



Modular Vertical Farm Lightbars

Tailored to your needs

DATA SHEET

The Tungstram LED VF lightbar is a very flexible and highly efficient solution specifically designed for indoor multilayer growing facilities. This light weight modular system can be customized in length, light output and color spectra to meet the needs of the different crops and thus ensure the best harvest results. Our lightbars produce very low heat radiation above the plants and the wide beam version gives great uniformity even from 15 cm or shorter distance.

The various versions of the Tungstram LED VF lightbars enable growers to have full control over the growth cycle of their plants:

- **Fix spectrum lightbar** (TUAS VFMSM) offers the most cost effective solution with our proven light recipes or tailored to customer requirements.
- **4-channel lightbar** (TUAS VFPM) provides control over the mix of wavelengths and light intensity resulting in a dynamic lighting strategy for advanced indoor farming production.
- **6-8 channel Research module** (TUAS VFRM) enables to create most versatile spectral variations to finetune light recipes in R&D centers for the most optimized production in plant factories.

Up to 3.5
 $\mu\text{mol / J}$

Remote
driver

Various
length

Customizable
spectrum

Special wide
optics

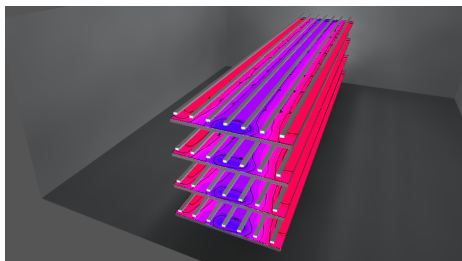
Robust
metal
housing

Key product features

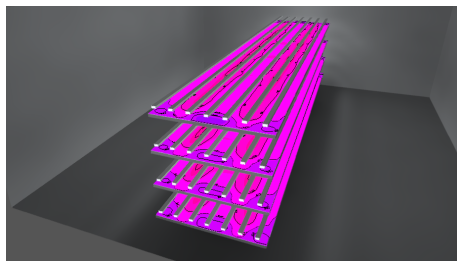
High efficiency LED design, up to 3.5 $\mu\text{mol}/\text{J}$	Lifetime: L80B50 54khrs (Ta= 25 °C)
Fixed or controllable spectrum	220-400 V, 50-60Hz
Remote driver - minimizing heat dissipation within the selves	Power factor >0.9
Standard and wide beam option	Light weight and simple mounting solution
Robust metal housing	Regulatory approvals – CE, RoHS
Various length	Operating Environment: 0°C to +40°C
Ingress protection: IP65	

Special optics for optimized light distribution

Regular optics



Special optics



Uniform light distribution
even with short fixture-plant
distance

Fewer fixtures, lower
investment cost

Product Specifications of the standard 1.2m lightbars

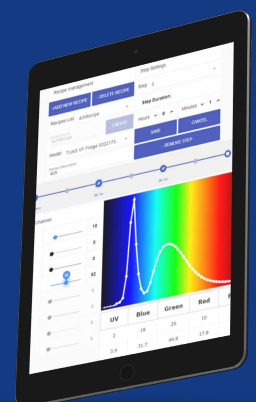
In case of customized solutions the size and number of lightbars per driver, the wattage, PPF and efficacy values are adjusted specific to the application (size of growth surface, distance between the lightsource and the plants, spectrum, PPF and uniformity requirements).

Product ID	VFMS			VFPM	VFRM
Type	EFF	STD	HO	HO	HO
Growth Spectrum *	B/G/R/FR	B/G/R/FR	B/G/R/FR	B/G/R/FR	UV/B/G/A/R/FR
Nominal System Power (W)	32	50	74	74	65
Photon flux 300-780nm ($\mu\text{mol}/\text{s}$)	100	150	212	212	150
Efficacy ($\mu\text{mol}/\text{J}$)	3.1	2.9	2.9	2.9-3.1	2.3
Control	Fix or Dimmable			4-channel variable spectrum	6-channel variable spectrum**

* B=Blue, G=Green, A=Amber, R=Red, FR=Far Red, UV (customization possible)
** 8-channel optional

Advanced Control

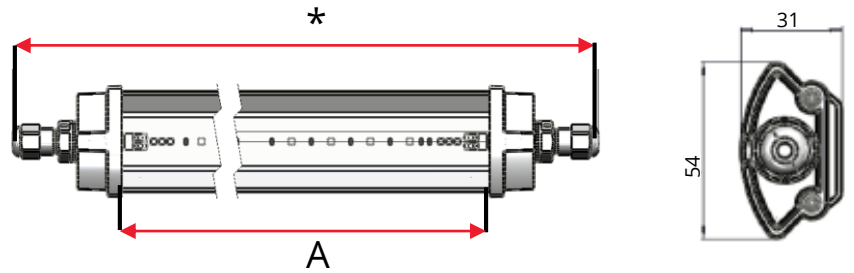
- Remotely operated innovative control system options for industrial scale and research cultivations
- Real time growing recipe management: pre-defined programs, timed dimming, grouped control, easy-to adapt map view of the growing areas
- 0-100% dimmability on each channel ensures numerous spectral variants and wide range of PPF



Dimension (mm)

Model	A	Weight
S	1102 mm	850 gr
T	1472 mm	1350 gr
M	1842 mm	1100 gr
L	2470 mm	1800 gr

* Full length depends on endcap/connector type



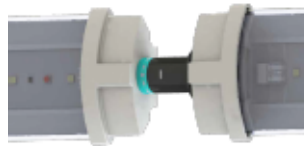
Mounting

For ease of installation the mounting bracket can be pre-assembled and once they are installed, the lightbars can be simply snapped into place (#1 Picture). Depending on the layout lamps can be directly connected by engaging the male and female connectors (#2 Picture) or by using a connecting cable (#3 Picture). Driver/driver box provided with sufficient cable length and connectors to allow them to be assembled remotely as it best suits the application.

1



2



3

