

## ORB3 & ORB5 - 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, Silvoir BLE & Casambi BLE. ORB5: DMX/RDM & Casambi BLE

### Applications

- > Downlights
- > Spotlights
- > Landscape

## Designed for Fit and Performance



1.97 in  
50.00mm



0.31 in  
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

Spectra : Tunable White, Tunable Color

LES : 7 - 18mm

Lumens : Up to 3000lm

Complete Calibrated System



## Tunable Color



## Tunable White





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## ORB Order Codes

Order Code*	Arkalumen Part Number	Technology	Number of Channels	Control Protocol
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-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

\*xxxx – Firmware code provided by Arkalumen

## ORB Electrical Specifications

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

\*Input Voltage is dependent on the LoDA, please refer to the Reference Design Sheet (RDS) for required input voltage

\*\*Max Wattage is typically limited to the LED module populated in ORB

## Mechanical Specifications

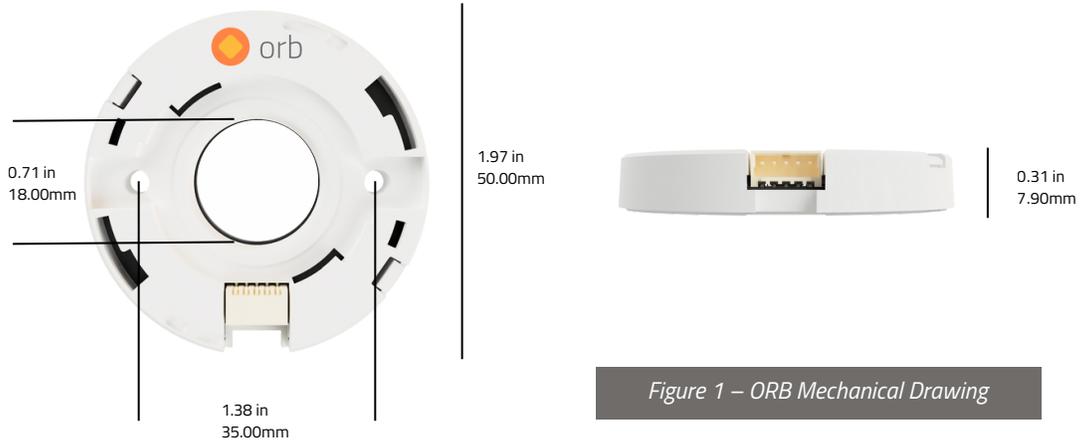


Figure 1 – ORB Mechanical Drawing

Encasement Specifications	
Material	Plastic
RTI Elec	130°C

## Operating Conditions

Temperature Limits	
Min Ambient Temperature, Ta	-40°C
Max Ambient Temperature, Ta	40°C



Figure 2 - USB Tc temperature is measured on the metal sleeve of the micro-USB programming port. To measure USB Tc, insert a K-type thermal probe between micro-USB and top encasement of the ORB controller as shown. Solder the tip of the thermal probe to the center of the USB connector.

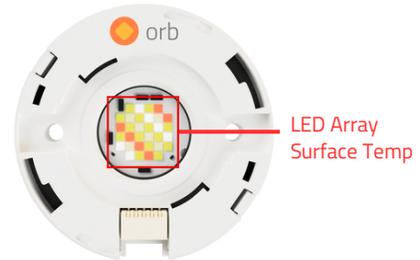


Figure 3 - To measure LED array surface temperature, use thermal camera with diffuser removed after system reached thermal equilibrium

\*Refer to the ORB System Reference Design Sheet & Thermal Testing Guideline application note in the Resource Section: [www.arkalumen.com/orb-led-controllers/](http://www.arkalumen.com/orb-led-controllers/)

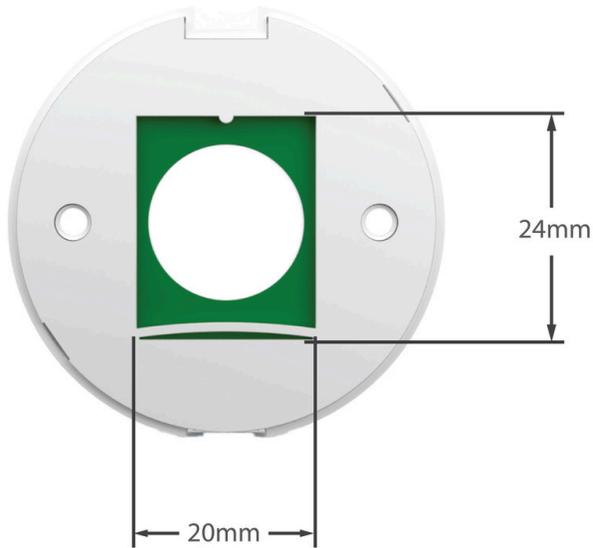
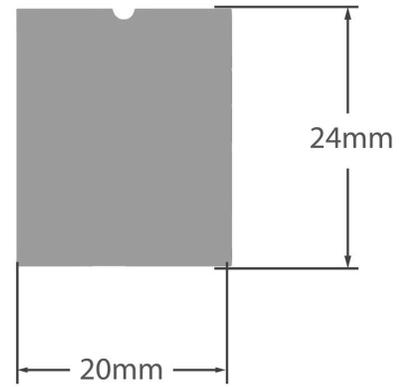


Figure 4 – ORB Bottom View

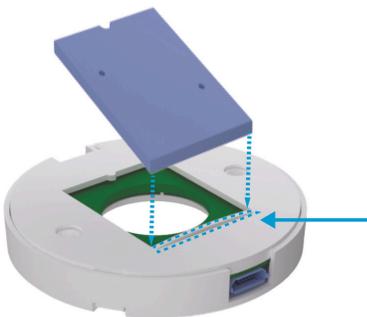


All LxxxA LoDAs have the same dimension and are specifically designed to integrate into all ORB line of products

Figure 5 – 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 6

Step 2



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

Figure 7

Step 3



LoDA properly inserted into ORB

Figure 8

## Control Protocol: DMX/RDM

### Wiring Diagram

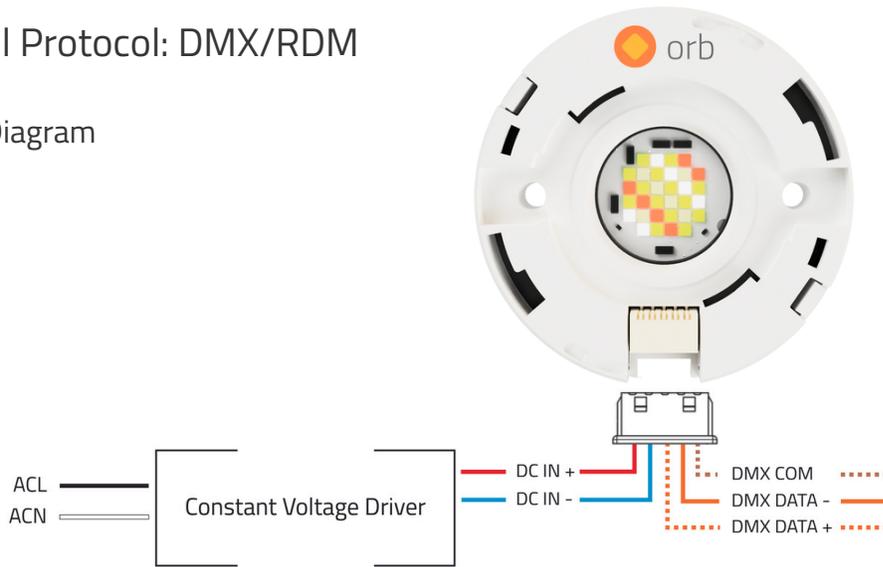
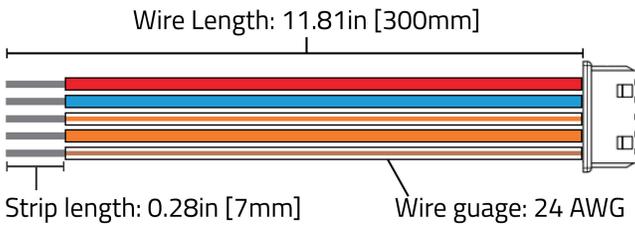


Figure 9 – DMX/RDM Wiring Diagram

### ARK-C1-5A-30



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

Figure 10– DMX/RDM Cable Assembly

Function	Wire Color
DC IN +	Red
DC IN -	Blue
DMX Data +	White & Orange
DMX Data -	Orange
DMX COM	White & Brown

### Electrical Specifications

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

ORB controller acts as a floating device as per ANSI E1.11 – 2024. Use only with a driver with an output not referenced to earth or protective ground (ie. isolated output)  
ORB3-VA & ORB5-VA use an NCC DMX512-A connector



## 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 11 – ORB3-VA DMX Personalities

### ORB5-VA

Personalities for DMX [y]	DMX Address Assignment				
1	INT	CCT	-	-	-
2	R	G	B	W2	-
3	R	G	B	18K	-
4	R	G	B	22K	-
5	R	G	B	27K	-
6	R	G	B	30K	-
7	R	G	B	35K	-
8	R	G	B	40K	-
9	R	G	B	65K	-
10	R	G	B	W2	W1
11	R	G	B	INT	CCT
12	INT	CCT	SAT	HUE	-
13	HUE	SAT	INT	CCT	-

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

Figure 12 – 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

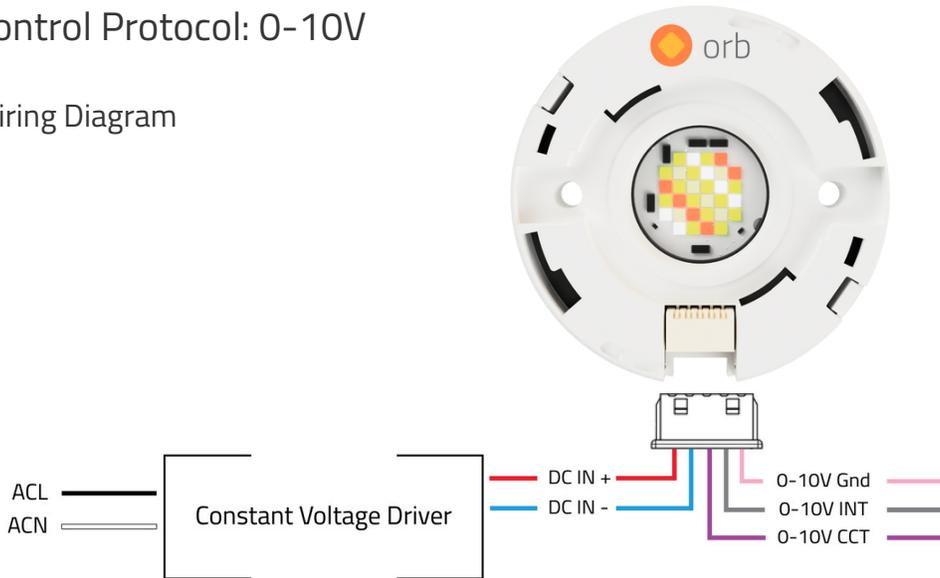
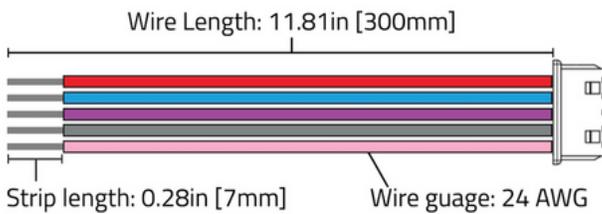


Figure 13 – 0-10V Wiring Diagram

### ARK-C1-5B-30



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

Figure 14 – 0-10V Cable Assembly

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

### Electrical Specifications

Port	Voltage [V]		Current [mA]	
	Min	Max	Min	Max
0-10V (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

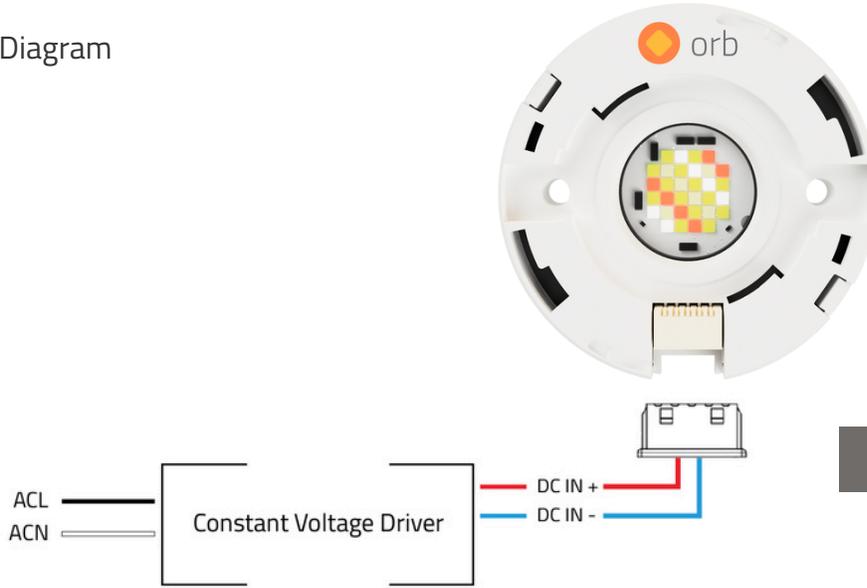
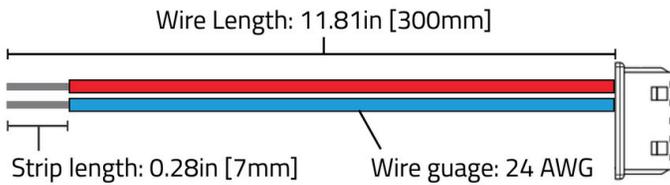


Figure 15 – Wireless BLE Wiring Diagram

### ARK-C1-AB-30



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

Figure 16 – Wireless BLE Cable Assembly

Function	Wire Color
DC IN +	Red
DC IN -	Blue



Figure 17 – Embedded Antenna Location

When designing and placing the embedded antenna in its enclosure, it is crucial to ensure that no metal is placed near the antenna area, both above and below it. The presence of metal in close proximity to the module can significantly degrade its RF performance.

ORB controller acts as a floating device as per ANSI E1.11 – 2024. Use only with a driver with an output not referenced to earth or protective ground (ie. isolated output)



## 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](mailto: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/](http://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.

## Programmable 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	✓	✓	✓	✓	✓	✓

## Arkalumen Accessories

### Diffuser Elements

Arkalumen Part Number	Material	Shape	Thickness [mm]	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



ARK-DF-SF2



ARK-DF-SF4



ARK-DF-SF6



ARK-DF-SF8

### Inner Reflectors

Arkalumen Part Number	LES	Material
ARK-IR-PL-LES9	9	Plastic
ARK-IR-PL-LES13	13	Plastic
ARK-IR-ST-LES18	18	Steel

### Reflector Holders

Arkalumen Part Number	Compatibility	Material
ARK-RH-SA	LES9 & LES13	Plastic
ARK-RH-LA	LES18	Plastic



## Arkalumen Accessories

### Cables

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

*Molex Part Number 874390500*

### Thermal Interface Material

Arkalumen Part Number	Compatibility	Dimensions [mm]	Material
ARK-TM-PC1-1818	ORB3 & ORB5	18x18	Phase Changing Material



## 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.

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### 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.

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### 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.

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### 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. Imperial: #4-40 UNC, 0.5in. Length should be adjusted to the heat sink.

Torque: 0.22Nm

Head diameter for the screw: 6mm

Max head height: 2.52mm



### Contact Us

For any further support please contact Arkalumen at [support@arkalumen.com](mailto:support@arkalumen.com) or toll free at 1.877.865.5533

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