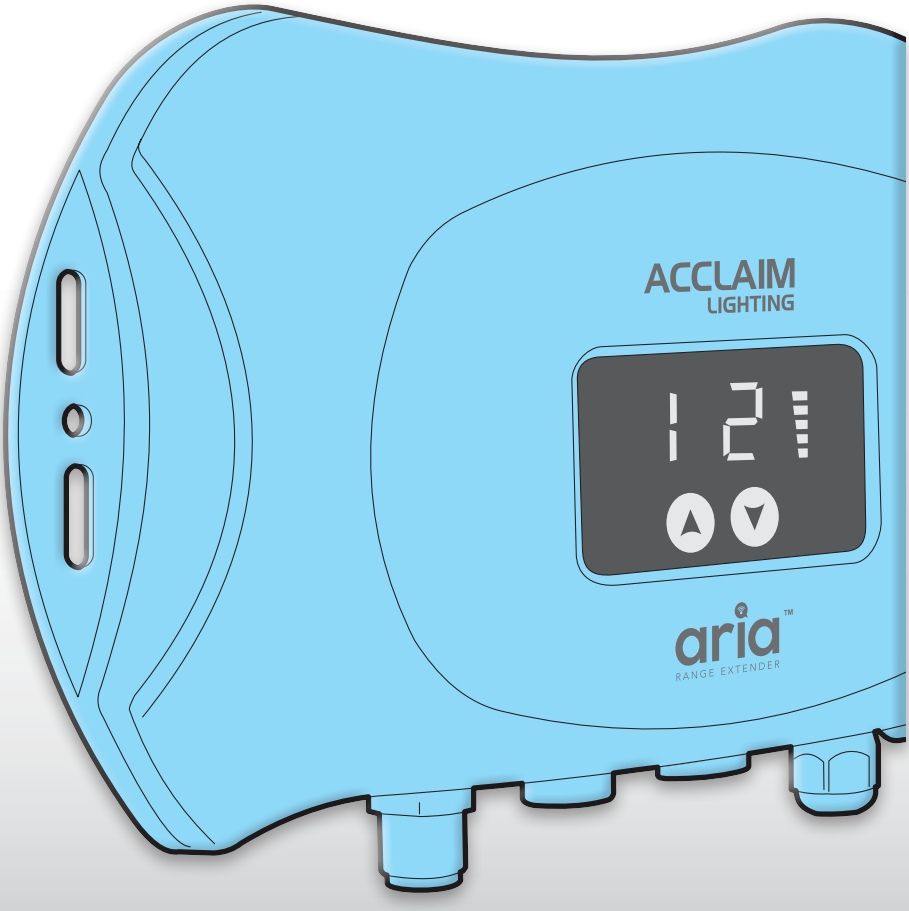
ACCLAIM
LIGHTING



Aria Range Extender

User guide

CONTENTS

INTRODUCTION

WELCOME

Welcome to the Aria Range Extender from Acclaim Lighting. This compact module works in unison with standard Aria transceivers to greatly increase their coverage area. The Aria Range Extender receives the original signal, amplifies it and then re-transmits it. A 5dB onmi-directional antenna is supplied with each Aria unit, together with a 9 feet (3m) extension plus a male-to-male adapter. Optional high gain 10dB directional antennas are also available.

The Aria Range Extender supports fifteen radio channels and must be set to match the channel being used by the Aria transceivers with which it is cooperating. All Aria wireless signals are AES 128 bit encrypted.

The Aria Range Extender can operate from mains inputs ranging from 100 to 277VAC, 50/60Hz (autosensing) and consumes just 3W.

The module housing is a gray power-coated die-cast aluminum enclosure with an IP66 outdoor rating, excluding the mains 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 module using the supplied adapter).

INSTALLATION NOTES

- The Aria Range Extender must be professionally installed and the wiring must be done by a qualified electrician.
- No alternate cables or antenna may be used with the system.

SAFETY

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

MAINTENANCE

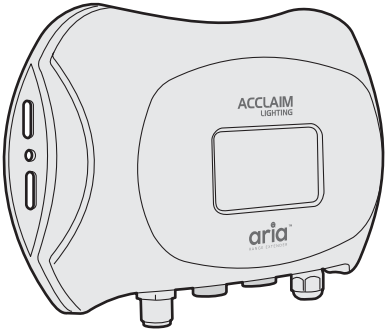
CAUTION: Always isolate mains power before starting maintenance operations.

- Ensure that all mounting (and device) screws/bolts are fully tight and free of corrosion.
- Ensure there is no deformation to the housing, lenses or fixing points.
- Check that all power supply cables are free from physical damage or material fatigue.
- Use only genuine spare parts supplied by Acclaim Lighting.

CLEANING

- Use a moist, lint-free cloth when cleaning each fixture.
- Never use alcohol or solvents.

SUPPLIED ITEMS

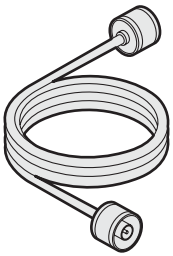


Aria Range Extender

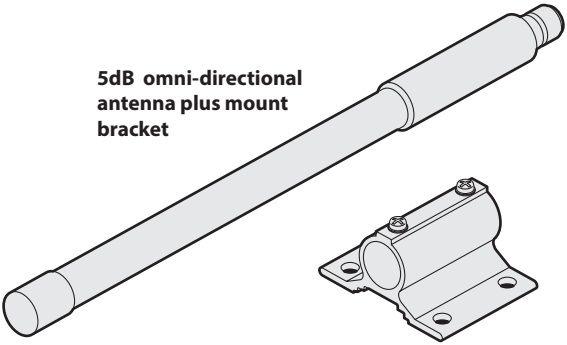
Supplied with 4.2' (1.3m) power cord.

Type N male to male antenna adapter

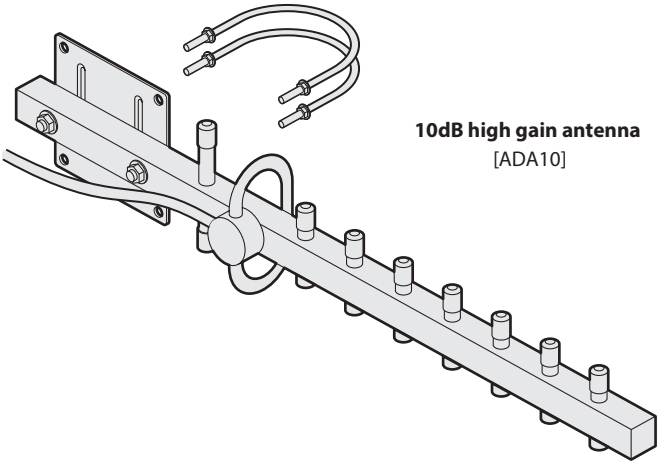
9' (2.74m) antenna extension cable



5dB omni-directional antenna plus mount bracket



OPTIONAL EXTRAS



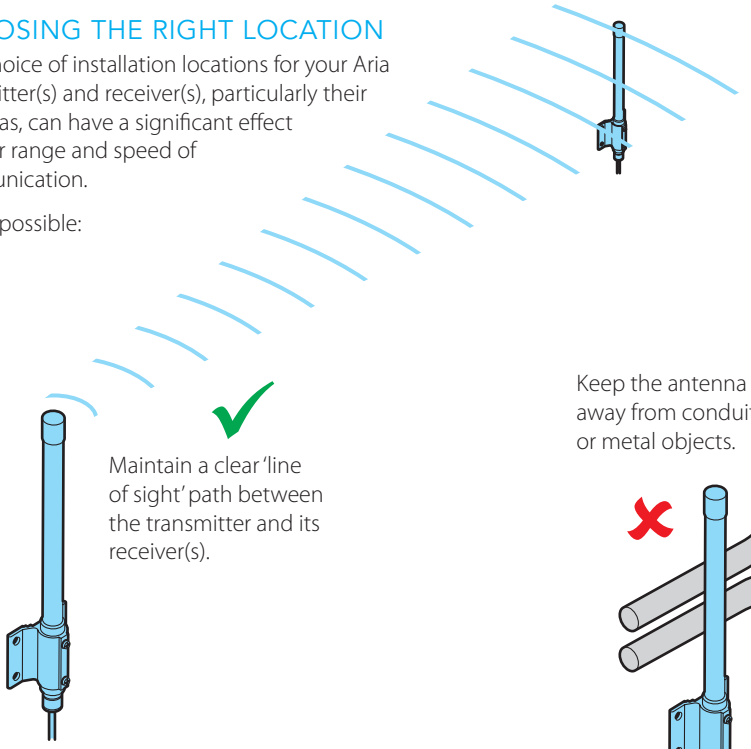
10dB high gain antenna
[ADA10]

INSTALLATION

CHOOSING THE RIGHT LOCATION

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

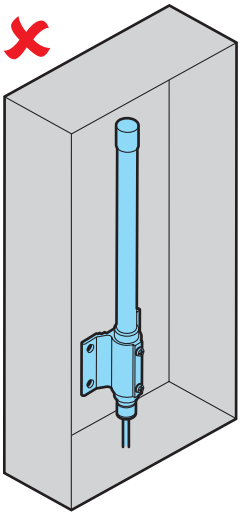
Where possible:



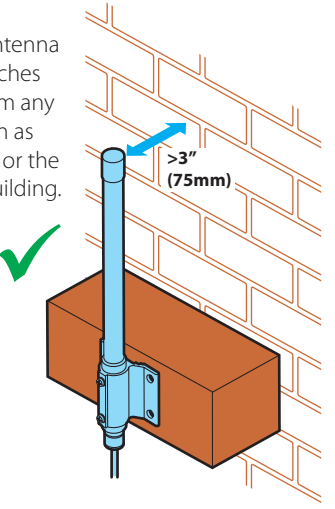
Maintain a clear 'line of sight' path between the transmitter and its receiver(s).

Keep the antenna away from conduit or metal objects.

Do not install an antenna inside a metal box.



Keep the antenna at least 3 inches (75mm) from any surface such as walls, poles or the eves of a building.

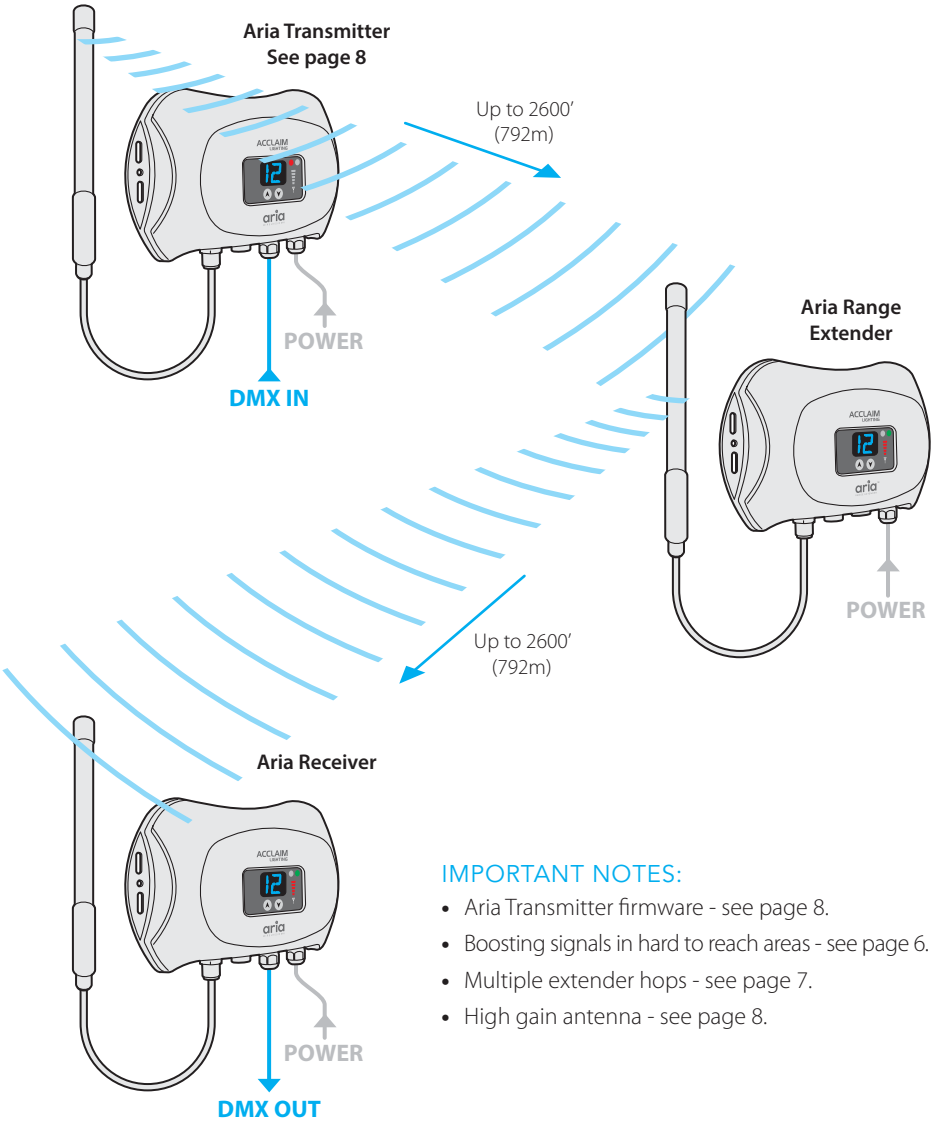


OBJECTIVE 1: EXTENDING RANGE

Position the Aria Range Extender between the Aria Transmitter and the Aria Receiver such that it is within range of both:

- Line of sight: 2600' (792m)
- When obstructed: 300' (91m)

Ensure that the transmitter, receiver and range extender are all set to the same radio channel. The Aria Range Extender will receive the original signal, amplify it and re-transmit it.



Note: The signal can be received by Aria modules or Aria-equipped lighting fixtures.

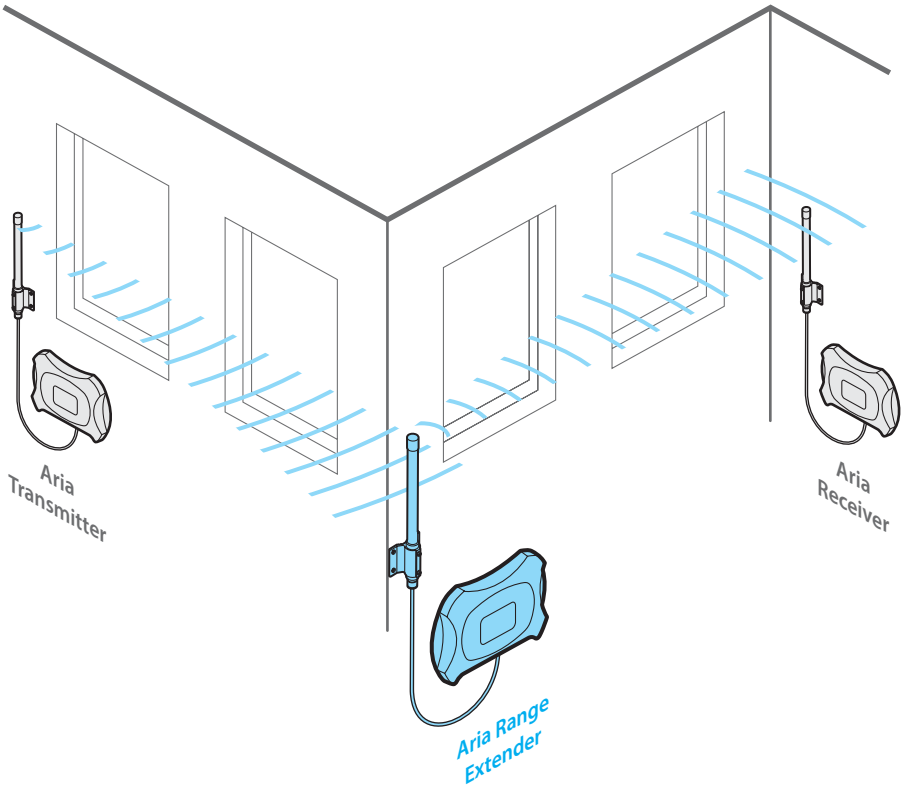
IMPORTANT NOTES:

- Aria Transmitter firmware - see page 8.
- Boosting signals in hard to reach areas - see page 6.
- Multiple extender hops - see page 7.
- High gain antenna - see page 8.

OBJECTIVE 2: BOOSTING SIGNALS IN HARD TO REACH AREAS

The Aria Range Extender has an important role to play in situations where signals are affected by the hard-to-reach placement of the transmitter and/or receiver, rather than the excessive distance between them.

Position the Aria Range Extender between the Aria Transmitter and the Aria Receiver such that it is visible to both. If necessary, use more than one Aria Range Extender (see page 7) to form a reliable chain between the start and end points:



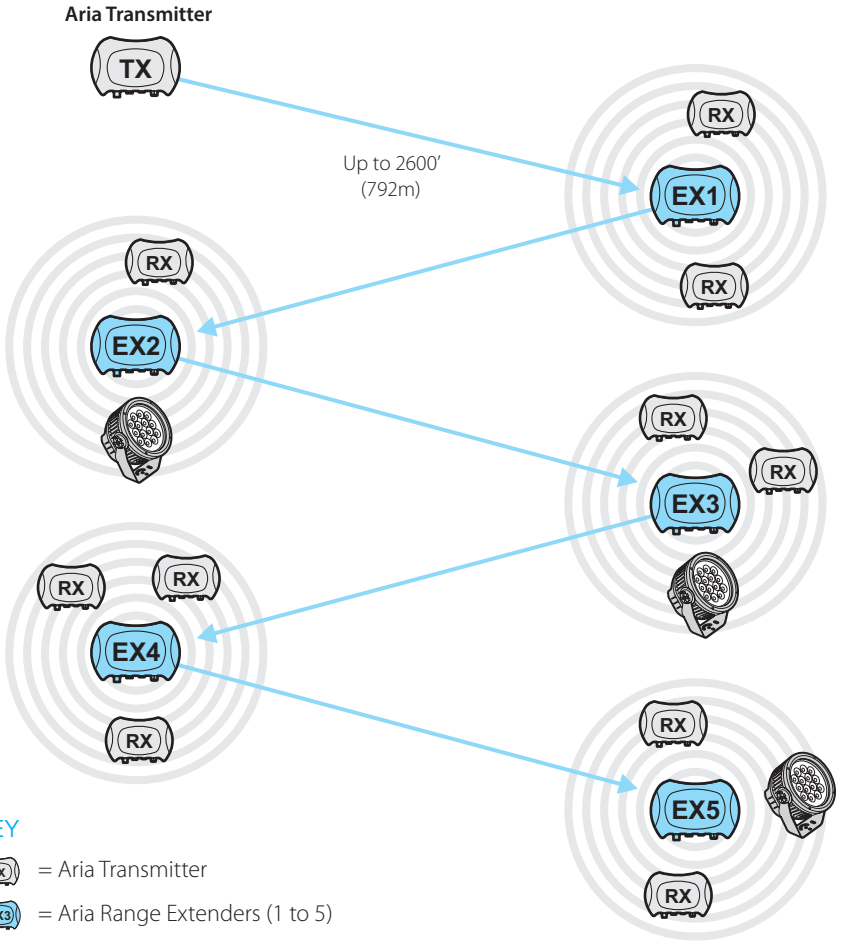
Ensure that the transmitter, receiver and range extender are all set to the same radio channel. The Aria Range Extender will receive the original signal, amplify it and re-transmit it.

IMPORTANT NOTES:

- Aria Transmitter firmware - see page 8.
- Extending range - see page 5.
- Multiple extender hops - see page 7.
- High gain antenna - see page 8.

USING MULTIPLE ARIA RANGE EXTENDERS

Up to five Aria Range Extenders can be used together, with each passing the signal on to the next. This allows larger distances to be covered and the reliable delivery of the signal to a wide span of receivers (and/or Aria-equipped fixtures) at every stage.



KEY

- = Aria Transmitter
- = Aria Range Extenders (1 to 5)
- = Aria Receivers
- = Aria-equipped lighting fixtures

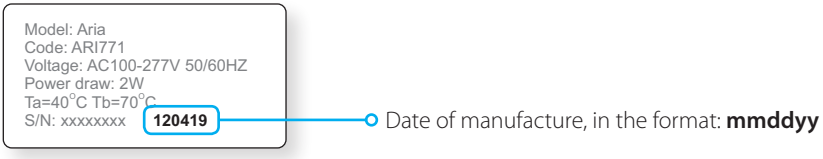
Ensure that the transmitter, receiver and all range extenders are all set to the same radio channel. Each Aria Range Extender will receive the original signal, amplify it and re-transmit it.

IMPORTANT NOTES:

- Aria Transmitter firmware - see page 8.
- Extending range - see page 5.
- Boosting signals in hard to reach areas - see page 6.
- High gain antenna - see page 8.

TRANSMITTER MUST HAVE LATER FIRMWARE

In order to operate, Aria Range Extenders must be given permission, by the Aria Transmitter, to repeat the signal. This is a function that has been added to the signal output of all standard Aria modules manufactured since December 2019. On the rear of each Aria module you will find a label:

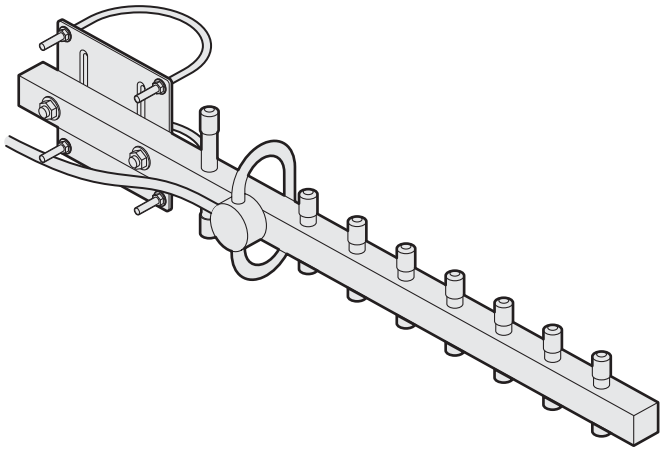


If an Aria module has a manufacture date earlier than December 2019 you will need to either swap it for a later model or return it to Acclaim Lighting for a firmware upgrade before it can be successfully used to transmit to an Aria Range Extender.

The Aria modules being used as receivers do not require the later firmware.

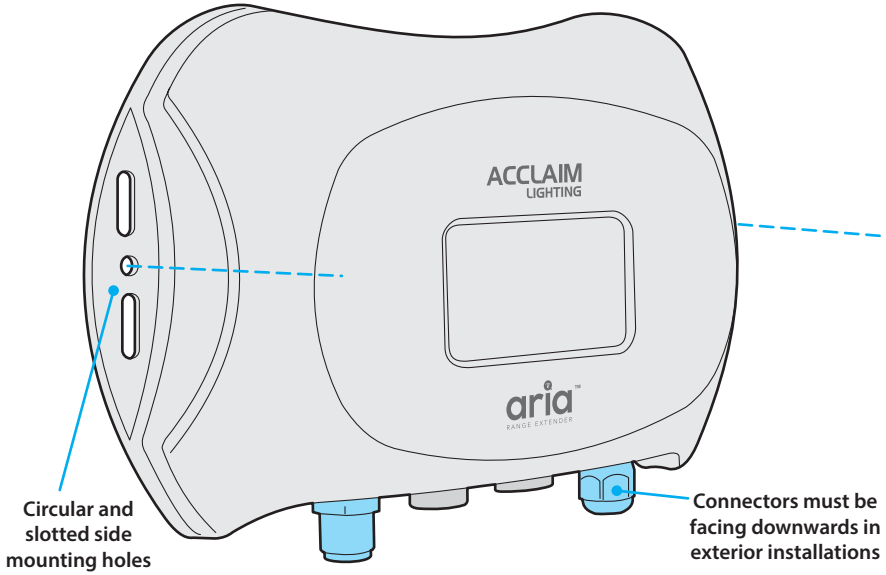
HIGH GAIN ANTENNA

In locations where you wish to extend the range further or to otherwise strengthen the signal (eg to counter the threat of interference), Acclaim Lighting provide a directional antenna with 10dB gain [part #: ADA10].



MOUNTING

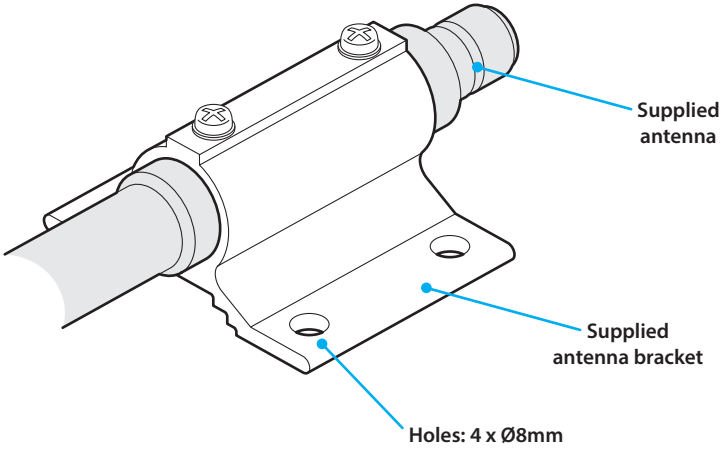
IMPORTANT: When installing outdoors, the Aria Range Extender must be wall mounted with its connectors facing downwards to ensure that full ingress protection is achieved.



Circular (Ø5mm) and slotted holes are located on each side for mounting purposes - for dimensions, see page 16.

See "Choosing the right location" on page 4.

The supplied antenna can be mounted directly onto the connector or fitted into its own wall bracket (supplied) - for dimensions, see page 16:



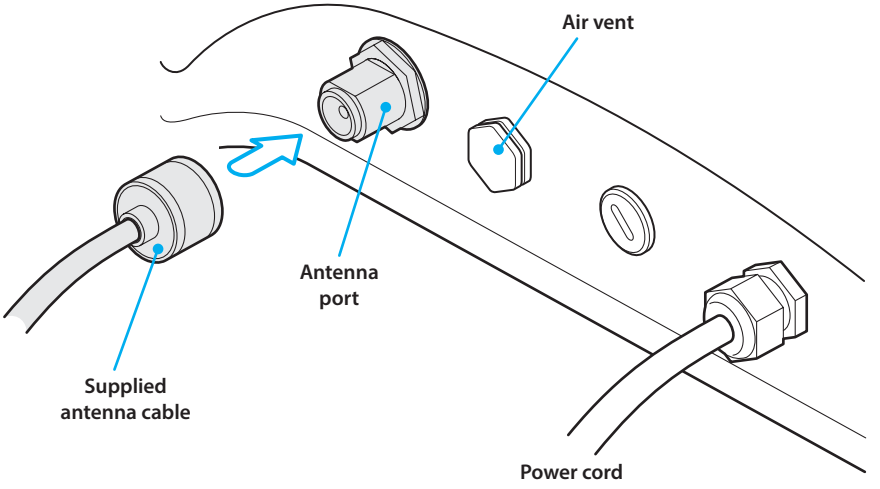
CONNECTIONS

On the underside face of the Aria Range Extender unit, there is a fixed power cord via a sealed gland as well as a moisture-proof air vent and the antenna port.

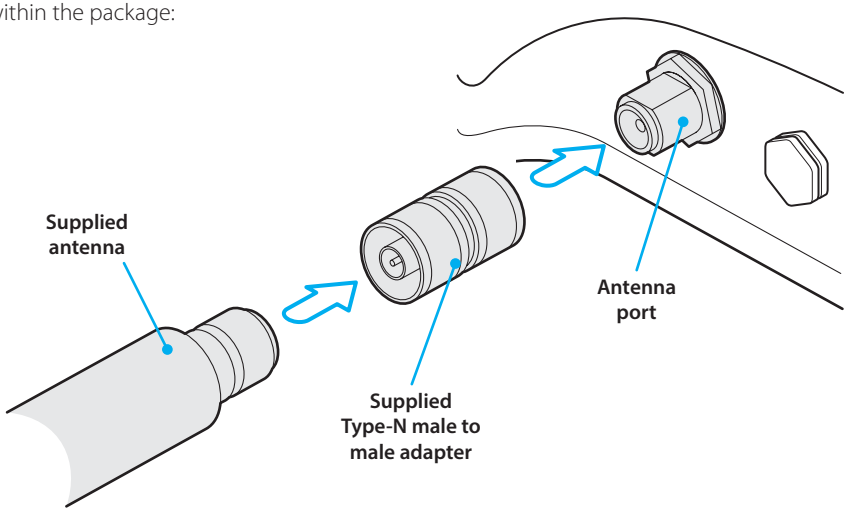
ANTENNA CONNECTION

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 13. See also "Choosing the right location" on page 4.

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



Alternatively, the antenna can be attached directly to the port on the Aria Range Extender 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:

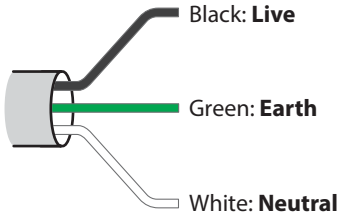


POWER WIRING

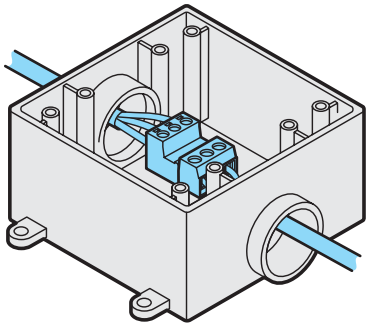
The power cord enters the casing via a water-tight gland on the underside of the Aria Range Extender unit. The power cord is supplied with bare tails and is roughly 4.5 feet (1.4m) in length. The power requirements are as follows:

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

The power cord color designations are as follows:



Where necessary, use a weatherproof junction box with suitable IP rating, seals and connectors to protect the power cord joints.



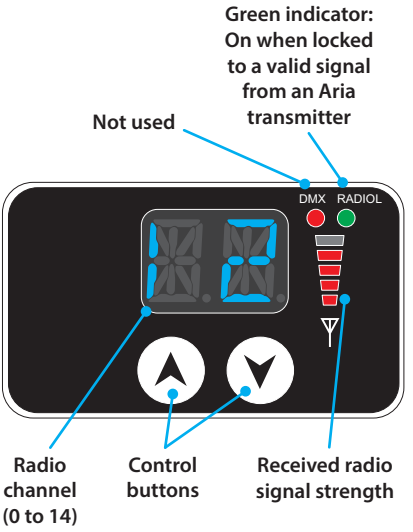
Connections to the power cable are best protected within a junction box with suitable IP ratings

OPERATION

THE CONTROL PANEL

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

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 the Aria Range Extender, 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).
- Use a high gain directional antenna. See page 8.
- 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 13.

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) to match the channel being used by the transmitter and receivers in the group. See page 13 for channel details.

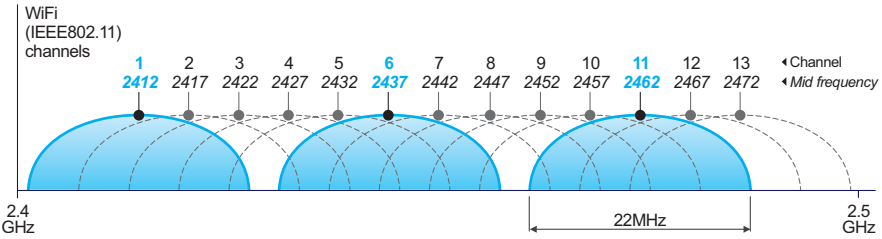
Notes: If more than one set of Aria units are used in the same area (to transmit multiple DMX universes), maintain a gap of at least one radio channel between sets. There must never be two transmitters using the same radio channel in the same area.

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

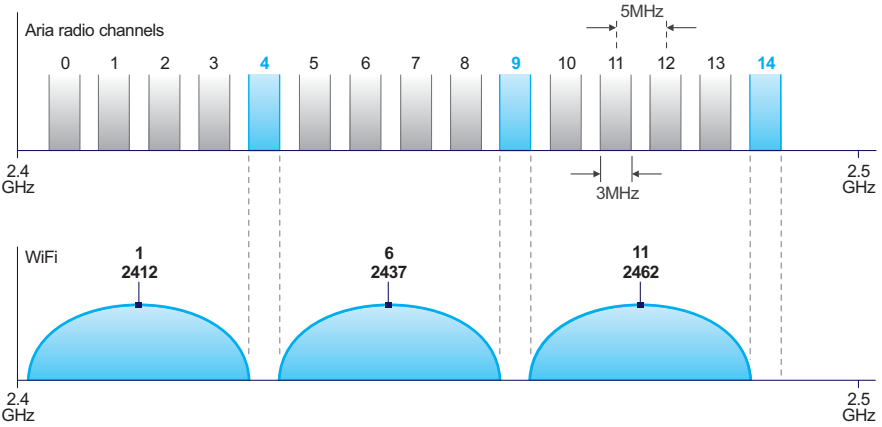
OPTIMIZING SIGNAL STRENGTH VIA CHANNEL SELECTION

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.

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.

TROUBLESHOOTING

Aria Range Extender does not re-transmit the incoming signal.

- Check the Aria Transmitter that is supplying the signal. It must have a manufacture date (shown on the rear label) of December 2019 or later. See page 8.

FCC COMPLIANCE STATEMENT

WARNING: Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

This equipment should be installed and operated with a minimum distance of 20 centimeters between the radiator and your body.

FURTHER INFORMATION

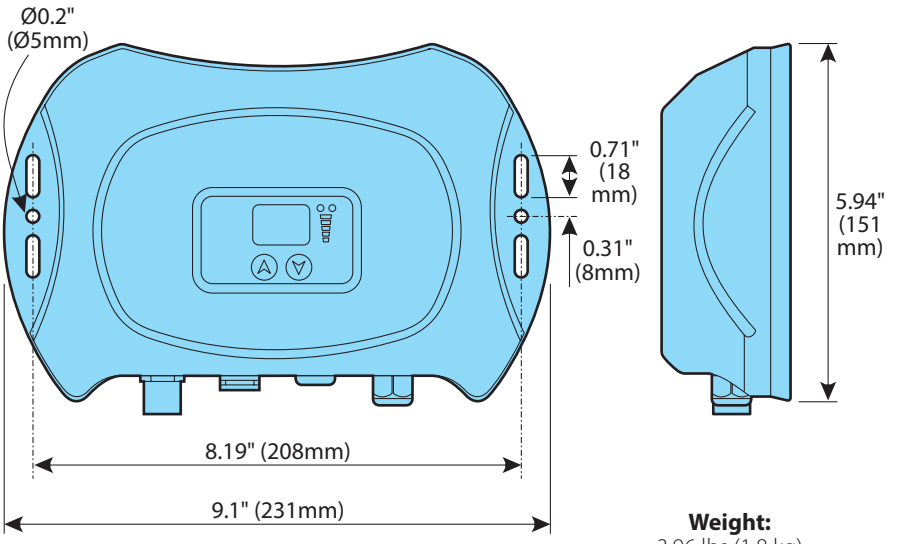
ARIA RANGE EXTENDER SPECIFICATIONS

Wireless protocol	2.4GHz, IEEE802.15.4	
Estimated transmission range	Clear line of sight: Through obstructions (walls, etc):	2600 feet (792m) 300 feet (91m)
Selectable channels	15	
DMX universes	One per range extender, maximum of 8 simultaneously	
Max number of range extenders	Up to 5 per single transceiver	
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		

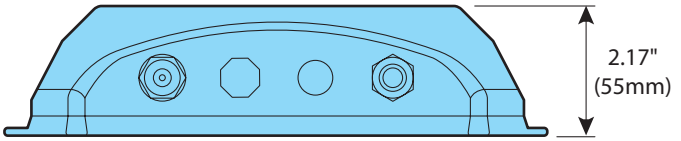
NOTES

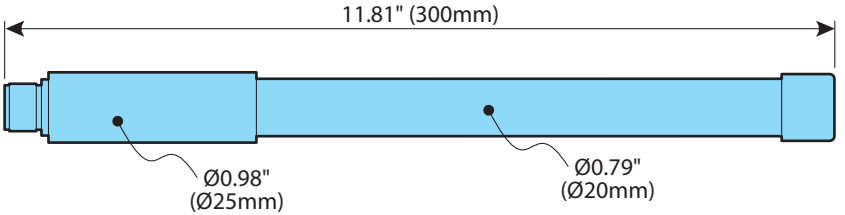
- To prevent signal interference with nearby fixtures and devices, only operate after the proper wireless channel and DMX address have been set. This product is only to be installed by trained and licensed professionals.
- This product can only be used with the Acclaim Lighting antennas mentioned within this guide.
- 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.

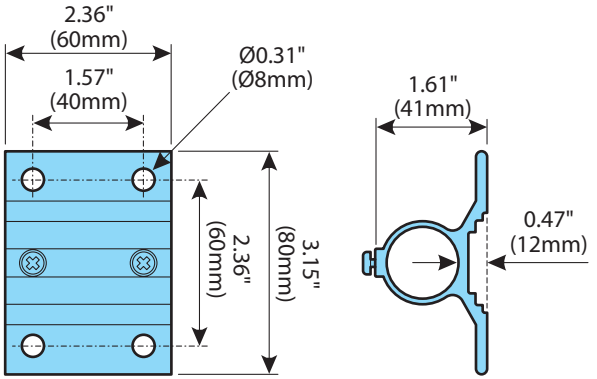
DIMENSIONS



Weight:
3.96 lbs (1.8 kg)







Release 1.0b RC1

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 there of. 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