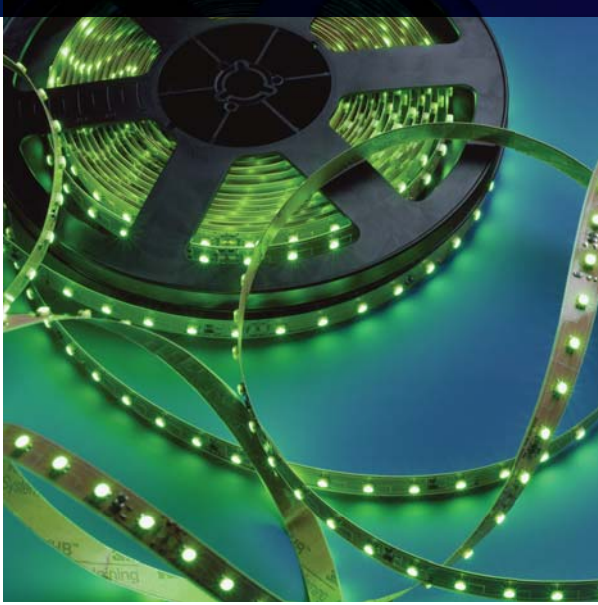


LINEARlight FLEX® TOPLED®

Flexible White or Colored LED Strips



LINEARlight FLEX modules pair the diminutive size of LEDs with a flexible printed circuit board to achieve a high degree of configuration. These modules are ideally suited to match simple contours and complex three dimensional assembly requirements. These modules are ideal for edge lighting transparent and diffuse materials. They are mounted on self-adhesive tape and can be conveniently field-cut.

LINEARlight FLEX TOPLED is optimally paired with OPTOTRONIC® 24Vdc power supplies. 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

- Linear LED strip on flexible printed circuit board with self-adhesive back for easy installation!
- Contour configurations and three dimensional assembly possible
- OSRAM Power TOPLED® delivers high luminous flux
- Size of entire module (LxWxH) 27.5 ft x 0.4 in. x 0.10 in.
- Conveniently field cut with scissors (smallest unit – 10 LEDs @ 5.5")
- Electrical connectors, mounting tracks and optical diffusers available for easy installation
- Long life: Up to 100,000 hours depending on color. White modules service life is up to 50,000 hours when Tc point is maintained at or below 40°C
- Available in various colors: red, true green, blue, yellow and white
- Optimal operation with OPTOTRONIC 24Vdc power supplies
- 120° beam angle
- Minimal heat generation
- No UV or IR radiation

Product Offering

Ordering Description	Wattage (W)	Color
LNRFLXTP/LM10A/W3F-727 27.5 FT	72	2700K
LNRFLXTP/LM10A/W3F-830 27.5 FT	72	3000K
LNRFLXTP/LM10A/W3F-833 27.5 FT	86.4	3300K
LNRFLXTP/LM10A/W3F-835 27.5 FT	86.4	3500K
LNRFLXTP/LM10A/W3F-840 27.5 FT	72	4000K
LNRFLXTP/LM10A/W3F-854 27.5 FT	86.4	5400K
LNRFLXTP/LM10A/W2-854 27.5 FT*	55	5400K
LNRFLXTP/LM10A/W2-865 27.5 FT*	55	6500K
LNRFLXTP/617/LM10A/A1 27.5 FT	72	Amber Red
LNRFLXTP/587/LM10A/Y1 27.5 FT	72	Yellow
LNRFLXTP/525/LM10A/T1 27.5 FT	72	True Green
LNRFLXTP/LM10A-B2 27.5 FT	48	Blue
LNRFLXTP/470/LM10A/B1 27.5 FT	72	Blue

* Available while supplies last

Application Information

Applications

- Cove lighting
- Edge lighting transparent/diffuse materials
- Border lighting
- Commercial signs
- Emergency/Rescue signs

- Path and contour marking
- Backlighting complex contours
- Refrigeration cases
- Display shelves
- Recessed lighting

Specifications and Certifications



The SYLVANIA LINEARlight FLEX TOPLED is UL2108 Listed for US and Canada Class 2 Unit. (UL file # E247649)

RoHS Compliant

Listed in Sign Components Manual (SAM)



Ordering Information

Item Number	Ordering Abbreviation	Module Length (ft)	No. of LEDs	Power (W)	Voltage (Vdc)	Current per module (A)	Color** (wavelength)	Initial Lumens per module (lm)*	Lumens/ft	Watts/ft
70266	LNRFLXTP/LM10A/W3F-727 27.5 FT	27.5	600	72	24	3	2700K	1850	67	3
70332	LNRFLXTP/LM10A/W3F-830 27.5 FT	27.5	600	72	24	3	3000K	2350	85.5	2.6
70356	LNRFLXTP/LM10A/W3F-833 27.5 FT	27.5	600	86.4	24	3.6	3300K	1800	65	3
70327	LNRFLXTP/LM10A/W3F-835 27.5 FT	27.5	600	86.4	24	3.6	3500K	2350	85	3
70333	LNRFLXTP/LM10A/W3F-840 27.5 FT	27.5	600	72	24	3	4000K	2350	85.5	2.6
70291	LNRFLXTP/LM10A/W3F-854 27.5 FT	27.5	600	86.4	24	3.6	5400K	2000	73	3
70089	LNRFLXTP/LM10A/W2-854 27.5 FT***	27.5	600	55	24	2.3	5400K	1290	47	2
70104	LNRFLXTP/LM10A/W2-865 27.5 FT***	27.5	600	55	24	2.3	6500K	1290	47	2
70135	LNRFLXTP/617/LM10A/A1 27.5 FT	27.5	600	72	24	3	617 nm	1620	59	2.6
70061	LNRFLXTP/587/LM10A/Y1 27.5 FT	27.5	600	72	24	3	587 nm	1290	47	2.6
70063	LNRFLXTP/525/LM10A/T1 27.5 FT	27.5	600	72	24	3	525 nm	1200	44	2.6
70320	LNRFLXTP/LM10A-B2 27.5 FT	27.5	600	48	24	2	470 nm	460	17	1.7
70064	LNRFLXTP/470/LM10A/B1 27.5 FT	27.5	600	72	24	3	469 nm	170	6	2.6

* 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. All other white color temperatures have a CRI >80.

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

Ordering Guide

LNRFLXTP	/	617	/	LM10A	/	A	
Module Name		Wavelength		ID Number		Color Code	
LINEARlight FLEX TOPLED						A = Amber Red, Y = Yellow, T = True Green, B = Blue	
LNRFLXTP	/	LM10A	/	W3F	-	7	27
LINEARlight FLEX TOPLED		ID Number		White 3rd Generation Fine Binning		CRI	27 = 2700K 35 = 3500K 54 = 5400K
						7 > 70, 8 > 80	30 = 3000K 40 = 4000K 65 = 6500K
							33 = 3300K

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)
70266	727 (W3F)	16	7.3	0.7 (41)	18.8	1.0 (60)	27.5	1.3 (80)	36.66	1.1 (66)	3x 30.25
70332	830 (W3F)	16	7.3	0.7 (41)	18.8	1.0 (60)	27.5	1.3 (80)	36.66	1.1 (66)	3x 30.25
70356	833 (W3F)	13	6.0	0.6 (34)	15.6	0.9 (52)	23.9	1.1 (66)	30.25	0.9 (55)	3x 25.21
70327	835 (W3F)	13	6.0	0.6 (34)	15.6	0.9 (52)	23.9	1.1 (66)	30.25	0.9 (55)	3x 25.21
70333	840 (W3F)	16	7.3	0.7 (41)	18.8	1.0 (60)	27.5	1.3 (80)	36.66	1.1 (66)	3x 30.25
70291	854 (W3F)	13	6.0	0.6 (34)	15.6	0.9 (52)	23.9	1.1 (66)	30.25	0.9 (55)	3x 25.21
70089	854 (W2)	21	9.6	0.9 (54)	24.7	1.4 (81)	37.1	1.7 (104)	47.70	1.4 (81)	3x 39.40
70104	865 (W2)	21	9.6	0.9 (54)	24.7	1.4 (81)	37.1	1.7 (104)	47.70	1.4 (81)	3x 39.40
70135	Amber Red	16	7.3	0.7 (41)	18.8	1	27.5	1.3 (80)	36.66	1.1 (66)	3x 30.25
70061	Yellow	16	7.3	0.7 (41)	18.8	1	27.5	1.3 (80)	36.66	1.1 (66)	3x 30.25
70063	True Green	16	7.3	0.7 (41)	18.8	1	27.5	1.3 (80)	36.66	1.1 (66)	3x 30.25
70320	Blue	16	7.3	0.7 (41)	18.8	1	27.5	1.3 (80)	36.66	1.1 (66)	3x 30.25
70064	Blue	16	7.3	0.7 (41)	18.8	1	27.5	1.3 (80)	36.66	1.1 (66)	3x 30.25

Notes: 1. A coupon is a sub-section of the LINEARlight FLEX TOPLED module, containing 10 LEDs at a length of 5.5".

2. The LINEARlight FLEX TOPLED modules can be dimmed when used with the OT DIM, or OTRGBDIM controllers. Because of the power consumed by these controllers, an additional de-rating of the overall "maximum" load must be factored into the above chart. To determine this de-rating (wattage) value please reference Step 8 of this same App. Note #LED026.

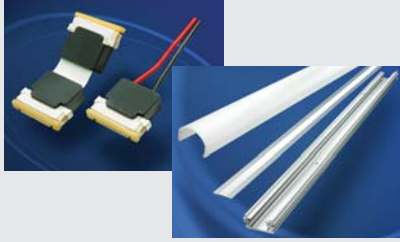
3. These values are an approximation based on the typical "Power" values listed under the "Ordering Information" parameters. To accurately determine the maximum LED load please evaluate the application based on the application note "Determining the Maximum LED Load on a Constant Voltage Power Supply" LED026. This document can be found at www.sylvania.com.

Minimum and Maximum Ratings

Parameter	Symbol	Values
Operating Temperature at Tc Point	T _{op}	-30... +75°C (-22 to +167°F)
Storage Temperature	T _{stg}	-40... +85°C (-22 to +185°F)
Voltage Range	V _{max}	23...25 V _{dc}
Maximum Reverse Voltage	V _R	0 V _{dc}

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.

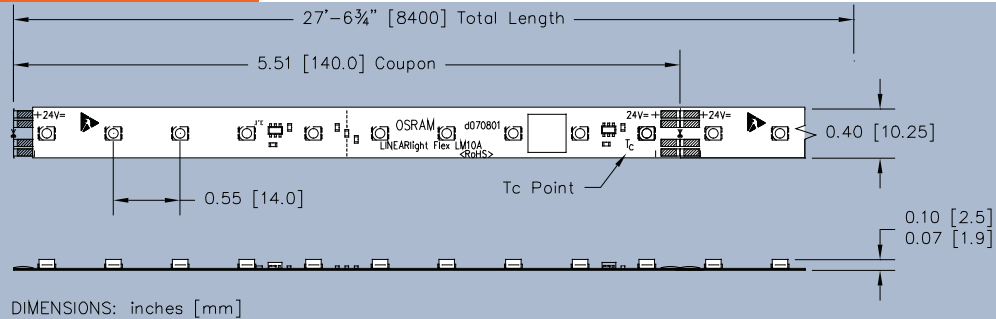
Accessories



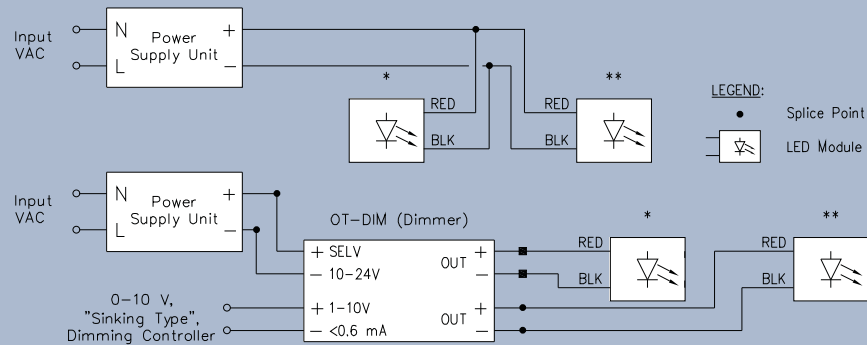
Item Number	Ordering Abbreviation	Description	Length (in.)	Width (in.)	Wire Length (in.)	Lens
70269	LM2PINFLEXCONN	Input Connector	20.21	0.64	19.69	–
70263	LM2CONN5FLEXCONNBB	Board to Board (short)	1.43	0.64	0.39	–
70131	LINEARlightFLEXCONNBB 150mm	Board to Board (long)	6	0.64	0.39	–
71236	LINEARlight 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.

Assembly Diagram



Wiring Diagram



* Maximum length of product with power feed at 1 end: W3F = 25 coupons
 W2 = 35 coupons
 A1, Y1, T1, B1 = 30 coupons

** Remaining load may be connected with additional power feeds in the middle of the module. It is recommended, if at all possible, that the power supply be located near this middle to help reduce potential voltage drops resultant of long power feeds.

To accurately determine maximum LED load the derating values listed in the App. Note # LED026 must be factored in. Reference the "Maximum Product Load" circuit requirement charts for the maximum product load per 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 Underwriter 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.

Safety Information (continued)

1. The LED itself and all its components must not be mechanically stressed and assembly must not damage or destroy conducting paths on the circuit board.
2. 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!
3. Power Supply must be of adequate power rating to operate the total load.
4. When mounting on metallic or otherwise conductive surfaces, electrical isolation is required at soldering points between the module and the mounting surface.
5. Electrostatic Discharge (ESD) precautions must be incorporated when handling or installing the module.
6. 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.
7. 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.
8. 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 $15\text{-}30^{\circ}\text{C}/\text{cm}/\text{K}$
 - 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. SYLVANIA 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).
3. 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).
4. 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.
5. The thermal expansion coefficient along the length of the module is $17 \times 10^{-6}\text{cm}/\text{cm}/\text{K}$. 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.
6. 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's LINEARlight FLEX TOPLED LED modules based on the recommended max number of modules listed. 3. The connectors/cable systems.

The 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 connections are necessary, wires are to be UL Listed, minimum 22 AWG and splice connectors must be UL rated and 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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OPTOTRONIC is a registered trademark of OSRAM GmbH.

TOPLED is a registered trademark of Siemens Aktiengesellschaft Corporation.

Specifications subject to change without notice.

Specification Data

Catalog #

Type

Project

Comments

Prepared by

Date

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