

Light is OSRAM

OSRAM

LINEARLIGHT FLEX DIFFUSE 400

LFD400T / LFD400MT / LFD400S / LFD400MS

Technical Datasheet

Subtle accentuation or comfortable ambient lighting: Integrate homogenous lines of light in architecture, furniture or any object where you need the flexibility of the new diffused LINEARLIGHT FLEX LED modules. Paired with the new slim 24V OPTOTRONIC Dali Indoor drivers you can materialize your ideas in lighting.

Key Features & Benefits

- Diffused light lines without visible spots
- Flexible & cuttable module to support design freedom
- IP67 protection with high performance silicone
- Outdoor use possible: UV & salt mist resistant
- Long operational length per single power feed possible (up to 6m)
- Ideal for luminaire designs
- Extra strong self-adhesive backside for easy mounting
- 24V technology for easy dimensioning.

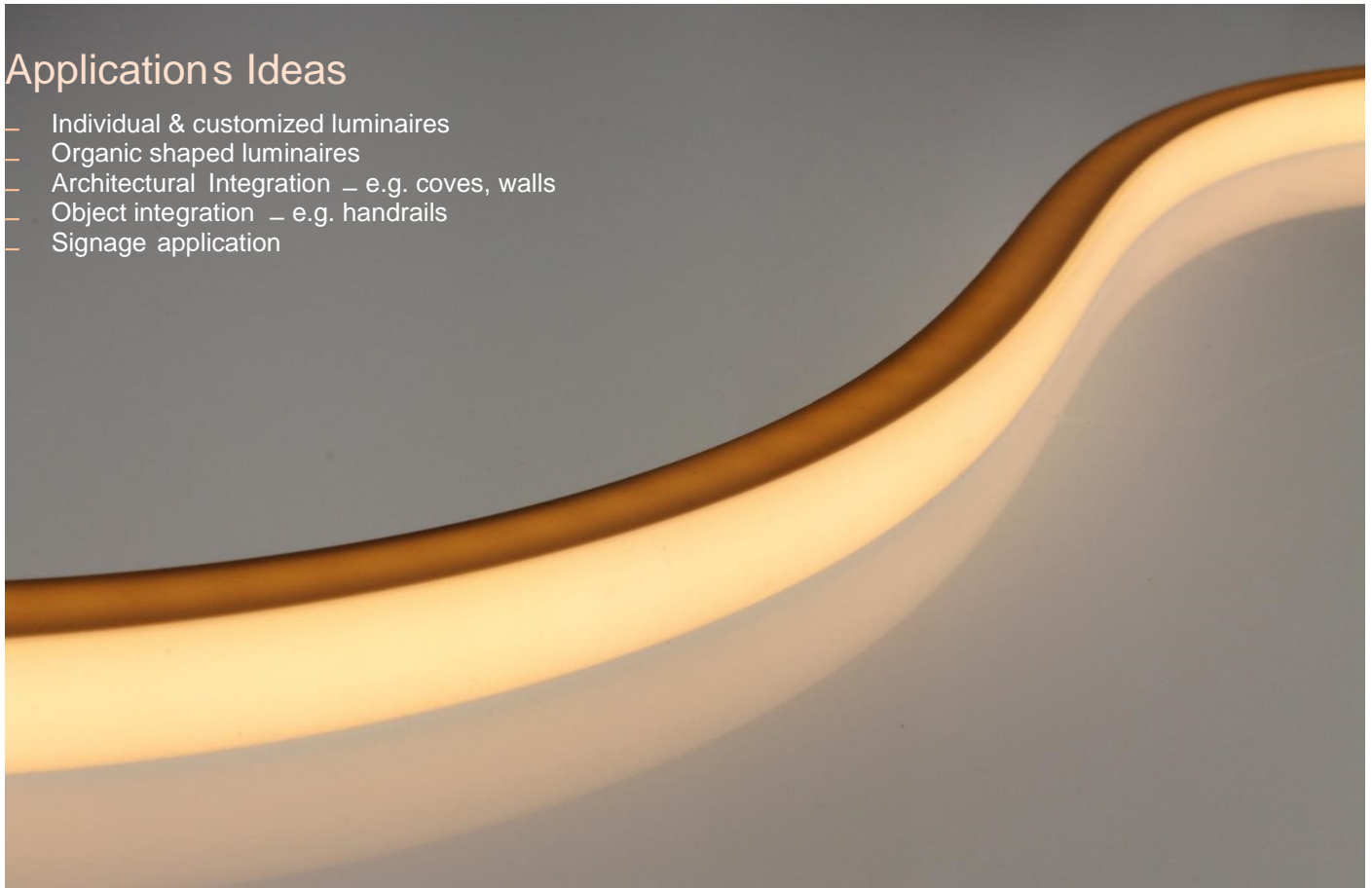
Recommended in system use with OPTOTRONIC®

- Increased reliability due to single piece reel-to-reel technology
- Dimmable with PWM technology

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Applications Ideas

- Individual & customized luminaires
- Organic shaped luminaires
- Architectural Integration – e.g. coves, walls
- Object integration – e.g. handrails
- Signage application



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Quick Reference

Top-bending modules (white light colors)

Product	Order Code	Color	Color Temp. [K]	CRI	V	W/m	lm/m	lm/W	Operable length [mm]	Beam Angle (°)
LFD400T-G1-827-06	4052899953512	white	2700	>80	24	7.2	490	68	6,000	120
LFD400T-G1-830-06	4052899953529	white	3000	>80	24	7.2	490	68	6,000	120
LFD400T-G1-840-06	4052899953536	white	4000	>80	24	7.2	480	67	6,000	120
LFD400T-G1-865-06	4052899953543	white	6500	>80	24	7.2	460	64	6,000	120

Top-bending modules (monochromatic light colors)

Product	Order Code	Color	Wavelength range	CRI	V	W/m	lm/m	lm/W	Operable length [mm]	Beam Angle (°)
LFD400MT-G1-BL-06	4052899953550	blue	457-467	–	24	12.0	60	5	6,000	120
LFD400MT-G1-GR-06	4052899953567	green	525-539	–	24	12.0	285	24	4,000	120
LFD400MT-G1-GR-03	4052899450851	green	525-539	–	24	12.0	285	48	4,000	120
LFD400MT-G1-RE-06	4052899953574	red	612-626	–	24	12.0	320	27	6,000	120
LFD400MT-G1-YE-06	4052899953581	yellow	586-594	–	24	12.0	162	14	6,000	120
LFD400MT-G1-OR-06	4052899953598	orange	603-611	–	24	12.0	175	15	6,000	120

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Side-bending modules (white light colors)

Product	Order Code	Color	Color Temp. [K]	CRI	V	W/m	lm/m	lm/W	Operable length [mm]	Beam Angle (°)
LFD400S-G1-827-06	4052899953611	white	2700	>80	24	7.2	410	57	6,000	120
LFD400S-G1-830-06	4052899953628	white	3000	>80	24	7.2	410	57	6,000	120
LFD400S-G1-840-06	4052899953635	white	4000	>80	24	7.2	410	57	6,000	120
LFD400S-G1-865-06	4052899953642	white	6500	>80	24	7.2	350	52	6,000	120

Side-bending modules (monochromatic light colors)

Product	Order Code	Color	Wavelength range	CRI	V	W/m	lm/m	lm/W	Operable length [mm]	Beam Angle (°)
LFD400MS-G1-BL-06	4052899953659	blue	457-467	–	24	12.0	55	5	6,000	120
LFD400MS-G1-GR-06	4052899953666	green	525-539	–	24	12.0	260	22	4,000	120
LFD400MS-G1-GR-03	4052899450882	green	525-539	–	24	12.0	260	43	4,000	120
LFD400MS-G1-RE-06	4052899953673	red	612-626	–	24	12.0	240	20	6,000	120
LFD400MS-G1-YE-06	4052899953680	yellow	586-594	–	24	12.0	150	13	6,000	120
LFD400MS-G1-OR-06	4052899953697	orange	603-611	–	24	12.0	160	13	6,000	120

Technical operating data for complete reel

Top-bending modules (white light colors)

Product	Order Code	Power [W]	Current [A]	Luminous Flux [lm]	Module Length [m]
LFD400T-G1-827-06	4052899953512	43.2	1.8	2,940	6
LFD400T-G1-830-06	4052899953529	43.2	1.8	2,940	6
LFD400T-G1-840-06	4052899953536	43.2	1.8	2,880	6
LFD400T-G1-865-06	4052899953543	43.2	1.8	2,760	6

Top-bending modules (monochromatic light colors)

Product	Order Code	Power [W]	Current [A]	Luminous Flux [lm]	Module Length [m]
LFD400MT-G1-BL-06	4052899953550	72.0	3.0	360	6
LFD400MT-G1-GR-06	4052899953567	72.0	3.0	1,710	6

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LFD400MT-G1-GR-03	4052899450851	36.0	1.5	855	3
LFD400MT-G1-RE-06	4052899953574	72.0	3.0	1,920	6
LFD400MT-G1-YE-06	4052899953581	72.0	3.0	972	6
LFD400MT-G1-OR-06	4052899953598	72.0	3.0	1,050	6

Side-bending modules (white light colors)

Product	Order Code	Power [W]	Current [A]	Luminous Flux [lm]	Module Length [m]
LFD400S-G1-827-06	4052899953611	43.2	1.8	2,460	6
LFD400S-G1-830-06	4052899953628	43.2	1.8	2,460	6
LFD400S-G1-840-06	4052899953635	43.2	1.8	2,460	6
LFD400S-G1-865-06	4052899953642	43.2	1.8	2,250	6

Side-bending modules (monochromatic light colors)

Product	Order Code	Power [W]	Current [A]	Luminous Flux [lm]	Module Length [m]
LFD400MS-G1-BL-06	4052899953659	72.0	3.0	330	6
LFD400MS-G1-GR-06	4052899953666	72.0	3.0	1,560	6
LFD400MS-G1-GR-03	4052899450882	36.0	1.5	780	3
LFD400MS-G1-RE-06	4052899953673	72.0	3.0	1,440	6
LFD400MS-G1-YE-06	4052899953680	72.0	3.0	900	6
LFD400MS-G1-OR-06	4052899953697	72.0	3.0	960	6

Technical Specifications

General

Dimmable	Pulse width modulation (PWM)
Binning	Fine white (3.8 Steps Ellipse MacAdam)
Lifetime	up to 50,000 h (L70B50, Tc max)
Adhesive tape on backside	3M 4614
Complementary systems	DIFFUSE CONNECT SYSTEM, LFD MOUNTING SYSTEM, OPTOTRONIC
Certifications	CE, UL recognized, VDE, ENEC10, EAC

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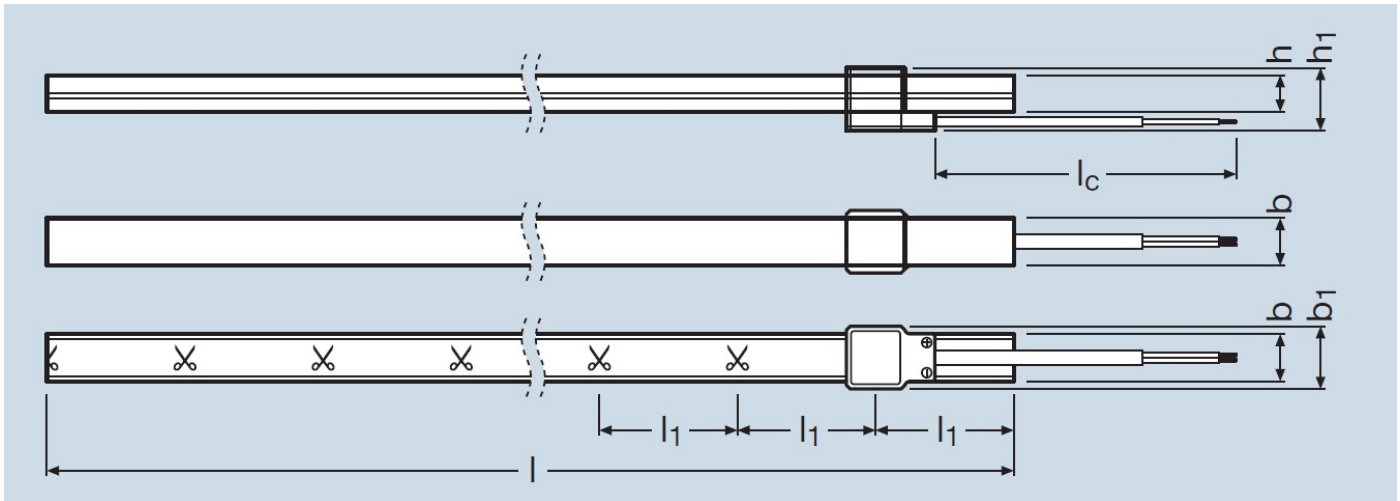
Operating conditions

Operating temperature Tc-Max (measured at Tc-Point) [°C]	-20 – +65 °C
Performance temperature Tp (measured at Tc-Point) [°C]	30°C (LFD400T, LFD400S) 35°C (LFD400MT, LFD400MS)
Storage temperature [°C]	-20 – +85 °C
Voltage range [V dc]	23 – 25
Reverse Voltage [V dc]	25

- 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. For exact location of the Tc-point see drawing below.

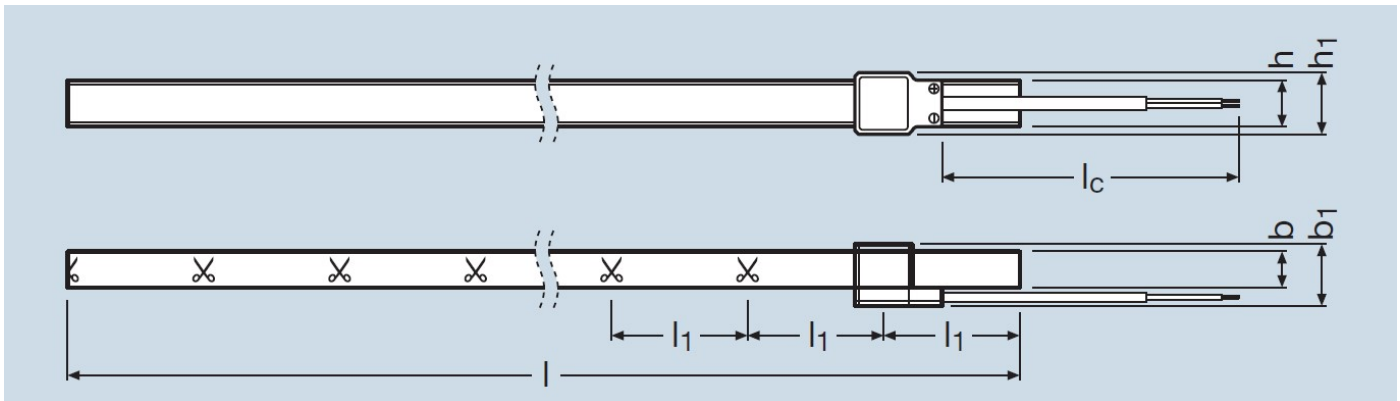
Technical Drawings

Top bending versions



Product	l [mm]	l_1 [mm]	b [mm]	b_1 [mm]	h [mm]	h_1 [mm]	l_c [mm]
LFD400T-G1-XXX-06	6,000	50	14.1	18.3	10	19	500
LFD400MT-G1-XX-06	6,000	40	14.1	18.3	10	19	500
LFD400MT-G1-XX-03	3,000	40	14.1	18.3	10	19	500

Side bending versions



Product	l [mm]	l_1 [mm]	b [mm]	b_1 [mm]	h [mm]	h_1 [mm]	l_c [mm]
LFD400S-G1-XXX-06	6,000	50	10	19	14.1	18.3	500
LFD400MS-G1-XX-06	6,000	40	10	19	14.1	18.3	500
LFD400MS-G1-XX-03	3,000	40	10	19	14.1	18.3	500

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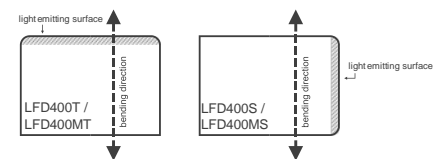
Safety information

- The LED module itself and all its components must not be mechanically stressed.
(The modules need explicitly additional protection if installation requirements need walkable light lines)
- 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 electrical 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 red or no light. The module can be destroyed!
Correct polarity immediately!
- 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.
- Please ensure that the power supply is of adequate power to operate the total load.
- When mounting on metallic or otherwise conductive surfaces, there needs to be an electrical isolation at soldering points between module and the mounting surface.
- The maximum length of a coherently operable unit are 6m
Exception: the green module may only be operated at max 4m length. A longer operation will result in reduced lighting quality. However, 6m may be operated from safety side.
- Pay attention to standard ESD precautions when installing and handling the module.
- 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 completes all module modifications first (cutting wiring) and then apply a conformal coating in the final stages of installation
- 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.
- 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:
 - o Optical transparency
 - o UV-resistance
 - o Thermal expansion matching the thermal expansion of the module
 - o Low permeability of steam for all climatic conditions
 - o Resistance against corrosive environment.

In order to drive OSRAM LED-Modules safely, it is absolutely necessary to operate them with an electronically stabilized 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 with all relevant standards and guarantees safe operation.

Assembly Information

- The smallest unit can be removed by cutting with scissors between the designated solder pads.
- Mounting of the module is facilitated by the double-sided adhesive tape on the back-surface of the module.
- Mounting surface must be clean and dry, 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 protective backing. Once the module is appropriately positioned, pre on the module with about 20N/cm² (refer to application techniques of 3M adhesive transfer tapes). In difficult cases the use of a prime may help.
- Correct bending to prevent circuit damages:
 - o The minimum bending radius of 10 cm must be observed
 - o Bending is only allowed within one axis and depending on module type (see graphic to the right)
 - o Torsion will damage the circuit
- When installing in environments with large variations in temperature (e.g. outdoor applications) and operating length of more than 2 m, the use of



of LINEARlight Flex Diffuse modules 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. - Installation must be handled by 2 people

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Complementary Systems, Accessories & Shipping information

Accessories to be used with top-bending modules (LFD400T & LFD400MT)

Description	Pictures/ Dimensions	Product Name	Ordering code
Middle power feeder	1)	FX-DCS-G1-CM2PF-IP67-0500-X5	4052899451971
Module to module middle jumper	2)	FX-DCS-G1-CM2PJ-IP67-0190-X5	4052899452039
Mounting Bracket	3)	FX-LFDM-G1-BT-17H11	4052899452497
Mounting Bracket with additional wing	4)	FX-LFDM-G1-BTL-17H11E9	4052899452527
Feeder Kit with Endcaps & Glue	1) 5)	FX-DCS-G1-CM2PF-IP67-TOPKIT5	4052899451995
Jumper Kit with Endcaps & Glue	2) 5)	FX-DCS-G1-CM2PJ-IP67-TOPKIT5	4052899452053
Endcaps & Glue	5)	FX-DCS-G1-ECT-KIT20	4052899452107
Double-sided Endcaps & Glue	6)	FX-DCS-G1-EHT-KIT20	4052899452176
Silicone Glue 25g	n/a	FX-DCS-G1-GL-25	4052899452244

Accessories to be used with side-bending modules (LFD400S & LFD400MS)

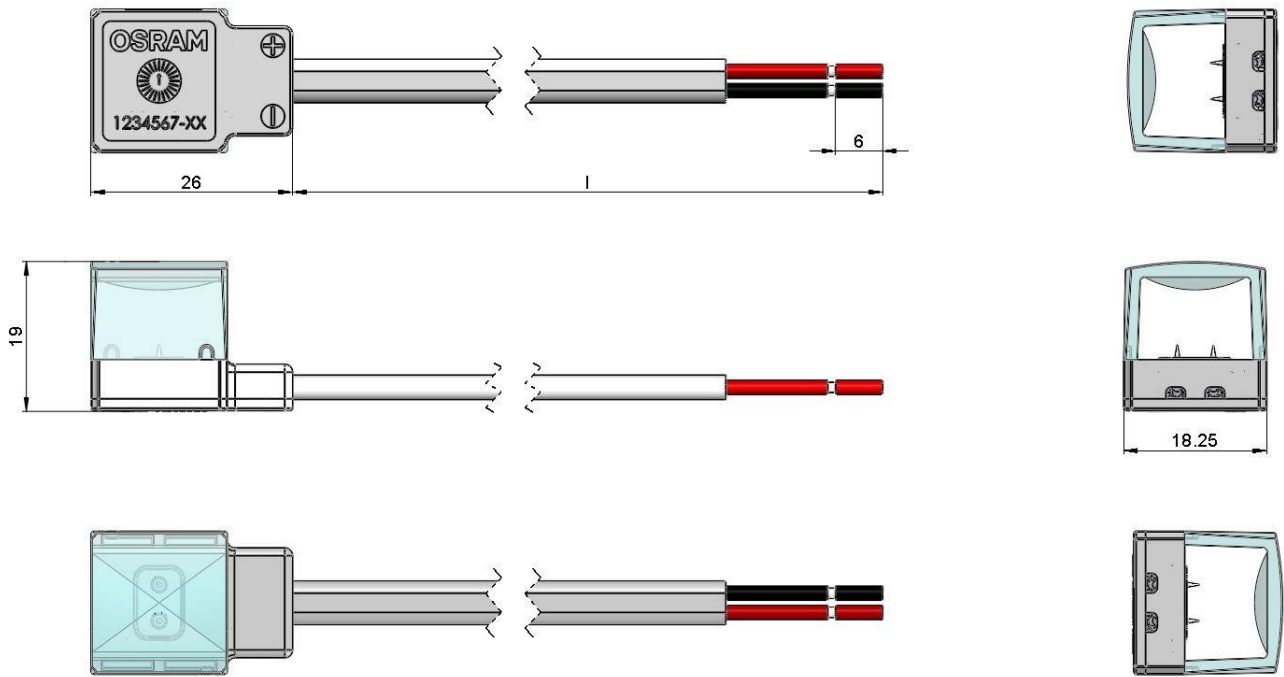
Description	Pictures/ Dimensions	Product Name	Ordering code
Middle power feeder	1)	FX-DCS-G1-CM2PF-IP67-0500-X5	4052899451971
Module to module middle jumper	2)	FX-DCS-G1-CM2PJ-IP67-0190-X5	4052899452039
Mounting Bracket	7)	FX-LFDM-G1-BS-12H13	4052899452558
Mounting Bracket with additional wing	8)	FX-LFDM-G1-BSL-12H13E9	4052899452589
Feeder Kit with Endcaps & Glue	1) 9)	FX-DCS-G1-CM2PF-IP67-SIDEKIT5	4052899452015
Jumper Kit with Endcaps & Glue	2) 9)	FX-DCS-G1-CM2PJ-IP67-SIDEKIT5	4052899452077
Endcaps & Glue	9)	FX-DCS-G1-ECS-KIT20	4052899452121
Double-sided Endcaps & Glue	10)	FX-DCS-G1-EHS-KIT20	4052899452206
Silicone Glue 25g	n/a	FX-DCS-G1-GL-25	4052899452244

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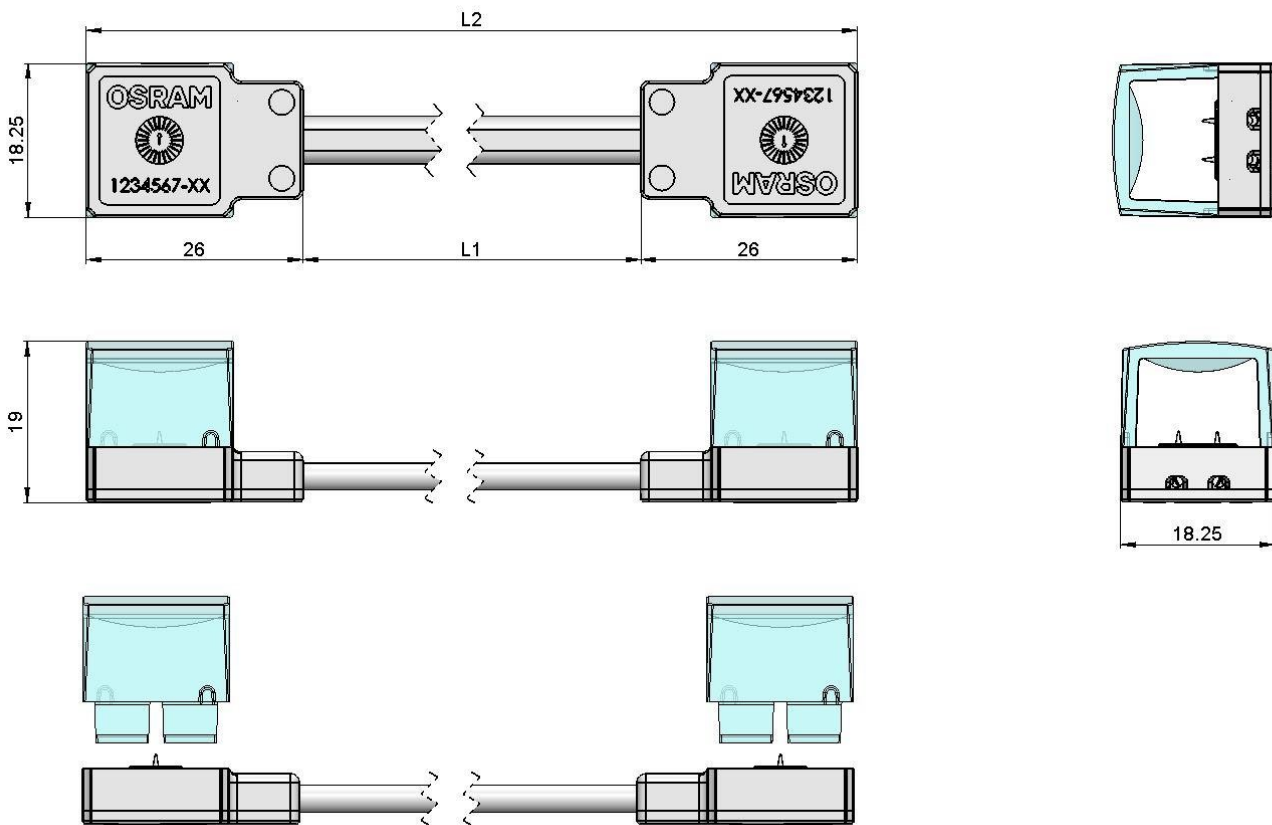
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1) Middle power feeder

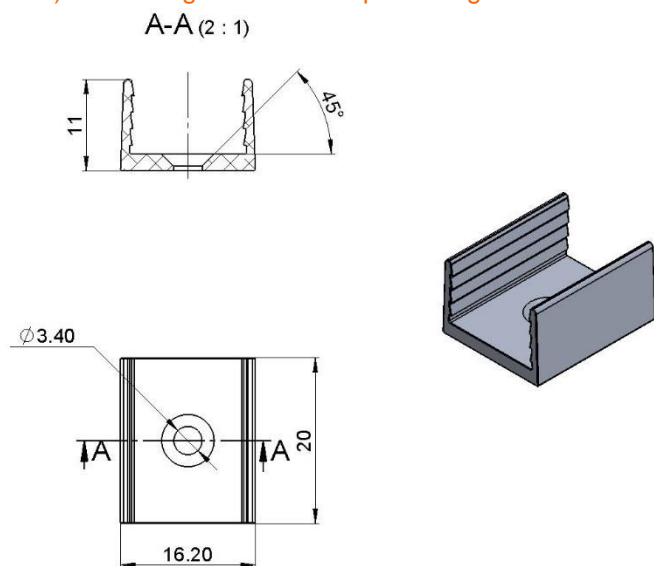


2) Module to module middle jumper

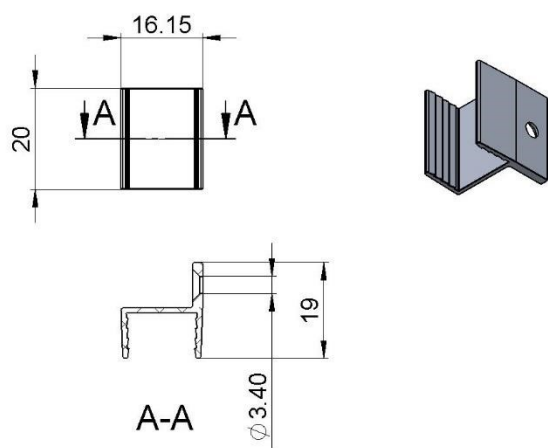


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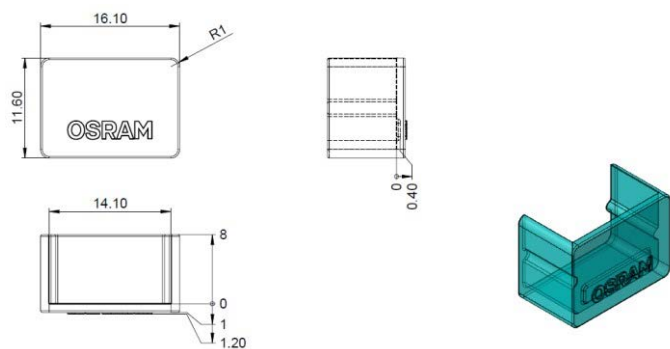
3) Mounting Bracket for top-bending modules



4) Mounting Bracket with additional wing for top-bending modules

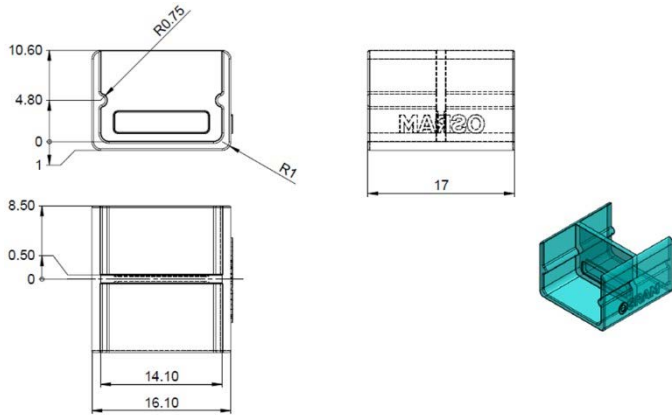


5) Single sided endcaps for top-bending modules

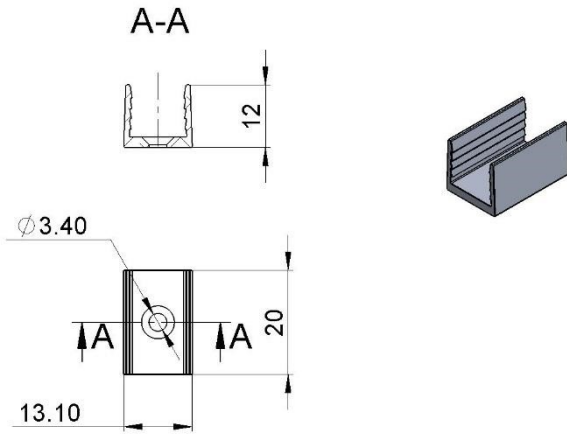


Technical Datasheet

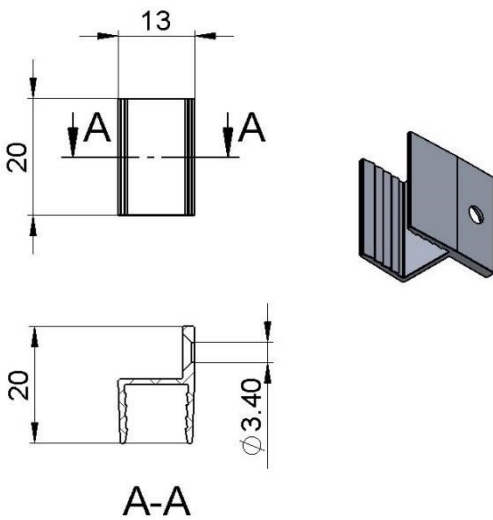
6) Double sided endcaps for top-bending modules



7) Mounting Bracket for side-bending modules

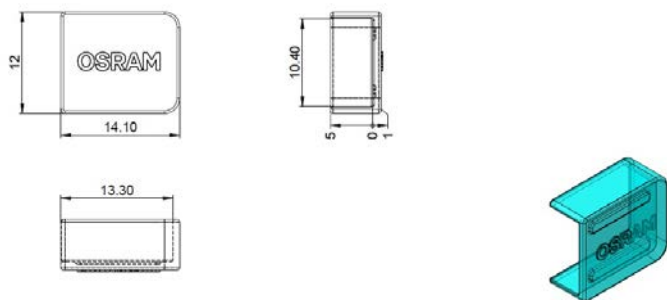


8) Mounting Bracket with additional wing for top-bending modules

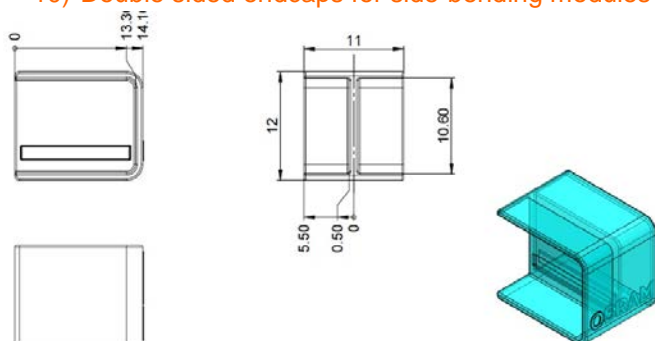


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9) Single sided endcaps for side-bending modules



10) Double sided endcaps for side-bending modules



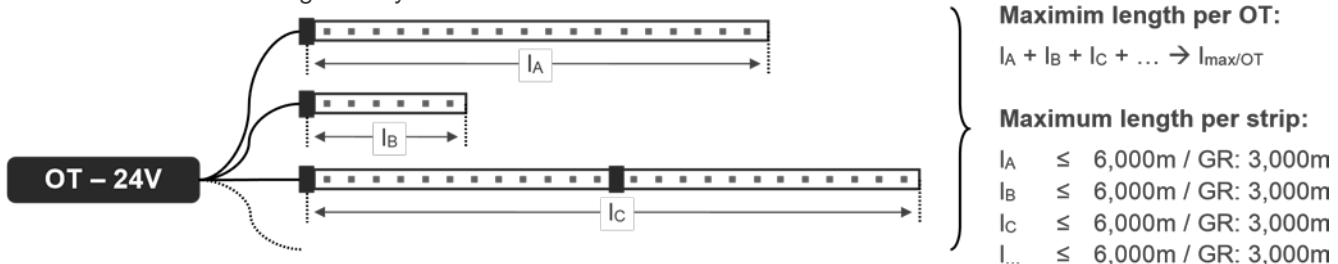
Non-dimmable

Recommended drivers	EAN
OT 6/200-240/24 CE	4008321113269
OT 8/200-240/24	4008321040169
OT 20/220-240/24	4050300618111
OT 20/120-240/24 S	4050300662626
OT 75/220-240/24	4050300817477
OT 75/220-240/24 E	4008321362476
OT 80/220-240/24 P	4008321981684
OT 120/220-240/24 P	4008321981707
OT 240/220-240/24 P	4008321981721

Dimmable

Recommended drivers	EAN
OT EASY 60 II	4008321187796
OT EASY 80	4008321808363
OT 65/220-240/24 3DIM E	4008321964403
OTi DALI 75/220-240/24 1-4 CH	4008321371560
OT 80/220-240/24 DIM P	4008321981677
OT 120/220-240/24 DIM P	4008321981691
OT 240/220-240/24 DIM P	4008321981714

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



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Related and further information

- OSRAM LED Systems www.osram.com/led-systems
- OSRAM: FLEXIBLE LED MODULES www.osram.com/flex
- OSRAM catalogue <http://catalog.osram.com> –
- General information www.osram.com



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