

## Aria Wireless DMX



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# INTRODUCTION

## WELCOME

Welcome to the Aria Wireless DMX system from Acclaim Lighting. Aria transceivers enable you to transfer DMX signals up to 2600 feet (792m) line of sight between units (obstacles between the respective antennas will lower the achievable distances). A 5dB omni-directional antenna is supplied with each Aria unit, together with a 9 feet (3m) extension plus a male-to-male adapter.

Each Aria unit can operate as a transmitter or a receiver, depending on which is fed with a cabled DMX input. Fifteen radio channels are available to choose from, allowing you to avoid potential interference sources, such as WiFi access points, and set up parallel wireless links between different sets of Aria units. All Aria wireless signals are AES 128 bit encrypted.

Numerous Acclaim Lighting products, such as the Dyna Drum range, have compatible Aria wireless units built in, which allows a single Aria transmitter to control them directly.

Each Aria module can operate from mains inputs ranging from 100 to 277VAC, 50/60Hz (autosensing) and consume just 3W.

The Aria module housing is a gray power-coated die-cast aluminum enclosure with an IP66 outdoor rating, excluding the feed end connections, which must be housed appropriately. The unit is designed to be wall mounted and includes an antenna that is similarly intended for wall mounting (or direct attachment to the Aria unit using the supplied adapter).

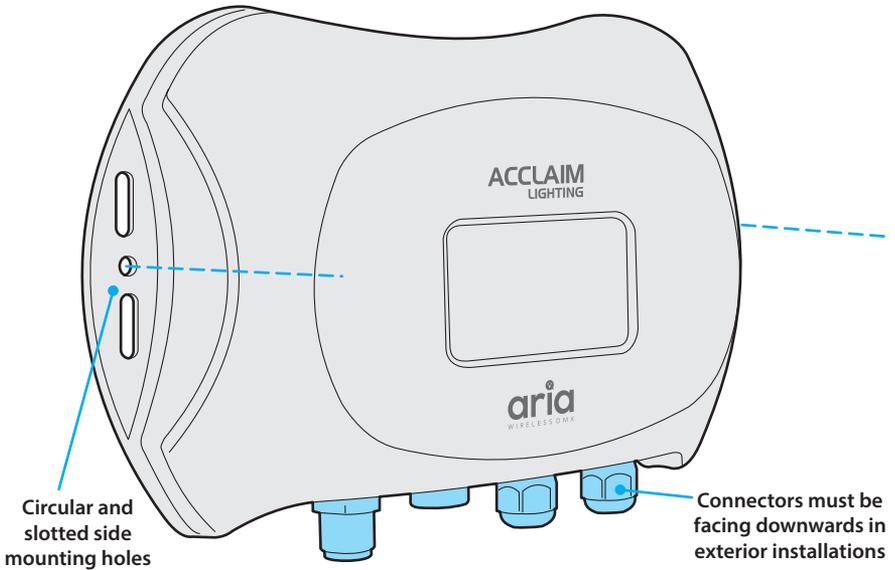
## SAFETY

- Ensure the power input is supplied from a correctly fused, earthed and environmentally protected location.

# INSTALLATION

## MOUNTING

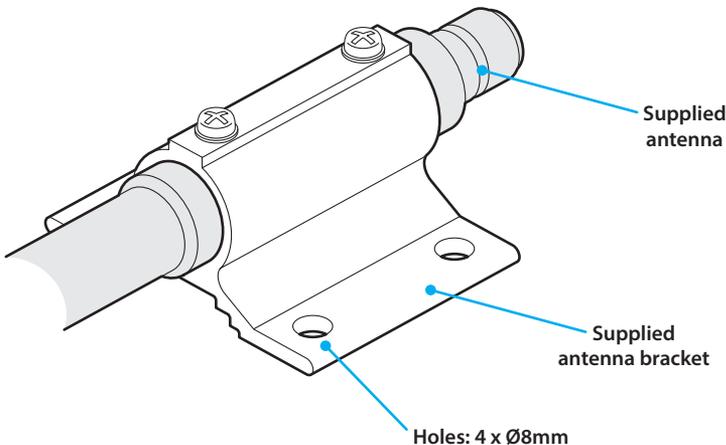
**IMPORTANT:** When installing outdoors, the Aria module must be wall mounted with its connectors facing downwards to ensure that full ingress protection is achieved.



Circular ( $\text{\O}5\text{mm}$ ) and slotted holes are located on each side for mounting purposes - for dimensions, see page 13.

See "Choosing the right location" on page 11.

The supplied antenna can be mounted directly onto the connector or fitted into its own wall bracket (supplied) - for dimensions, see page 13:



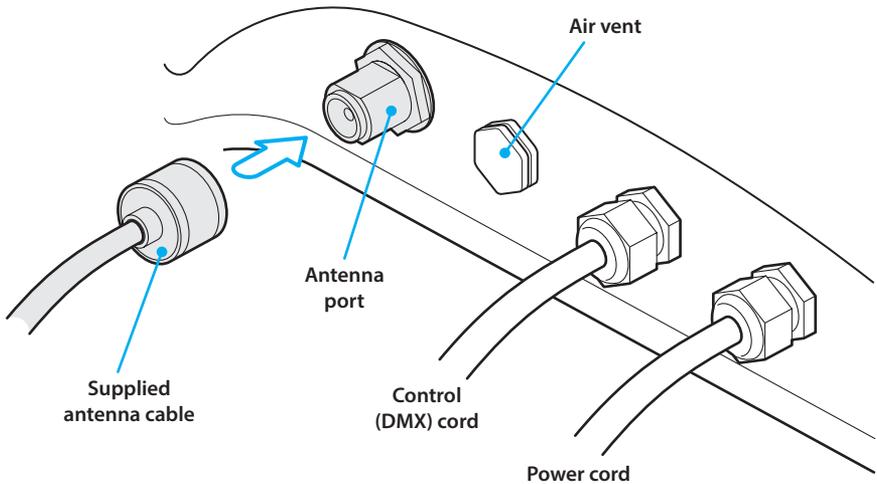
## CONNECTIONS

On the underside face of the Aria unit, there are two fixed cords (DMX and power) via sealed glands as well as a moisture-proof air vent and the antenna port.

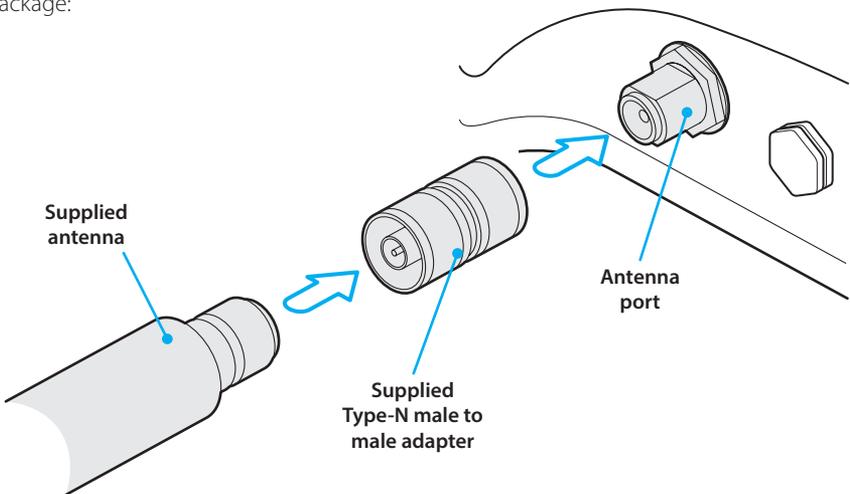
### ANTENNA CONNECTION

**Wherever possible, ensure the antenna has a clear path to that of the paired Aria unit(s).** Be aware of the possibilities for interference caused by nearby WiFi access points - see page 10. See also "Choosing the right location" on page 11.

The supplied antenna can be wall mounted and then connected to the port on the underside of the Aria unit using the supplied cable (9.8 feet, 3m):



Alternatively, the antenna can be attached directly to the port on the Aria underside, so that it hangs vertically downwards (the antenna bracket should be removed when using this method). This requires you to use the Type-N male to male adapter supplied within the package:

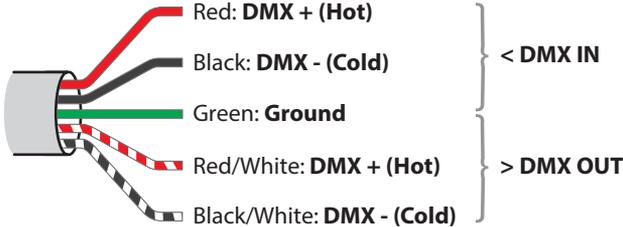


## POWER AND CONTROL WIRING

The power and DMX cords enter the casing via water-tight glands on the underside of the Aria unit. Both cords are supplied as bare tails.

### CONTROL

The control cord is roughly 5.2 feet (1.6m) in length and has five cores to provide DMX512-A input and output connections:

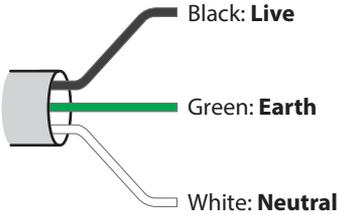


### POWER

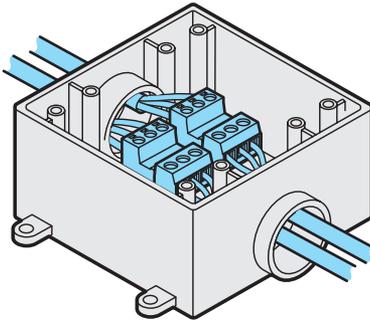
The power cord is roughly 4.5 feet (1.4m) in length. The power requirements are as follows:

- Voltage: 100-277VAC 50/60Hz (autosensing)
- Power: 3W

The power cord color designations are as follows:



Where necessary, use one (or two) weatherproof junction boxes with suitable IP ratings, seals and connectors to protect the power and DMX cord joints.



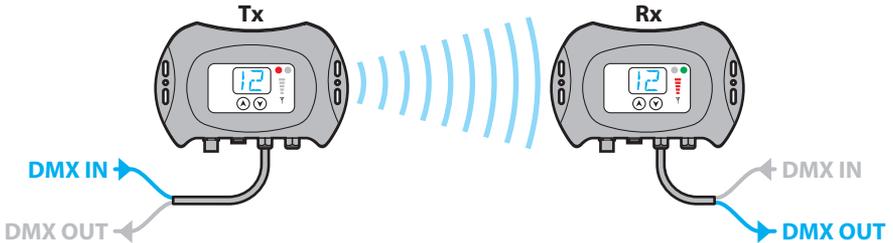
Connections to feed cables are best protected within junction boxes with suitable IP ratings

# OPERATION

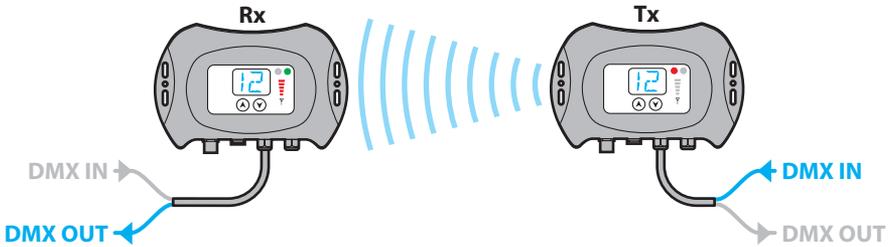
Providing transceiver pairs are within range and are set to use the same radio channel, setup and operation will be totally transparent. A DMX signal applied to one unit will be replicated and output at the other.

*Note: Remote Device Management (RDM) is not currently supported across Aria wireless links.*

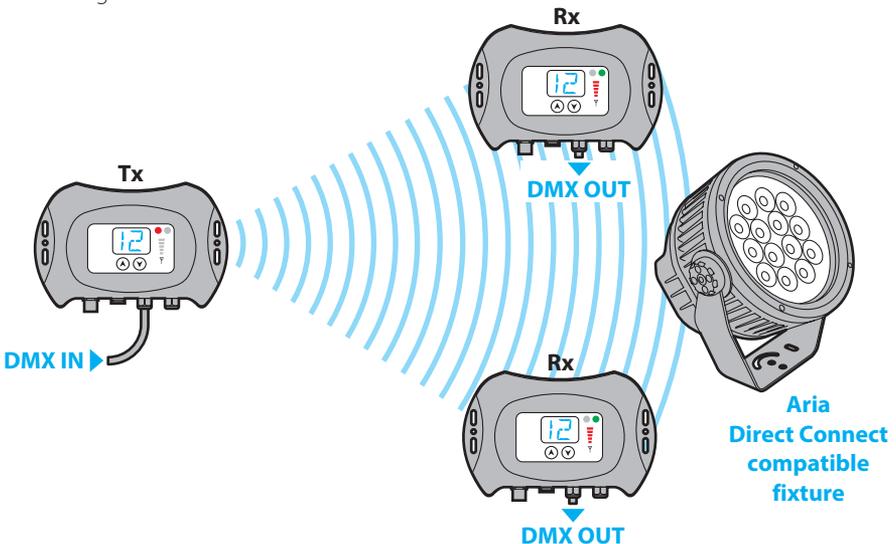
Aria units can operate either as a transmitter or as a receiver - although not at the same time:



No configuration changes are required to change between operation as a transmitter or receiver; the detection of a valid DMX input will automatically prompt an Aria unit to become a transmitter.



Up to 250 Aria units (or Aria Direct Connect compatible lighting fixtures) can act as receivers from a single Aria transmitter:



## THE CONTROL PANEL

The control panel allows you to choose the radio channel and it also indicates both the signal strength plus the DMX status.

The two digit display automatically blacks out (and locks) roughly twelve seconds after your last button press.

### SIGNAL STRENGTH

The radio signal strength is shown on Aria units when they are in receive mode; varying from zero to five red bars.

If the signal strength reduces to two bars or less, operation will become affected and you may need to take action to remedy the situation:

- Ensure that the line of sight between transceivers is as clear as possible.
- If possible, reposition the antenna(s) or move the transmitter closer to the receiver(s).
- If possible, perform a radio survey to determine possible causes of interference. Using different Aria radio channels may improve reception in the presence of other radio sources, such as WiFi devices. See page 10.
- To cover long distances, consider installing a pair of Aria transceivers as a repeater. See page 9.

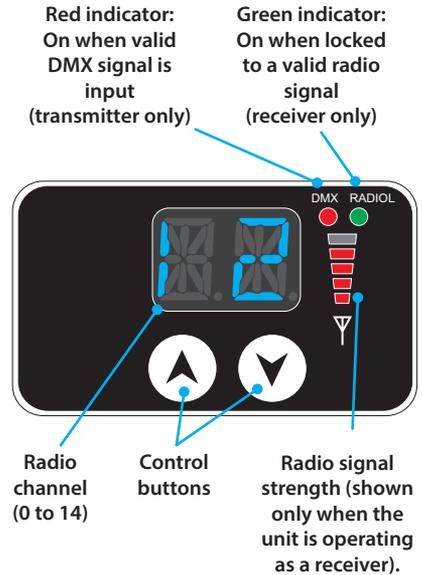
## CHOOSING A CHANNEL

### TO UNLOCK AND CHOOSE A RADIO CHANNEL

- 1 Simultaneously press and hold the ▲ and ▼ buttons. The current radio channel will be shown and then after roughly seven seconds the unit will unlock to allow you to change the radio channel, as required.
- 2 Use the ▲ and ▼ buttons to increment or decrement the radio channel (between 0 and 14) on each Aria unit. See page 10 for channel details.

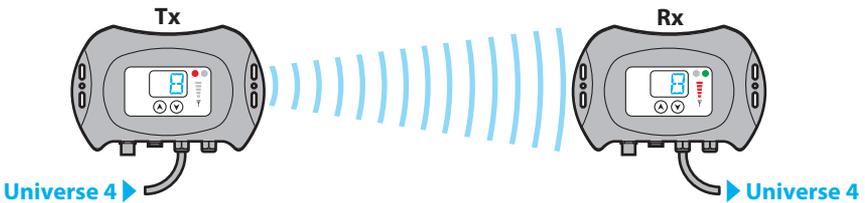
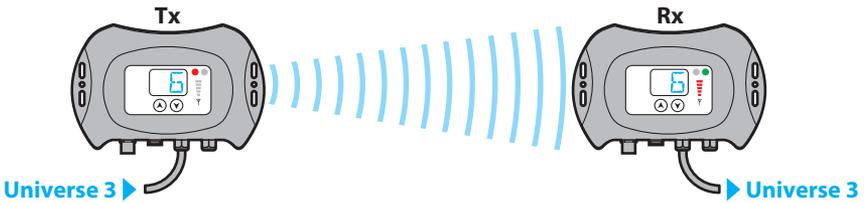
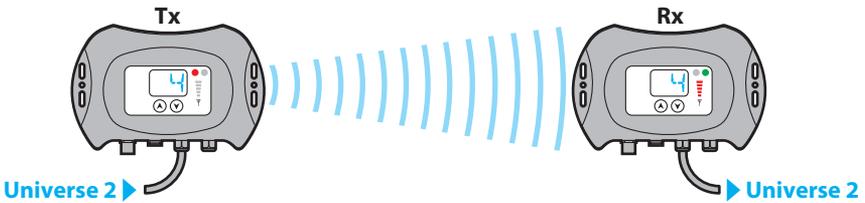
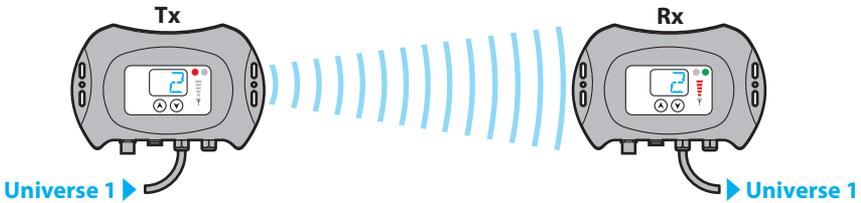
*Notes: If more than one pair of Aria units are used in the same area, maintain a gap of at least one radio channel between pairs, see page 8. There must never be two transmitters using the same radio channel in the same area.*

The panel will lock again (to prevent the channel being changed accidentally) roughly twelve seconds after the last button press.



## TRANSFERRING MULTIPLE UNIVERSES

Each Aria transceiver pair can transfer a single DMX universe, however, by arranging parallel pairs of Aria units you can send multiple universes. Configuration for each pair is exactly the same as any standard installation, see page 7.



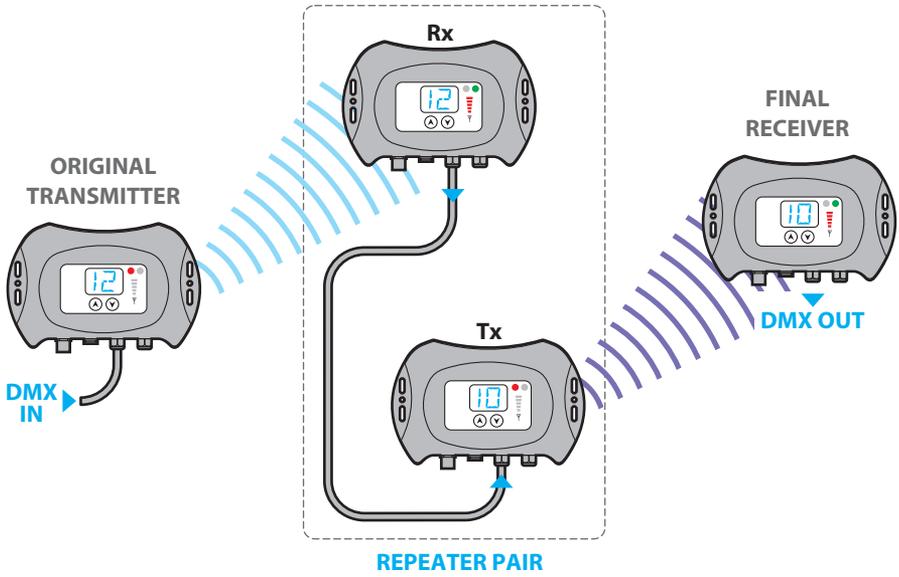
The two important points to remember when setting up multiple Aria pairs are:

- Ensure there is a minimum spacing of 6.5 feet (2m) between the antennas of neighboring Aria units.
- Maintain a gap of at least one Aria radio channel between different pairs operating in the same area, e.g. use groups of odd or even channels: 0, 2, 4, 6, 8, 10, 12 and 14 **OR** 1, 3, 5, 7, 9, 11 and 13. This means the maximum number of universes that can be transferred in the same area is 8 (where external sources of interference do not exist). See page 10 for details about WiFi issues.

Taking these steps will help to minimize interference between Aria units operating in the same area.

## CREATING A REPEATER

In situations where a long distance needs to be covered but signal strength is insufficient, you may be able to solve the issue by using an extra pair of Aria transceivers to create a repeater. Located between the original transmitter and final receiver, the repeater pair will take the signal from the former and boost it for the latter.



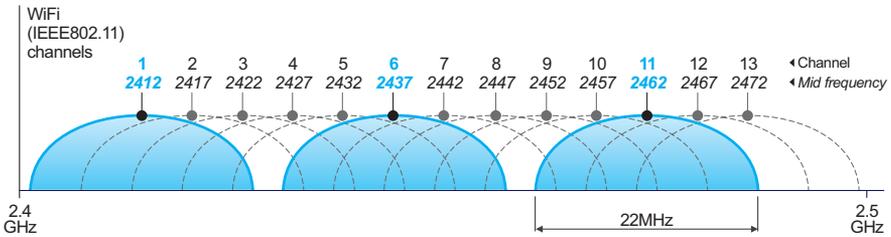
### TO CREATE A REPEATER

- 1 Determine a suitable location that lies between the original transmitter and final receiver. Mains power and a suitable mounting surface will be required.
- 2 Mount the two new Aria units so that their respective antennas are at least 6.5 feet (2 meters) apart and have as clear a path as possible to the units they will be linking with.
- 3 Connect the DMX output lines of the Repeater Rx unit to the DMX input lines of the Repeater Tx Aria unit. Ensure their common signal grounds (green) are connected.
- 4 Connect both units to the mains power within suitable protective enclosures.
- 5 Set the address of the Repeater Rx unit to match that of the original transmitter.
- 6 Set the address of the Repeater Tx unit and the final receiver to an address that is not immediately adjacent to the address used by the other two units (e.g. if one pair use channel 12, do not use 11 or 13 for the other pair).
- 7 When operating, check the signal strength bars on the receivers achieve three or more.

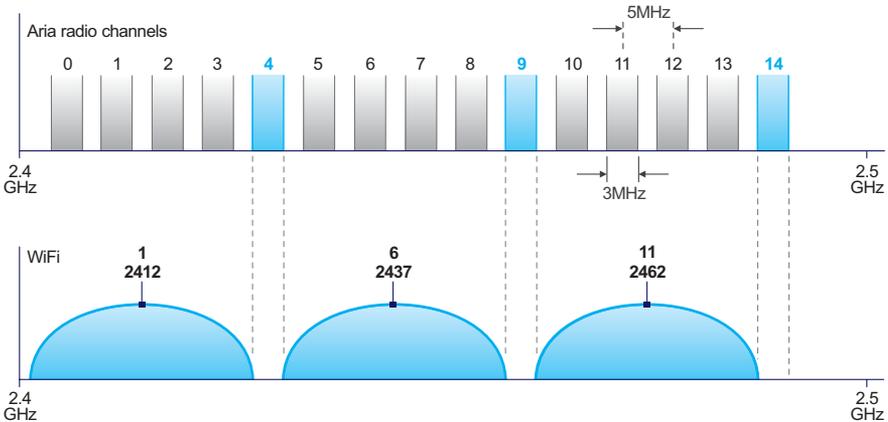
## OPTIMIZING SIGNAL STRENGTH VIA CHANNEL SELECTION

Aria wireless transceivers use radio frequencies contained within the Industrial Scientific and Medical (ISM) band that runs between 2.4GHz and 2.5GHz. As one of the few license-free radio bands agreed upon in most countries, many other devices also use this band, most notably WiFi. Aria units use the ISM band in a different manner than WiFi and the two can coexist. However, where distances between Aria units are great and WiFi access points are reasonably close, then interference can become an issue.

WiFi uses the IEEE802.11 standard, which divides the ISM band into 13 (sometimes 14) channels, each of which is 22MHz wide. However, the channels overlap and so cannot all be used simultaneously. Hence, most WiFi access points settle upon channels 1, 6 and 11 to avoid any overlap:



Aria uses the IEEE802.15.4 standard, with channels that are 3MHz in width and not overlapping. Many Aria channels do, however, coincide with the common WiFi channels. The notable exceptions are Aria channels 4, 9 and 14, which fall into the gaps between the most commonly used WiFi channels:



Where interference is suspected, a radio frequency survey may provide useful indications. If you have control over the nearest WiFi access points, it is suggested that you lock them down to one or more of the common channels (to prevent them from roaming) and select Aria channels that sit comfortably alongside.

*Note: The Aria channel notations (0 to 14) are directly equivalent to the IEEE802.15.4 channels 11 to 25, inclusive.*

## CHOOSING THE RIGHT LOCATION

Your choice of installation locations for your Aria transmitter(s) and receiver(s) can have a significant effect on their range and speed of communication.

Where possible:

- Keep the antenna at least 3 inches (75mm) from any surface such as walls, poles or the eaves of a building.
- Keep the antenna away from conduit or metal objects.
- Do not install an antenna inside a metal box.
- Maintain a clear 'line of sight' path between the transmitter and its receiver(s).

## INTERFERENCE CREATED BY OBJECTS

The composition of nearby objects can have a significant impact on the quality of the RF signal. Here are a few examples:

- Standard drywall does not present much of an issue to the 2.4GHz wireless spectrum. However, things inside or attached to the drywall, such as copper pipe, electrical conduit, and circuit breaker panels, will partially block RF signal propagation.
- Hollow cement block walls will dampen the RF signal.
- Reinforced concrete walls typically contain rebar that will contribute to significant RF signal strength loss.
- Large metal structures such as metal cabinets, HVAC units, machinery, brew kettles, etc. may partially or completely block the RF signal.

# FURTHER INFORMATION

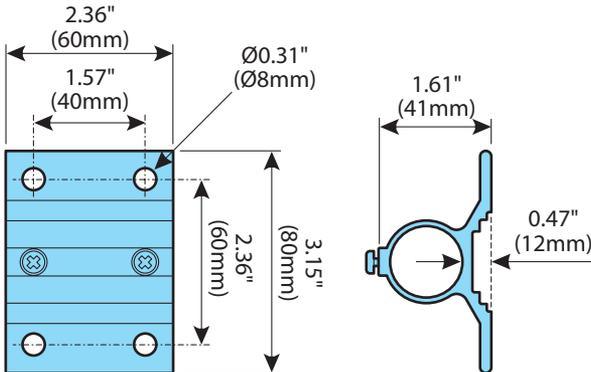
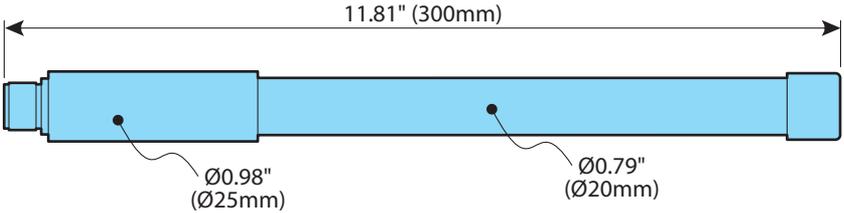
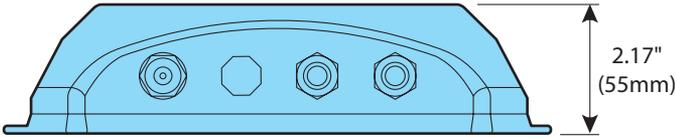
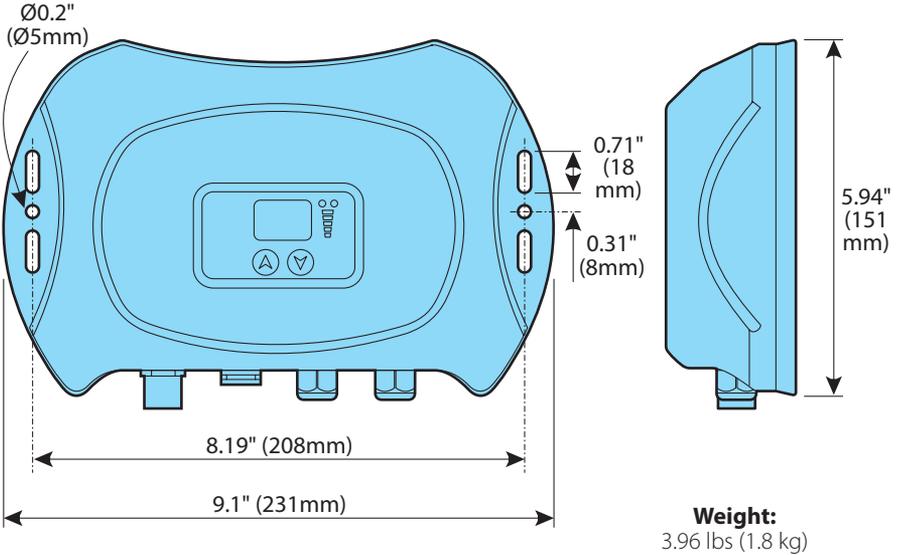
## ARIA SPECIFICATIONS

Wireless protocol	2.4GHz, IEEE802.15.4	
Estimated transmission range	Clear line of sight:	2600 feet (792m)
	Through obstructions (walls, etc):	300 feet (91m)
Selectable channels	15	
DMX universes	One per transceiver set, maximum of 8 simultaneously	
Max number of receivers	250 (to ensure optimum data transmission)	
Signal encryption	AES 128	
Included antenna	5dB, includes direct attachment adaptor plus cable	
Mounting	Wall mountable via screw holes on transceiver and antenna mount	
Input voltage	100 to 277VAC (50/60Hz) - autosensing	
Input power consumption	3W	
Housing	Die cast aluminum with matte gray powder coat finish	
IP rating	IP66, wet location (not including cable end feeds)	
Operating temperature	-40°F to 122°F	
	-40°C to 50°C	
Certifications		

## NOTES

- To prevent signal interference with nearby fixtures and devices, only operate after the proper wireless channel and DMX address have been set. This product is only to be installed by trained and licensed professionals.
- This product can only be used with the wireless antenna model RF-AN2400L-3DBI, by RongFengDa Communications.
- This product is not intended for retail sale.
- This product is designed to be used in commercial applications, and is not suitable for retail consumers.

# DIMENSIONS



## LIMITED PRODUCT WARRANTY

A. Acclaim Lighting™ hereby warrants, to the original purchaser, Acclaim Lighting finished products to be free of manufacturing defects in material and workmanship for a standard period of:

- Fixtures: 5 Years (1,825 days) from the date of purchase.
- Drivers, power supplies and accessories: 5 Years (1,825 days) from the date of purchase.
- Flex Products: 3 Years (1,095 days) from the date of purchase.
- Controllers: 2 Years (730 days) from the date of purchase.

It is the owner's responsibility to establish the date and place of purchase and warranty terms by acceptable evidence, at the time service is sought.

B. For warranty service, send the product only to the Acclaim factory. All shipping charges must be pre-paid. If the requested repairs or service (including parts replacement) are within the terms of this warranty, Acclaim Lighting will pay return shipping charges only to a designated point within the United States. If the entire instrument is sent, it must be shipped in its original package. No accessories should be shipped with the product. If any accessories are shipped with the product, Acclaim Lighting shall have no liability whatsoever for loss of or damage to any such accessories, nor for the safe return thereof. Acclaim reserves the right to replace the item with same or similar product at its discretion.

C. This warranty is void if the serial number has been altered or removed; if the product is modified in any manner which Acclaim concludes, after inspection, affects the reliability of the product; if the product has been repaired or serviced by anyone other than the Acclaim Lighting factory unless prior written authorization was issued to purchaser by Acclaim Lighting; if the product is damaged because not properly maintained as set forth in the instruction manual.

D. This is not a service contract, and this warranty does not include maintenance, cleaning or periodic check-up nor do we guarantee as part of this warranty any lumen performance during period. Parts not covered by this warranty include: fuses, external power supplies, third party items not manufactures by Acclaim lighting. During the period specified above, Acclaim Lighting will replace defective parts at its expense, and will absorb all expenses for warranty service and repair labor by reason of defects in material or workmanship. The sole responsibility of Acclaim Lighting under this warranty shall be limited to the repair of the product, or replacement thereof, including parts, at the sole discretion of Acclaim Lighting. At no time will installation or re-installation or products labor or liability costs will be assumed by Acclaim Lighting. All products covered by this warranty were manufactured after January 1, 2012, and bear identifying serial number marks to that effect.

E. Acclaim Lighting reserves the right to make changes in design and/or improvements upon its products without any obligation to include these changes in any products theretofore manufactured. No warranty, whether expressed or implied, is given or made with respect to any accessory supplied with products describe above. Except to the extent prohibited by applicable law, all implied warranties made by Acclaim Lighting in connection with this product, including warranties of merchantability or fitness, are limited in duration to the warranty period set forth above. And no warranties, whether expressed or implied, including warranties of merchantability or fitness, shall apply to this product after said period has expired.

F. Marine or extreme weather location applications using Acclaim lighting products are subject to a 2 year limited warranty and Acclaim must be notified prior to delivery of units for such applications so that preventative treatment can be made to the products to ensure proper performance and product life with a special marine code coating / sealing process at an additional cost.

G. The consumer's and or dealer's sole remedy shall be such repair or replacement as is expressly provide above; and under no circumstances shall Acclaim Lighting be liable for any loss or damage, direct or consequential, arising out of the use of, or inability to use, this product. This warranty is the only written warranty applicable to Acclaim Lighting products and supersedes all prior warranties and written descriptions of warranty terms and conditions heretofore published.



[www.acclaimlighting.com](http://www.acclaimlighting.com)