

# LXC-1

## *IP to Control Port Expander User Guide*



## SAFETY INSTRUCTIONS

Please review the following safety precautions. If this is the first time using this model, then read this manual before installing or using the product. If the product is not functioning properly, please contact your local dealer or Aurora for further instructions.



The lightning symbol in the triangle is used to alert you to the presence of dangerous voltage inside the product that may be sufficient to constitute a risk of electric shock to anyone opening the case. It is also used to indicate improper installation or handling of the product that could damage the electrical system in the product or in other equipment attached to the product



The exclamation point in the triangle is used to alert you to important operating and maintenance instructions. Failure to follow these instructions could result in injury to you or damage to the product.



Be careful with electricity:

- **Power outlet:** To prevent electric shock, be sure the electrical plug used on the product power cord matches the electrical outlet used to supply power to the Aurora product. Use only the power adapter and power connection cables designed for this unit.
- **Power cord:** Be sure the power cord is routed so that it will not be stepped on or pinched by heavy items.
- **Lightning:** For protection from lightning or when the product is left unattended for a long period, disconnect it from the power source.



Also follow these precautions:

- **Ventilation:** Do not block the ventilation slots if applicable on the product or place any heavy object on top of it. Blocking the air flow could cause damage. Arrange components so that air can flow freely. Ensure that there is adequate ventilation if the product is placed in a stand or cabinet. Put the product in a properly ventilated area, away from direct sunlight or any source of heat.
- **Overheating:** Avoid stacking the Aurora product on top of a hot component such as a power amplifier.
- **Risk of Fire:** Do not place unit on top of any easily combustible material, such as carpet or fabric.
- **Proper Connections:** Be sure all cables and equipment are connected to the unit as described in this manual.
- **Object Entry:** To avoid electric shock, never stick anything in the slots on the case or remove the cover.
- **Water Exposure:** To reduce the risk of fire or electric shock, do not expose to rain or moisture.
- **Cleaning:** Do not use liquid or aerosol cleaners to clean this unit. Always unplug the power to the device before cleaning.
- **ESD:** Handle this unit with proper ESD care. Failure to do so can result in failure.

### FCC

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

- (1) This device may not cause harmful interference.
- (2) This device must accept any interference received, including interference that may cause undesired operation.



### Trademarks

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## PACKAGE CONTENTS

Please make sure the following items are included within your package. Contact your dealer if any items are missing or damaged.

### SKU

- QTY:1 LXC-1 Port Expander

### Optional Accessories

### SKU

- PS0094-2 - 48V DC Power Supply for Stand-Alone Operation
- PS0081-1 – 48V PoE Injector Supply

***Power supplies are sold separately.***

***Note: Go to [www.auroramm.com](http://www.auroramm.com) for latest manual and firmware.***

## INTRODUCTION

### About

The LXC-1 is a low cost high performance IP to port expander. Designed for control port expansion, the LXC-1 has a variety of ports including 1-serial, 1 – IR, 2 – relays, and 2 – I/O ports. The internal Flash memory provides the ability for storing and serving up web-control pages for complete in room and remote control. All configuration of ports and can be done with the integrated setup web page. The LXC-1 works with all Aurora IP control products and 3rd party control too.

Power Supply **NOT** included, please order separately.

### Features

- ◆ 32-Bit RISC Processor
- ◆ Telnet/TCP Controlled
- ◆ 1x Serial RS-232 Port (in/Out)
- ◆ 2x C-Type Relay Ports
- ◆ 2x Digital I/O Ports
- ◆ 1x IR Out Port
- ◆ 10/100 LAN Power Over Ethernet (PoE)
- ◆ Integrated Web Server
- ◆ Integrated Setup Web Pages
- ◆ 3 Watt Power Consumption
- ◆ Compact Space Saving Size: 4.65" x 2.86" x .98"



## SKU Front



### LEDs

- Power/Status – Power will light green when unit is on or in standby.
- TX/RX – Will blink red when RS-232 data is being sent or received.
- Rly 1 & 2 – Will turn on and off to reflect port states.
- I/O 1 & 2 – Will turn on and off to reflect port states.

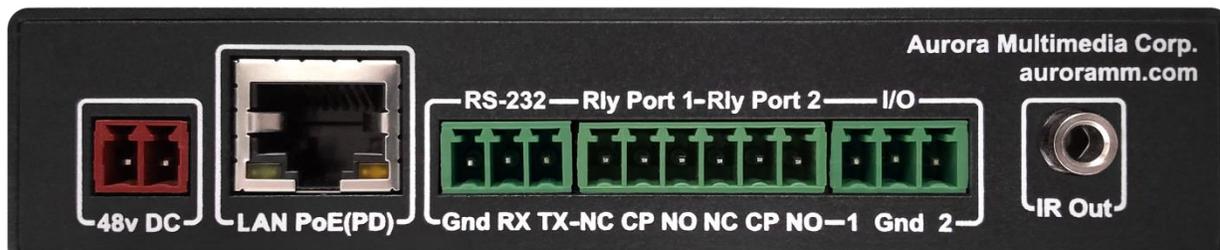
### Setup Button Function



The 'Setup' button located in the front, pressed using a paperclip or equivalent, is available for two functions:

- Factory Reset – Press and hold for 5 seconds, then release to reset the unit to factory defaults.  
IP:192.168.1.100
- Firmware Update Mode – Press and hold for 10 seconds to put the unit into 'Firmware Update Mode'. The TX/RX and I/O 1 & 2 LEDs will be solid red to indicate that the unit is ready for a firmware update. To cancel, cycle the power.

## SKU Rear



### Rear

- 48VDC 48 Volt DC isolated power input.
- LAN 10/100/1000Mbps LAN. Can power the unit with PoE from injector or switch.  
LAN connector LED's (Rear):
  - Left LED Green = 1G/Good. (1G Required for proper operation)
  - Left LED Orange = 10/100 or Bad Connection.
  - Left LED Orange = 10/100 or Bad Connection.
- Control RS-232 Serial port pass-through and control up to 115Kbps.
- Relays Relay Port 1 and 2.
- I/O Ports for I/O control

### Default Settings

- Serial Port Baud Rate: 9600
- IP Mode: Static, 192.168.1.100
- Fallback IP Mode (no DHCP present): 192.168.1.100

## WEB SETUP PAGES

The LXC-1 Web Setup pages are accessed via <IP Address of Unit>/setup.

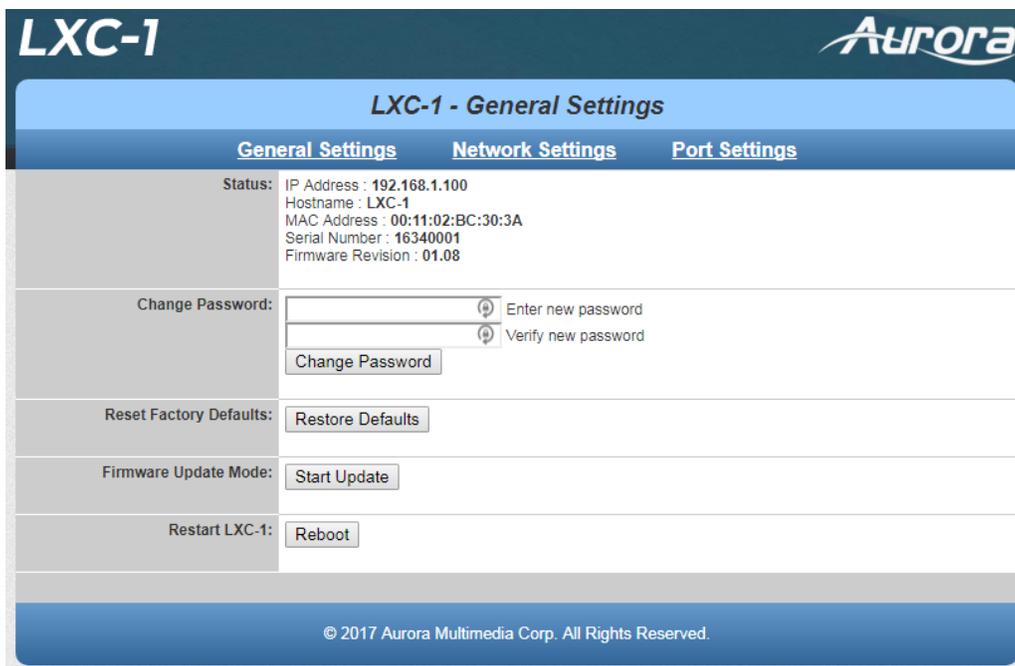
E.g. 192.168.1.100/setup

Default Username: admin

Default Password: admin

### General Settings Tab

This page allows the user to change Password, Factory Default, initiate Firmware Update, and reboot the LXC-1.



The screenshot shows the LXC-1 web interface. At the top left is the text "LXC-1" and at the top right is the "Aurora" logo. Below this is a blue header bar with the title "LXC-1 - General Settings". Underneath the header are three tabs: "General Settings" (which is selected), "Network Settings", and "Port Settings". The main content area is divided into several sections:

- Status:** IP Address : 192.168.1.100  
Hostname : LXC-1  
MAC Address : 00:11:02:BC:30:3A  
Serial Number : 16340001  
Firmware Revision : 01.08
- Change Password:** Two input fields with eye icons. The first is labeled "Enter new password" and the second is labeled "Verify new password". Below these fields is a "Change Password" button.
- Reset Factory Defaults:** A "Restore Defaults" button.
- Firmware Update Mode:** A "Start Update" button.
- Restart LXC-1:** A "Reboot" button.

At the bottom of the page, there is a blue footer bar with the text "© 2017 Aurora Multimedia Corp. All Rights Reserved."

## Network Settings Tab

The 'Network Settings' tab shows the current IP settings and allows the user to set the network parameters as needed, operating in 'DHCP' or 'Static' mode.

**LXC-1**

### LXC-1 - Network Configuration

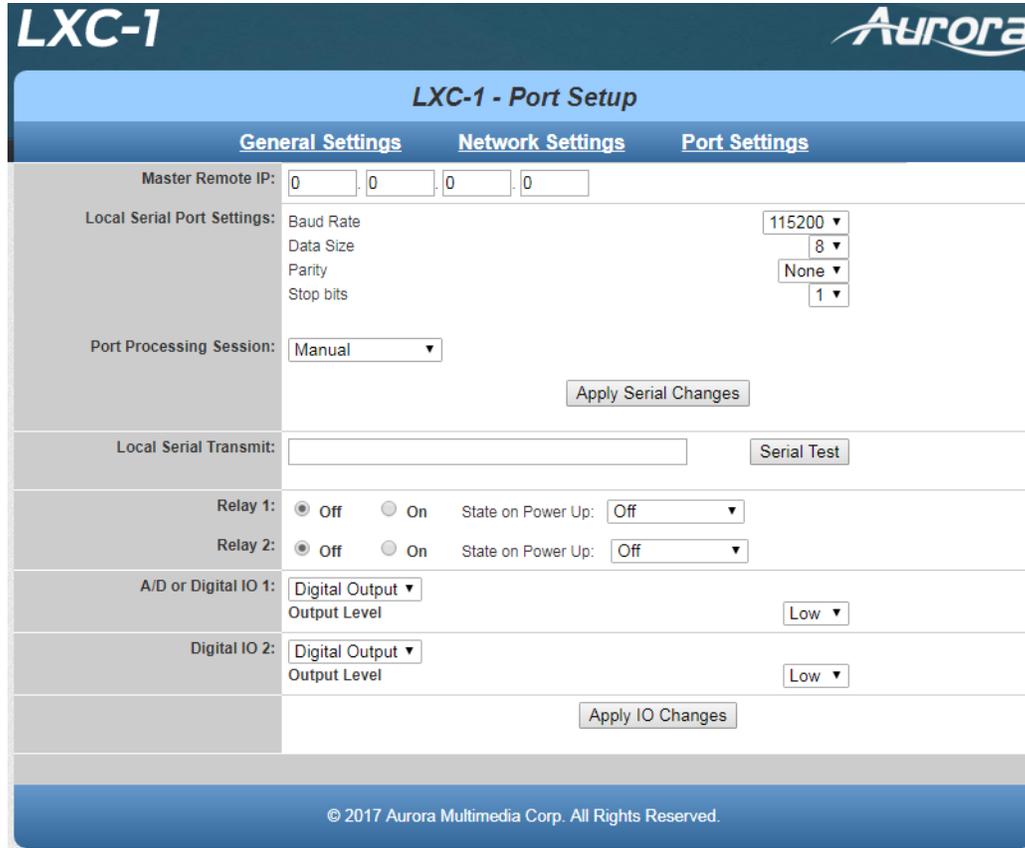
**General Settings    Network Settings    Port Settings**

<b>Current Network Settings:</b>	IP Address : 192.168.1.100 Subnet Mask : 255.255.0.0 Gateway : 192.168.1.1 Hostname : LXC-1 MAC Address : 00:11:02:BC:30:3A
<b>Network Configuration:</b>	DHCP <input type="radio"/> ON <input checked="" type="radio"/> OFF Static IP Address <input type="text" value="192"/> <input type="text" value="168"/> <input type="text" value="1"/> <input type="text" value="100"/> Subnet Mask <input type="text" value="255"/> <input type="text" value="255"/> <input type="text" value="0"/> <input type="text" value="0"/> Gateway <input type="text" value="192"/> <input type="text" value="168"/> <input type="text" value="1"/> <input type="text" value="1"/> Hostname <input type="text" value="LXC-1"/>

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## Port Settings Tab

The 'Port Settings' tab allows the user to change 'Baud Rate', Relay and I/O states, as wells as other communication options.



- **Master Remote IP:** This IP address is used to associate the LXC-1 with a target control server, such as an RXT-7 or other ReAX Series controllers.
- **Local Serial Port Settings:** Allows the user to select 'Baud Rate' and associated parameters for RS-232.

**Note:** '%' is used to denote hex characters for Aurora Multimedia products.

## Port Processing Session

**Manual:** Default, no action taken.

**Push to Variable:** This setting allows the user to target a variable on a remote control server (RXT). When enabled, any incoming RS232 data will be 'pushed' to the remote variable as set by the 'Target RPC Variable Name'.

Port Processing Session:

Remote Session IP Address:  .  .  .

Target RPC Variable Name:

**Push to Port:** This setting directs incoming RS232 data to a remote serial port on another controller or port expander.

Port Processing Session:

Remote Session IP Address:  .  .  .

Target RPC Serial Port Number:

**Telnet Client/Server:** These settings allow RS232 data to be sent to a remote Telnet Server, or have incoming Telnet data pass to the local RS232 port.

Port Processing Session:

Remote Session IP Address:  .  .  .

Telnet Remote Port Number:

Telnet Timeout Seconds:

---

Port Processing Session:

Telnet Local Port Number:

**Local Serial Transmit:** This is used for testing / diagnostics. String data entered here will be sent out of the RS232 port.  
E.g. Hello world%0d

Local Serial Transmit:

**Relay 1 & 2 Settings:** You can set the active state of the relay(s) by clicking 'OFF' or 'ON'. The power-up state of the relays can also be chosen as 'ON', 'OFF', or 'LAST'.

Relay 1:  Off  On State on Power Up:

Relay 2:  Off  On State on Power Up:

## A/D Digital IO 1 & Digital IO 2

The IO ports allow detect incoming signal levels, or output signal levels. Port 1 operates as Digital or Analog input/output. Port 2 operates as digital input/output only.

A/D or Digital IO 1:

Digital IO 2:

**Digital Output:** The settings available are 'Low' (Closed / Low Z) and 'High' (Open / High Z).

**Digital Input:** This mode is used to detect a dry contact closure to ground (Pull-Up mode), or detect a logic high (High Impedance mode). When a state change is detected, a corresponding remote IP/Variable can be set to 1 or 0, reflecting High/Low state.

Input Mode

Remote Notify IP Address

Notify Variable Name

Here's a table for the variable notification values:

Digital Input	Pull Up Mode	Open	LED = On	Notify Data = 1
Digital Input	Pull Up Mode	Closed / Shorted	LED = Off	Notify Data = 0
Digital Input	High Impedance	0V DC In	LED = Off	Notify Data = 0
Digital Input	High Impedance	5V DC In	LED = On	Notify Data = 1

**Analog Input:** This mode will read incoming voltage (0-5V DC) and associate a digital value representing the voltage level, 0000 – 5000 (Approximately). If you set a 'Range' (Min/Max) and select 'Notify on Range Entry' and 'Notify on Exit' reports, the translated voltage value on the port will be pushed to variable when in and out of range, respectively.

A/D or Digital IO 1: Analog Input ▾

Remote Notify IP Address: 192 . 168 . 15 . 110

Notify Variable Name: myAnalogVar

Notify Range Min 0-5volts: 3.0

Notify Range Max 0-5volts: 5.0

Notify on Range Entry

Notify on Range Exit

Here's a matrix demonstrating variable notification values (approximate, your values will differ):

Analog Input	0.0V DC In	LED = Off	Notify Data = ~0000
Analog Input	2.5vdc In	LED = On (Med)	Notify Data = ~2500
Analog Input	5.0vdc	LED = On (Bright)	Notify Data = ~5000

## APPENDIX 1

### Troubleshooting

It is advisable to make certain all units are using the latest firmware before troubleshooting.

Problem	Solution
1. LED is not lit on any buttons	<ul style="list-style-type: none"><li>a. Check 48V power supply is plugged in locally or if connected to a switch via PoE, make certain that the switch has power and is connected on a powered port.</li><li>b. Check to see if wall power supply is plugged into wall outlet.</li><li>c. Make certain that the wall outlet has power.</li></ul>
2. RS-232 does not work	<ul style="list-style-type: none"><li>a. Check connection on RS-232 port. Make certain TX goes to RX and RX goes to TX of the device to be connected. Don't forget about ground.</li><li>b. Check baud rate.</li><li>c. Verify commands being sent are correct protocol.</li><li>d. Each unit must have a unique address.</li></ul>
3. Some functions do not work	<ul style="list-style-type: none"><li>a. Make certain unit has latest firmware.</li></ul>

## APPENDIX 2

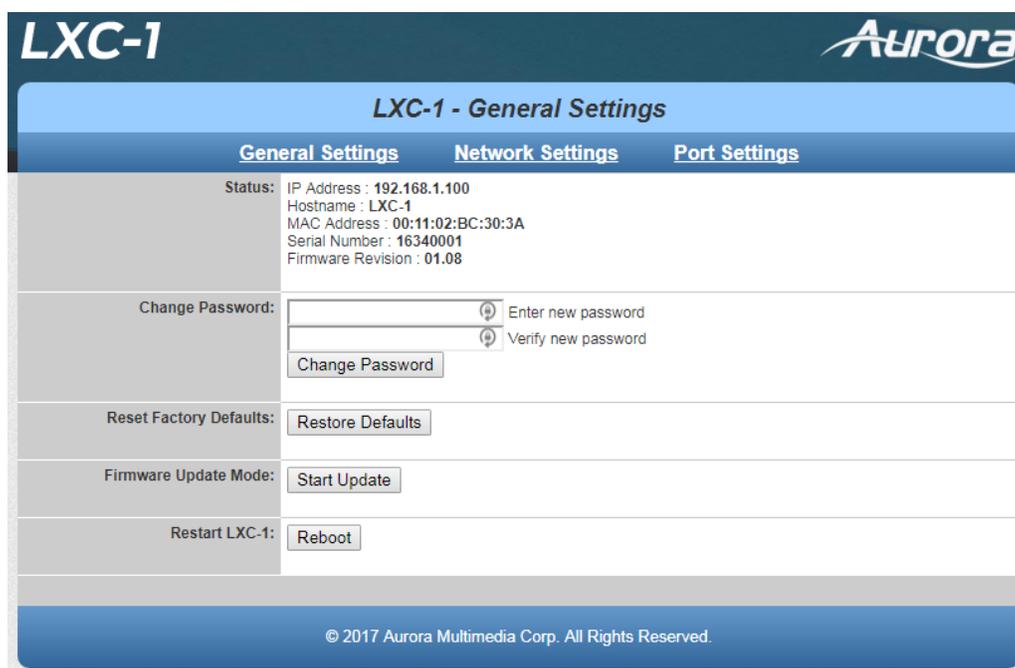
### Firmware Update

For the latest firmware updates please go to: [www.auroramm.com](http://www.auroramm.com). You must be signed up to the Customer Portal in order to download firmware.

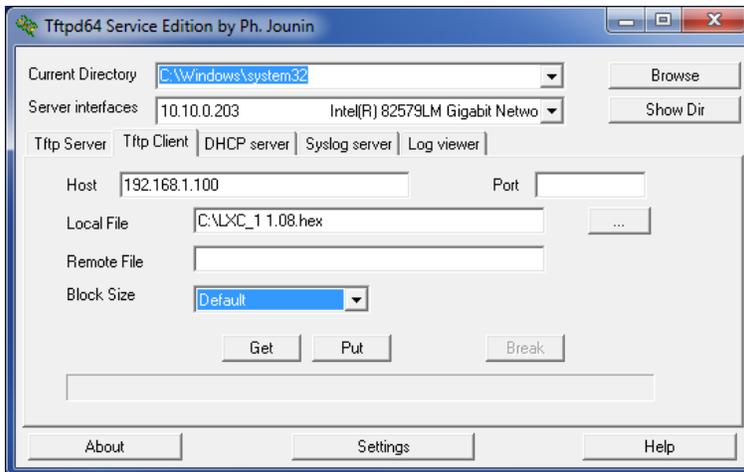
To update the firmware, enter the Web Setup Pages e.g. '192.168.1.100/setup'.

Note: User and Password by default is admin/admin.

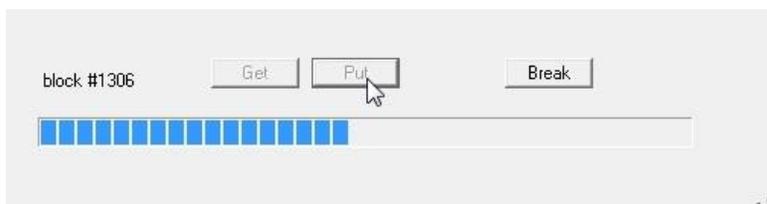
If the IP or Password is unknown, factory reset unit by pressing and holding the 'Setup' button in the front of the LXC-1 unit with a paperclip or equivalent for 10 seconds or longer. This will revert the unit back to the default IP of 192.168.1.100. On the 'General Settings' tab, click the 'Start Update' button to put the unit into 'Firmware Update Mode'. The operation is successful when the TX/RX and IO 1 & 2 LEDs are solid red, indicating that the unit is ready to be updated.



Once in 'Firmware Update Mode', use [TFTP program](#) as shown below. Set 'Host:' as the IP of the LXC-1 unit.



Set 'Host:' as the IP of the LXC-1 unit. Select Firmware file (browse the downloaded \*.hex file), then press 'Put' to load firmware. Unit will reboot after the firmware is updated.



## APPENDIX 3

### Technical Specifications

Model Name	LXC-1
<b>Technical</b>	<b>LXC-1</b>
Processor	32-bit RISC / 120 MHz
Memory	256KB RAM / 1MB Flash / >4 GB Micro SD
RS-232 Baud Rate	Max 115kbps (Factory default is 9600)
RS-232 Connector Port	3 pin Phoenix Connector
Relay	2x C-Type Ports
IR Out Port	3.5 mm TS
Digital I/O	2x Phoenix Connectors
<b>Mechanical</b>	<b>LXC-1</b>
Housing	Aluminum
Dimensions [L x W x D] (in)	4.65" x 2.86" x .98" Note: Wall box portion depth .48"
Weight	.38lbs
Mounting	Rack Options
Power supply	PoE or 48vdc
Power consumption	3 Watts [max]
Operation temperature	0~40°C [32~104°F]
Storage temperature	-20~60°C [-4~140°F]
Relative humidity	20~90% RH [no condensation]
<b>Package Contents</b>	1x LXC-1
<b>Options</b>	48v PoE Injector Supply (PS0081-1) 48V DC Power Supply for Stand-Alone Operation (PS0094-2)

## APPENDIX 4

### Warranty

#### Limited 3 Year Warranty

Aurora Multimedia Corp. ("Manufacturer") warrants that this product is free of defects in both materials and workmanship for a period of 3 years as defined herein for parts and labor from date of purchase. This Limited Warranty covers products purchased in the year of 2019 and after. Motorized mechanical parts (Hard Drives, DVD, etc.), mechanical parts (buttons, doors, etc.), remotes and cables are covered for a period of 1 year. Touch screen displays are covered for 1 year; touch screen overlay components are covered for 90 days. Supplied batteries are not covered by this warranty. During the warranty period, and upon proof of purchase, the product will be repaired or replaced (with same or similar model) at our option without charge for parts or labor for the specified product lifetime warranty period.

This warranty shall not apply if any of the following:

1. The product has been damaged by negligence, accident, lightning, water, act-of-God or mishandling; or,
2. The product has not been operated in accordance with procedures specified in operating instructions; or,
3. The product has been repaired and or altered by other than manufacturer or authorized service center; or,
4. The product's original serial number has been modified or removed; or,
5. External equipment other than supplied by manufacturer, in determination of manufacturer, shall have affected the performance, safety or reliability of the product.
6. Part(s) are no longer available for product.

In the event that the product needs repair or replacement during the specified warranty period, product should be shipped back to Manufacturer at Purchaser's expense. Repaired or replaced product shall be returned to Purchaser by standard shipping methods at Manufacturer's discretion. Express shipping will be at the expense of the Purchaser. If Purchaser resides outside the contiguous US, return shipping shall be at Purchaser's expense.

#### **No other warranty, express or implied other than Manufacturer's shall apply.**

Manufacturer does not assume any responsibility for consequential damages, expenses or loss of revenue or property, inconvenience or interruption in operation experienced by the customer due to a malfunction of the purchased equipment. No warranty service performed on any product shall extend the applicable warranty period. This warranty does not cover damage to the equipment during shipping and Manufacturer assumes no responsibility for such damage. This product warranty extends to the original purchaser only and will be null and void upon any assignment or transfer.



## **Aurora Multimedia Corp.**

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