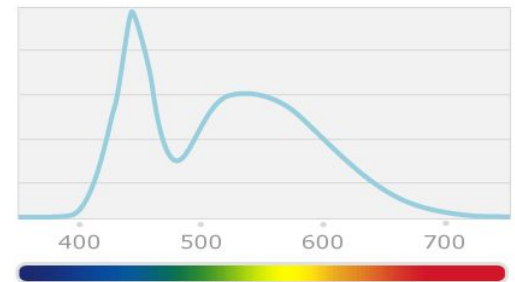
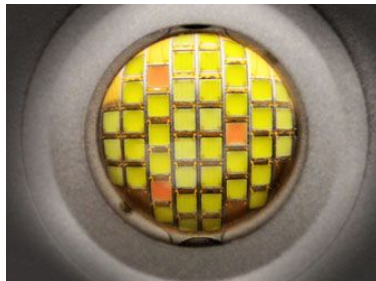


Kessil

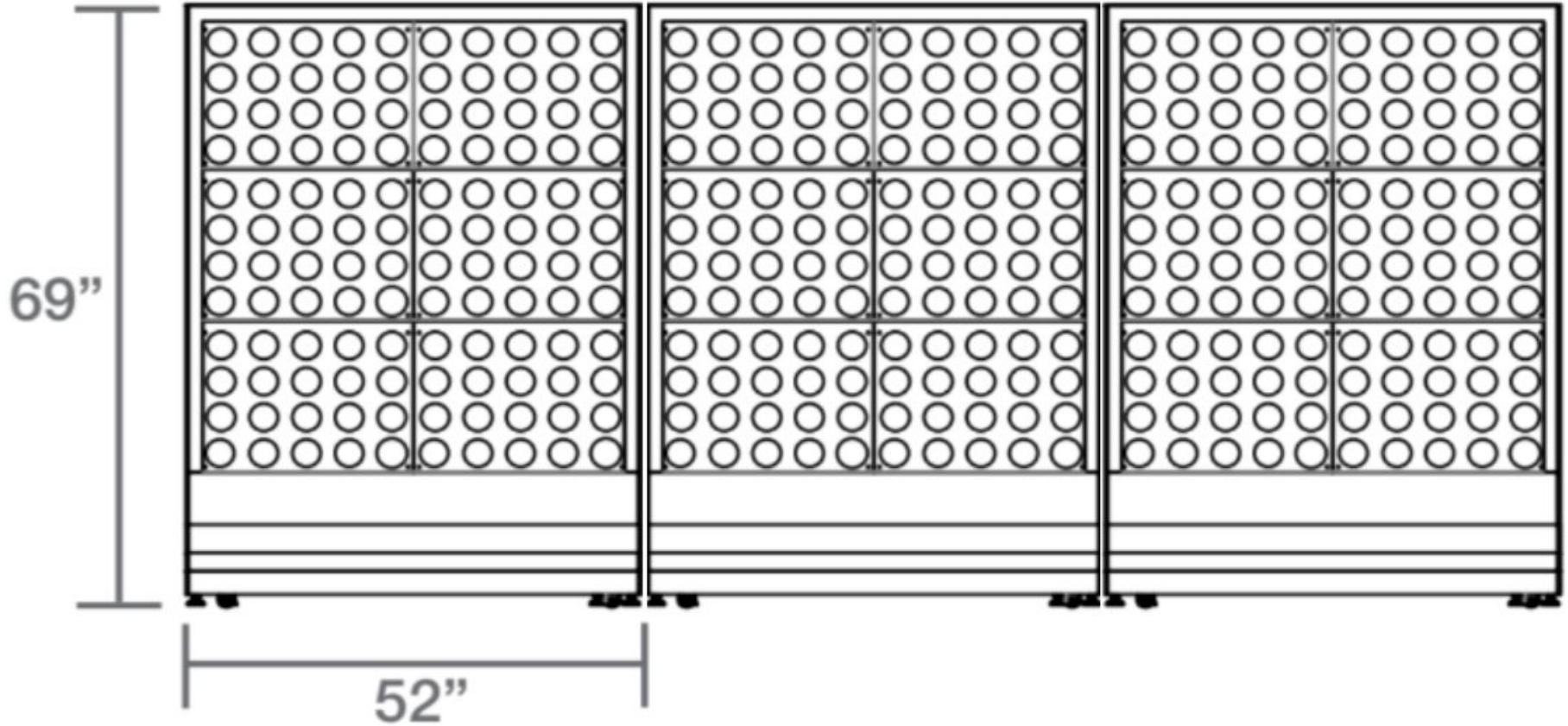
Join The Spectral Revolution!

Project: Gensler - Verdanta Collection

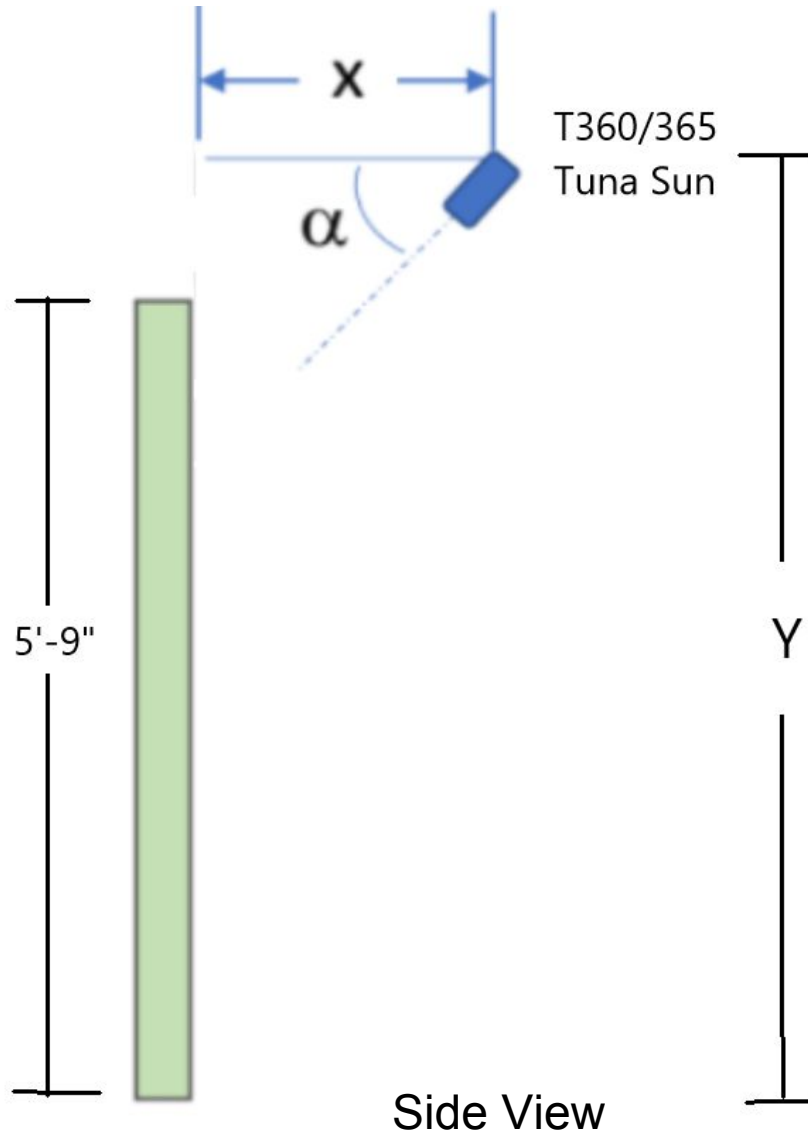
Prepared By: Franco Chan



Design Configuration - Verdanta Collection 4' - 3 units



Design Configuration - Verdanta Collection 4' - 3 units



Verdanta Dimensions:

13'-0" W x 5'-9" H

Ceiling Height:

11'-6"

Purpose:

Maintain Tropical foliage

Lighting:

Kessil Tuna Sun Track Lights

X = Distance between T360/
T365 TS and herb wall

Y = Height of T60/T365 TS

α = Degree of T360/T365 TS

Layout Summary 1

Recommended Layout

3 x T365 Tuna Sun on a 12 feet long track is needed for even light distribution across all 3 **Verdanta 4' unit**. This layout does not account for ambient lighting and is designed for maintaining low-light-requirement tropical foliage. This provides optimal results but may be too low for people to pass by.

12-14 hours of operation at 100% intensity is recommended.

- Track is 4'-0" away from the face of the plants, **suspended at 6'-3" H**
- **3 x T365 Tuna Sun at Flood** 35° angling downwards (aiming the center of the plants)
- Each lamp should be aligned to the center of the 4' Verdanta Unit

* There are front & back side, so 2 sets of lights are needed.
Please note that we do not provide the suspension kits

Recommended Layout

3 x T365 @ 6,000K @ Flood

**Maximum footcandle:
~ 371 fc ;**

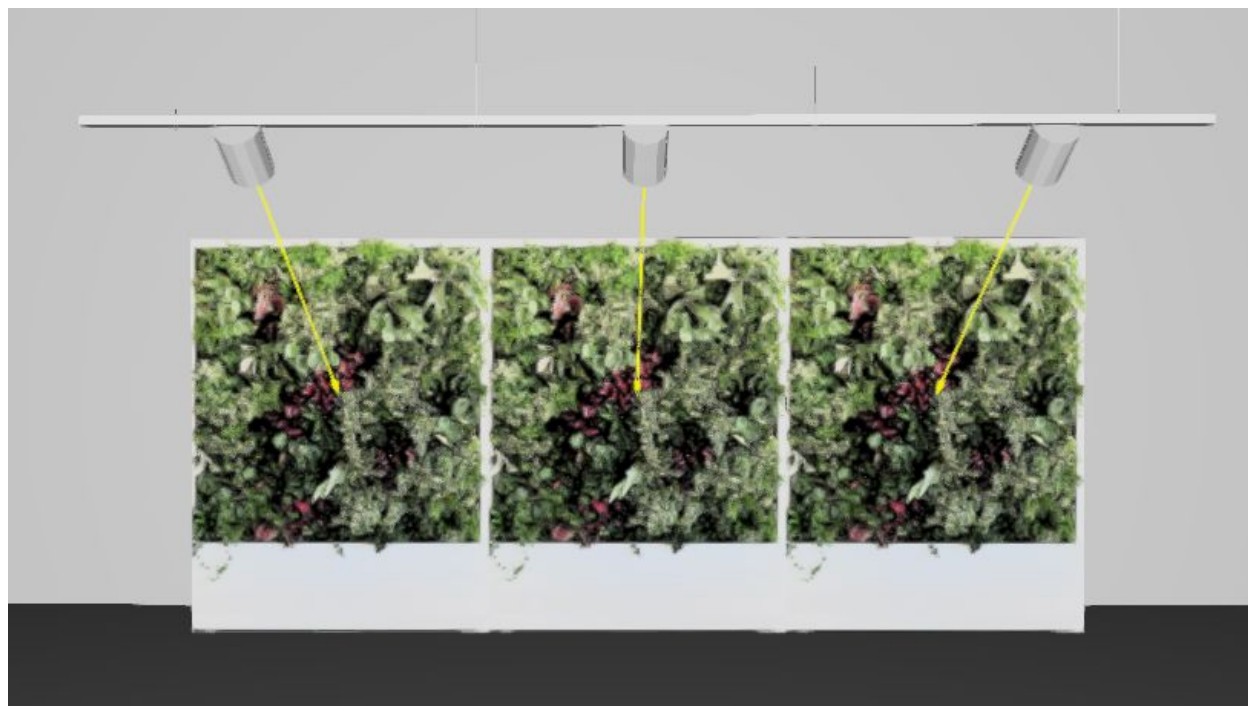
**Average footcandle:
~ 153fc**

Parameter

X = 4'-0"

**Y = 6'-3" (suspended
from ceiling)**

Lamp $\alpha = 35^\circ$



Front View

Recommended Layout

3 x T365 @ 6,000K @ Flood

Maximum footcandle:
~ 371 fc ;

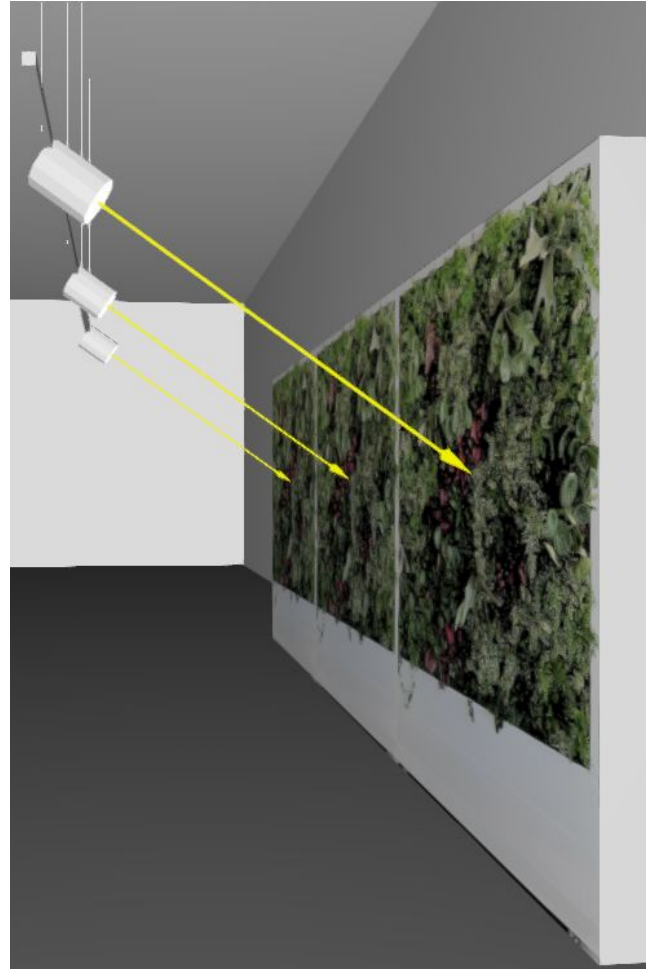
Average footcandle:
~ 153 fc

Parameter

X = 4'-0"

Y = 6'-3" (suspended
from ceiling)

Lamp $\alpha = 35^\circ$



Side View

Recommended Layout

3 x T365 @ 6,000K @ Flood

**Maximum footcandle:
~ 371 fc ;**

**Average footcandle:
~ 153fc**

Parameter

X = 4'-0"

**Y = 6'-3" (suspended
from ceiling)**

Lamp $\alpha = 35^\circ$



Front View

Recommended Layout

3 x T365 @ 6,000K @ Flood

Maximum footcandle:
~ 371 fc ;

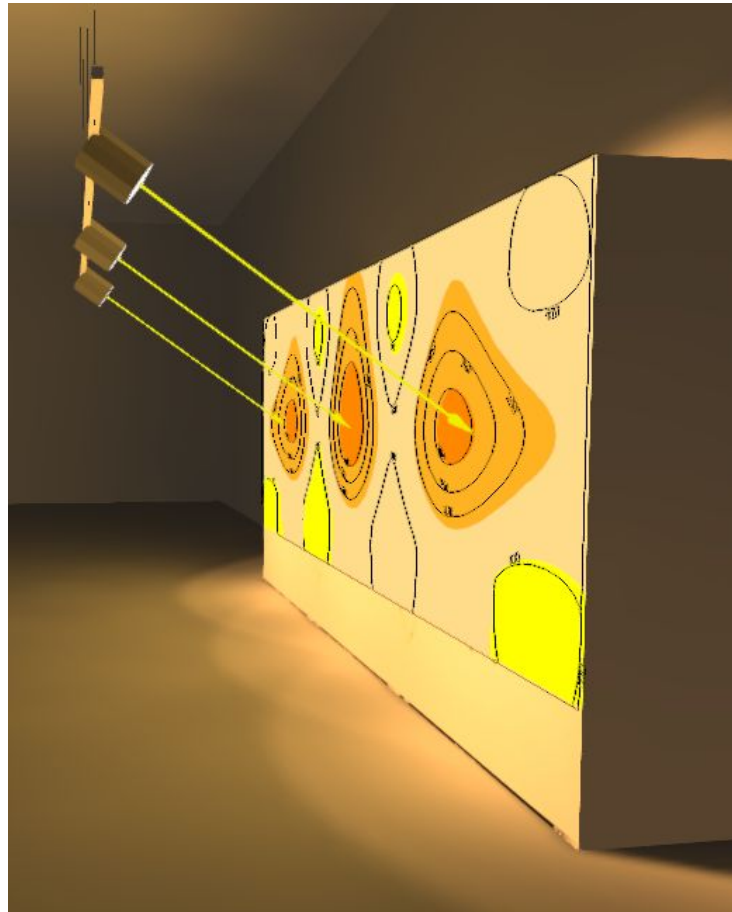
Average footcandle:
~ 153fc

Parameter

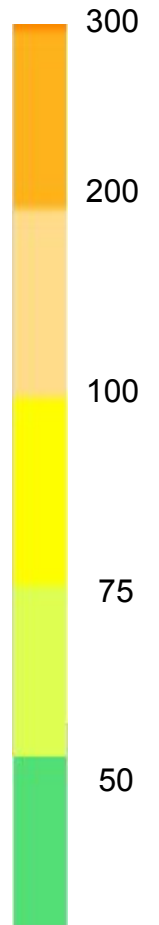
X = 4'-0"

Y = 6'-3" (suspended
from ceiling)

Lamp $\alpha = 35^\circ$



Side View



Layout Summary 2 - Higher Suspension Height

Layout 2 - Higher Suspension Height

3 x T365 Tuna Sun on a 12 feet long track are needed for even light distribution across all 3 **Verdanta 4' unit**. This layout does not account for ambient lighting and is designed for maintaining low-light-requirement tropical foliage. Higher suspension height allows more clearance for people to pass by.

12-14 hours of operation at 100% intensity is recommended.

- Track is 3'-6" away from the face of the plants, **suspended at 7'-6" H**
- **3 x T365 Tuna Sun at Flood** 50° angling downwards (aiming the center of the plants)
- Each lamp should be aligned to the center of the 4' Verdanta Unit

* There are front & back side, so 2 sets of lights are needed.

Please note that we do not provide the suspension kits

Layout 2

3 x T365 @ 6,000K @ Flood

**Maximum footcandle:
~ 280 fc ;**

**Average footcandle:
~ 134 fc**

Parameter

X = 3'-6"

**Y = 7'-6" (suspended
from ceiling)**

Lamp $\alpha = 50^\circ$



Front View

Layout 2

3 x T365 @ 6,000K @ Flood

**Maximum footcandle:
~ 280 fc ;**

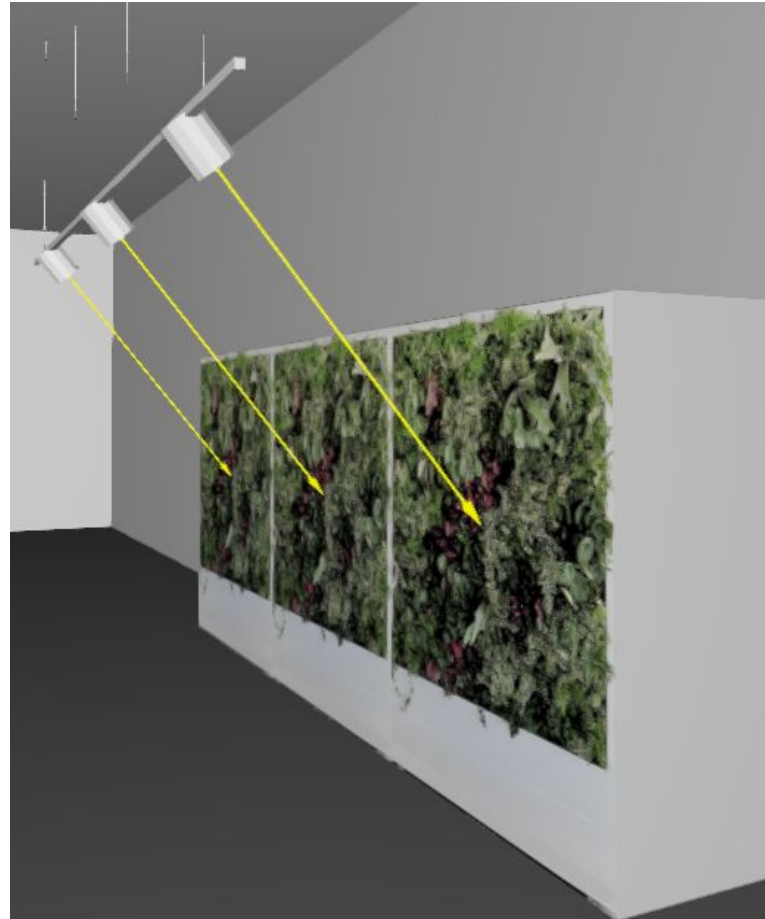
**Average footcandle:
~ 134 fc**

Parameter

X = 3'-6"

**Y = 7'-6" (suspended
from ceiling)**

Lamp $\alpha = 50^\circ$



Side View

Layout 2

3 x T365 @ 6,000K @ Flood

Maximum footcandle:
~ 280 fc ;

Average footcandle:
~ 134 fc

Parameter

X = 3'-6"

Y = 7'-6" (suspended
from ceiling)

Lamp $\alpha = 50^\circ$



Front View

Layout 2

3 x T365 @ 6,000K @ Flood

**Maximum footcandle:
~ 280 fc ;**

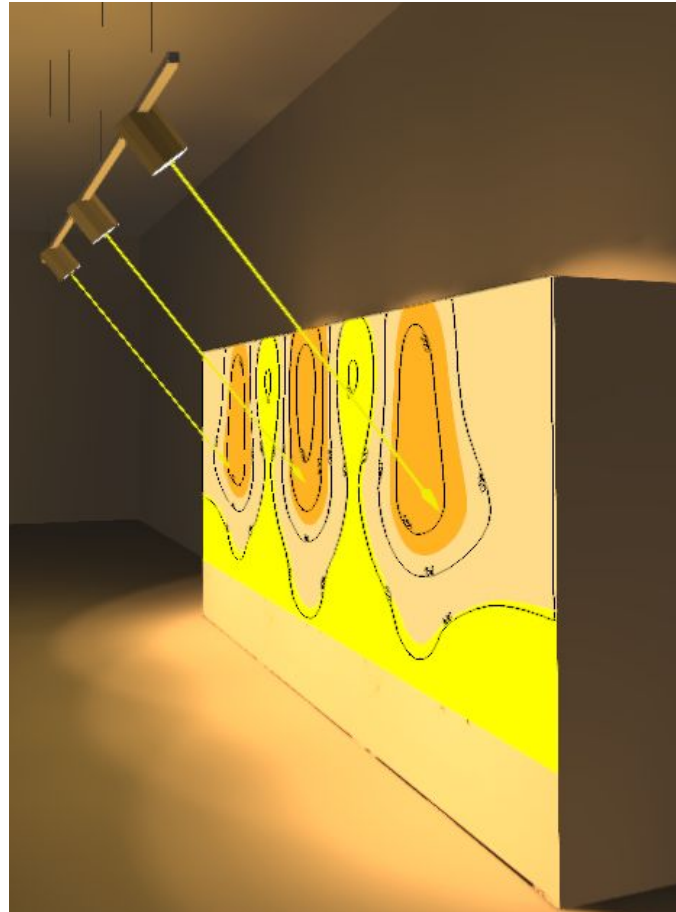
**Average footcandle:
~ 134 fc**

Parameter

X = 3'-6"

**Y = 7'-6" (suspended
from ceiling)**

Lamp $\alpha = 50^\circ$



Side View

Bill Of Material - Total

Description	Ref. Price	Qty.	Extended
Kessil T365 Tuna Sun Track Light	\$1,095	6	\$6,570
120V Track 8FT	\$265	2	\$530
120V Track 4FT	\$140	2	\$280
Straight Coupler (for connecting 8FT & 4FT Tracks)	\$70	2	\$140
Track Powerfeed w/ Data - Right	\$95	2	\$190
120V Track End cap	\$7	2	\$14
Total			\$7,724

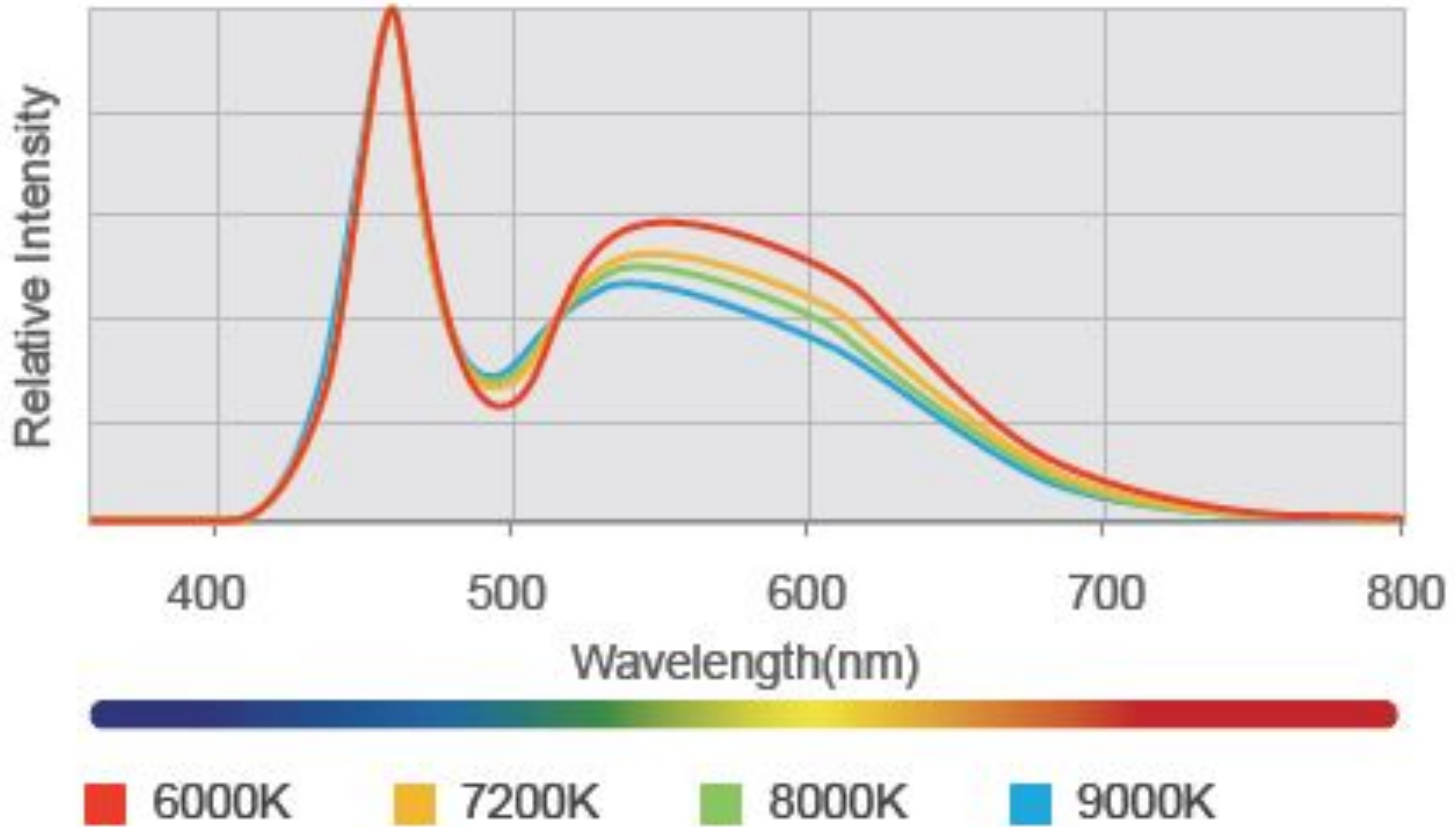
Note: There are front & back side, so 2 sets of lights are needed.

The whole system can be in **BLACK** or **WHITE** color

The pricing is the out-of-door price

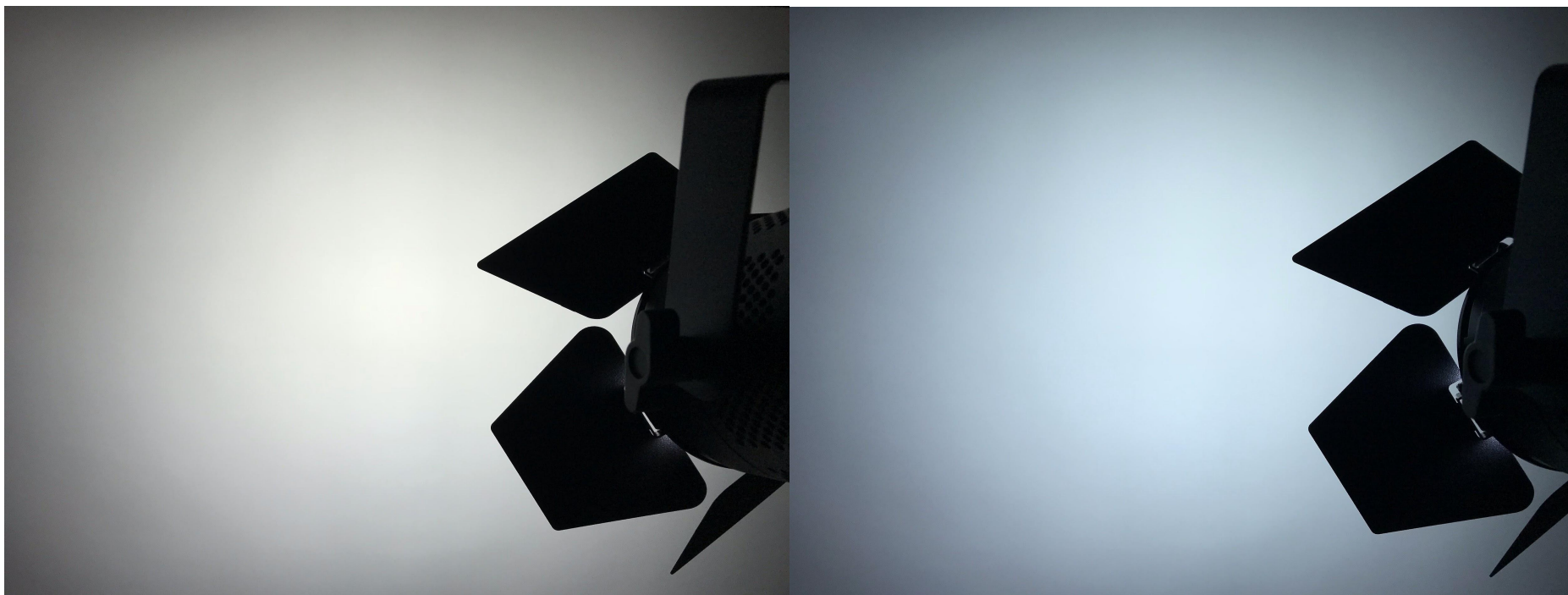
Spectrums

KESSIL T360/T365 Tuna Sun



Color Temperature

KESSIL T365 Tuna Sun

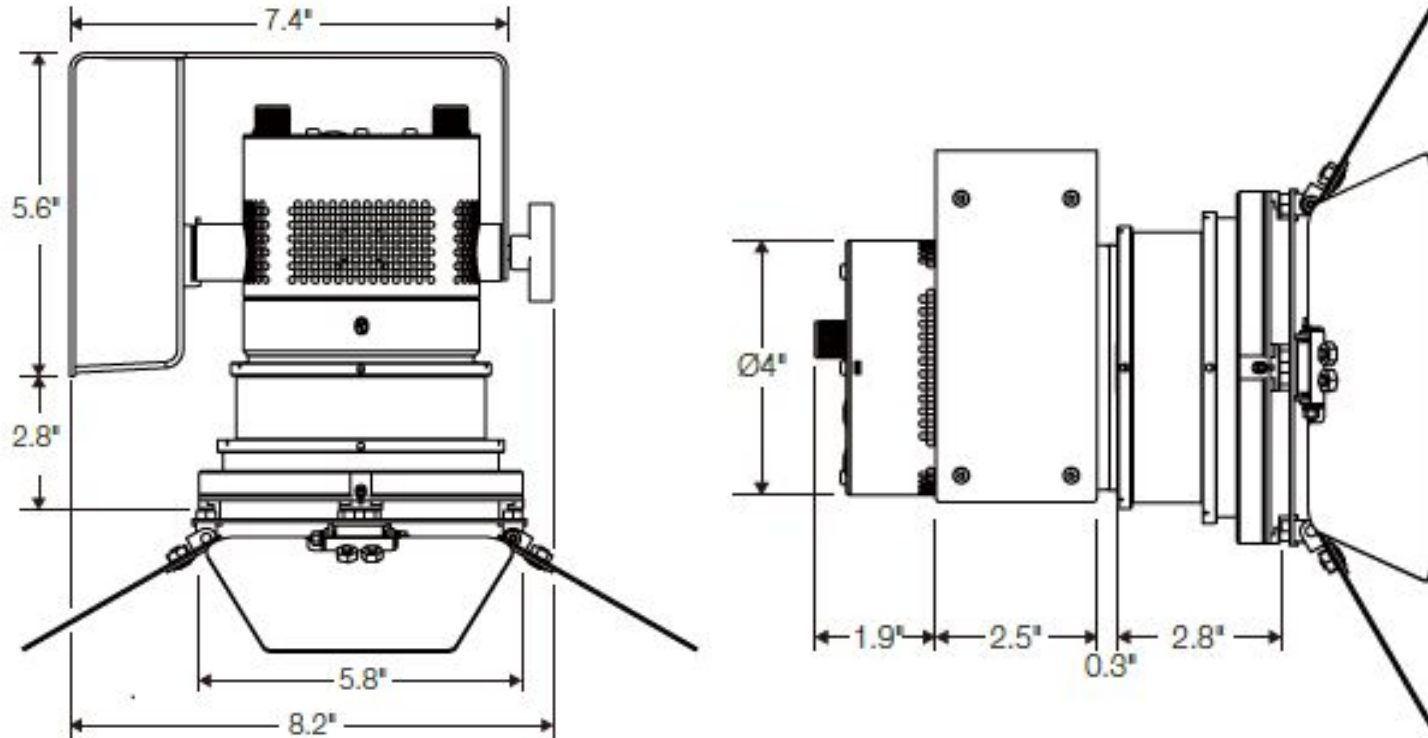


6,000K

9,000K

Dimensions & Weight

KESSIL T365 Tuna Sun



Weight: 4.08 lb / 1.85 kg

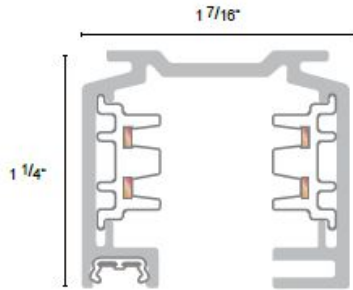
* T/C365 = T/C360 Tuna Sun + 5" Fresnel Accessory w/ Barndoors

Track System



Custom Lengths

Available in lengths of 4FT, 8FT, and 12FT lengths that can be field cut to the desired length.



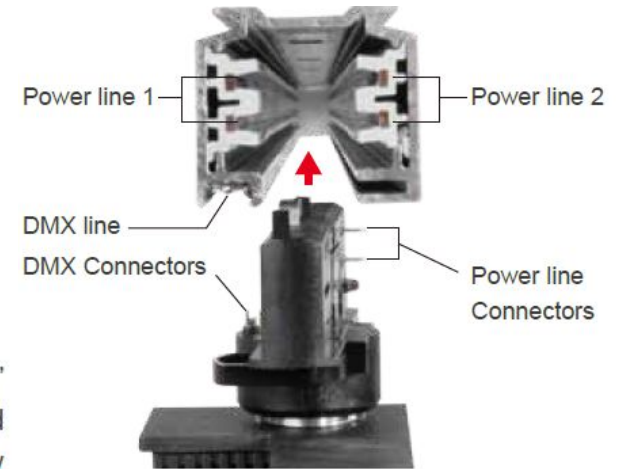
Data Bus Ready

Built in nickel plated Data Bus supports up to 30 devices per system.



Mounting Points

Pre-drilled $\frac{1}{4}$ " (6mm) x 1" (25mm) slots spaced every 8" (203mm) for easy surface mounting.



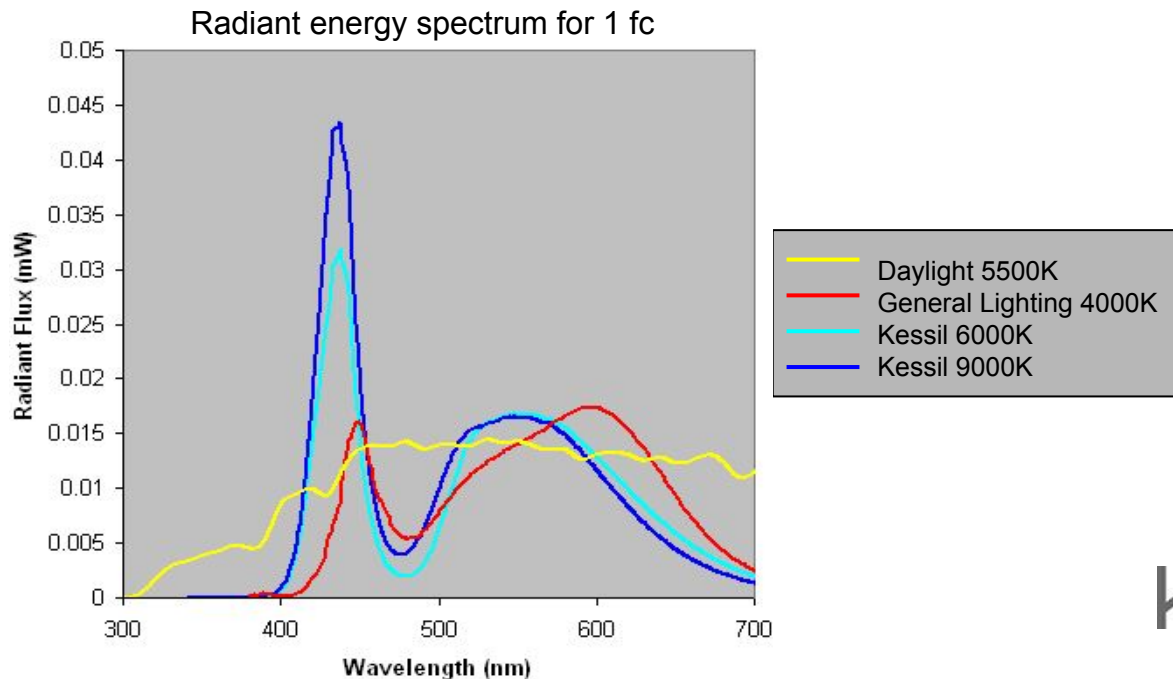
The Track System Kessil offers is an architectural grade surface mounted track consisting of seven conductors allowing for two unique power circuits. Each track features a 22 gauge nickel plated copper Data Bus providing **DMX control signals** to any connected fixture along the track.

Appendix - The Kessil Advantage

Spectrum vs Brightness

Abstract - Lumens/foot candle are still used as a common measurement of light. LED fixtures are often characterized in lumens/watt or foot candle/watt and efforts are progressing further in this direction without regard to photosynthesis

- Lumens or foot candles are fundamentally based on the wavelength sensitivity of the human eye
- Photosynthesis occurs with wavelength sensitivity different than that of the human eye
- Kessil spectrums are fundamentally based on the wavelength sensitivity of photosynthesis and can provide up to 2x effective photosynthetic energy per foot candle



Appendix - The Kessil Advantage

Spectrum vs Brightness

- The photometrics (foot-candles, lumen, etc.) of Kessil lights are lower than most LED lighting fixtures because Kessil's focus is the spectrum.
- Most commercial LED chips are made for general illumination such as household lighting and not specifically made to grow plants
- The majority of Photosynthesis occurs in the blue and red ends of the spectrum where the eye is less sensitive
- The Kessil Horticulture fixtures- like the H80 and H1200, are extreme examples of spectrum specific lighting fixtures. Intensity changes of these fixtures are harder to detect visually. The Kessil Tuna Sun series has a good balance in spectrum and visual effects.
- Because Kessil manufactures LEDs in house, we can produce unique spectrums targeted for each individual application. These spectrums have been tested and proven effective for superior plant growth health.

As stated in the first point, when comparing Kessil fixtures with other LED fixtures, spectrum should be the main focus, not photometrics. The photometrics provided in this presentation is only for reference.

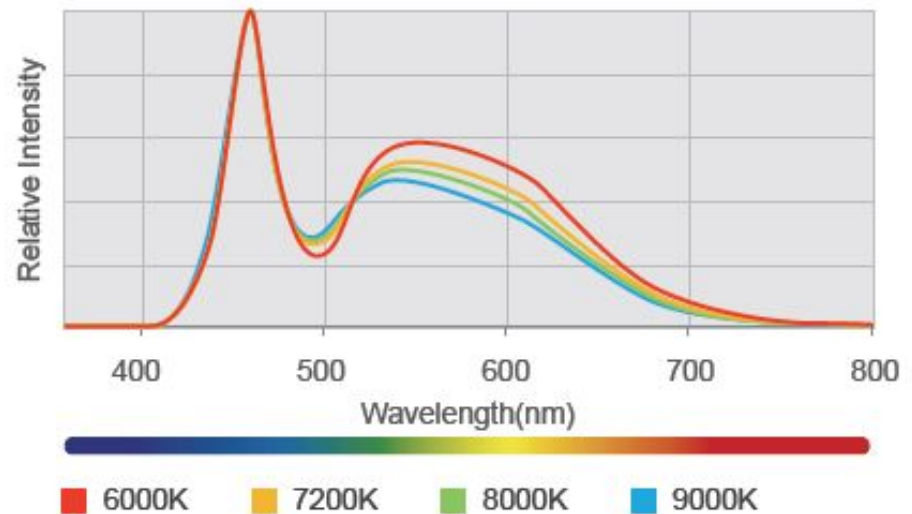
Appendix - The Kessil Advantage

Kessil Logic

Kessil Logic: Kessil's way to simplify spectral tuning for users

Kessil Logic has two main functions

- 1) To balance the spectrum
 - Kessil Logic maintains a very **similar wavelength combination** across different colors (e.g. Tuna Sun color range). This allows the user to choose colors they like to see and not worry about balancing the wavelengths.
- 2) To balance the power
 - Kessil Logic maintains maximum output across each color, allowing highest output possible. This also means intensity is not directly tied to color tuning.



Appendix - The Kessil Advantage

Correlated Color Temperature (CCT)

- Kessil Tuna Sun fixtures have CCT from 6,000K - 9,000K. The fixtures are tunable in terms of color and intensity.
- Our color calibration method is not the same as normal ambient lighting. The extreme end is called 9,000K, it looks cool white (sky white), not blue.
- The reason why Kessil chooses 6,000K - 9,000K is because these color temperatures look brighter and make plants more appealing in an indoor environment. Other LEDs usually have ~5,500K color temperature and not higher, mainly because they cannot maintain the spectrum if higher color temperature is set.
- Thanks to Kessil Logic, users can choose any color they want while the core spectrum is still very efficient for plant growth. Our technology allows us to create lights that are bright and beautiful, while maintaining the spectrum that is efficient for plant growth,

Appendix - The Kessil Advantage

Kessil Platform

Kessil Platform

- A lot of grow light manufacturers tend to make light fixtures that have higher lux/foot candle value to boost sales but sacrifice the most efficient spectrum.
- LED chips manufacturers tend to make and sell chips that cater to general lighting, which is a much bigger market for them. Kessil produces LED chips which means we have control and access to a better and more suitable bin of LED chips for each application.
- Kessil uses the original Dense Matrix LED array (multiple LEDs on a single platform). This effective point source allows better blending of wavelengths without wasting energy/output and offers deeper penetration than many other LED fixtures.
- This effective point source can be paired with additional optics that can mimic any source. This can be seen with the T360 with 5" Fresnel Accessory with barndoors.

