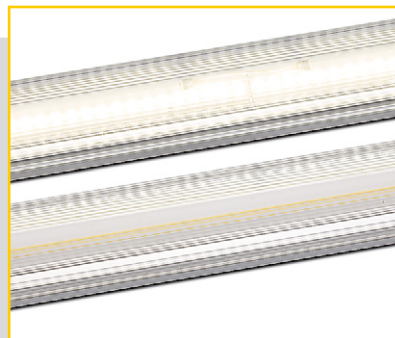


LED LINE ALUFIX HORTICULTURE

LINEAR ALUMINIUM PROFILE
WITH LED MODULE
LUGA BLOOM & LEAF



LED LINE ALUFIX LUGA BLOOM & LEAF

LED Line AluFix LUGA consists of an energy-efficient linear COB module, an aluminium holder and a clear cover. The module was designed for integration into indoor luminaires IP40 providing direct or indirect light. The light module is available with up to five pre-wired LUGA modules in lengths of 305 to 1,429 mm.

The robust aluminium holder serves to optimise thermal management and is easy to attach using M3 screws. The clear cover protects LED modules from environmental factors.

Typical Applications

- Greenhouse
- Vertical Lighting
- Interlight for high-growth plants
- Cultivation of young plants
- Multilayer Systems
- Full spectrum solution "Vertical Farm"

LED Line AluFix LUGA Horticulture

- **HIGH-EFFICIENT COB TECHNOLOGY**
- **SPECTRA OPTIMIZED FOR VEGETATIVE (LEAF) & GENERATIVE (BLOOM) GROWTH**
- **VERY LONG SERVICE LIFETIME**
- **HIGH PHOTON FLUX: UP TO 174 $\mu\text{mol/s}$ (FOR 1429 MM)**
- **HIGH PHOTON EFFICIENCY: UP TO 2.5 $\mu\text{mol/J}$**



LED Line AluFix LUGA Bloom & Leaf

**Aluminium profile equipped
with LED modules LUGA Line Horticulture**

Technical notes for LUGA Line modules

For one to five LUGA Line modules

Allowed operating temperature at t_c point:
-40 to 85 °C

Use of external LED constant-current drivers required:
for drivers with $U_{OUT} < 150$ V DC

Colour rendering index R_a :
> 55 (Bloom) / 85 (Leaf)

Lumen maintenance L90/B10:
55,000 hrs. (If 700 mA)

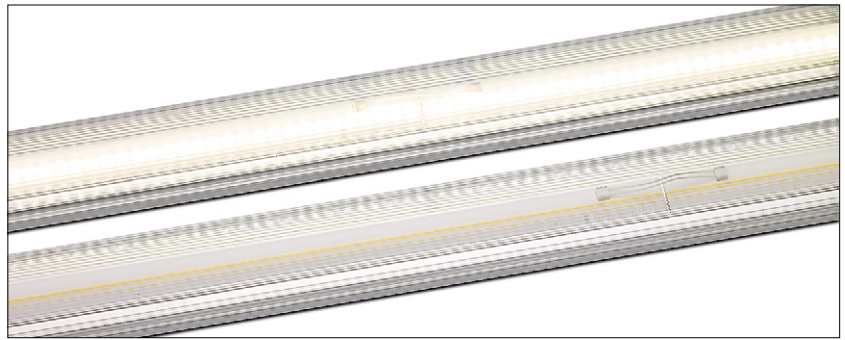
Material: Aluminium profile and PMMA cover

Rear connection leads, lead length: 70 mm
with 2-poles connector AMP Micro Mate-N-LOK
1445049-2

Degree of protection: IP40

Fixation: rear slots for screws M3

Tightening torque: 0.5 Nm



Spectrum "Leaf"

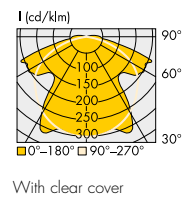
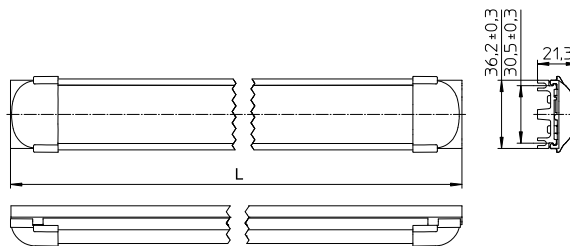
Recommendation for plants and vegetables which should have an optimized vegetative growth. Due increased spectral emission in the infrared (> 700 nm), as well as in the green (500–560 nm) spectral range, the growth of the plants or the vegetables can be positively influenced. The slightly pink-coloured full spectrum light (white light with a colour rendering > 80) also shows an improved compatibility for the employees in the vicinity of the illumination solution.

Spectrum "Bloom"

"Bloom" shows an optimized effect on ornamental plants and young seedlings, which need support in the flowering or in the initial growth stage. The spectrum is characterized by its focus on the blue and red spectral range, which provides maximum efficiency in photosynthesis.

Dimensions and logistics details

Type	Dimensions (LxWxH) in mm			Packaging unit (pcs.)	Weight g
	L	W	H		
89001	305	36.2	21.3	15	171
89002	586	36.2	21.3	15	330
89003	867	36.2	21.3	15	495
89004	1148	36.2	21.3	15	650
89005	1429	36.2	21.3	15	815



Electrical characteristics

at $t_p = 65$ °C

PCB	Typ. voltage DC* [V]				Typ. power consumption* [W]			
	350 mA	500 mA	700 mA	1050 mA	350 mA	500 mA	700 mA	1050 mA
89001	14.7	15.4	16.4	17.9	5.1	7.7	11.4	18.8
89002	29.4	30.8	32.8	35.8	10.2	15.4	22.8	37.6
89003	44.1	46.2	49.2	53.7	15.3	23.1	34.2	56.4
89004	58.8	61.6	65.6	71.6	20.4	30.8	45.6	75.2
89005	73.5	77	82	89.5	25.5	38.5	57	94

* Voltage and power consumption tolerance: ± 10%

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Optical characteristics of LED modules LUGA Line Horticulture

at $t_p = 65\text{ °C}$ | The following efficiency levels can be achieved when using a cover: see data sheets

Length mm	Ref. No.	Type	Operating current mA	Typ. photon flux and efficiency**				Typ. luminous flux and efficiency**	
				PAR $\mu\text{mol/s}$		PBAR $\mu\text{mol/s}$		lm	lm/W
LED Line AluFix Bloom – Type with DML059HAWFC1									
305	569600	89001	350	12.1	2.4	12.7	2.5	615	119.5
			500	16.9	2.2	17.8	2.3	860	111.5
			700	23.1	2	24.2	2.1	1170	102.2
			1050	33.1	1.8	34.8	1.9	1680	89.5
586	569167	89002	350	24.2	2.4	25.4	2.5	1230	119.5
			500	33.8	2.2	35.6	2.3	1720	111.5
			700	46.2	2	48.4	2.1	2340	102.2
			1050	66.2	1.8	69.6	1.9	3360	89.5
867	569168	89003	350	36.3	2.4	38.1	2.5	1845	119.5
			500	50.7	2.2	53.4	2.3	2580	111.5
			700	69.3	2	72.6	2.1	3510	102.2
			1050	99.3	1.8	104.4	1.9	5040	89.5
1148	569169	89004	350	48.4	2.4	50.8	2.5	2460	119.5
			500	67.6	2.2	71.2	2.3	3440	111.5
			700	92.4	2	96.8	2.1	4680	102.2
			1050	132.4	1.8	139.2	1.9	6720	89.5
1429	569602	89005	350	60.5	2.4	63.5	2.5	3075	119.5
			500	84.5	2.2	89	2.3	4300	111.5
			700	115.5	2	121	2.1	5850	102.2
			1050	165.5	1.8	174	1.9	8400	89.5
LED Line AluFix Leaf – Type with DML059HAJFC1									
305	569601	89001	350	10.5	2	12.2	2.4	500	97.2
			500	14.7	1.9	17.1	2.2	700	90.7
			700	20	1.7	23.2	2	950	83
			1050	28.7	1.5	33.3	1.8	1370	73
586	569170	89002	350	21	2	24.4	2.4	1000	97.2
			500	29.4	1.9	34.2	2.2	1400	90.7
			700	40	1.7	46.4	2	1900	83
			1050	57.4	1.5	66.6	1.8	2740	73
867	569171	89003	350	31.5	2	36.6	2.4	1500	97.2
			500	44.1	1.9	51.3	2.2	2100	90.7
			700	60	1.7	69.6	2	2850	83
			1050	86.1	1.5	99.9	1.8	4110	73
1148	569172	89004	350	42	2	48.8	2.4	2000	97.2
			500	58.8	1.9	68.4	2.2	2800	90.7
			700	80	1.7	92.8	2	3800	83
			1050	114.8	1.5	133.2	1.8	5480	73
1429	569603	89005	350	52.5	2	61	2.4	2500	97.2
			500	73.5	1.9	85.5	2.2	3500	90.7
			700	100	1.7	116	2	4750	83
			1050	143.5	1.5	166.5	1.8	6850	73

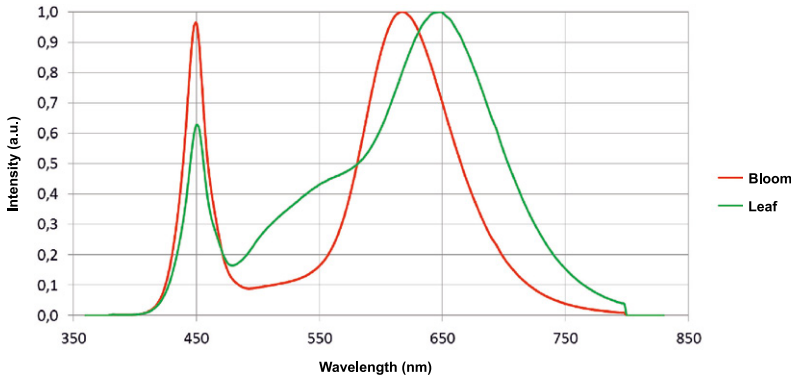
* Production tolerance of luminous flux, efficiency, voltage and power consumption: $\pm 10\%$

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Spectral Characteristics

at $t_p = 65^\circ\text{C}$

Type	Spectral distribution related to $\mu\text{mol/s}$				Ratios		
	400–500 nm (blue)	500–600 nm (green)	600–700 nm (red)	> 700 nm (far red)	blue – red	blue – green	red – far red
Bloom	16.9%	24.0%	56.6%	4.5%	1 : 3.2	1 : 1.4	1 : 0.1
Leaf	10.1%	22.5%	53.7%	13.7%	1 : 5.3	1 : 2.2	1 : 0.3



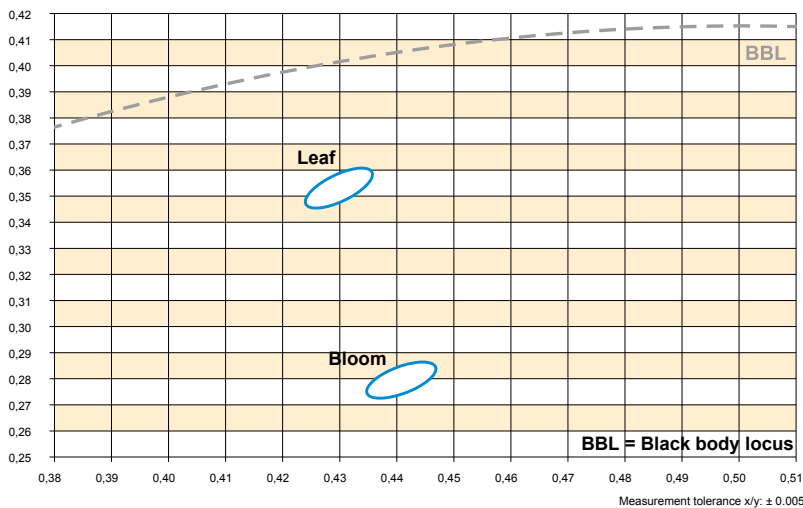
* All characteristics shown are for reference only and will not be guaranteed

Operating Life

at $t_p = 65^\circ\text{C}$

Lumen maintenance	DML059***FC1		
	$I_f \leq 500\text{ mA}$	$I_f 700\text{ mA}$	$I_f 1050\text{ mA}$
L90/B10	60,000 Std.	55,000 Std.	50,000 Std.
L80/B10	80,000 Std.	75,000 Std.	70,000 Std.
L70/B10	90,000 Std.	85,000 Std.	80,000 Std.

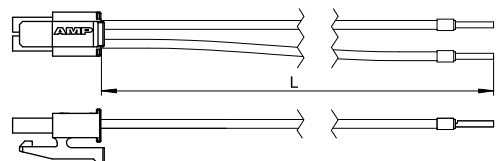
Bins



Connection leads

2-poles, ferrule on bare end of cores and AMP Micro Mate-N-LOK 1445022-2

Ref. No.	Lead length L					
	100 mm	200 mm	300 mm	400 mm	500 mm	600 mm
	554285	554286	554287	554288	554289	554290



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LED Constant Current Drivers

Please visit our homepage for details for suitable
LED constant current drivers: www.vossloh-schwabe.com

Assembly and Safety Information

Installation must be carried out under observation of the relevant regulations and standards. The LED Line AluFix are designed for operation within a casing or luminaire. Installation must be carried out in a voltage-free state (i.e. disconnection from the mains). The following advice must be observed; non-observance can result in the destruction of the LED fixing units, fire and/or other hazards.

- ESD (electrostatic discharge) protection measures must be observed when handling and installing the LED Line AluFix. See VS's application notes on ESD protection.
- Adequate anti-static electricity measures, including the use of conductive shoes, ionizers, work bench grounding, wrist straps, flooring and stools could be used.
- LED fixing units must not be subjected to any undue mechanical stress, e.g.:
 - do not treat as bulk cargo
- Safe operation only possible by the use of external constant current sources (I_{max} , see table "Electrical Characteristics").
- Safety regulations acc. to EN 60598 (or further standards) has to be observed if the maximum output voltage exceed the permitted touchable value.
Max. output voltage mustn't exceed 150 V DC.
- Power supply units must be used for operation, in which the following protective measures are ensured:
 - Short-circuit protection
 - Overload protection
 - Overheating protection
- Please ensure the correct polarity of the leads prior to commissioning. Reversed polarity can destroy the modules.
- Max. number of modules connected in series: 5
A series connection of the AluFix modules is not permitted due to clearances and creepage distances.
- The following points must be observed when connecting LED fixing units in parallel:
 - All LED strings that are wired in parallel must contain the same number of LED Line AluFix (symmetrical loading).
 - Owing to differing forward biases, there can be a difference of up to 10% in brightness between modules connected in parallel.
 - All modules that are wired in parallel must be thermally connected (same temperatures at all LED Line AluFix).

- To ensure problem-free operation, the specified maximum temperature at the t_c point of the LUGA Line module (see "Operating Life") must be observed (and measured in accordance with EN 60598-1). To satisfy this point, it may be necessary to put measures in place to ensure any heat is dissipated from the PCB to the environment.
- M3 screws are required to fix the aluminium profile for the screw fitting. A torque of 0.5 Nm is recommended.
- In the event of outdoor applications or applications in damp locations, care must be taken to protect LED Line AluFix against humidity, splashes and jets of water. Any corrosion damage resulting from humidity or contact with condensation will not be recognised as a defect or manufacturing fault. Linear LED Line AluFix with a cover feature an IP40 degree of protection. Depending on the type of application, further protection must be ensured to prevent dust and foreign bodies from entering.
- The photobiological safety of the LED Line AluFix must be classified into risk groups in accordance with EN 62471: 2008.
 - general lighting: exempt group
 - other applications: exempt group

Further detailed safety and installation instructions on VS LED modules and LED drivers can be found in the product data sheets at www.vossloh-schwabe.com.

Product Guarantee

- 5 years
- The conditions for the Product Guarantee of the Vossloh-Schwabe Group shall apply as published on our homepage (www.vossloh-schwabe.com).
We will be happy to send you these conditions upon request.

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