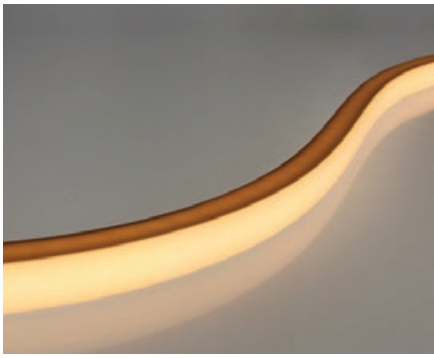
www.osram.com/flex



Light is flexible

LINEARlight FLEX Diffuse 400

LFD400T / LFD400MT / LFD400S / LFD400MS
PRELIMINARY TECHNICAL DATASHEET

Light is OSRAM

OSRAM

LINEARlight FLEX Diffuse 400

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 materialise your ideas in lighting.

Homogenous lines of light

Key Features and 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

Applications Ideas

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

Top bending: LFD400T & LFD400MT
Side bending: LFD400S & LFD400MS

QUICK REFERENCE

Product	Order Code	Colour	K/Wave-length Range	CRI	V	W/m	lm/m	lm/W	Operable length [mm]	Beam Angle (°)
LFD400T-G1-827-06	4052899**953512**	white	2700	>80	24	7.2	490	68	6,000	120
LFD400T-G1-830-06	4052899**953529**	white	3000	>80	24	7.2	490	68	6,000	120
LFD400T-G1-840-06	4052899**953536**	white	4000	>80	24	7.2	480	67	6,000	120
LFD400T-G1-865-06	4052899**953543**	white	6500	>80	24	7.2	460	64	6,000	120
LFD400MT-G1-BL-06	4052899**953550**	blue	457-467	–	24	12.0	60	5	6,000	120
LFD400MT-G1-GR-06	4052899**953567**	green	525-539	–	24	12.0	285	24	4,000	120
LFD400MT-G1-GR-03	4052899**450851**	green	525-539	–	24	12.0	285	48	4,000	120
LFD400MT-G1-RE-06	4052899**953574**	red	612-626	–	24	12.0	320	27	6,000	120
LFD400MT-G1-YE-06	4052899**953581**	yellow	586-594	–	24	12.0	162	14	6,000	120
LFD400MT-G1-OR-06	4052899**953598**	orange	603-611	–	24	12.0	175	15	6,000	120
LFD400S-G1-827-06	4052899**953611**	white	2700	>80	24	7.2	410	57	6,000	120
LFD400S-G1-830-06	4052899**953628**	white	3000	>80	24	7.2	410	57	6,000	120
LFD400S-G1-840-06	4052899**953635**	white	4000	>80	24	7.2	410	57	6,000	120
LFD400S-G1-865-06	4052899**953642**	white	6500	>80	24	7.2	350	52	6,000	120
LFD400MS-G1-BL-06	4052899**953659**	blue	457-467	–	24	12.0	55	5	6,000	120
LFD400MS-G1-GR-06	4052899**953666**	green	525-539	–	24	12.0	260	22	4,000	120
LFD400MS-G1-GR-03	4052899**450882**	green	525-539	–	24	12.0	260	43	4,000	120
LFD400MS-G1-RE-06	4052899**953673**	red	612-626	–	24	12.0	240	20	6,000	120
LFD400MS-G1-YE-06	4052899**953680**	yellow	586-594	–	24	12.0	150	13	6,000	120
LFD400MS-G1-OR-06	4052899**953697**	orange	603-611	–	24	12.0	160	13	6,000	120

TECHNICAL OPERATING DATA FOR COMPLETE REEL

Product	Order Code	Power [W]	Current [A]	Luminous Flux [lm]	Module Length [m]
LFD400T-G1-827-06	4052899**953512**	43.2	1.8	2,940	6
LFD400T-G1-830-06	4052899**953529**	43.2	1.8	2,940	6
LFD400T-G1-840-06	4052899**953536**	43.2	1.8	2,880	6
LFD400T-G1-865-06	4052899**953543**	43.2	1.8	2,760	6
LFD400MT-G1-BL-06	4052899**953550**	72.0	3.0	360	6
LFD400MT-G1-GR-06	4052899**953567**	72.0	3.0	1,710	6
LFD400MT-G1-GR-03	4052899**450851**	36.0	1.5	855	3
LFD400MT-G1-RE-06	4052899**953574**	72.0	3.0	1,920	6
LFD400MT-G1-YE-06	4052899**953581**	72.0	3.0	972	6
LFD400MT-G1-OR-06	4052899**953598**	72.0	3.0	1,050	6
LFD400S-G1-827-06	4052899**953611**	43.2	1.8	2,460	6
LFD400S-G1-830-06	4052899**953628**	43.2	1.8	2,460	6
LFD400S-G1-840-06	4052899**953635**	43.2	1.8	2,460	6
LFD400S-G1-865-06	4052899**953642**	43.2	1.8	2,250	6
LFD400MS-G1-BL-06	4052899**953659**	72.0	3.0	330	6
LFD400MS-G1-GR-06	4052899**953666**	72.0	3.0	1,560	6
LFD400MS-G1-GR-03	4052899**450882**	36.0	1.5	780	3
LFD400MS-G1-RE-06	4052899**953673**	72.0	3.0	1,440	6
LFD400MS-G1-YE-06	4052899**953680**	72.0	3.0	900	6
LFD400MS-G1-OR-06	4052899**953697**	72.0	3.0	960	6

Technical Specifications

GENERAL

Dimmable	Pulse width modulation (PWM)
Binning	Fine white
Lifetime	up to 50,000 h (L70B50, Tc max)
Adhesive tape on backside	3M – type: tbd
Complementary systems	CONNECTsystem, SLIMCONNECTsystem, OPTOTRONIC
Certifications	CE, UR pending, ENEC pending, EAC pending

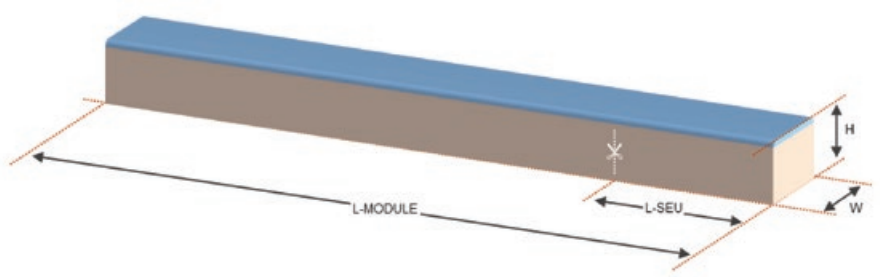
OPERATING CONDITIONS

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[Vdc]	23 – 25
Reverse Voltage[Vdc]	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 the following drawing.

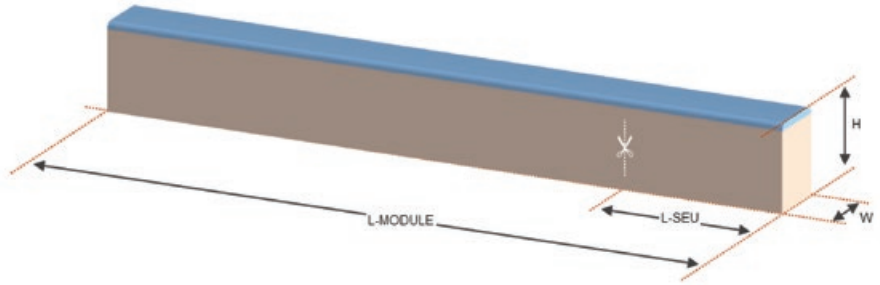
Technical Drawings

Top bending versions



Product	L-MODULE [mm]	L-SEU [mm]	W [mm]	H [mm]
LFD400T-G1-XXX-06	6,000	50	14.1	10
LFD400MT-G1-XX-06	6,000	40	14.1	10
LFD400MT-G1-XX-03	3,000	40	14.1	10

Side bending versions



Product	L-MODULE [mm]	L-SEU [mm]	W [mm]	H [mm]
LFD400S-G1-XXX-06	6,000	50	10	14.1
LFD400MS-G1-XX-06	6,000	40	10	14.1
LFD400MS-G1-XX-03	3,000	40	10	14.1

Safety information

- The LED module itself and all its components must not be mechanically stressed.
- 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 is 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 customise 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 honoured as a materials defect claim. It is the user's responsibility to provide suitable protection again 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:

- Optical transparency
- UV-resistance
- Thermal expansion matching the thermal expansion of the module
- Low permeability of steam for all climatic conditions
- 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.
- The minimum bending radius is 10cm.
- When installing in environments with large variations in temperature (e.g. outdoor applications) and operating length of more than 2m, 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.
- Installation must be handled by 2 people

Complementary Systems, Accessories & Shipping Information

LFD Top Accessories

Use with products of the range LFD400T & LFD400MT

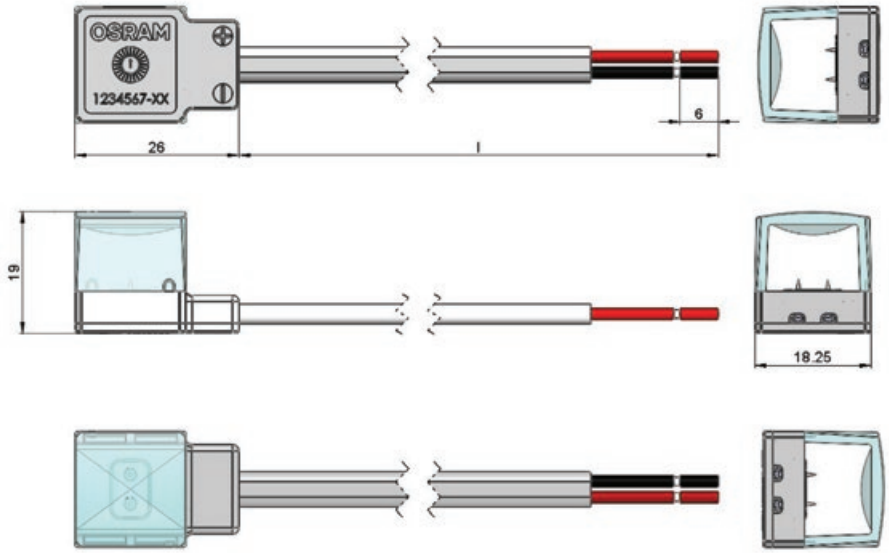
Description	Pictures/ Dimensions	Product Name	Ordering code
Middle power feeder	1)	FX-DCS-G1-CM2PF-IP67-0500-X5	4052899**451971**
Module to module middle jumper	2)	FX-DCS-G1-CM2PJ-IP67-0190-X5	4052899**452039**
Mounting bracket	3)	FX-LFDM-G1-BT-17H11	4052899**452497**
Mounting bracket with additional wing	4)	FX-LFDM-G1-BTL-17H11E9	4052899**452527**
Feeder Kit with Endcaps & Glue	1)5)	FX-DCS-G1-CM2PF-IP67-TOPKIT5	4052899**451995**
Jumper Kit with Endcaps & Glue	2)5)	FX-DCS-G1-CM2PJ-IP67-TOPKIT5	4052899**452053**
Endcaps & Glue	5)	FX-DCS-G1-ECT-KIT20	4052899**452107**
Double-sided Endcaps & Glue	6)	FX-DCS-G1-EHT-KIT20	4052899**452176**
Silicone Glue 25g	n/a	FX-DCS-G1-GL-25	4052899**452244**

LFD Side Accessories

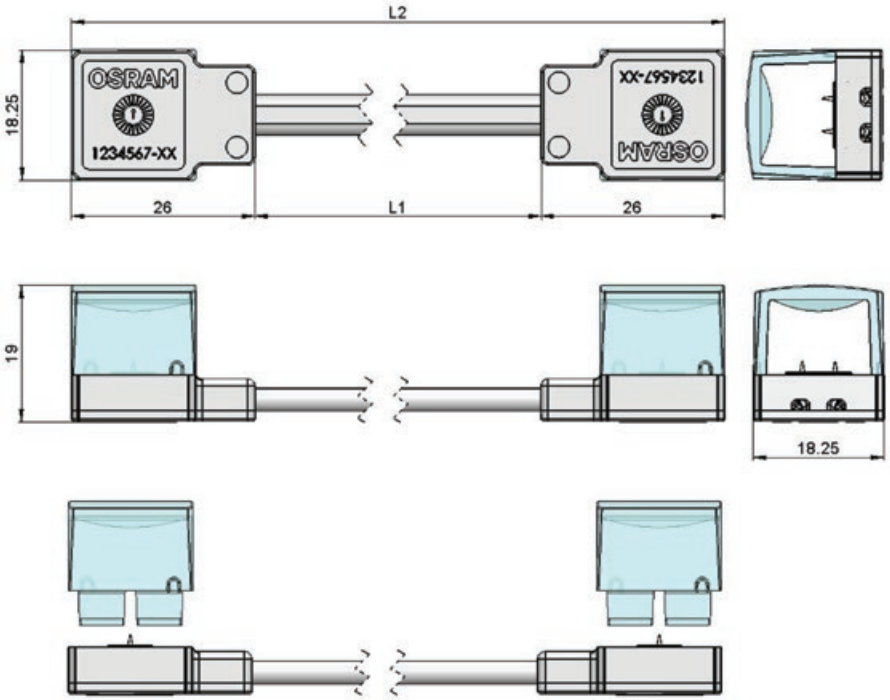
Use with products of the range LFD400S & LFD400MS

Description	Pictures/ Dimensions	Product Name	Ordering code
Middle power feeder	1)	FX-DCS-G1-CM2PF-IP67-0500-X5	4052899**451971**
Module to module middle jumper	2)	FX-DCS-G1-CM2PJ-IP67-0190-X5	4052899**452039**
Mounting bracket	7)	FX-LFDM-G1-BS-12H13	4052899**452558**
Mounting bracket with additional wing	8)	FX-LFDM-G1-BSL-12H13E9	4052899**452589**
Feeder Kit with Endcaps & Glue	1)9)	FX-DCS-G1-CM2PF-IP67-SIDEKIT5	4052899**452015**
Jumper Kit with Endcaps & Glue	2)9)	FX-DCS-G1-CM2PJ-IP67-SIDEKIT5	4052899**452077**
Endcaps & Glue	9)	FX-DCS-G1-ECS-KIT20	4052899**452121**
Double-sided Endcaps & Glue	10)	FX-DCS-G1-EHS-KIT20	4052899**452206**
Silicone Glue 25g	n/a	FX-DCS-G1-GL-25	4052899**452244**

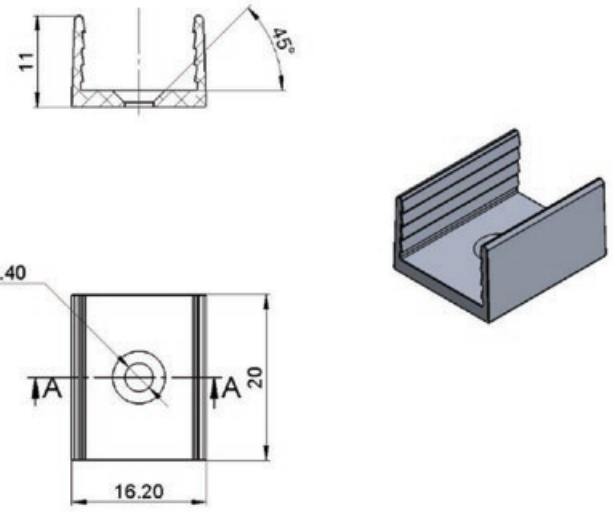
1) Middle power feeder



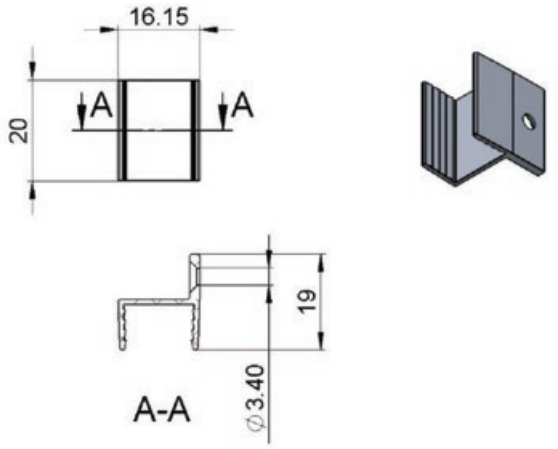
2) Module to module middle jumper



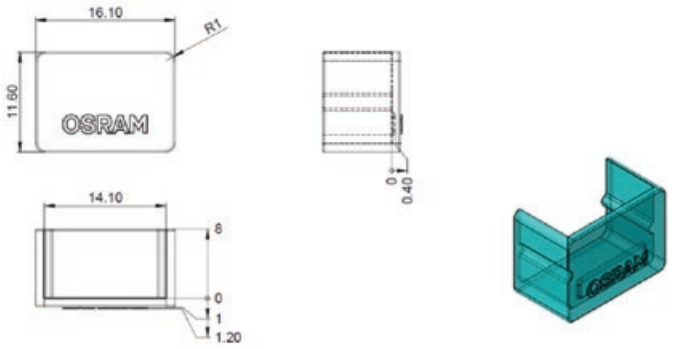
3) Mounting bracket for top-bending modules



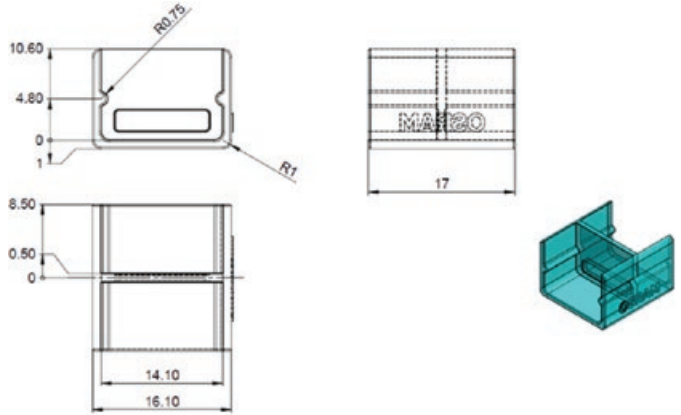
4) Mounting bracket with additional wing for top-bending modules



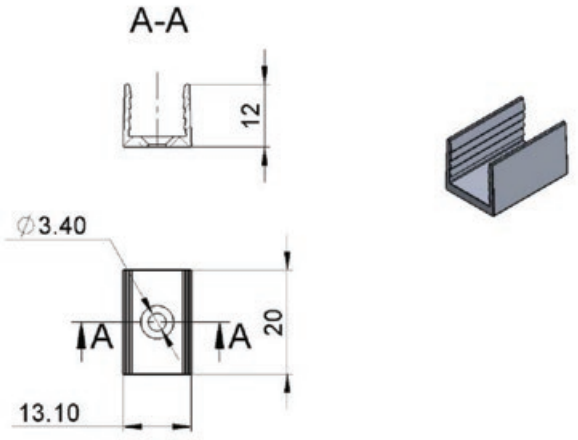
5) Single sided endcaps for top-bending modules



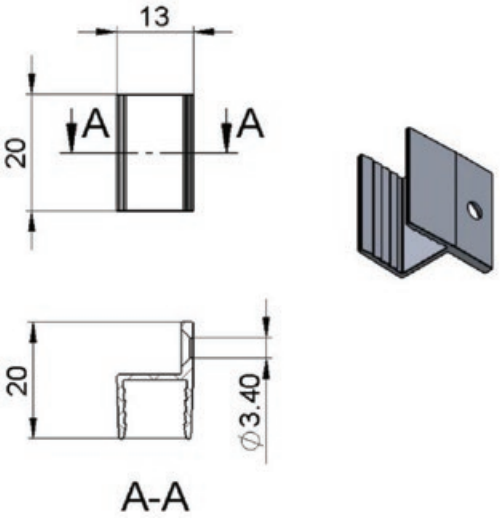
6) Double sided endcaps for top-bending modules



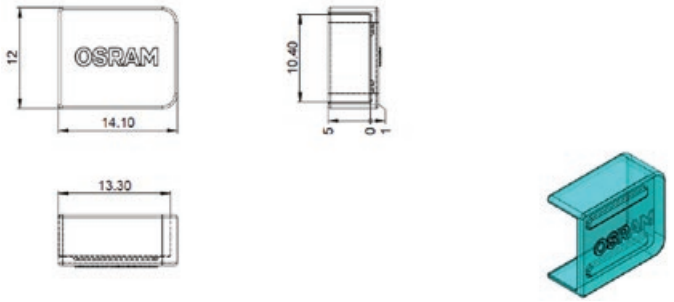
7) Mounting bracket for side-bending modules



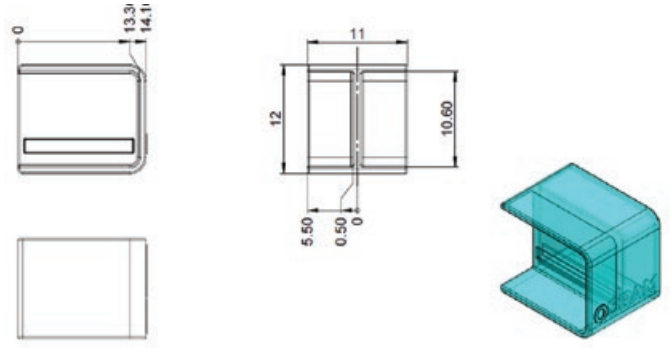
8) Mounting bracket with additional wing for top-bending modules



9) Single sided endcaps for side-bending modules



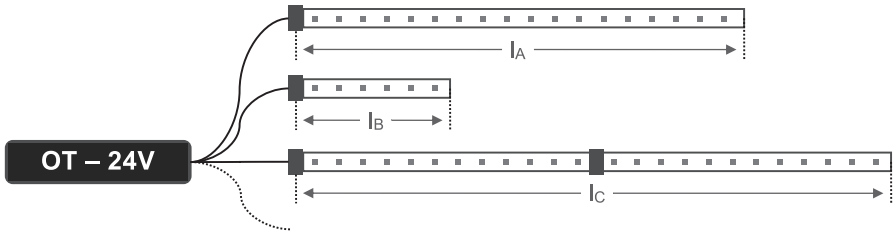
10) Double sided endcaps for side-bending modules



OPTOTRONIC

Recommended OPTOTRONIC® drivers	EAN
Non-dimmable	
OPTOTRONIC OT 6/200-240/24 CE	4008321**113269**
OPTOTRONIC OT 8/200-240/24	4008321**040169**
OPTOTRONIC OT 20/220-240/24	4050300**618111**
OPTOTRONIC OT 20/120-240/24 S	4050300**662626**
OPTOTRONIC OT 75/220-240/24	4050300**817477**
OPTOTRONIC OT 75/220-240/24 E	4008321**362476**
OPTOTRONIC OT 80/220-240/24 P	4008321**981684**
OPTOTRONIC OT 120/220-240/24 P	4008321**981707**
OPTOTRONIC OT 240/220-240/24 P	4008321**981721**
Dimmable	
OPTOTRONIC OT EASY 60 II	4008321**187796**
OPTOTRONIC OT EASY 80	4008321**808363**
OPTOTRONIC OT 65/220-240/24 3DIM E	4008321**964403**
OPTOTRONIC OTi DALI 75/220-240/24 1-4 CH	4008321**371560**
OPTOTRONIC OT 80/220-240/24 DIM P	4008321**981677**
OPTOTRONIC OT 120/220-240/24 DIM P	4008321**981691**
OPTOTRONIC OT 240/220-240/24 DIM P	4008321**981714**

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



Maximim length per OT:
IA + IB + IC + & → Imax/OT

Maximum length per strip:
IA ≤ 6,000m / GR: 3,000m
IB ≤ 6,000m / GR: 3,000m
IC ≤ 6,000m / GR:3,000m
I... ≤ 6,000m / GR: 3,000m

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

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