



# USER MANUAL



## Wireless DMX Receiver/Transmitter (ART3)

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## Safety



**Before you operate the unit, read this manual carefully.**

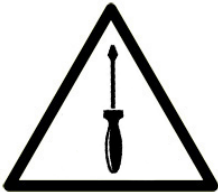
**Make sure to keep the manual, in case you need to consult this manual again or you give the unit to another person.**

**Always make sure to include this manual if you hand out the unit to another person.**

**Keep in mind that this manual cannot address all possible dangers and environments. Please use your own caution when operating.**



**Do not operate the unit in areas where the usage of radio frequency or mobile phones is prohibited, like for example in airplanes, or when it may cause interference or danger.**



**Only qualified personnel may repair this product.  
Don't open the case.**



**This device conforms to CE -or- FCC regulation, see type label!**

**This device radiates in the 868 MHz or 915 MHz bands.**

**Always make sure, that your national regulations allow the use of this device!**

**Using a FCC version in Europe or a CE version in the USA is against the law.**



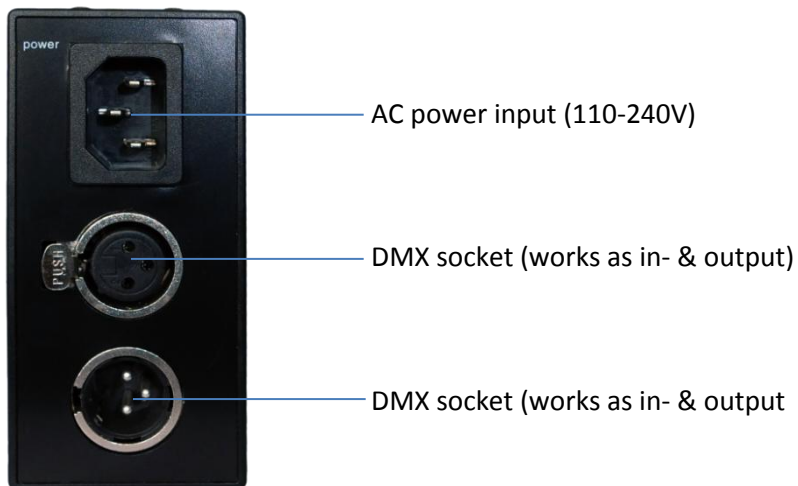
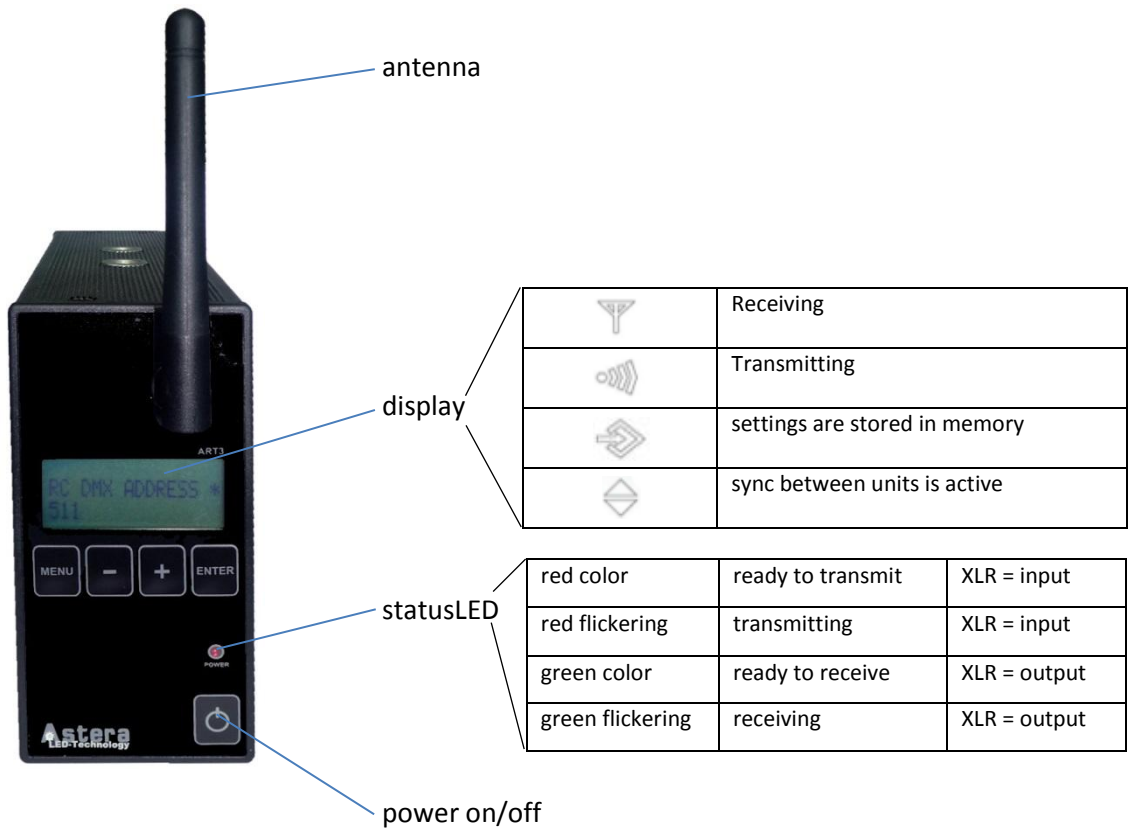
**Don't throw the unit into the garbage at the end of its lifetime.**

**Make sure to dispose is according to your local ordinances and/or regulations, to avoid polluting the environment!**

**The packaging is recyclable and can be disposed into the garbage.**

# Introduction

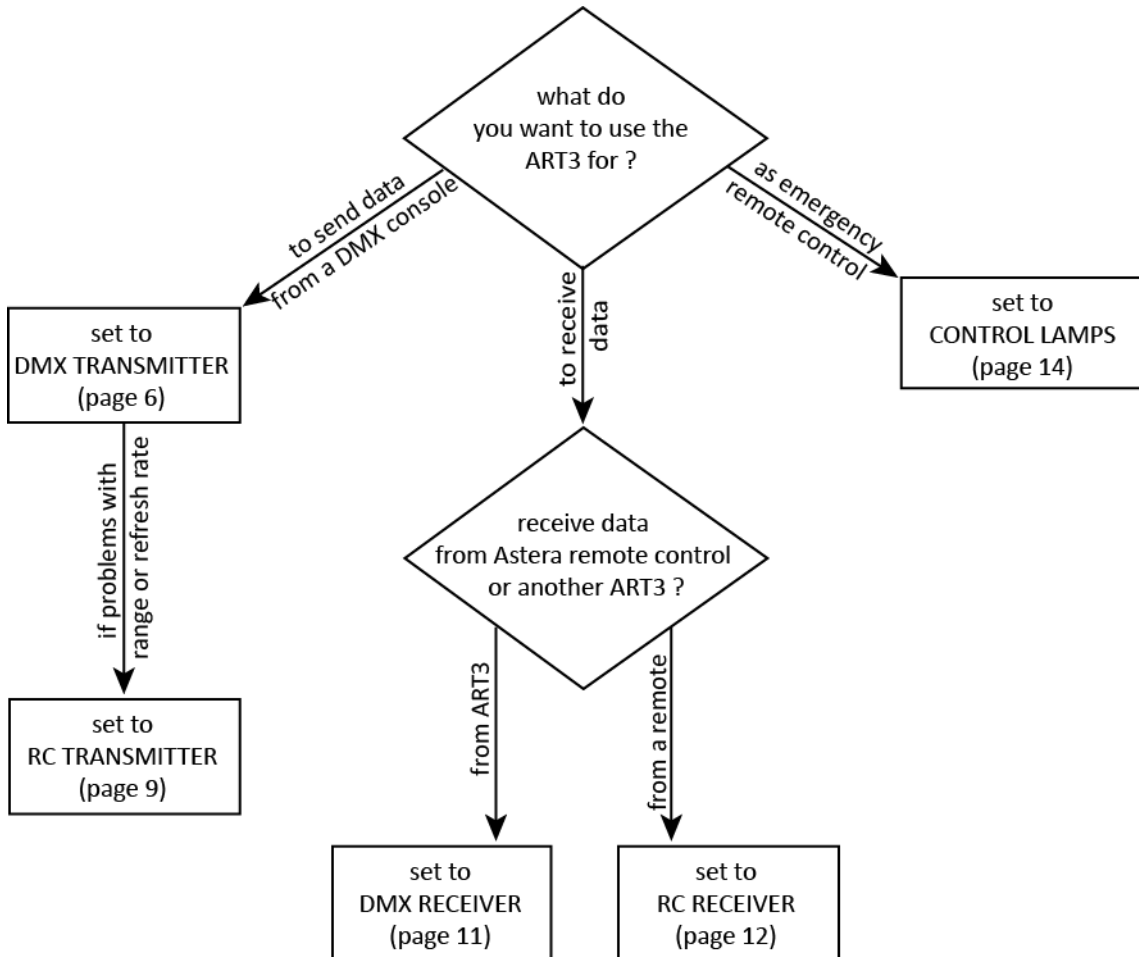
## Overview



## Operation Modes

The ART3 is a very versatile product and can be used to send or receive data. It can work with wireless Astera lights or controllers as well as with conventional DMX fixtures from other companies. Also, it can be used as an emergency remote control in case you forgot the ARC2 or ARC6.

Because of the many settings and purposes of the ART3 it is important to carefully check the desired mode before starting to use it. Here is how you can find out:



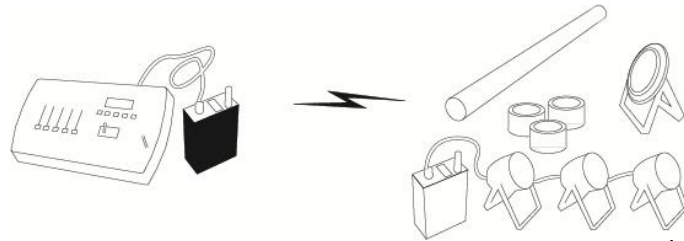
## Navigation through the menu

The navigation panel with its display and 4 buttons is used to navigate between the Operation Modes and to change settings.

When the display shows the name of one of the 5 operation modes in capital letters or SETUP you are in the top level navigation. Use the + and – buttons to navigate between the operation modes. When in one of the operation modes press Enter and then use the + and – buttons to reach its settings. Press Enter to confirm and Back to abort.

## Operation

### DMX Transmitter Mode



### Introduction

The DMX Transmitter mode is for customers that want to send DMX data to Astera lamps and/or to other ART3s that are set to DMX receiver mode. The DMX Transmitter simply transmits the DMX protocol from a standard DMX controller such as Martin Lightjockey, GrandMA and computer-based systems over the air to Astera lights and ART3s that are set to DMX Receiver. For this, the DMX Data gets compressed.

### Characteristics

- Works straight out of the box, all you have to set is the DMX addresses of the lights
- Establishes a constant link to the lights/ART3s it controls. If the link is interrupted the lights/ART3 wont react correctly
- Range: 50-100m
- Transmits a limited amount of data, to get better results use several with different radio pins at the same time (see bottom of page 7). The more channels you transmit the lower the refresh rate.

### Setup of ART3

When you buy a new ART3 or when you Factory Reset the ART3 it is already set into DMX Transmitter mode. All you have to do is connect it to an AC power socket and to your DMX Controller and it will automatically start transmitting as soon as it receives DMX data which is indicated by a flickering blue light and the display showing TRANSMITTING...

While in the DMX Transmitter mode you can press the Enter key then + key to select the minimum and maximum addresses of this ART3, this is useful when using several ART3s at the same time. Also, you can find information about the ART3 by pressing the enter key. Press the menu button to go back.

### Setup of lamps

With the ARC2 or inside the menu of lights with keyfoil and buttons you can set the following:

#### DMX Address:

New lights or lights that have been factory reset are set to DMX address. You can set other DMX addresses for any wireless Astera light:

#### ***Lights without display and on/off button (AL1, AL3, AL7-L):***

Take the ART3 press the – button until you see Setup and confirm with Enter. Choose DMX Setup > DMX Address, choose the desired address and press Enter. All lamps in range will start blinking white once a second. Press the on/off buttons of the lamps you want to set to this address. Alternatively you can use the ARC2 to send addresses to lights, the ARC2 Quick Start Guide explains this process well.

***Lights with display and 5 buttons (AL6, AL7-W):***

Hold the menu button for 3 seconds, select DMX Setup > DMX Setup > confirm with Enter > select an address > confirm with Enter. For setting a larger number of lights, set addresses with ART3 or ARC2 as described above but confirm the address with the light's Enter button (not the on/off button).

**Channels:**

Sets the amount of channels that is used to control 1 unit. 1 RGB channel means that all LEDs have the same color.

**DMX Tab:**

Several DMX tables can be chosen. When sending DMX channels from an ART3 in DMX transmitter mode each Astera light behaves different depending on its amount of pixels. Refer to [www.astera-led.com/DMXtab/](http://www.astera-led.com/DMXtab/) for pdf's that show the DMX tables.

**Strobe:**

Defines if each pixel has its own strobe, if 1 channel controls all strobes or if strobe is turned off.

**DMX Fail:**

Defines what happens if the DMX signal is lost.

## **Limitations and Troubleshooting**

**Very low range:**

The DMX Transmitter Mode is known to have a lower range than the RC Transmitter. To boost the range a bit you can move the ART3, even a meter can make a large difference. The best result would be achieved if it would be in the very center of the room if this is not possible move it a bit up and a bit into the room, don't get it tied up in metal structures such as trussing. To increase the range you can use additional ART3s (see below) so that each ART3 transmits less data. Having a directed antenna would help in some situations but is illegal in many countries.

**Lights sometimes get stuck for 1-2 seconds:**

If the DMX signal gets interrupted due to lack of bandwidth some lights will not receive any data for 1-2 seconds and not display the next frame. To get a more stable transmission you can use additional ART3s (see below) so that each ART3 transmits less channels. Also, having slow fades between scenes requires less bandwidth than abrupt changes and as long as you only change the value of some DMX channels and not all channels you should not have this problem.

If you have the impression that your ART3 is sending too many channels you can test this. Press the Enter button and change the maximum address as described above from 512 to 100. That way you only transmit 100 channels instead of 512. Have a look if the transmission is more efficient now. If yes, use additional ART3s to transmit channels the other channels.

**Lamps don't react at all:**

If the lamps don't react and the display shows NO DMX SIGNAL the DMX cable is not connected correctly or the DMX Controller has a problem. If the lamps don't react and the display shows TRANSMITTING...the DMX Controller is set to Blackout.

**Summary:**

There are several ways to increase the performance of the ART3. It is important to know the ART3's characteristics and sometimes adjust a lighting installation. If you transfer fewer data the performance will be better. For video content we recommend no more than 100 channels per ART3 for slow ambient installations 200 channels per ART3.

If all the above info is not enough you can switch to the RC Transmitter mode (see page 9), which has a much higher range and works more stable.

**Using several ART3s**

When using more than 100 DMX channels and experiencing problems you can use several ART3s at the same time so each one only transmits a part of the data. To make sure they send on different frequencies you need to give each ART3 an individual Radio Pin (e.g. 0000, 0001, 0002).

**Set the Radio Pin of an ART3:**

Go to Setup > Radio Pin > Set Pin > use the + and – buttons to set a pin and confirm with Enter.

**Set the Radio Pin of a light:**

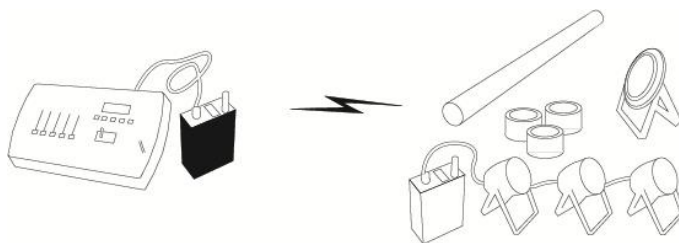
Put the light into blue-mode by holding its power button until it starts blinking rapidly in blue color. Take the ART3, which you want to use to control these lights, go to Setup > Radio Pin > Pair with Lamps. The lamps that were in blue-mode should exit the blue mode which means that they were set to the new Radio Pin.

Lights with display and 5 buttons offer the chance to check or set the Radio Pin by holding the menu button for 3 seconds > Info > Radio Pin > press Enter and select a pin with the + and – buttons and confirm with Enter. Alternatively you can use the ARC2 to send addresses to lights, the ARC2 Quick Start Guide explains this process well.

When using several ART3s with individual Radio Pins, make sure to have enough space between the ART3s so that they won't interfere with each other. You can use a different DMX universe for each ART3 or you can use several ART3s in the same universe, for example by transmitting 150 channels through one ART3, 150 channels through another and the remaining 212 channels through a third ART3. In this case, set the Minimum and Maximum Address of each ART3 to make sure he only sends these channels. When in the DMX Transmitter Mode, press Enter > Select Min or Max address and choose addresses.



## RC Transmitter Mode



### Introduction

In the RC Transmitter mode the ART3 controls Wireless Astera lamps, the same way an ARC2 or ARC6 remote control would do but the parameters are set by a DMX control table. You can send and customize basic running and fading effects and send them to individual lights or groups of lights.

The basic advantages of this operation mode are a higher range and that data is only sent during changes. With only 20 DMX channels you can control a whole setup of lights and/or ART3s.

### Characteristics

- 20 channels are enough to control an unlimited amount of lights
- No constant link, only changes get transmitted. The lights operate independently once they received a command
- Range: 100-300m
- User should be familiar with the Astera control system

### Setup of ART3

Set the ART3 to RC Transmitter Mode (see page 5). As soon as it receives a signal the display shows TRANSMITTING.. and the status LED starts blinking in green color.

When in the RC Transmitter mode press the Enter button to change the following values:

#### RC DMX Address:

Chooses the ART3's input DMX address from 1-511. The ART3 will act as a normal DMX fixture. The remote control functions are mapped to DMX channels see page 17.

#### DMX Tab:

Three DMX tables that control the lamps can be chosen. Each one has a predefined set of DMX channels and their effects on the lamps. A table showing the DMX tables for each tab can be found on page **Error! Bookmark not defined.**

While the DMX Tabs STANDARD and EXTENDED offer the same possibilities as the ARC2 remote control just that you input the values directly at a DMX light controller the DMX Tab

SIMPLE RGB offers an easy way to control colors of 4 pixels with 3 DMX channels for each pixel. Simple RGB is the default value of DMX Tab.

### Setup of lights

The lights do not have to be set at all and will work straight out of the box as soon as they receive data from an ART3 in RC Transmitter mode. For more complex setups you can define different groups for some lights or create Sets of lights. To address a single light choose the Extended DMX Tab (see above) and create a Set with only the one light you want to address individually.

To assign lights to Groups and build Sets this we recommend to use the ARC2, the ARC2 Quick Start Guide explains this process well. Alternatively you can take an ART3, go to Setup > Create a Set or respectively to Setup > Remote Setup > Remote Group. Lights with display and 5 buttons also offer the chance to change their group. To do this hold the menu button for 3 seconds > choose Auto Settings > Group > select a group with the + and – buttons and confirm with Enter.

## **Troubleshoot**

### **Lights don't react and display says NO DMX SIGNAL:**

The DMX cable is not connected to the ART3 or to the DMX controller.

### **Lights don't react and display says RECEIVING DMX:**

The DMX cable is connected but the ART3 does not receive any data. The DMX controller might be set to blackout or might have problems.

### **Lights react incorrectly:**

Most likely the DMX addresses of the light or the DMX controller are not set correctly.

## DMX Receiver Mode



### Introduction

An ART3 in DMX Receiver Mode enables conventional DMX fixtures to be controlled by wireless DMX. It transmits the DMX protocol that is sent from another ART3 (in DMX Transmitter mode) over the air so that the lights can be controlled in the same way as if wired by DMX cable.

### Characteristics

- Very easy to set up, just like an invisible wire.
- Just set the DMX address for each fixture

### Setup of ART3

Set the ART3 to DMX Receiver Mode (see page 5). As soon as the ART3 in DMX Receiver Mode receives a wireless DMX signal, the power-LED start flickering red, the display shows LINK OK and the XLR connector outputs DMX data. If the signal is lost, the display shows NO LINK and the transmission stops.

Several additional functions can be set inside the ART3. To get to these functions, simply press the Enter button while in DMX Transmitter mode and use the + and – buttons to switch between the functions.

### DMX Failure

When in the DMX Receiver mode you can also set a value for DMX Failure in case the DMX signal is interrupted and the ART3 does not receive any DMX data. Four values are possible:

- Hold:** If the DMX reception times out, the output keeps unchanged and the last received DMX frame is displayed.
- Emergency Light:** If the DMX reception times out, the light turns white.
- Blackout:** If the DMX reception times out, all light turns black.
- Auto Program:** If the DMX reception times out the ART3 displays any of the 20 preprogrammed programs.

### Setup of third-party LED fixtures

Set DMX addresses of the fixtures that are connected to the ART3 just like you would set them if they were connected by DMX cable. Refer to the fixture's user manual about how to set addresses.

## RC Receiver Mode



### Introduction

An ART3 in RC Receiver Mode enables conventional DMX fixtures to be controlled by the Astera Remote Controls. That enables customers to control battery-powered Astera lights together with conventional DMX fixtures.

### Characteristics

- Receives data from ARC2 and ARC6 and ART3 in RC Transmitter Mode
- Can connect up to 32 third-party fixtures
- Can be used as standalone controller to control the connected fixtures

### Setup of ART3

Set the ART3 to DMX Receiver Mode (see page 5). Daisy-chain the third-party fixtures which you want to control to the ART3. The ART3 outputs 32 pixels so it can control 32 fixtures with 1 pixel each or fewer multi-pixel fixtures. If you have more than 32 pixels you can use several ART3s that are set to RC Receiver mode.

It is important to set the exact number of pixels that are connected to the ART3 so that effects get displayed correctly. While in RC Receiver mode press the Enter button twice and use the + and – buttons to select the number of pixels. Confirm with Enter.

As soon as the ART3 receives a new program the display will show this program which confirms that it is receiving data.

Users that are familiar with the Astera system can change or look up a number of other settings such as defining Group or Set number, Program or Colors of the ART3. While in RC Transmitter mode, press the Enter button and use the + and – buttons to choose among the settings. Confirm with Enter and press the Back button to abort.

Apart from Auto Pixels a range of values can be set to control the connected third-party lamps directly from the ART3 without the need for an ARC2 remote control. Refer to the ARC2 manual for an explanation about these features.

### Setup of third-party LED fixtures

The connected fixtures need to be set to 3-channel DMX (RGB). Alternatively they can be set to 6-channel DMX where the first 3 channels are for RGB and the following 6-channels can be set to zero. 4-channel DMX, 7-channel DMX etc. are not supported. To check how to set your fixture to 3-channel DMX, please refer to its manual.

If you want to use more than 1 pixel, set the fixtures accordingly: pixel 2 should be DMX address 004, pixel 3 should be DMX address 007 etc. up to address 94. For fixtures that use 6-channel DMX (see paragraph above) the ART3 outputs data from Channels 97 onwards: pixel 1 = channel 97, pixel 2 = channel 103, pixel 3 = 109. Please refer to DMX Output Chart on page 19.

## Troubleshoot

### **The connected fixtures do not display anything:**

As soon as the ART3 receives a new program the display will show this program which confirms that it is receiving data. If you see that the program names on the display are changing the link to the remote control is ok and there must be a problem with the connected fixture. Try to connect another fixture.

### **Fixtures display the effects incorrectly:**

Make sure you have set all connected fixtures to 3-channel DMX and make sure you have selected the correct amount of connected pixels.

### **Fixtures does not support 3-channel or 6-channel DMX:**

3-channel DMX (RGB) is the most common DMX protocol and is supported by most DMX fixtures. If your fixture does not support 3-channel DMX or 6-channel DMX (with channel 4,5,6 set to zero), please use another DMX fixture.

## Control Lamps



### Introduction

The ART3 can be used as a remote control, providing basic functionality of the ARC2 and ARC6 remote controls. Although the other remotes are easier to use and have more buttons ART3 can do most of the ARC2 functions in case no other remote is available.

### Characteristics

- Can control an unlimited amount of lights
- This operation mode does not input or output the DMX protocol
- Requires basic use of the Astera control system

### Settings

Set the ART3 to Control Lamps (see page 5) to use it as a remote control.

The following settings can be adjusted with the ART3 in Control Lamps mode. Confirm with Enter, abort with the Return button.

<b>Target Lamps:</b>	Offers a range of possibilities to target several lights of all the lamps in range. It is possible to target lights by type, serial number, group, set number or by tapping several lamps
<b>Program:</b>	Plays one of 20 predefined programs that can be customized with colors, intensity, power scheme, speed, fade, directions, etc.
<b>Intensity:</b>	Sets the brightness of the lamps.
<b>Power Scheme:</b>	Three different power schemes can be set to optimize the light for high-brightness, maximum runtime or normal playback.
<b>Speed:</b>	Sets the speed with which a program is played.
<b>Fade:</b>	Sets the fading transitions between different colors from hard transition to smooth transitions.
<b>Direction:</b>	Sets the direction of a program and whether it loops continuously or is played only once.
<b>Strobo Speed:</b>	Starts the strobe-light and defines the frequency of the strobe effect
<b>Random Mode:</b>	Switches to a random mode on which displays programs at a changing rate.
<b>Random Fade:</b>	Defines the random fade
<b>Use Random Cols:</b>	Uses random colors to display programs
<b>Color 1:</b>	Sets color 1 that is used to display programs
<b>Color 2:</b>	Sets color 2 that is used to display programs
<b>Color 3:</b>	Sets color 3 that is used to display programs
<b>Color 4:</b>	Sets color 4 that is used to display programs
<b>Info:</b>	Gives you information about software and RF link

## Setup



### Introduction

The Setup is used to set up the lights, rather than the ART3 itself. It offers advanced settings that can be used before or after an event like factory reset, forming groups of lamps, setting a light's DMX address etc. To get to Setup, see bottom of page 5.

### Settings

The following settings can be adjusted. After changing the settings all lights in range will blink in white light once a second. Press the Enter or on/off button of the lights to confirm on which lamps you want to execute this setting. Here is a hierarchical tree of the setting along with a short description. For a complete list that explains each setting, please refer to the ARC2 manual.

- **Create a Set:** A set is a cluster of lamps with fixed positions that can be targeted at the same time.
- **Create a Chain:** Use a chain to stretch effects over several Sets
- **DMX Setup:** Send a number of DMX settings to lamps that do not have a display
  - **DMX Address:** Sets the DMX address of the desired light
  - **DMX Pixels:** Sets how many pixels a light has (all, one or reduced pixels)
  - **DMX Tab:** Several different DMX tables can be chosen to select what channels are used to control the lights (RGB S RGB S, RGB RGB S S, Effect Mode Fix, Effect Mode RGB)
  - **Strobe:** Sets how many channels are used to control each pixel's strobe
  - **DMX Failure:** Sets the behavior of the light in case of an interrupted DMX signal.
- **Remote Setup:** Send a number of settings to lamps that do not have a display
  - **Remote Group:** Defines the group in which a lamp is
  - **Input Select:** Defines which signal a light listens to (XLR, wireless DMX, remote, standalone)
  - **AC Failure:** Sets the behavior of battery powered lights in case of power failure
- **Manual Wht Calib:** Allows you to calibrate the RGB levels to match other white LED lights
- **Test Radio:** A test to check the distance of lights and ART3 to see if the antenna is defect
- **Radio Pin:** The Radio Pin sets the frequency and makes it possible to operate several lights and controllers without them influencing each other. Controllers and lights must have the same radio pin in order to work with each other.
- **Factory Reset:** Factory Reset puts the ART3 or a lamp into its original state and deletes all settings. The only setting that is not influenced by Factory Reset is the Radio Pin

## Technical Specifications

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**General**

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<i>Temperature (operation)</i>	<i>5 °C – 40 °C</i>
<i>Temperature (transport)</i>	<i>-25 °C – 55 °C (70 °C for 24h)</i>
<i>Altitude</i>	<i>up to 2000 m above sea level</i>
<i>Environment</i>	<i>indoor</i>
<i>Input Power</i>	<i>110-240V, 50-60Hz AC</i>

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**Radio Frequency**

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<i>RF coverage</i>	<i>50m up to 300m</i>
<i>Frequency</i>	<i>Europe: 868.000 MHz – 869.750 MHz</i> <i>US: 902MHz – 928 MHz</i>

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## Appendix 1: DMX tab for ART3 in RC transmitter mode

MODE			VALUE	FUNCTION
SIMPLE	STANDARD	EXTENDED		
	1	1	0-255	<b>DIMMER</b> Brightness of 0%-100%
	2	2	0-3 4 5 6 7-255	<b>STROBE</b> OFF RANDOM STROBE FAST RANDOM STROBE MEDIUM RANDOM STROBE SLOW STROBE SLOW->FAST
	3	3	0-6 7-14 15-22 23-30 31-38 39-46 47-54 55-62 63-70 71-78 79-86 87-94 95-102 103-110 111-118 119-126 127-134 135-142 143-150 151-158	<b>PROGRAM</b> ONE COLOR STATIC TWO COLOR STATIC THREE COLOR STATIC FOUR COLOR STATIC ONE COLOR FADE TWO COLOR FADE THREE COLOR FADE FOUR COLOR FADE SIMPLE RUNNING DOUBLE RUNNING TWO COL RUNNING FLAG RUNNING DOUBLE FLAG RUNNING SPIRAL 4 COLORS SPIRAL 2 COLORS RAINBOW FIRE ROTOR ROTOR SPLIT 2 ROTOR SPLIT 4
	4	4	0 1-255	<b>SPEED</b> STOP SPEED SLOW->FAST
	5	5	0-255	<b>FADE</b> 0%-100% of step time
	6	6	0-63 64-127 128-190 191-255	<b>DIRECTION</b> LOOP+FFW FFW REW LOOP+REW

	7	7		<b>SEND TO GROUPS</b>
			1	G1
			3	G1 G2 SINGLE
			2	G2
			4	G3
			6	G2 G3 SINGLE
			7	G1 G2 G3 SINGLE
			8	G4
			12	G3 G4 SINGLE
			14	G2 G3 G4 SINGLE
			15	G1 G2 G3 G4 SINGLE
			130	G1
			132	G1 G2 CONNECTED
			131	G2
			133	G3
			135	G2 G3 CONNECTED
			136	G1 G2 G3 CONNECTED
			137	G4
			141	G3 G4 CONNECTED
			143	G2 G3 G4 CONNECTED
			144	G1 G2 G3 G4 CONNECTED
	8	8		<b>SEND MODE</b>
			0-10	SEND ON MODIFY
			11-245	DO NOT SEND
			246-255	SEND ALL PARAMETERS NOW
1	9	9	0-255	<b>COLOR 1 RED</b>
2	10	10	0-255	<b>COLOR 1 GREEN</b>
3	11	11	0-255	<b>COLOR 1 BLUE</b>
4	12	12	0-255	<b>COLOR 2 RED</b>
5	13	13	0-255	<b>COLOR 2 GREEN</b>
6	14	14	0-255	<b>COLOR 2 BLUE</b>
7	15	15	0-255	<b>COLOR 3 RED</b>
8	16	16	0-255	<b>COLOR 3 GREEN</b>
9	17	17	0-255	<b>COLOR 3 BLUE</b>
10	18	18	0-255	<b>COLOR 4 RED</b>
11	19	19	0-255	<b>COLOR 4 GREEN</b>
12	20	20	0-255	<b>COLOR 4 BLUE</b>
		21		<b>SET ADDRESS</b>
			0	ADDRESS ALL SETS
			1-255	ADDRESS SET #1-255

SINGLE = Programs run separate on each group  
CONNECTED = Programs span over selected groups

## Appendix 2: DMX Output Chart

Pixel #	Address RGB	Address RGB000
1	1	97
2	4	103
3	7	109
4	10	115
5	13	121
6	16	127
7	19	133
8	22	139
9	25	145
10	28	151
11	31	157
12	34	163
13	37	169
14	40	175
15	43	181
16	46	187
17	49	193
18	52	199
19	55	205
20	58	211
21	61	217
22	64	223
23	67	229
24	70	235
25	73	241
26	76	247
27	79	253
28	82	259
29	85	265
30	88	271
31	91	277
32	94	283

This instruction manual is part of the device and persons operating the device must have access to it at any time.  
Safety precautions mentioned in the instruction manual have to be observed.  
If the device is being sold, this instruction manual has to be included.

#### **Translations**

If the device is being sold, this instruction manual has to be translated into the national language of the destination country.  
If discrepancies occur in the translated text, the original instruction manual has to be used to solve them for the manufacturer has to be contacted.

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Rüdesheim an der Nahe, Germany