

# LINEARlight Colormix Flex Protect – LF05CA-P / LF05CE-P

## Technical Datasheet



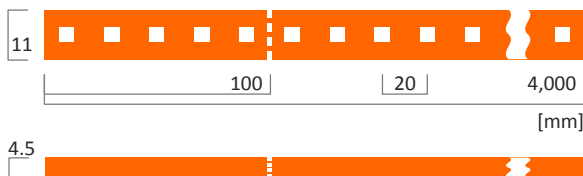
### Benefits

For outdoor use → IP67  
 High performance silicone:  
 - extreme long life time: 50.000 h  
 - high flexibility  
 Premounted feeder for easy connection  
 Attractive Design  
 - Elegant white appearance  
 - Electronic components hidden

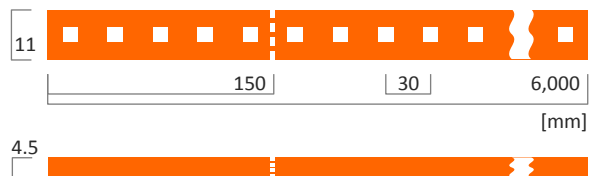
### Applications

Ships and boats, wall integration  
 Machine lighting  
 Path illumination, illuminated signs  
 Architectural lighting

LF05CA-RGB3-P



LF05CE-RGB1-P



### Quick reference

Product	Order Code	Color	Dominant Wavelength	W/m	lm/m	lm/W	Shipping Units
LF05CA-RGB3-P	4008321977205	RGB		<b>18,0</b>	<b>435</b>	<b>24</b>	<b>8</b>
		Red	625	6,7	114	17	
		Green	525	9,5	298	32	
		Blue	465	1,9	23	12	
LF05CE-RGB1-P	4008321977182	RGB		<b>6,5</b>	<b>180</b>	<b>28</b>	<b>8</b>
		Red	625	2,7	120	16	
		Green	525	3,1	292	34	
		Blue	465	0,7	23	11	

### Technical features

<b>Protection Type</b>	IP 67 (outdoor use)
<b>High performance Silicone</b>	High UV-resistancy Saltmist proof
<b>Dimmable</b>	Pulse width modulation (PWM)
<b>Lifetime (L70B50 @ Tc=40°C)</b>	50,000 h
<b>Adhesive tape on backside</b>	Tesa (High Performance Tape)
<b>Fulfilled standards/tests</b>	Flammability: Glow-wire test with 850° – EN60598-1 Mixed gas corrosion test – IEC60068-2-60
<b>Complementary systems</b>	CONNECTsystem PROTECT, SLIM TRACK, OPTOTRONIC

Due to the special conditions of manufacturing processes of LED, 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.  
 Subject to change without notice. Errors and omissions excepted. **Version: 2014-05-06**

**Technical operating data (for overall module)**

Product	Order Code	Color	Voltage [V]	Power [W]	Current [A]	Luminous Flux [lm]	Radiance Angle [°]	Overall Length
LF05CA-RGB3-P	4008321977205	RGB	24	72	3	1740	120	4 m
		Red	24	27	1,1	456		
		Green	24	38	1,6	1193		
		Blue	24	7	0,3	92		
LF05CE-RGB1-P	4008321977182	RGB	24	39	1,6	1080	120	6 m
		Red	24	16	0,7	1161		
		Green	24	19	0,8	2822		
		Blue	24	4	0,2	222		

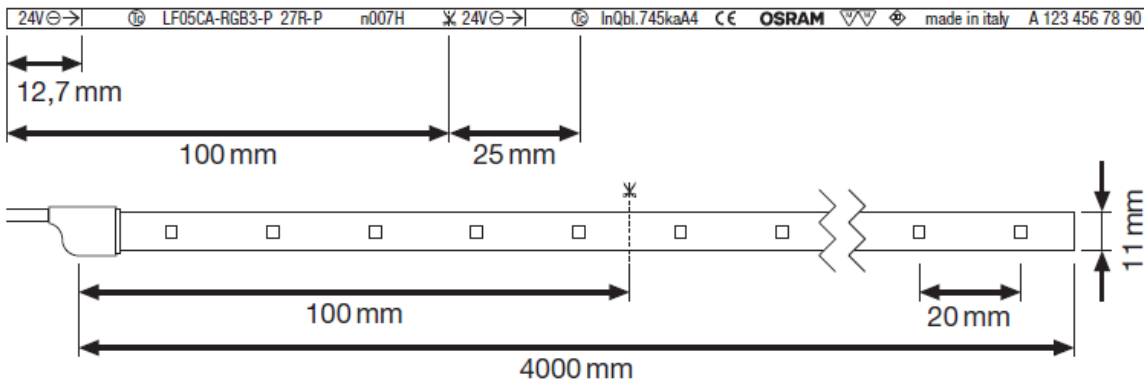
**Minimum & maximum ratings**

	Operating temperature at Tc-Point [°C]	Storage temperature [°C]	Voltage range [V dc]	Reverse Voltage [V dc]
LF05CA/E-P	-30 ... +75°C	-40 ... +85°C	23 ... 25 V	25 V

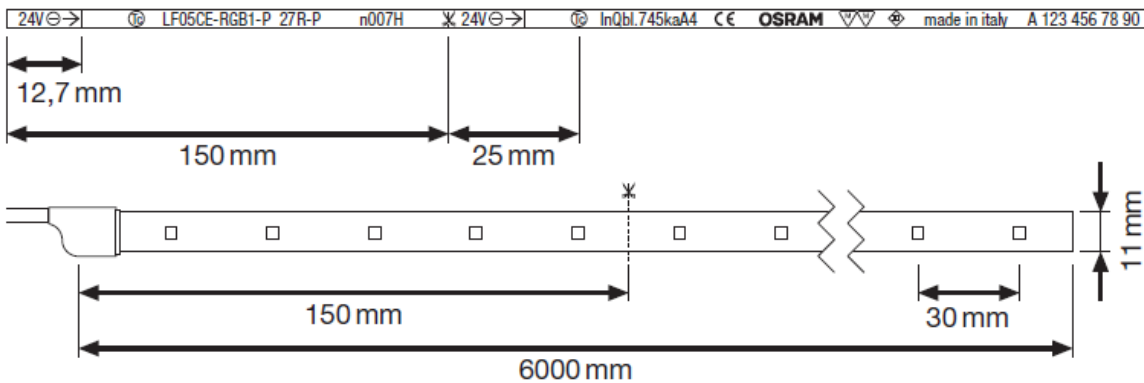
- ▶ Exceeding maximum ratings for operating and storage temperature will reduce expected life time or destroy the LED Module.
- ▶ Exceeding maximum ratings for operating voltage will cause hazardous overload and will likely destroy the LED Module.
- ▶ The temperature of the LED module must be measured at the Tc-point according to EN60598-1 in a thermally constant status with a temperature sensor or a temperature sensitive label. Drive all channels on 100% to determine the temperature. For exact location of the Tc-point see drawing below.

**Technical drawings**

**LF05CA-P**



**LF05CE-P**



Due to the special conditions of manufacturing processes of LED, 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. Subject to change without notice. Errors and omissions excepted. **Version: 2014-05-06**

## Safety information

- ▶ The module has to be protected from mechanical loads
- ▶ Assembly must not damage or destroy conducting paths on the circuit board.
- ▶ Installation of LED modules (with power supplies) needs to be made with regard to all applicable and safety standards. Only qualified personnel should be allowed to perform installations.
- ▶ Observe correct polarity!  
Depending on the product incorrect polarity will lead to emission of no light. The module can be damaged after a few seconds. To prevent this, correct polarity immediately! (see "reverse voltage", page 2)
- ▶ Parallel connection is highly recommended as safe electrical operation mode.  
Serial connection is not recommended. Unbalanced voltage drop can cause hazardous overload and damage the LED module.
- ▶ ESD protection methods have to be observed when cutting and connecting the module. on ESD handling in the application note ESD protection for LED modules.
- ▶ The LED Module must not be operated under water
- ▶ Please ensure that the power supply is of adequate power to operate the total load.

### In order to drive OSRAM LED-Modules safely, it is absolutely necessary to operate them with an electronically stabilized SELV power supply protecting against short circuits, overload and overheating.

To also ease the luminaire/installation approval, electronic control gear for LED or LED modules should carry the CE mark and be ENEC certified. In Europe the declarations of conformity must include the following standards:

CE: EC 61347-2-13, EN 55015, IEC 61547 and IEC 61000-3-2 - ENEC: 61347-2-13 and IEC/EN 62384.

Also check for the mark of an independent authorized certification institute.

Please see the relevant brochure for more detailed information (see "Related and Further Information")

**OSRAM OPTOTRONIC® control gear complies to all relevant standards and guarantees safe operation.**

## Assembly Information

- ▶ The smallest electrical unit (SEU) (100mm / 150mm- 5 LEDs) can be removed by cutting at the printed marks at the side.
- ▶ After cutting connect the module via CONNECTsystem PROT. Insert module into connector and apply pressure on a hard surface until locked.
- ▶ The mounting of the single LED coupons 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 particle. 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/cm<sup>2</sup> (refer to application techniques of Tesa adhesive transfer tapes).  
To support adhesion at higher temperatures, use additional mounting brackets if temperature exceeds T<sub>c</sub> = 40°C.
- ▶ The minimum bending radius is 5 cm.
- ▶ When installing in environments with large variations in temperature (e.g. outdoor applications) and operating length of more than 2 m, the use of adequate mounting surfaces is necessary. Otherwise it is advisable to use an additional thicker adhesive tape to absorb the stress of any mismatch in expansion.
- ▶ If temperature exceeds T<sub>c</sub> = 40°C, additional mounting brackets are needed.
- ▶ Pay attention to avoid highly corrosive atmospheres, e.g. permanent high humidity or Hydrogen Sulfide (H<sub>2</sub>S).  
With current LED technology, H<sub>2</sub>S is causing accelerated corrosion which will lead to shortened lifetime or premature failure.  
Sources for H<sub>2</sub>S may be rubber, foamed rubber, soft-foam-tapes, sealings on rubber basis, natural sources (e.g. sulfur springs), etc.  
To avoid H<sub>2</sub>S from sulfur-vulcanized rubber it is necessary to switch to silicon based materials or rubber that is Peroxid-crosslinked.  
Indication may be found in the material datasheet of the rubber supplier.

## Complementary systems and accessories

### Accessories

Type	Product	EAN	Shipping units
<b>CONNECTsystem PROTECT</b>			
Endcap for module	LF-ENDCAP PROTECT	4008321977106	10
4pin Feeder	LF-4PIN PROTECT	4008321977076	5
4pin Jumper	LF-4CONN PROTECT	4008321977090	5
<b>SLIM TRACK System</b>			
SLIM TRACK	LF-LTS-2100 SLIM TRACK	4008321978981	40
Mounting Bracket for SLIM TRACK	LF-LTS-MB	4008321979025	35 / 280
SLIM TRACK Cover, very low, clear	LF-LTS COVER C	4008321790187	40
SLIM TRACK Cover, hight, diffuse	LF-LTS-COVER-DIFFUSE	4008321979001	40
Silicone Endcap for LF-LTS-COVER-DIFFUSE	LF-LTS-ENDCAP	4008321979049	20 / 160

Due to the special conditions of manufacturing processes of LED, 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.  
Subject to change without notice. Errors and omissions excepted. **Version: 2014-05-06**

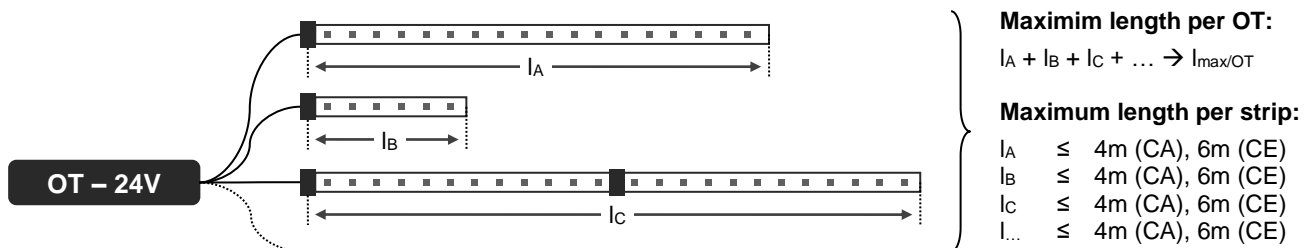
## OPTOTRONIC

► Please consider that lengths may differ if further controls are installed.

Product reference	EAN10	LF05CA-RGB3-P 4008321977205	LF05CE-RGB1-P 4008321977182
<b>Non-dimmable</b>			
OPTOTRONIC OT 6/200-240/24 CE	4008321113269	up to 0,3 m	up to 0,9 m
OPTOTRONIC OT 8/200-240/24	4008321040169	up to 0,4 m	up to 1,2 m
OPTOTRONIC OT 20/220-240/24	4050300618111	up to 1,1 m	up to 3 m
OPTOTRONIC OT 20/120-240/24 S	4050300662626	up to 1,1 m	up to 3 m
OPTOTRONIC OT 30/220-240/24 P	4052899043497	up to 1,6 m	up to 4,5 m
OPTOTRONIC OT 50/220-240/24	405289905566	up to 2,7 m	up to 7,65 m (**)
OPTOTRONIC OT 75/220-240/24	4050300817477	up to 4,1 m (*)	up to 11,4 m (**)
OPTOTRONIC OT 75/220-240/24 E	4008321362476	up to 4,1 m (*)	up to 11,4 m (**)
OPTOTRONIC OT 80/220-240/24 P	4008321981684	up to 4,4 m (*)	up to 12,3 m (**)
OPTOTRONIC OT 120/220-240/24 P	4008321981707	up to 6,6 m (*)	up to 18,45 m (**)
OPTOTRONIC OT 240/220-240/24 P	4008321981721	up to 13,3 m (*)	up to 36,9 m (**)
<b>Dimmable</b>			
OPTOTRONIC OT EASY 60 II	4008321187796	up to 3,3 m	up to 9,15 m (**)
OPTOTRONIC OT EASY 80	4008321808363	up to 4,4 m (*)	up to 12,3 m (**)
OPTOTRONIC OT 65/220-240/24 3DIM E	4008321964403	up to 3,6 m	up to 9,9 m (**)
OPTOTRONIC OTi DALI 75/220-240/24 1-4 CH	4008321371560	up to 4,1 m (*)	up to 11,4 m (**)
OPTOTRONIC OT 80/220-240/24 DIM P	4008321981677	up to 4,4 m (*)	up to 12,3 m (**)
OPTOTRONIC OT 120/220-240/24 DIM P	4008321981691	up to 6,6 m (*)	up to 18,45 m (**)
OPTOTRONIC OT 240/220-240/24 DIM P	4008321981714	up to 13,3 m (*)	up to 36,9 m (**)

(\*) Total length operable per driver. Length of single strip or series connection may not exceed 4 m.

(\*\*) Total length operable per driver. Length of single strip or series connection may not exceed 6 m.



## Contacts & information

German engineering meets Italian elegance – **creating a European product**  
 All LINEARlight Flex® Protect are Made in Italy by OSRAM, with over 100 years of experience in light solutions.



### OSRAM GmbH

Marcel-Breuer-Straße 6  
 80807 Munich, Germany  
 www.osram.com  
 +49.89.6213-0

Sales and technical support is given by the local OSRAM subsidiaries.  
 On the OSRAM website all subsidiaries are listed with complete address and phone numbers.

OSRAM LED Systems  
 OSRAM: FLEXIBLE LED MODULES  
 OSRAM catalogue  
 General information

[www.osram.com/led-systems](http://www.osram.com/led-systems)  
[www.osram.com/flex](http://www.osram.com/flex)  
<http://catalog.osram.com>  
[www.osram.com](http://www.osram.com)

Due to the special conditions of manufacturing processes of LED, 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.  
 Subject to change without notice. Errors and omissions excepted. **Version: 2014-05-06**