

ORB-CC-VS - A Simple and Beautiful Round Light Source

Features

- > Converts constant current driver into multi-channel constant current driver with up to 3 controlled output channels
- > Integrate intelligent tunable spectra control features into a modular Zhaga based form factor
- > Select from different tunable white 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
- > APT Programmer enables configuration changes including CCT range, CCT mapping and control mode selection
- > Control Modes: 0-10V tunable white, dim-to-warm, DIP switch controlled selectable white, programmable selectable white

Designed for Fit and Performance



1.97 in
50.00mm

Zhaga Standard Dimensions ● Integrated Optic/Diffuser Holder
Ultra Low Profile → High Optical Efficiency



0.31 in
7.90mm

Choose your LED Module

Spectra : Tunable White

LES: 7 - 18mm

Complete Calibrated System



Tunable White





Table of Contents

ORB Order Codes & ORB Electrical Specifications	3
Mechanical Specifications & Operating Conditions	4
How to Insert LoDA Into ORB	5
Wiring Diagram, Cable Information & Control Mode Electrical Specifications	
0-10V (Tunable White)	6
Intensity Level (Dim-to-Warm)	7
DIP Switch (Selectable White)	8
Programmable (Selectable White)	9
APT Programmer & Programmable Features	10
Arkalumen Accessories	11
Ecosystem Accessories	13



ORB Order Codes

Order Code*	Technology	Number of Channels	Control Mode
ORB-CC-VS-xxxxTWz	Tunable White	Up to 3	0-10V
ORB-CC-VS-xxxxDWz	Dim-to-Warm	Up to 3	Intensity Level
ORB-CC-VS-xxxxDSz	Selectable White	Up to 3	DIP Switch
ORB-CC-VS-xxxxSWz	Selectable White	Up to 3	Programmable

*xxxx – Firmware code provided by Arkalumen

ORB Electrical Specifications*

Order Code	Max Wattage [W]**	Min Input Voltage [V]	Max Input Voltage [V]	Max Channel Current [mA]	Min Total Current [mA]	Max Total Current [mA]
ORB-CC-VS-xxxxYYz	48	12	55	2000	10	2000

*Ensure that current limits of the driver abide by the limit of the LED module

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

Mechanical Specifications

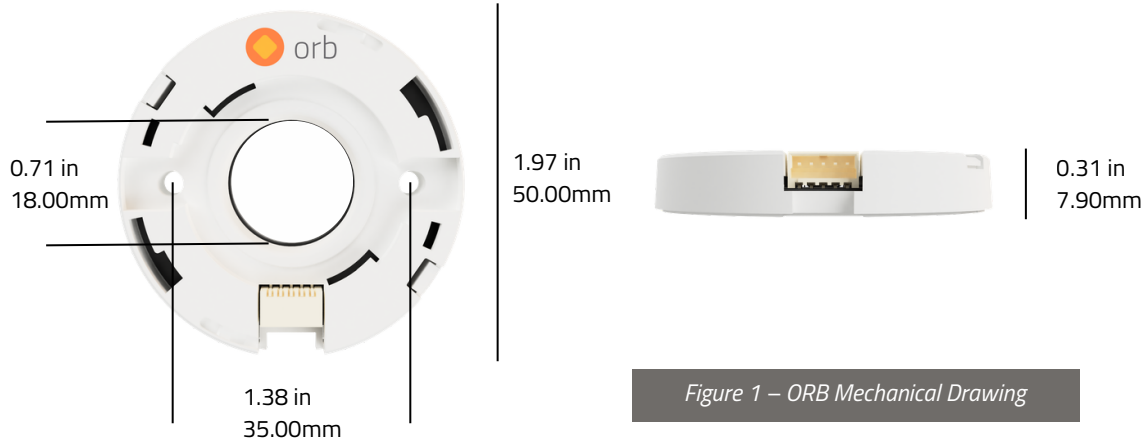


Figure 1 – ORB Mechanical Drawing

Encasement Specifications	
Material	Plastic
RTI Elec	130°C

Operating Conditions

Temperature Limits	
Min Ambient Temperature, Ta	-40°C
Max Ambient Temperature, Ta	50°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.

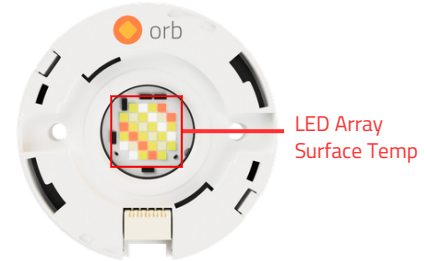


Figure 3 - To measure LED array surface temperature, use thermal camera with diffuser removed after system reached thermal equilibrium

*Refer to the ORB System Reference Design Sheet & Thermal Testing Guideline application note in the Resource Section: www.arkalumen.com/orb-cc-vs-led-controllers/

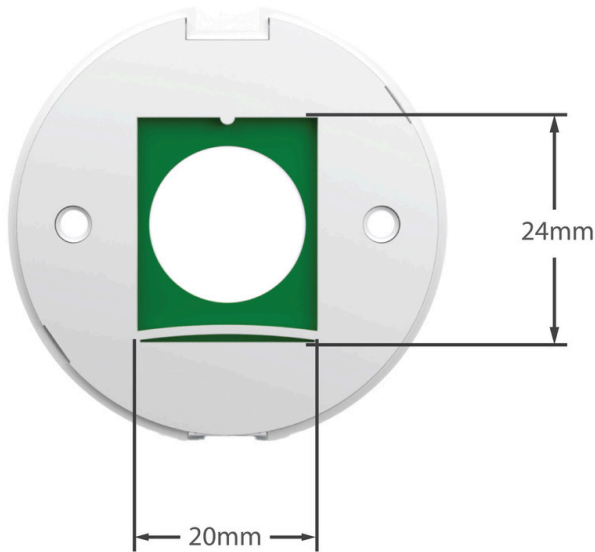
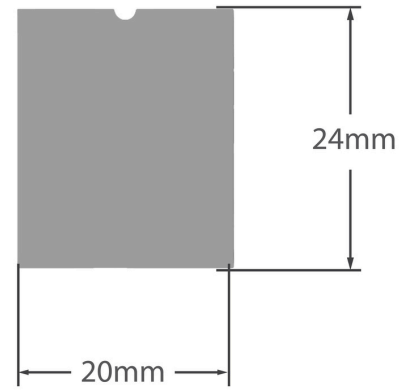


Figure 4 – ORB Bottom View

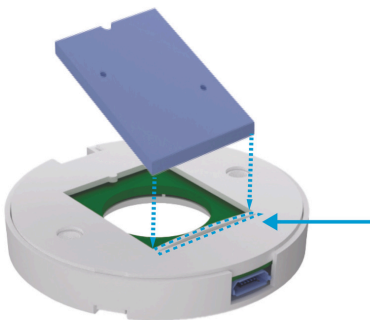


All LxxxA LoDAs have the same dimension and are specifically designed to integrate into all ORB line of products

Figure 5 – Bottom View of LoDA LED Module

How to Insert LoDA Into ORB

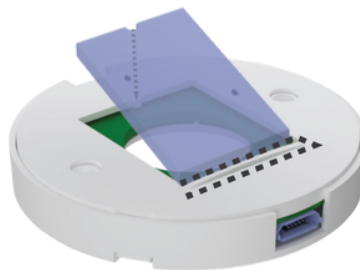
Step 1



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

Figure 6

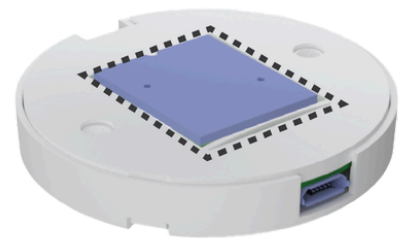
Step 2



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 Mode: 0-10V (Tunable White)

Wiring Diagram



Constant current driver intensity control could be 0-10V or phase dimming. Driver compatibility testing is required.

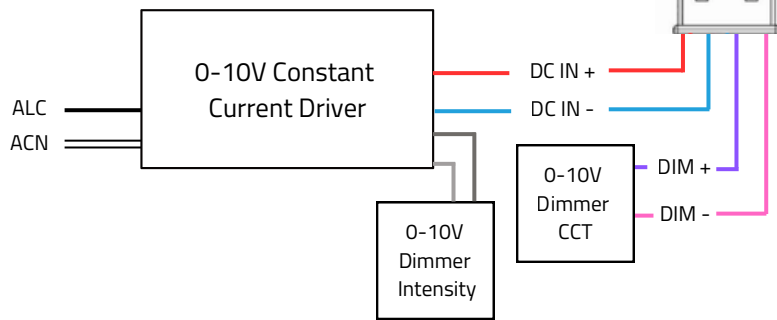
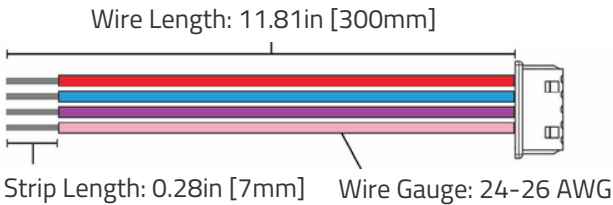


Figure 9 – 0-10V Tunable White Wiring Diagram

ARK-C1-4B-30



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

Figure 10 – 0-10V Tunable White Cable Assembly

Function	Wire Color
DC IN +	Red
DC IN -	Blue
DIM +	Purple
DIM -	Pink

Electrical Specifications

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

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



Control Mode: Intensity Level (Dim-to-Warm)

Wiring Diagram

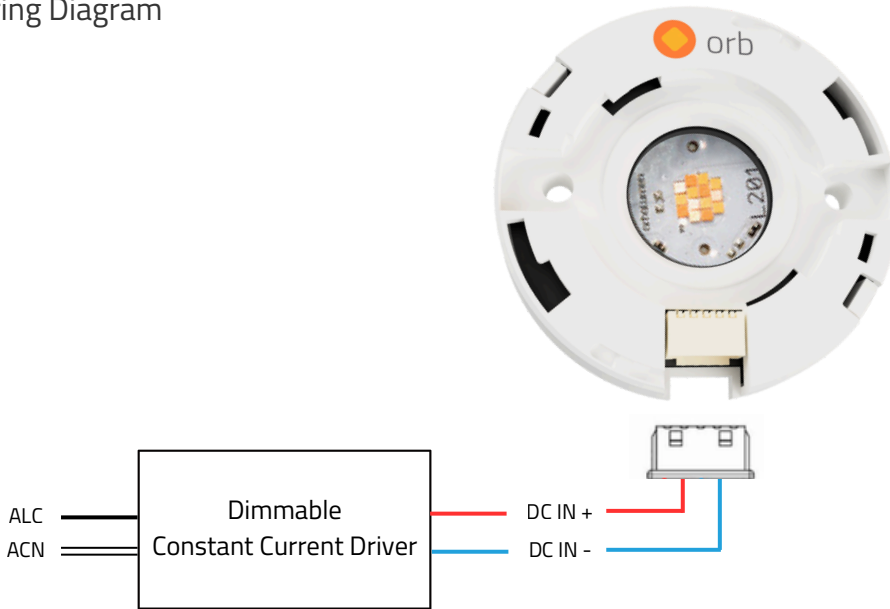
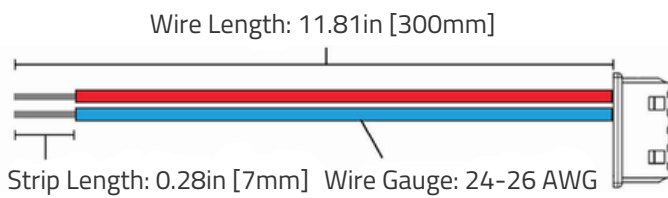


Figure 11 – Intensity Level Dim-to-Warm Wiring Diagram

Constant current driver intensity control could be 0-10V or phase dimming. Driver compatibility testing is required.

ARK-C1-5A-30



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

Function	Wire Color
DC IN +	Red
DC IN -	Blue

Figure 12 – Intensity Level Dim-to-Warm Cable Assembly

Control Mode: DIP Switch (Selectable White)

Wiring Diagram

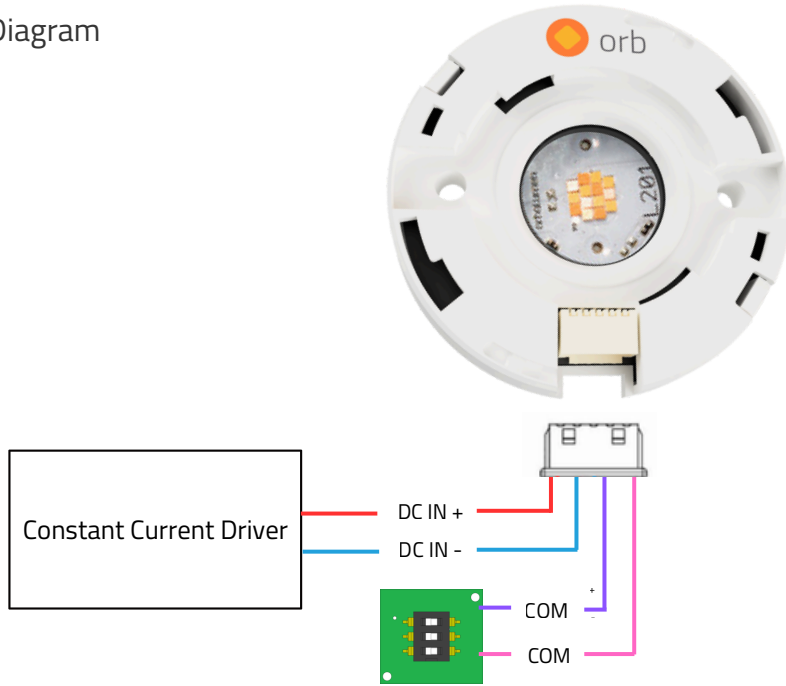
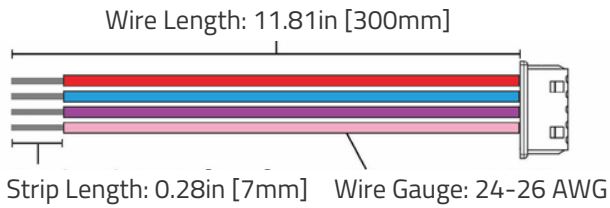


Figure 13 – DIP Switch Selectable White Wiring Diagram

Constant current driver intensity control could be 0-10V or phase dimming. Driver compatibility testing is required.

ARK-C1-4B-30



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

Function	Wire Color
DC IN +	Red
DC IN -	Blue
COM	Purple
COM	Pink

Figure 14 – DIP Switch Selectable White Cable Assembly

Control Mode: Programmable (Selectable White)

Wiring Diagram

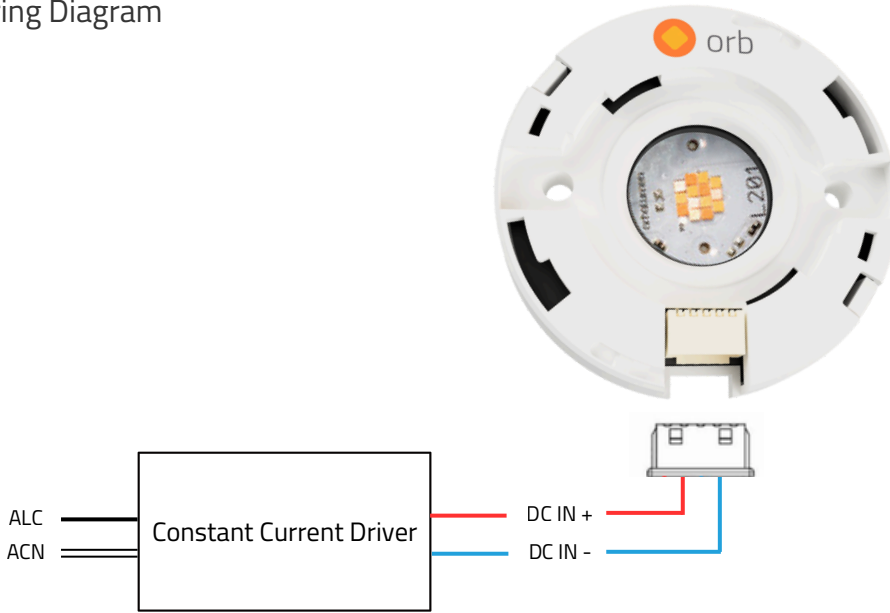
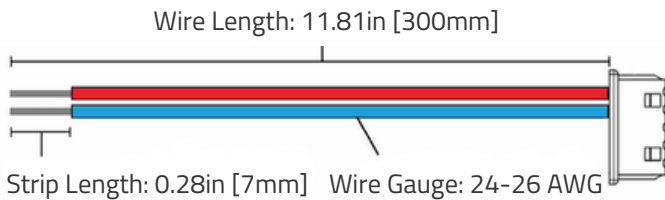


Figure 15 – Programmable Selectable White Wiring Diagram

Constant current driver intensity control could be 0-10V or phase dimming. Driver compatibility testing is required.

ARK-C1-5A-30



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

Function	Wire Color
DC IN +	Red
DC IN -	Blue

Figure 16 – Programmable Selectable White 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

Order Code	Technology	LoDA Selection	Virtual CCT Range	Selectable CCT	CCT Mapping	0-10V Trim Adjust	Dip Switch Usage
	Tunable White	✓	✓		✓	✓	
	Dim-to-Warm	✓	✓		✓		
ORB-CC-VS-xxxxYY	Selectable White DIP Switch	✓		✓	✓		✓
	Selectable White Programmable	✓		✓	✓		

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-PS-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-C1-4B-30	ORB-CC-VS-xxxxTW & ORB-CC-VS-xxxxDS (DIP Switch)	4	Red, Blue, Purple, Pink	300
ARK-C1-2A-30	ORB-CC-VS-xxxxDW & ORB-CC-VS-xxxxSW (Programmable)	2	Red, Blue	300

Molex Part Number 874390500

Thermal Interface Material

Arkalumen Part Number	Compatibility	Dimensions [mm]	Material
ARK-TM-PC1-1818	ORB-CC-VS-xxxxYY	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.

Approved Drivers

Arkalumen ORB Systems are compatible with a range of isolated constant current 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. 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 or toll free at 1.877.865.5533

Arkalumen products may be covered by patents in the US and elsewhere www.arkalumen.com/intellectual-property/