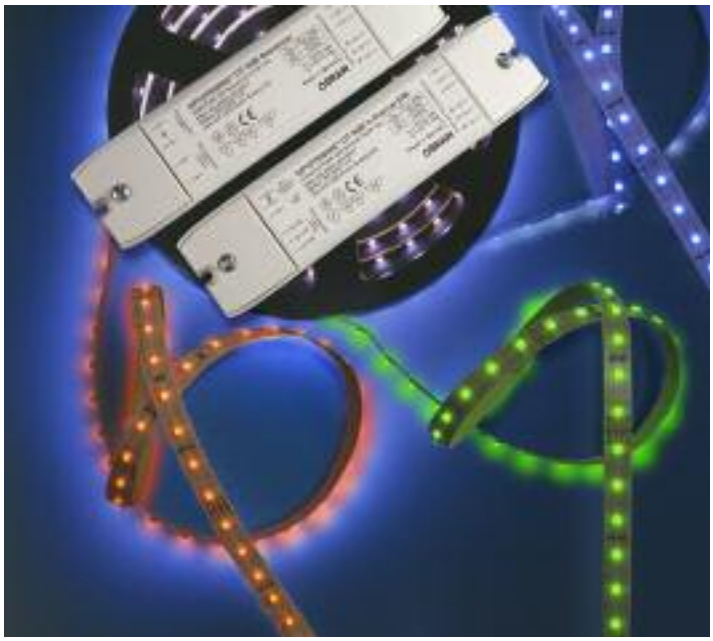
Product Information Bulletin

LINEARlight Flex Top Colormix



- Flexible circuit board with a self-adhesive backing
- Dynamic colored illumination
- Each LED contains individually powered red, green and blue chips
- Each module consists of 200 LEDs, 120° viewing angle per LED
- Modules may be subdivided into smaller sections of 10 LEDs
- 20mm LED spacing for superior uniformity
- Size of entire module (LxW)
  13.1 ft. x 0.45 in. (4000mm x 11.5mm)
- Size of smallest unit (LxW)
  7.9 in. x 0.45 in. (200mm x 11.5mm)
- Maximum assembly: 13.1 ft. (4000mm)
- Low heat generation

NEW OSRAM SYLVANIA LINEARlight Flex Top Colormix provides infinite possibilities for colored lighting.

LINEARlight Flex Top Colormix modules provide dynamic control of colored illumination. Each individual LED contains red, green and blue chips in one LED package that can be controlled by OPTOTRONIC® OT RGB 3CH DIM and OT RGB Sequencer dimming modules to yield an infinite choice of colors, including white. This unique method of color mixing within each LED, achieves better color consistency and uniformity than by combining separate, colored LEDs. The LINEARlight Flex Top Colormix is mounted on a flexible self-adhesive tape that can be conveniently field-cut with scissors. The flexible circuit board is sold in 13.1 ft. reels for long linear runs of LEDs and complex geometries. These dynamic and flexible features enable the systems to be used in a wide range of large-scale applications, including edge lighting of transparent and diffusing materials, illuminating facades and coves and architectural applications. These modules can be used wherever high voltage concerns or space limitations prevent the use of conventional means of illumination.

Product Availability

Product	Color
LNRFLXTP/LM10L/B8-RGB 13.1FT	RGB
LNRFLXTP/LM10L/B7-RGB 13.1FT	RGB

By using 3 diodes in one LED package, color mixing is achieved without color separation.

Application Information

Applications

Edge lighting
Accent lighting
Cove lighting
Color mixing
Controlled color sequencing
Custom color applications

Example Wiring Schematic

Four components are needed to form the Colormix system: OPTOTRONIC® power supplies, OT RGB controllers, LINEARlight Colormix Flex, and a 0-10V controller. (For additional specifications and sample wiring diagrams, refer to Product Information Bulletin ECS042.)

With OT RGB 3CH DIM, custom colors and dynamic color changing is possible. A 0-10V signal for each color controls the light output.

With the OT RGB sequencer, the Colormix system cycles through the saturated color spectrum. A 0-10V input signal controls the rate of the cycle.

Ordering and Specification Information[1]

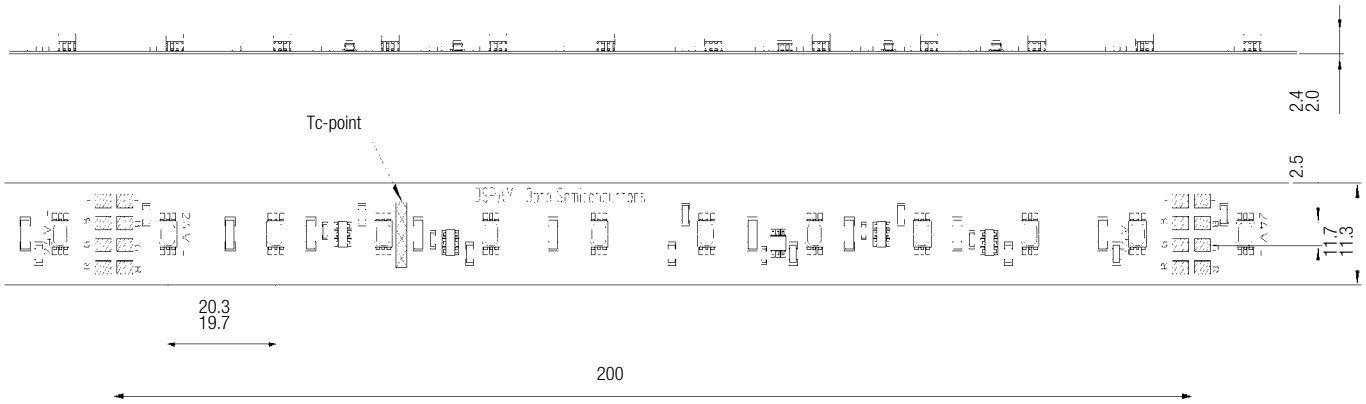
Item Number	Ordering Abbreviation	Power[1] (W)[2]	Voltage (V_{dc})	Current[1] (A)	Viewing Angle	Wavelength (nm)	Luminous[1] Flux (lm)	Approx. Lumens per linear ft.
70082	LNRFLXTP/LM10L/B8-RGB							
	All Colors	54	24	2.25	120°	RGB White	603	45
	Red Channel	12	24	0.5	120°	617	213	16.3
	Green Channel	24	24	1.0	120°	525	336	25.6
	Blue Channel	19.2	24	0.8	120°	467	54	4.1
70127	LNRFLXTP/LM10L/B7-RGB							
	All Colors	50	24	2.3	120°	RGB White	1285	98
	Red Channel	12.1	24	0.5	120°	625	385	29
	Green Channel	24	24	1	120°	525	770	59
	Blue Channel	14.4	24	0.6	120°	467	130	9.9

Flex Connectors

Item Number	Ordering Abbreviation	Length	Width	Wire Length
70183	LM4PINFLEXCONNBPS	0.48 (12.25)	0.65 (16.5)	19.69 (500)
70263	LM2CONN5FLEXCONNBB	1.4 (34.5)	0.65 (16.5)	0.39 (10)

1. Above values are typical for an entire (13.1 ft.) module, which consists of 200 LEDs total. To obtain power, current and lumen values for each separable 10-LED coupon (7.9 in.), divide values in the above table by a factor of 20.
2. The wattage and current values listed for each individual color represent maximum possible values; however, the manufacturing process assures that no module will exhibit the maximum in all colors simultaneously—thus the "All Colors" wattage is less than the sum of the individual color wattage maxima.

Dimensions (In Millimeters)



	Length inches (mm)	Width inches (mm)
Colormix Module	157.5 (4000)	.45 (11.5)
Smallest Coupon	7.9 (200)	.45 (11.5)
LED Spacing	0.79 (20)	

Accessories: Connectors

LM4PINFLEXCONNBPS	70183
LM2CONN5FLEXCONNBB	70263

Minimum and Maximum Ratings

Parameter	Rating
Operating Temperature at Tc-Point	-30…+75°C (-22…+167°F)
Storage Temperature	-40…+85°C (-40…+185°F)
Voltage Range (Vdc)	23…25
Maximum Reverse Voltage	25 V

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.

Safety Information

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. For dimming applications, attention should be paid to the specific references in the "OPTOTRONIC® Technical Guide". OSRAM OPTOTRONIC power supplies are specifically designed with protection features for safe operation. Use of third party power supplies is not recommended.
4. Installation of the LED modules and OSRAM LED power supplies need to be made with regard to all applicable electrical and safety standards. Only qualified personnel should be allowed to perform installations.
5. Correct electrical polarity needs to be observed. Incorrect polarity will result in no light emission.
6. Any installation configuration involving more than one module or module segments should be electrically wired in a parallel connection so as to maintain the 24 V operating condition.
7. Please ensure that the power supply is of adequate capacity to operate the load.
8. The maximum allowable run length of LINEARlight Flex OS-LM10L is 4000 mm. Any additional modules or module segments should have power feeds going back to the power supply directly and not through another module.
9. Pay attention to standard ESD precautions when handling and installing the module.
10. 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, etc.) and then apply a conformal coating in the final stages of installation.
11. 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.
12. 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 board grade conformal coating. The conformal coating should have the following features:

    – Optical transparency
    – UV resistance
    – Thermal expansion properties matching those of the module (15-30 x 10-6 cm/cm/K)
    – Low permeability of steam for all climatic conditions
    – Resistance against corrosive environments

    Note: The "APL" grade conformal coating from Electrolube, Inc. (www.electrolube.com) has met the conditions for the LINEARlight Flex in our tests.

Assembly Information

1. Solder connections should only be performed on designated solder pads. During soldering, do not exceed the maximum soldering time of 10 seconds and the maximum soldering temperature of 260°C.
2. 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 20 N/cm^2 (refer to application techniques of 3M adhesives transfer tapes).
3. The minimum bend 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 and such bends should be made once and fixed in position to avoid cyclic fatigue.
4. The thermal expansion coefficient along the length of the module is 17x10-6 cm/cm/K. When installing in environments with large variations in temperature (e.g. outdoor applications) and operating lengths of more than 2 m, 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.

Power Supply and Dimmer Ordering Information

	①			②			③		④	
Application	**OPTOTRONIC Power Supply**	**Ordering Code**	**Qty**	**OPTOTRONIC RGB Controller**	**Ordering Code**	**Qty**	**Max length of LINEARlight Colormix Strip**	**No. of Coupons**	**0-10V Controllers**	**Qty**
Colormixing, changing	OT6/100-240/24/COS	51501	1	OT RGB 3CH DIM	51517	1	1.3 ft. (400 mm)	2	0-10V Controllers* or three 100 K ohm potentiometers	3
	OT20/120-240/24S	51512	1	OT RGB 3CH DIM	51517	1	4.6 ft. (1400mm)	7		
	OT75/120/24	51513	1	OT RGB 3CH DIM	51517	1	18.4 ft. (5600mm)	28		
	OT75/120-277/24E	51514	1	OT RGB 3CH DIM	51517	1	18.4 ft. (5600mm)	28		
Color spectrum sequencing	OT6/100-240/24/COS	51501	1	OT RGB Sequencer	51518	1	1.3 ft. (400 mm)	2	0-10V Controllers* or one 100 K ohm potentiometer	1
	OT20/120-240/24S	51512	1	OT RGB Sequencer	51518	1	4.6 ft. (1400mm)	7		
	OT75/120/24	51513	1	OT RGB Sequencer	51518	1	18.4 ft. (5600mm)	28		
	OT75/120-277/24E	51514	1	OT RGB Sequencer	51518	1	18.4 ft. (5600mm)	28		

*Please contact OSRAM SYLVANIA for a list of approved 0-10V controllers

Ordering Guide

LNRFLXTP	/	**LM10L**	/	**B7-RGB**
LINEARlight Colormix Flex Top Emitting		Internal ID No.		Color Code R = Red Channel G = Green Channel B = Blue Channel

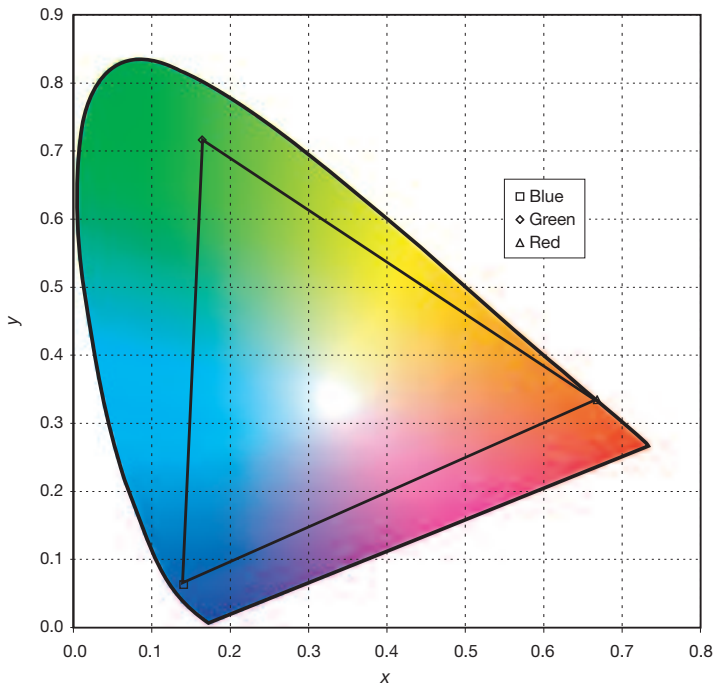
Theory of Color

A combination of all three primary colors of light (red, green, and blue) appears white to the human eye. Combinations of two primaries produce the “secondary” colors — magenta, cyan, and yellow. The three primary colors can be mixed to create almost any other color light. By mixing colors, the corrected Color Temperature (cct) may be adjusted to blend with the surrounding environment.

The LINEARlight Flex Top Colormix can display almost any color by combining the light output of closely spaced RGB chips. All three colors are placed within what appears to be just one LED.

Any color within the triangle below is achievable with the colormix system.

1931 CIE Chromaticity Diagram



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