	120	48	24	2	5400K	2100	233	5.3
70138	LNRPWRFLX/LM10P/W3-865 9FT***	9	120	72	24	3	6500K	1400	152	8

*All data is related to entire module measured at Tc point of 25°C. Data reflects statistical mean values. Actual data may differ depending on variances in the manufacturing process. End users need to take into account the lumen depreciation as the temperature rises with various thermal management solutions installed.

**CRI >70 for all 2700K and 3000K. All other white color temperatures have a CRI >80.

*** Available while supplies last. Check with your OSRAM SYLVANIA representative for availability.

Ordering Guide

LNRPWRFLX	/	LM10P	/	W3F	7	27
LINEARlight POWER FLEX		Identification Code		Color Code White 3rd Generation Fine Binning	CRI 7>70 8>80	Color Temperature 27 = 2700K 30 = 3000K 35 = 3500K 40 = 4000K
						47 = 4700K 54 = 5400K 65 = 6500K

Power Supply Information

LED Item Number	Color	OPTOTRONIC 20W (51512)		OPTOTRONIC 50W (51598)		OPTOTRONIC 75W (51513, 51514)		OPTOTRONIC 96W (51511, 51510)		OPTOTRONIC 240W (51515)	
		No. of Coupons	Max. Length (ft)	No. of reels (coupons)	Max. Length (ft)	No. of reels (coupons)	Max. Length (ft)	No. of reels (coupons)	Max. Length (ft)	No. of reels (coupons)	Max. Length (ft)
70268	727 (W3F)	5	2.3	0.65 (13)	6.1	1 (20)	9.2	1.3 (26)	11.9	1.1 (22)	10.1
70331	730 (W3F)	5	2.3	0.65 (13)	6.1	1 (20)	9.2	1.3 (26)	11.9	1.1 (22)	10.1
70325	835 (W3F)	5	2.3	0.65 (13)	6.1	1 (20)	9.2	1.3 (26)	11.9	1.1 (22)	10.1
70328	840 (W3F)	5	2.3	0.65 (13)	6.1	1 (20)	9.2	1.3 (26)	11.9	1.1 (22)	10.1
70137	847 (W3)	5	2.3	0.65 (13)	6.1	1 (20)	9.2	1.3 (26)	11.9	1.1 (22)	10.1
70098	854 (W3F)	8	3.6	1 (20)	9.2	1.6 (31)	14.2	2.0 (40)	18.3	1.7 (33)	15.1
70138	865 (W3)	5	2.3	0.65 (13)	6.1	1 (20)	9.2	1.3 (26)	11.9	1.1 (22)	10.1

A coupon is a sub-section of the LINEARlight POWERFLEX module, containing 6 LEDs at a length of 5.5".

The LINEARlight POWER FLEX modules can be dimmed when used with the OT DIM or OT RGB3 DIM. Allow for an additional power consumption of 3 watts for a 70 watt LED load.

These values are an approximation based on the typical "Power" values listed under the "Ordering Information" parameters. To accurately determine the maximum LED load and its appropriate wiring, please evaluate the application based on the Application Note, "Determining the Maximum LED Load on a Constant Voltage Power Supply", document #LED026, and reference the wiring based on the wiring diagram. This document can be found at www.sylvania.com.

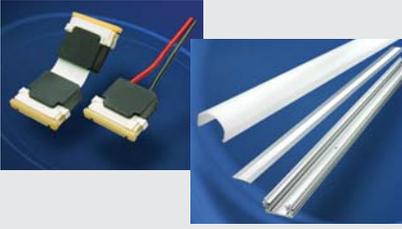
Minimum and Maximum Ratings

Parameter	Symbol	Values
Operating Temperature at Tc point	T_{op}	-20... +85°C (-4 to +185°F)
Storage Temperature	T_{stg}	-20... +85°C (-22 to +185°F)
Voltage Range	V_{max}	23...25 V _{dc}
Maximum Reverse Voltage	V_R	25 V _{dc}

Notes:

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

Accessories



Item Number	Ordering Abbreviaion	Description	Length (in.)	Width (in.)	Wire Length (in.)	Lens
70269	LM2PINFLEXCONN	Input Connector	20.21	0.64	19.69	—
70263	LM2CONN5FLEXCONNBB	Board to Board (short)	1.43	0.64	0.39	—
70131	LINEARlightFLEXCONNBB	Board to Board (long)	6	0.64	0.39	—
71236	LINEARlight Track 1.5P	Mounting Track	18	1.4	—	Prismatic
71237	LINEARlight Track 4.7P	Mounting Track	56	1.4	—	Prismatic
71238	LINEARlight Track 1.5D	Mounting Track	18	1.4	—	Diffuse
71239	LINEARlight Track 4.7D	Mounting Track	56	1.4	—	Diffuse

Note: For FLEX Connector installation instructions reference "FLEX Connectors User's Guide" LED069 found at www.sylvania.com.

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.

These instructions are guidelines for installation of SYLVANIA 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 itself and all its components must not be mechanically stressed.
2. Assembly must not damage or destroy conducting paths on the circuit board.
3. Observe correct electrical polarity! For all W3/W3F types of this product wrong polarity will lead to an emission of red light. **WARNING:** reverse polarity can destroy these modules. Immediately shut off power and correct polarity!
4. Please ensure that the power supply is of adequate power rating to operate the total load. Follow appropriate NEC requirements.
5. When mounting on metallic or otherwise conductive surfaces, an electrical isolation is required at soldering points between the module and the mounting surface.
6. The entire LINEARlight POWER FLEX module can be operated with a power feed at one end of the module.
7. Pay attention to standard Electrostatic Discharge (ESD) precautions when installing the module.
8. The module, as manufactured, has no conformal coating and therefore offers no inherent protection against corrosion. The ability to customize the length of the module by cutting at specifically marked points is a key feature of the product and hence the reason for no factory installed conformal coating. For these reasons, it is recommended that the user complete all module modifications first (cutting, wiring) and then apply a conformal coating in the final stages of installation.
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. For applications involving exposure to humidity and dust, the module must be protected by a fixture, or housing with a suitable protection class. The module can be protected against condensation water by treatment with an appropriate circuit grade conformal coating. The conformal coating should have the following features:
 - Optical transparency
 - UV-resistance
 - Thermal expansion matching the thermal expansion of the module $15-30^{\circ}\text{C}/\text{cm}/\text{K}$
 - Low permeability of steam for all climatic conditions
 - Resistance against corrosive environment

The lacquer APL of the company Electrolube <http://www.electrolube.com> has met the conditions for LINEARlight FLEX in our tests.

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

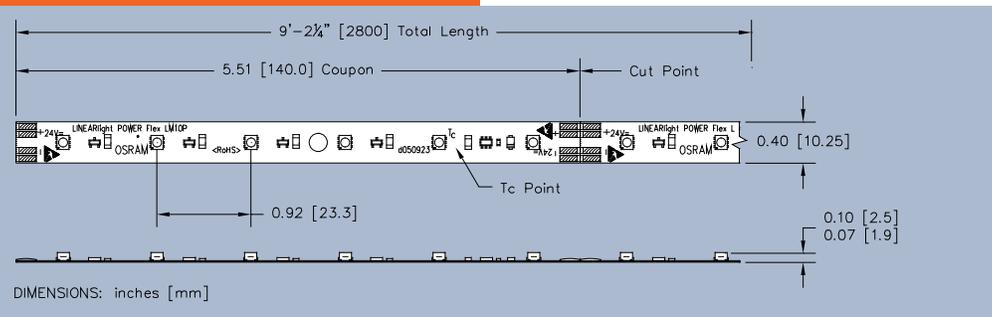
Assembly Information

1. Solder connections should only be performed on designated solder pads (marked "24V +/-"). During soldering, do not exceed the maximum soldering time of 10 seconds and the maximum soldering temperature of 260°C.
2. The Smallest Electrical Unit (SEU) or "coupon" can be removed by cutting with scissors between the designated solder pads (reference "Assembly Diagram" for location).

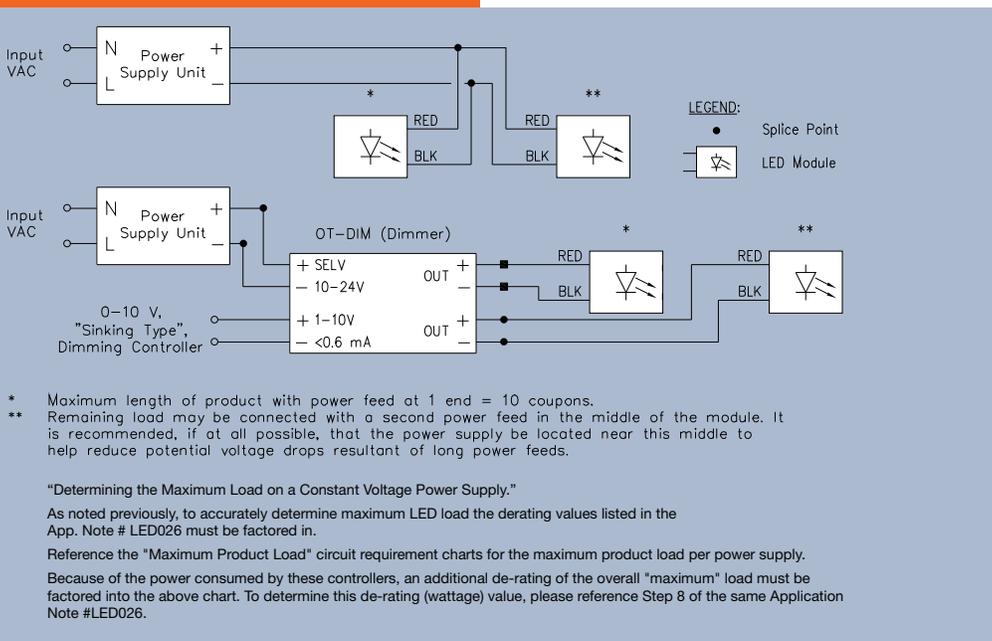
Assembly Information (continued)

- The mounting of the module is facilitated by means of the double-sided adhesive on the back-surface of the module. Care must be taken to provide a clean and dry mounting surface, free of oils or silicone coatings as well as dirt particles. The mounting substrate must have sufficient structural integrity. Take care to completely remove the adhesive backing. Once the module is appropriately positioned, press on the module with about 20N/cm² (refer to application techniques of 3M adhesive transfer tapes).
- The minimum bending radius is 2 cm. The module may be bent over a smaller radius but only in regions of the circuit board containing no electronic components. Such bends should be made only once and fixed in position to avoid cyclic fatigue.
- The thermal expansion coefficient along the length of the module is 17×10^{-6} cm/cm/K. When installing in environments with large variations in temperature (e.g. outdoor applications) and operating length of more than 2m, the use of metallic mounting surfaces is necessary. Otherwise it is advisable to use an additional thicker adhesive tape to absorb the stress of any mismatch in expansion coefficients.
- Installation of the LINEARlight POWER FLEX 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 hrs.)
- 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.
- The fixture makers' strategy should be to design a prototype fixture and test that fixture 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) or equivalent.

Assembly Diagram



Wiring Diagram



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