orb

A Simple and Beautiful Round Light Source
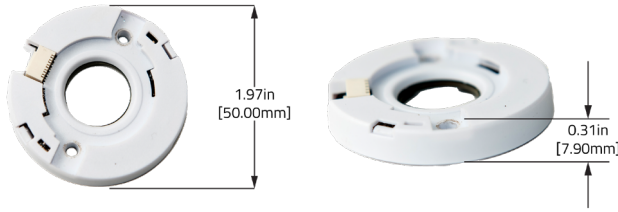
Features

> Multi-channel constant current driver with up to 5 precisely controlled output channels

> Integrate intelligent tunable spectra control features into a modular Zhaga based form factor

> Select from different tunable white or tunable color arrays to achieve desired spectra mix, LES source size, and lumen output

> Compatible with a wide selection of TIR optics and reflectors and easy integration with Arkalumen series of diffuser elements

> Control Protocols: ORB3: 0-10V, DMX/RDM, Silvair BLE & Casambi BLE. ORB5: DMX/RDM & Casambi BLE

Applications

> Downlights

> Spotlights

> Landscape

DESIGNED FOR FIT AND PERFORMANCE

1.97in [50.00mm]

0.31in [7.90mm]

Zhaga Standard Dimensions • Integrated Optic/Diffuser Holder

Ultra Low Profile → High Optical Efficiency

Embedded Antenna at the Face of Fixture → Incredible Wireless Range

CHOOSE YOUR LED MODULE

loda

Spectra : Tunable White, Tunable Color
LES : 7 - 18mm
Lumens : Up to 3000lm
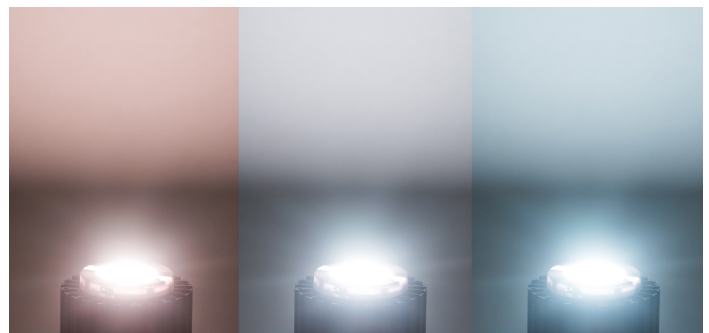
Drop-in LED Module
Auto-Calibration

16 Standard LED Modules Available

Tunable Color

Tunable White

Table of Contents

ORB Order Codes

Order Code	Arkalumen Part Number	Technology	Number of Channels	Control Protocol
ORB3 Tunable White				
ORB3-VA-xxxx	APT-CV3-VA-ORB-xxxx	Tunable White	3	DMX/RDM
ORB3-VD-xxxx	APT-CV3-VD-ORB-xxxx	Tunable White	3	0-10V
ORB3-VWC-xxxx	APT-CV3-VWC-ORB-xxxx	Tunable White	3	Casambi BLE
ORB3-VWS-xxxx	APT-CV3-VWS-ORB-xxxx	Tunable White	3	Silvair BLE
ORB5 Tunable Color				
ORB5-VA-xxxx	APT-CV5-VA-ORB-xxxx	Tunable Color	5	DMX/RDM
ORB5-VWC-xxxx	APT-CV5-VWC-ORB-xxxx	Tunable Color	5	Casambi BLE

ORB Electrical Specifications

Order Code	Max Wattage [W]	Input Voltage [V]	Max Channel Current [mA]	Max Total Current [mA]
ORB3-VA-xxxx	48	24	1000	2000
ORB3-VD-xxxx	48	24	1000	2000
ORB3-VWC-xxxx	48	24	1000	2000
ORB3-VWS-xxxx	48	24	1000	2000
ORB5-VA-xxxx	48	24	CH1,2,3 500, CH4,5 1000	2000
ORB5-VWC-xxxx	48	24	CH1,2,3 500, CH4,5 1000	2000

Mechanical Specifications
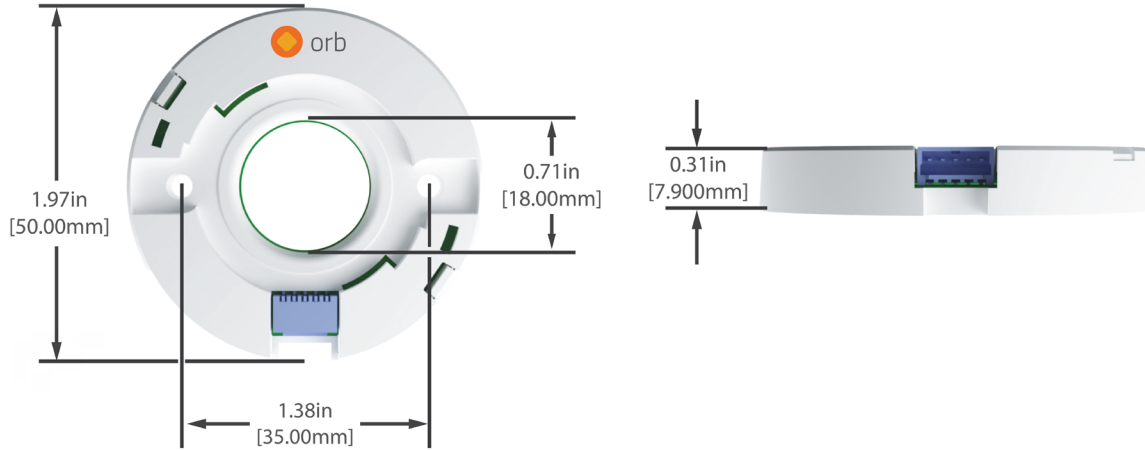
Figure 1 — ORB Mechanical Drawing

Encasement Specifications	
Material	Plastic
RTI Elec	130 C

Operating Conditions

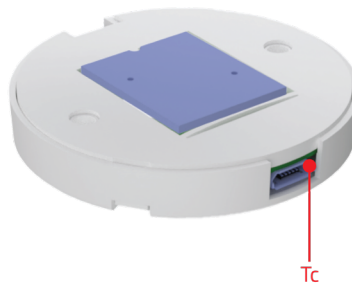| Temperature Limits	
Max Temperature, Tc	85°C
Min Ambient Temperature, Ta	-40°C
*Temperature Limits valid when electrical limits are respected and mounting surface is kept at 85°C or below	

Fig. 2 - Tc is measured on a metal sleeve of micro-USB programming port in location specified above
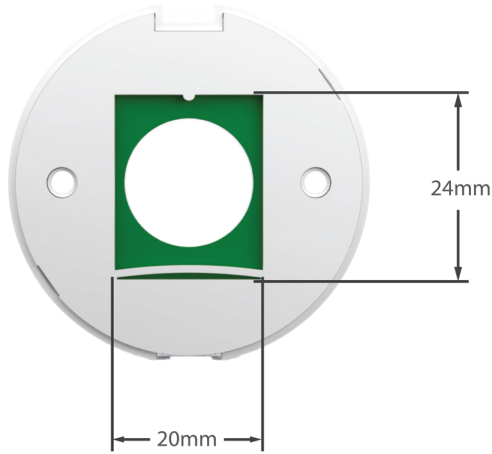
Figure 3 – ORB Bottom View
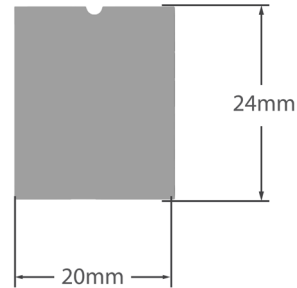
All LxxxA LoDAs have the same dimension and are speifically designed to integrate into all ORB line of products

Figure 4 – Bottom View of LoDA LED Module

How to Insert LoDA Into ORB

Step 1
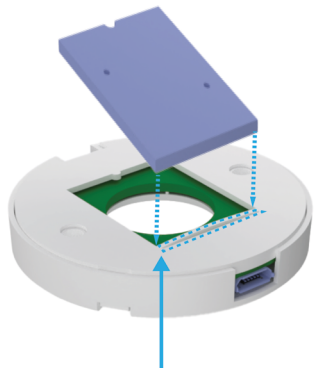
Insert LoDA into the back of the ORB at a 45° angle, toward the spring side

Figure 5

Step 2
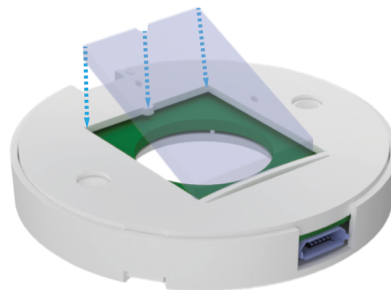
Once the LoDA is aligned with the bottom of the ORB, push down into a flush position

Figure 6

Step 3

LoDA properly inserted into ORB

Figure 7

Control Protocol: DMX/RDM

Wiring Diagram
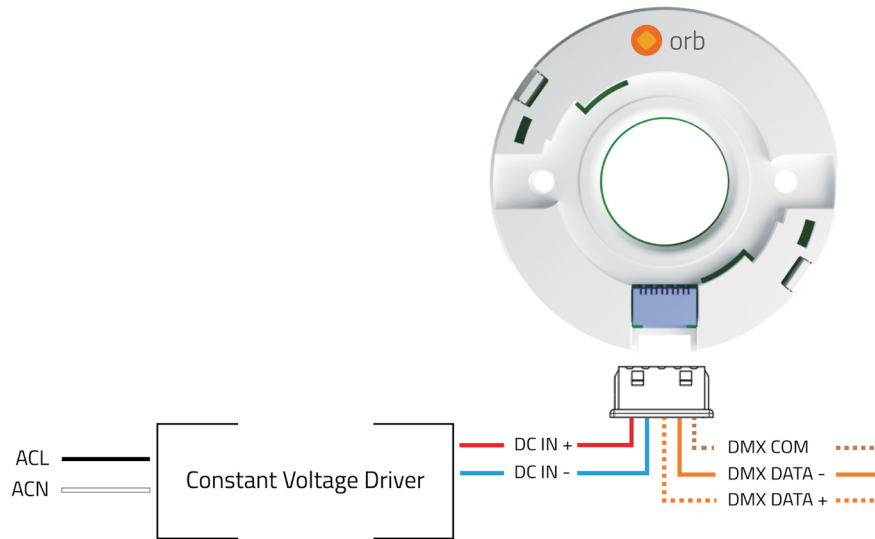
Figure 8 – DMX/RDM Wiring Diagram

ARK-C1-5A-300

Wire Length: 11.81in [300mm]

Strip length: 0.28in [7mm]   Wire guage: 24 AWG

Please contact Arkalumen if you would like a different length of cable
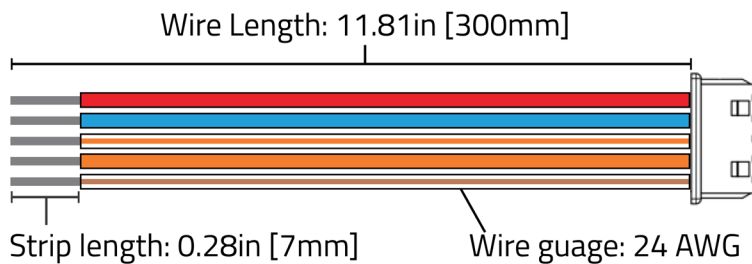
Function	Wire Color
DC IN +	Red
DC IN -	Blue
DMX Data +	White & Orange
DMX Data -	Orange
DMX COM	White & Brown

Figure 9 – DMX/RDM Cable Assembly

Electrical Specifications

Control Protocol Input

Port	Voltage [V]		Current [mA]	
	Min	Max	Min	Max
DMX Data +/Data -	-10	15	-0.8	1

DMX Personalities

ORB3-VA

Personalities for DMX [y]	DMX Address Assignment		
1	DTW	-	-
2	INT	CCT	-
3	CH1	CH2	-
4	CH1	CH2	CH3

LEGEND					
CH1	CH1	CH2	CH2	CH3	CH3
Intensity Control	INT	CCT Control	CCT	Dim-to-Warm	DTW

Figure 10 – ORB3-VA DMX Personalities

ORB5-VA

Personalities for DMX [y]	DMX Address Assignment				
1	DTW	-	-	-	-
2	INT	CCT	-	-	-
3	R	G	B	-	-
4	R	G	B	W1	-
5	R	G	B	W1	W2
6	HUE	SAT	INT	CCT	-
7	INT	CCT	HUE	SAT	-

LEGEND							
Red	R	Green	G	Blue	B	CCT Control	CCT	Intensity Control	INT
White 1	W1	White 2	W2	Hue	HUE	Saturation	SAT	Dim-to-Warm	DTW

Figure 11 – ORB5-VA DMX Personalities

The assigned DMX addresses are customizable and can be selected as 8-bit or 16-bit.

Control Protocol: 0-10V

Wiring Diagram

ACL

ACN

Constant Voltage Driver

DC IN +
DC IN -

0-10V Gnd
0-10V INT
0-10V CCT
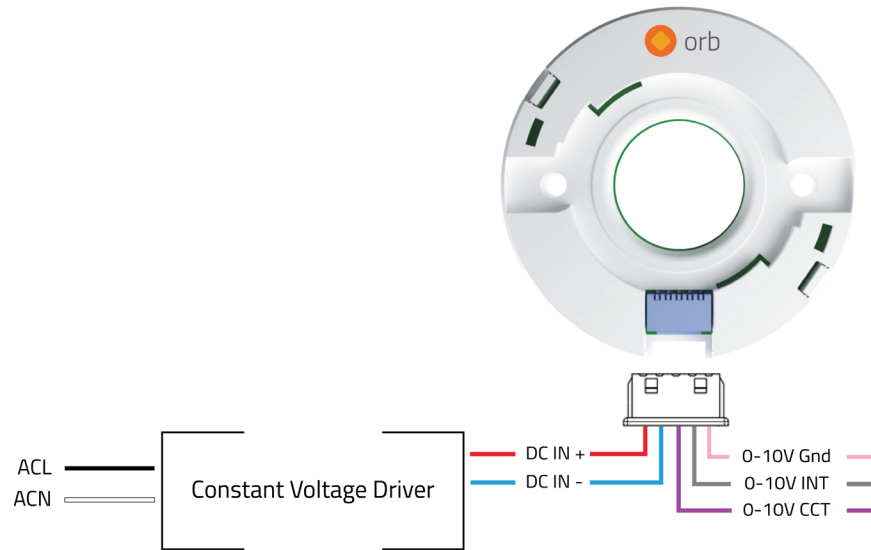
Figure 12 – 0-10V Wiring Diagram

ARK-C1-5B-300

Wire Length: 11.81in [300mm]

Strip length: 0.28in [7mm]

Wire guage: 24 AWG
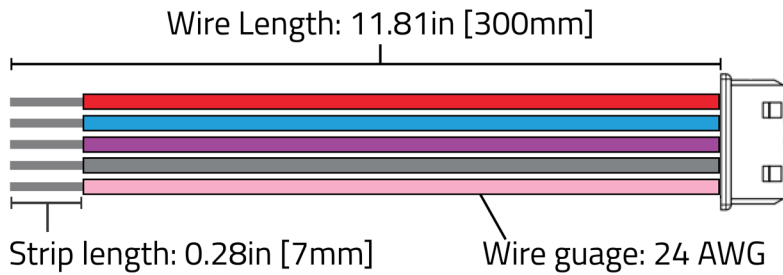
Function	Wire Color
DC IN +	Red
DC IN -	Blue
0-10V CCT	Purple
0-10V INT	Grey
0-10V Gnd	Pink

Please contact Arkalumen if you would like a different length of cable

Figure 13– 0-10V Cable Assembly

Electrical Specifications

Control Protocol Input

Port	Voltage [V]		Current [mA]	
	Min	Max	Min	Max
0-10V IN (Sink)*	0	9.36	-	6

*Specification indicates port output ranges only, to be used exclusively with sinking 0-10V dimmers

Control Protocol: Wireless BLE

Wiring Diagram
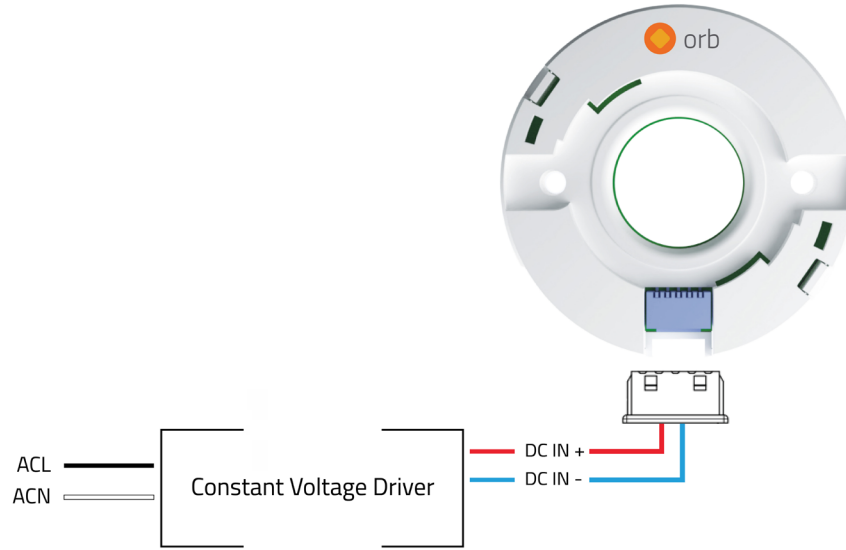
Figure 14 – BLE Wiring Diagram

ARK-C1-2A-300

Wire Length: 11.81in [300mm]

Strip length: 0.28in [7mm]   Wire guage: 24 AWG
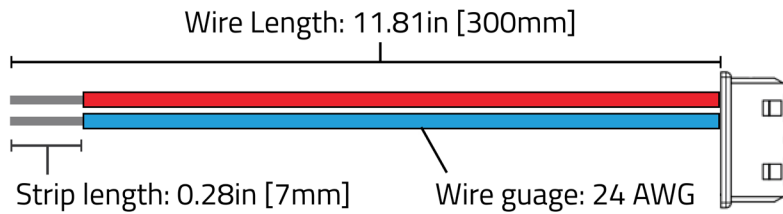
Function	Wire Color
DC IN +	Red
DC IN -	Blue

Please contact Arkalumen if you would like a different length of cable

Figure 15– BLE Cable Assembly

APT Programmer

Arkalumen's ORB controllers are customizable using our APT Programmer, which allows users to easily configure the controller for your applications. To configure, you will need an ORB controller, an APT Programmer hardware unit and the latest version of the APT Programmer user interface.

APT Programmer hardware: To request an APT Programmer hardware unit, please contact support@arkalumen.com and a unit can be sent to you.

APT Programmer software: To download the latest APT Programmer user interface, please request a download link via the Arkalumen website www.arkalumen.com/apt-programmer/. You will be prompted to add in your information and a link will be sent to you via email with the latest version of the software. If you do not receive the email, please ensure to check your spam folder.

Programable Features Chart

Features	ORB3-VA-xxxx	ORB3-VD-xxxx	ORB3-VWC-xxxx	ORB3-VWS-xxxx	ORB5-VA-xxxx	ORB5-VWC-xxxx
Control Protocol	DMX/RDM	0-10V	Casambi BLE	Silvair BLE	DMX/RDM	Casambi BLE
LoDA Selection	✔	✔	✔	✔	✔	✔
DMX Personality	✔				✔	
DMX Base Address	✔				✔	
DMX Error Rejection Level	✔				✔	
Max Total Current	✔	✔	✔	✔	✔	✔
Retrieve Configurations	✔	✔	✔	✔	✔	✔
Turn Off Transition (Instantaneous or Fade)	✔	✔	✔	✔	✔	✔
CCT Mapping Table	✔	✔			✔	
INT Mapping Table	✔	✔	✔	✔	✔	✔

LoDA - Tunable White
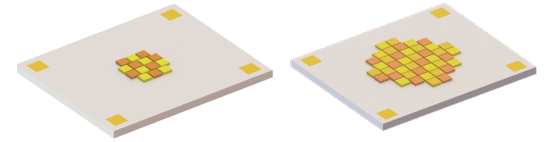
Designed to provide a calibrated tunable white lighting system when combined with the Arkalumen ORB3 and a simple dim-to-warm lighting solution when combined with the Arkalumen ORB2.

Product Nomenclature

L   3   01   A   -   18   30   65

| Number of Channels | Version Number 01 : 9mm LES 02 : 13mm LES | Size 24 x 20mm | | Low CCT 18 : 1800K | Mid CCT 27 : 2700K 30 : 3000K | High CCT 40 : 4000K 65 : 6500K |

Order Code	Channels	CCT Range	Dimensions [mm]	LES [mm]	Nominal Voltage [V]	Max Light Output [lm][1]
L201A-1830	2	1800K-3000K	24 x 20	7	21	1285
L201A-2765	2	2700K-6500K	24 x 20	7	21	1365
L202A-1830	2	1800K-3000K	24 x 20	10	21	1990
L202A-2765	2	2700K-6500K	24 x 20	10	21	2125
L301A-182740	3	1800K-4000K	24 x 20	9	18	1170
L301A-183065	3	1800K-6500K	24 x 20	9	18	1170
L302A-182740	3	1800K-4000K	24 x 20	13	21	2125
L302A-183065	3	1800K-6500K	24 x 20	13	21	2125

1. Max light output per channel

Custom LED Modules

If you need to achieve particular spectra, LES or lumens that are not currently offered as standard products, custom LED module design is available through Arkalumen.

Certified Third Party LED Modules

Arkalumen will be releasing design documents for a LoDA certification program to enable third parties to develop certified LED modules for the ORB.

loda

LoDA - Tunable Color
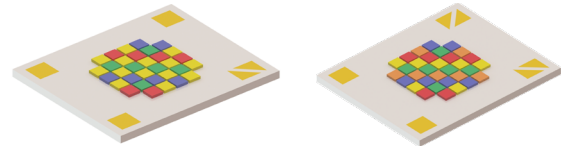
Designed to provide a calibrated tunable color lighting solution when combined with the Arkalumen ORB5.

Product Nomenclature

L 5 01 A - RGB 20 40

Colors

Number of Channels

Version Number
01 : 13mm LES
02 : 18mm LES

Size
24 x 20mm

Low CCT
20 : 2000K

High CCT
40 : 4000K

Order Code	Channels	CCT Range	Dimensions [mm]	LES [mm]	Nominal Voltage [V]	Max Light Output [lm][1]
L401A-RGB30	R, G, B, 3000K	2200K-5500K	24 x 20	9	18	1250
L401A-RGB40	R, G, B, 4000K	2700K-6500K	24 x 20	9	18	1310
L402A-RGB30	R, G, B, 3000K	2200K-5500K	24 x 20	13	21	2180
L402A-RGB40	R, G, B, 4000K	2700K-6500K	24 x 20	13	21	2315
L403A-RGB30	R, G, B, 3000K	2200K-5500K	24 x 20	18	21	3230
L403A-RGB40	R, G, B, 4000K	2700K-6500K	24 x 20	18	21	3420
L501A-RGB2040	R, G, B, 2000K, 4000K	1800K-6500K*	24 x 20	13	21	1525
L502A-RGB2040	R, G, B,2000K, 4000K	1800K-6500K*	24 x 20	18	21	2315

1. Max white light output per channel   *Programmable to 1650-8000K

Custom LED Modules

If you need to achieve particular spectra, LES or lumens that are not currently offered as standard products, custom LED module design is available through Arkalumen.

Certified Third Party LED Modules

Arkalumen will be releasing design documents for a LoDA certification program to enable third parties to develop certified LED modules for the ORB.

Arkalumen Accessories

Diffuser Elements

Arkalumen Part Number	Material	Shape	Thickness	Level of Diffusion
ARK-DF-SF2	Silicone	Flat	0.5	2
ARK-DF-SF4	Silicone	Flat	0.5	4
ARK-DF-SF6	Silicone	Flat	1.0	6
ARK-DF-SF8	Silicone	Flat	1.0	8

Figure 16 - ARK-DF-SF2

Figure 17 - ARK-DF-SF4

Figure 18 - ARK-DF-SF6

Figure 19 - ARK-DF-SF8

Cables

Arkalumen Part Number	Compatibilty	Number of Wires	Wire Colors	Length [mm]	Molex Part Number
ARK-C1-5A-30	ORB3-VA-xxxx ORB5-VA-xxxx	5	Red, Blue, White/Orange, Orange, White/Brown	300	874390500
ARK-C1-5B-30	ORB3-VD-xxxx	5	Red, Blue, Purple, Grey, Pink	300	874390500
ARK-C1-2A-30	ORB3-VWC-xxxx ORB3-VWS-xxxx ORB5-VWC-xxxx	2	Red, Blue	300	874390500

Thermal Interface Material

Arkalumen Part Number	Compatibility	Material
ARK-TM-ORB-50	ORB3 & ORB5	Graphite

*Note: Thermal Interface Material is not included in ORB Systems

Ecosystem Accessories

TIR Optic & Reflectors

Arkalumen ORB Systems are compatible with a wide range of TIR optics and reflectors. Please contact Arkalumen to confirm the compatibility of your selection.

Approved Drivers

Arkalumen ORB Systems are compatible with a wide range of isolated 24V constant voltage output drivers. Please contact Arkalumen to confirm the compatibility of your selection.

Heat Sink

Arkalumen LED modules are designed to be thermally managed to maintain a Tc point temperature equal to or less than the maximum specified temperature. When selecting materials for thermal management, consider using a thermal interface material and a heat sink. It is recommended to source products with low thermal resistance (C/W). Heat sinks may be specified with a power limit. Look for heat sinks with a power limit at least as high as the maximum power of the selected LED module. Testing within likely applications of the finished assembly is necessary to ensure that the Tc point temperature limit is not being exceeded.

Screws

Socket head or rounded button head hex drive screws are recommended. Please note that countersunk screws and thread forming or rolling screws are NOT allowed.

Metric: M3 x 0.5mm thread, 20mm long (length should be adjusted to the heat sink).
Imperial: #4-40 UNC, 0.5in (length should be adjusted to the heat sink).
Torque: 0.6Nm
Head diameter for the screw: 6mm, Max head height: 2.52mm

Contact Us

For any further support please contact Arkalumen at support@arkalumen.com
or toll free at 1.877.865.5533