KRAMER

# USER MANUAL

## MODEL:

## ExtremeUSB
## KDS-USB2 Device Pairing

P/N: 2900-301401 Rev 1

# Contents

# Introduction

Welcome to Kramer Electronics! Since 1981, Kramer Electronics has been providing a world of unique, creative, and affordable solutions to the vast range of problems that confront the video, audio, presentation, and broadcasting professional on a daily basis. In recent years, we have redesigned and upgraded most of our line, making the best even better!

**ExtremeUSB** Network Configuration (XUSBNETCFG) has been developed to control USB-KDS2 extenders that have **SwitchableUSB™** or Simultaneous Users Interaction capabilities. This document explains how to use our APIs.

XUSBNETCFG includes two features, **SwitchableUSB™** and Simultaneous Users Interaction that are enabled on specific extender and core models.

**SwitchableUSB™** is a protocol developed to dynamically switch KDS-USB2-EN (LEX) and KDS-USB2-DEC (REX) extender pairings over a LAN. Imagine the extenders being manually unplugged and re-plugged in swapped pairing configurations, but effortlessly via initiated command over the LAN. Your OEM control solution (perhaps a separate console or GUI software application for the host computer) would initiate the **SwitchableUSB™** command configurations.

Simultaneous Users Interaction (SUI) is a feature that enables up to seven different Remote extenders in different locations to be connected to the same Local extender at the same time.

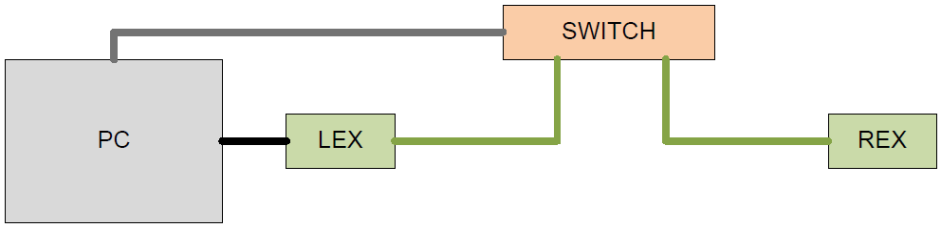
# Getting Started

## Connecting the Hardware

**To connect the hardware:**

1. Connect the KDS-USB2-EN - Local Extender- LEX to the computer.
2. Connect the LEX to the Switch.
3. Connect the Power to the REX (Remote Extender).
4. Connect the REX to the Switch.
5. Connect the computer to the Switch.

The hardware set up will look like the diagram below (for specific instructions on powering up the system, review the User Manual for your extender model):



# Setting up the Software

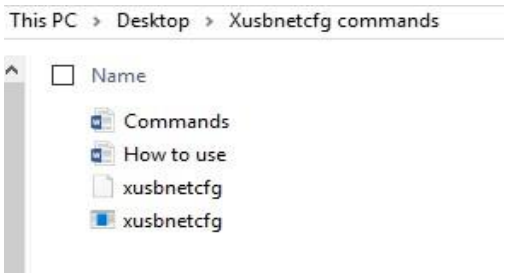
**To set up the software:**

1. Extract the zip file in the directory that you wish to execute the commands.

   Once extracted, you will find a directory called **Xusbnetcfg commands**.

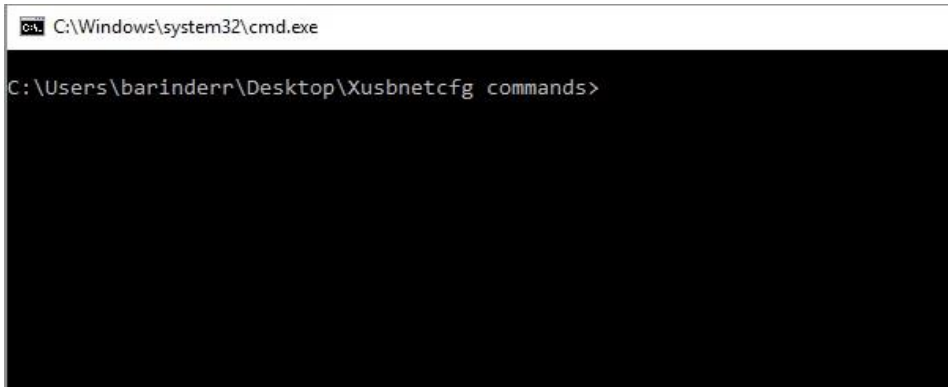
2. Go into the **Xusbnetcfg commands** directory

   The following files are listed:




3. SHIFT+RIGHT CLICK then select **Open command window here**.

   A window will open in the current directory.

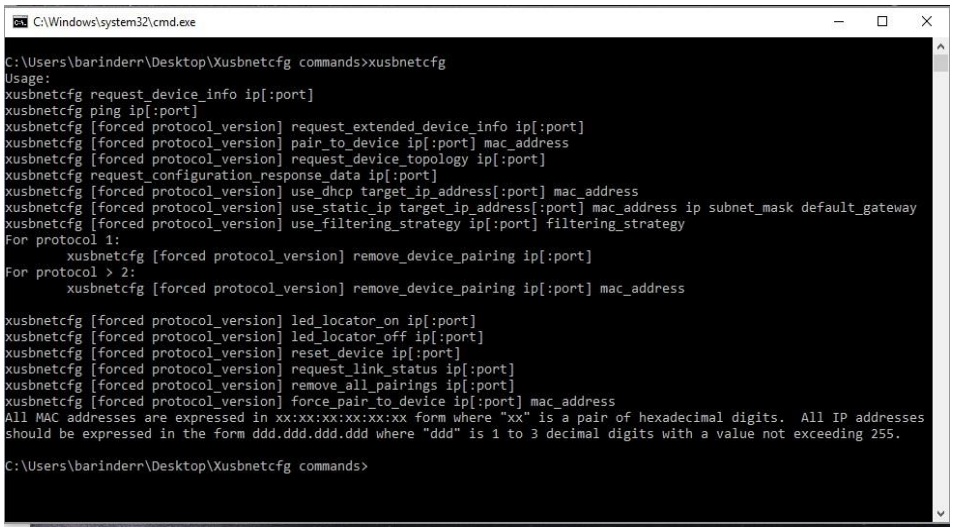


# Operating and Controlling ExtremeUSB

## Available Commands

**To see a list of available commands:**

- Type `xusbnetcfg`.



# Identifying ExtremeUSB Devices on the Network

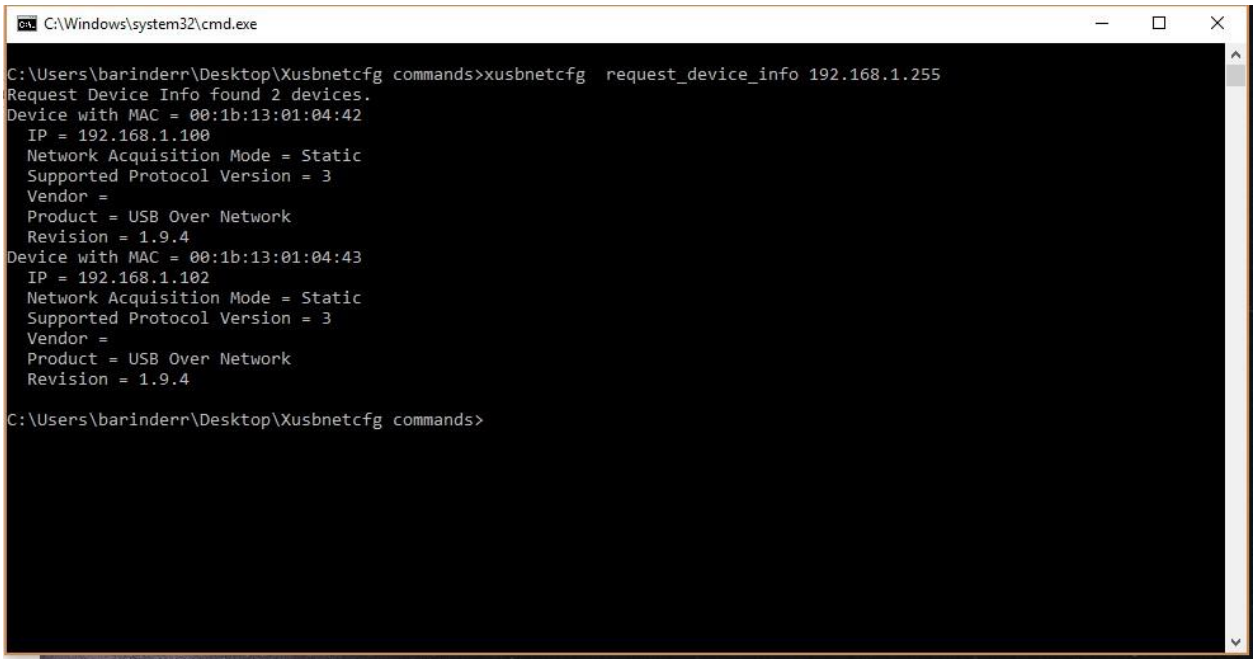
**To identify ExtremeUSB devices on the network:**

1. Type `xusbnetcfg  request_device_info 192.168.1.255`

   Returns all ExtremeUSB devices If using static IP where no DHCP server is enabled.

2. Type `xusbnetcfg  request_device_info 255.255.255.255`

   Returns all ExtremeUSB devices.




In the above case there two extenders:

- Device 1 – IP = 192.168.1.100 with Mac Address 00:1b:13:01:04:42
- Device 2 – IP = 192.168.1.102 with Mac Address 00:1b:13:01:04:43

At this stage there is no indication whether these ExtremeUSB devices are LEX or REX.

# Identifying LEX and REX Extenders

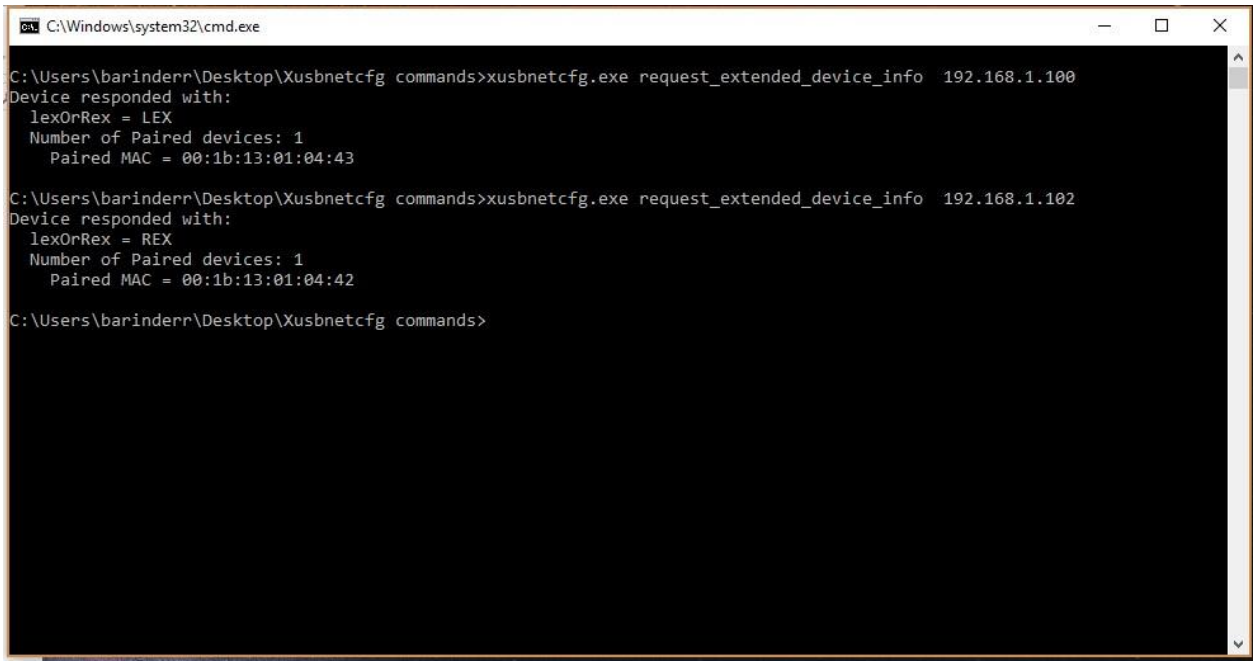
**To identify LEX and REX extenders:**

- Type `xusbnetcfg.exe request_extended_device_info <DEVICE IP>`

  **EXAMPLE:**

  `xusbnetcfg.exe request_extended_device_info  192.168.1.100`

  `xusbnetcfg.exe request_extended_device_info  192.168.1.102`




- Extender 1 – IP = 192.168.1.100 with Mac Address 00:1b:13:01:04:42 LEX
- Extender 2 – IP = 192.168.1.102 with Mac Address 00:1b:13:01:04:43 REX

Results indicate which ExtremeUSB device is LEX and which is REX.

It also shows that the LEX is paired to an extender with Mac address 00:1b:13:01:04:43 and the REX is paired to an extender with Mac address 00:1b:13:01:04:42. (i.e. the LEX and REX are paired to each other).

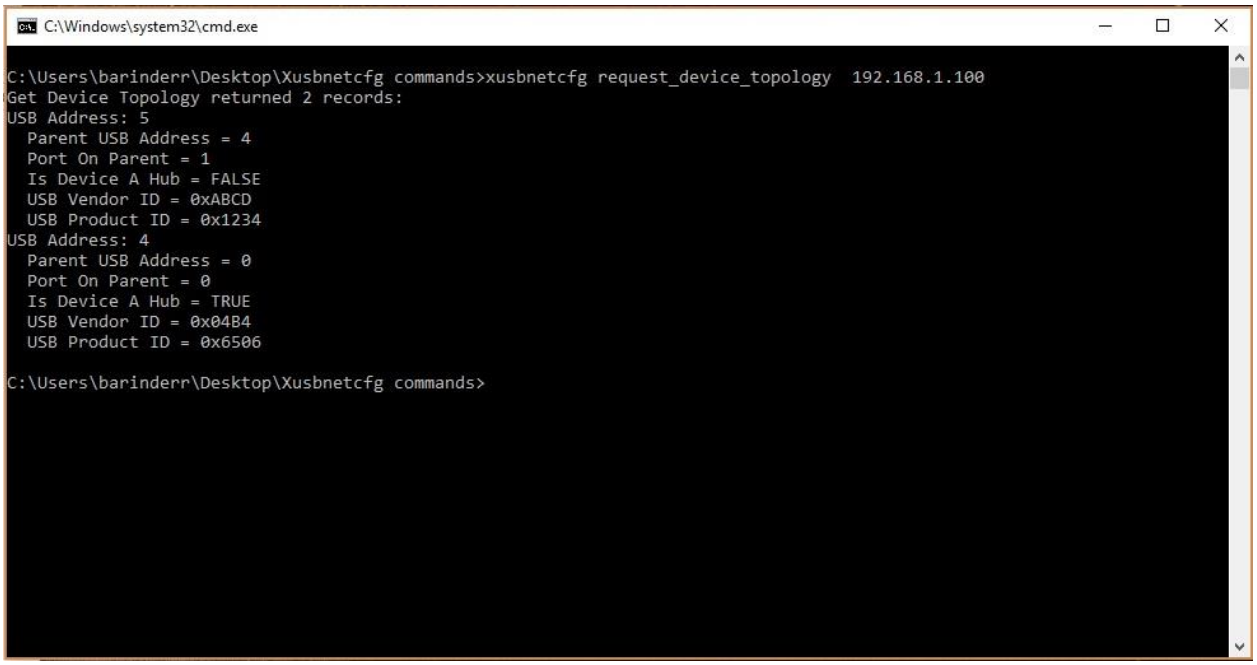
# Getting More Information

**To get more information about a device:**

Type `xusbnetcfg request_device_topology <DEVICE IP>`

**EXAMPLE:**

```
xusbnetcfg request_device_topology  192.168.1.100
xusbnetcfg request_device_topology  192.168.1.102
```



# Getting Device Configuration

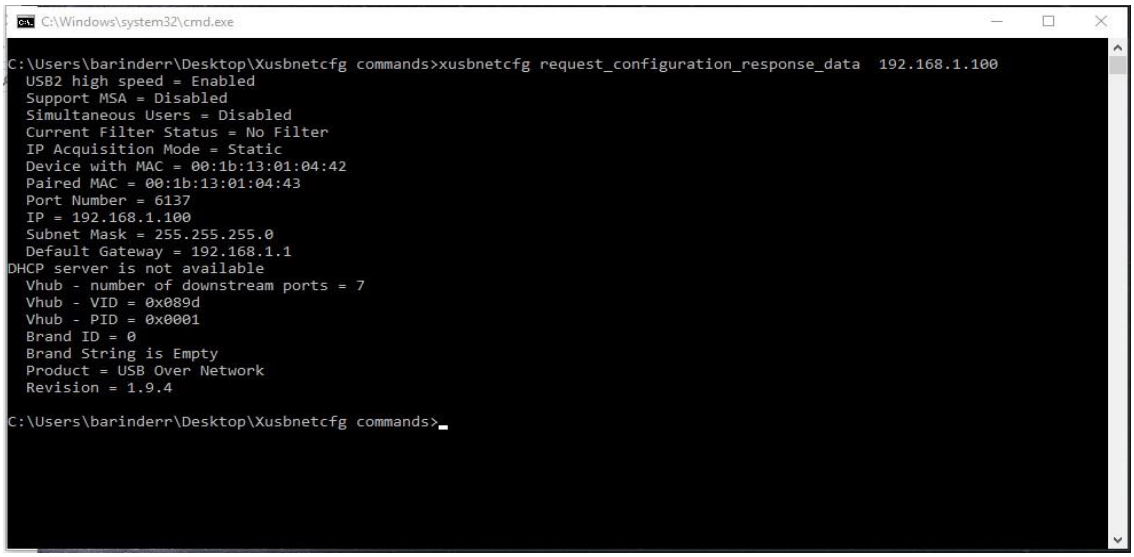
**To get device configuration:**

Type `xusbnetcfg request_configuration_response_data <DEVICE IP>`

**EXAMPLE:**

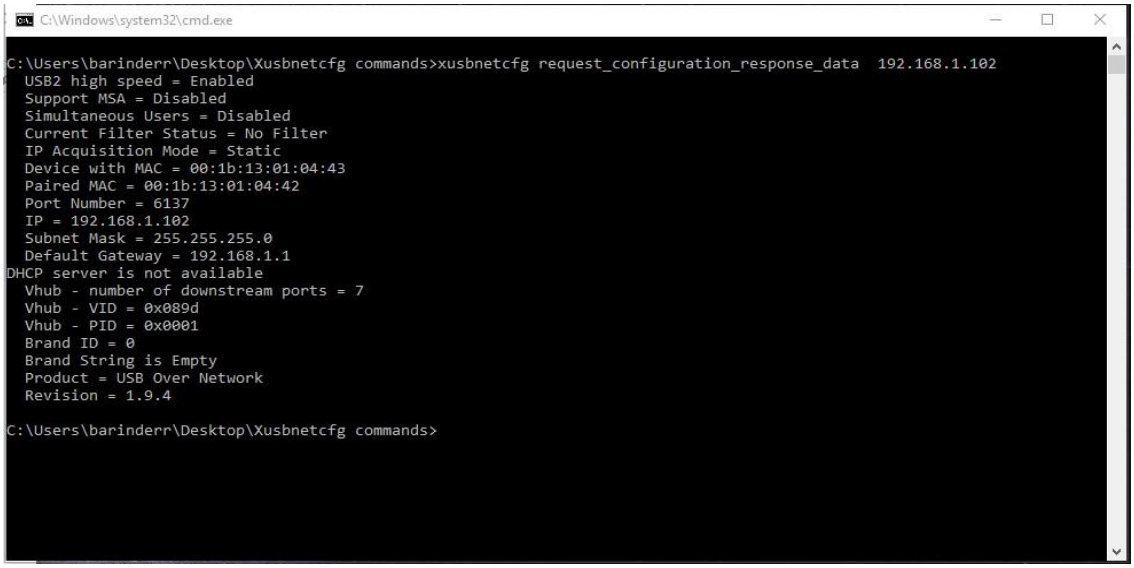
`xusbnetcfg request_configuration_response_data 192.168.1.100`

`xusbnetcfg request_configuration_response_data 192.168.1.102`




Device 1 – IP = 192.168.1.100 with Mac Address 00:1b:13:01:04:42 LEX High speed device with static IP set. No special features are enabled.

For more information on advanced features like Device Class Filtering, Vendor/Brand lock, etc. please contact your account manager




Device 2 – IP = 192.168.1.102 with Mac Address 00:1b:13:01:04:43 REX High speed device with static IP set. No special features are enabled.

# Link Status

**To get link status:**

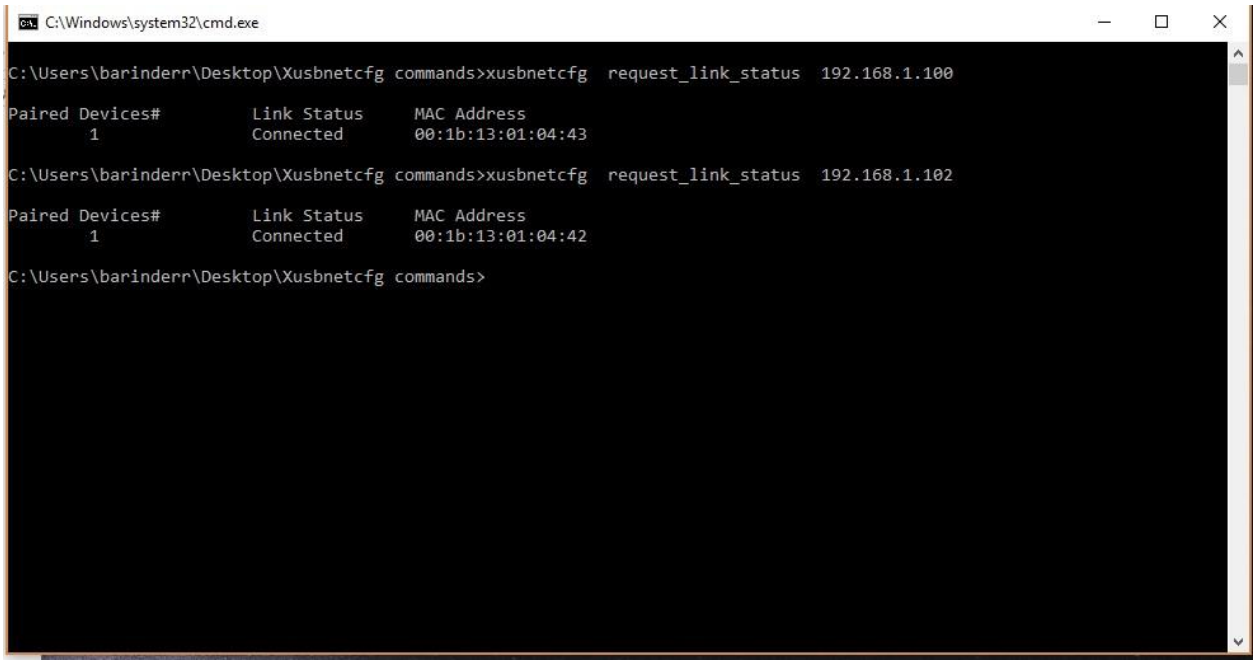
This provides information about the status of the network link between a LEX and REX. The LEX and REX must be linked (and paired) for data to flow between the LEX and REX.

- Type `xusbnetcfg request_link_status <DEVICE IP>`

  **EXAMPLE:**

  `xusbnetcfg request_link_status 192.168.1.100`

  `xusbnetcfg request_link_status 192.168.1.102`




In this example, extender with IP 192.168.1.100 is paired to an extender with MAC address 00:1b:13:01:04:43 and the link is active.

Extender with IP 192.168.1.102 is paired to an extender with MAC address 00:1b:13:01:04:42 and the link is active.

# LED Activity

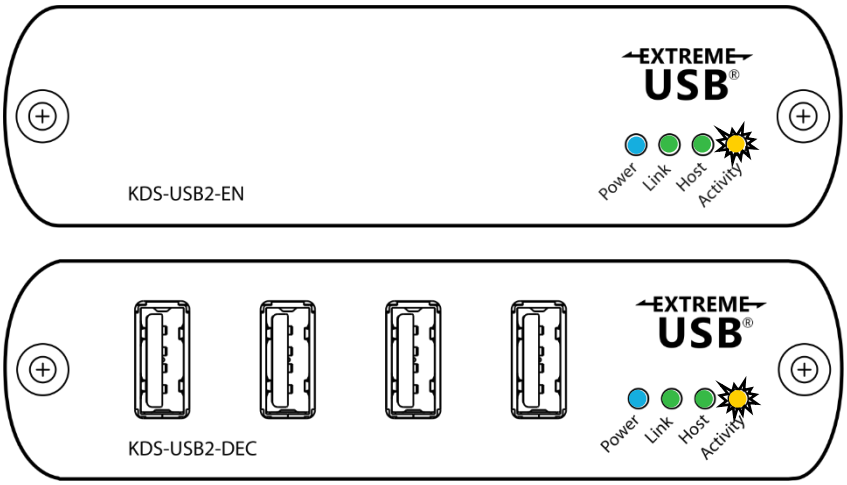
The image below is for the USB 2.0 RG2304GE-LAN.

**Under correct operation the following LEDs display for the REX and LEX:**

- Power LED lights
- Link LED lights
- Host LED lights

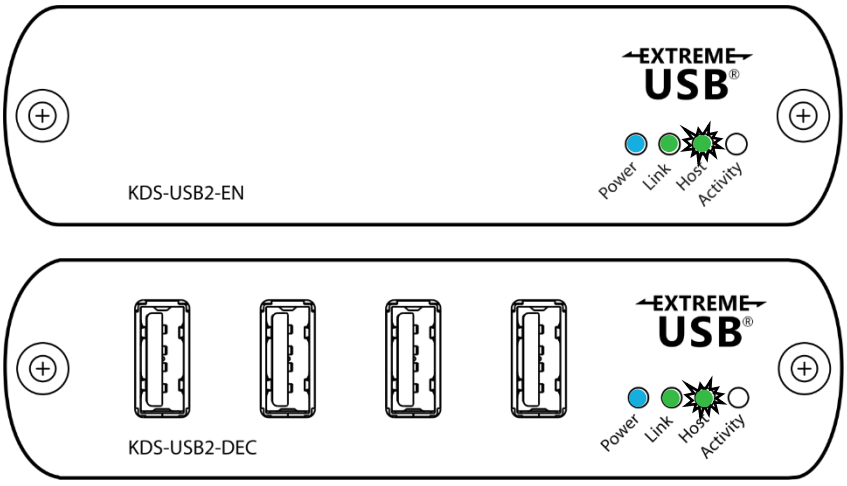
**USB device is connected to the REX:**

- Activity LED flashes




**Device not linked:**

- Activity LED unlit
- Host LED flashes



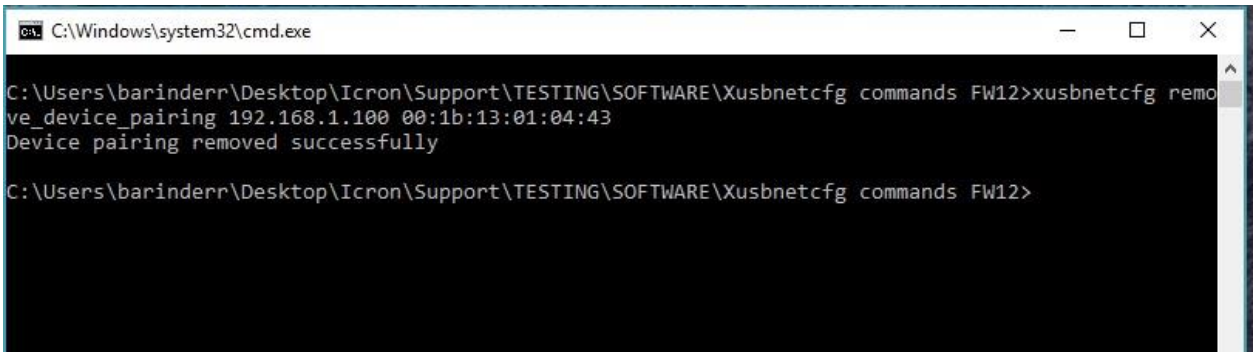
# Unpairing Devices

**To remove a pairing:**

1. Type `xusbnetcfg remove_device_pairing <LEX IP> <REX MAC>`
2. Type `xusbnetcfg remove_device_pairing <REX IP> <LEX MAC>`

**EXAMPLE:**

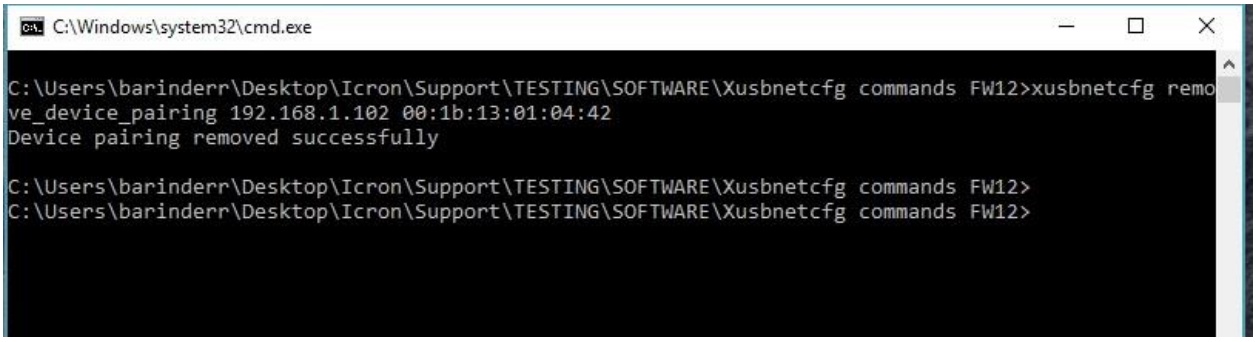
```
xusbnetcfg remove_device_pairing  192.168.1.100 00:1b:13:01:04:43
xusbnetcfg remove_device_pairing  192.168.1.102 00:1b:13:01:04:42
```




LEDs behave is as follows:

| LEX device | REX device |
|---|---|
| • Power LED lights<br>• Link LED unlit<br>• Host LED unlit<br>• Activity LED unlit | • Power LED lights<br>• Link LED flashes (Trying to pair with LEX)<br>• Host LED unlit<br>• Activity LED unlit |

**To unpair the REX:**




LEDs behave is as follows:

| LEX device | REX device |
|---|---|
| • Power LED lights<br>• Link LED unlit<br>• Host LED unlit<br>• Activity LED unlit | • Power LED lights<br>• Link LED unlit<br>• Host LED unlit<br>• Activity LED unlit |

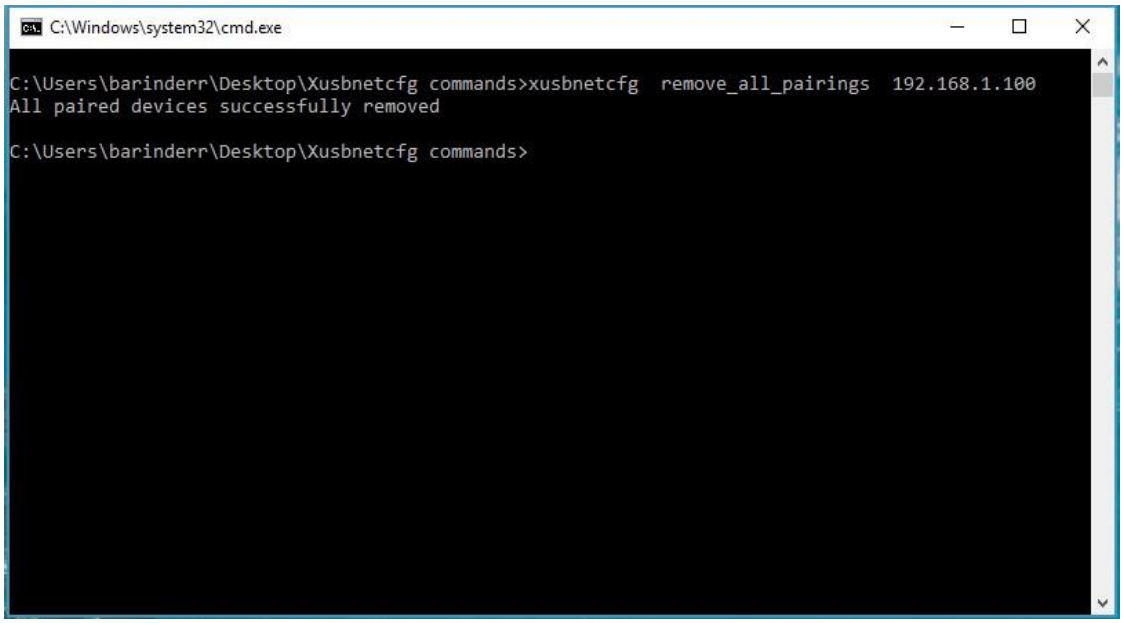
Alternatively:

1. Type `xusbnetcfg remove_all_pairings <LEX IP>`
2. Type `xusbnetcfg remove_all_pairings <REX IP>`

   **EXAMPLE:**

   `xusbnetcfg remove_all_pairings 192.168.1.100`

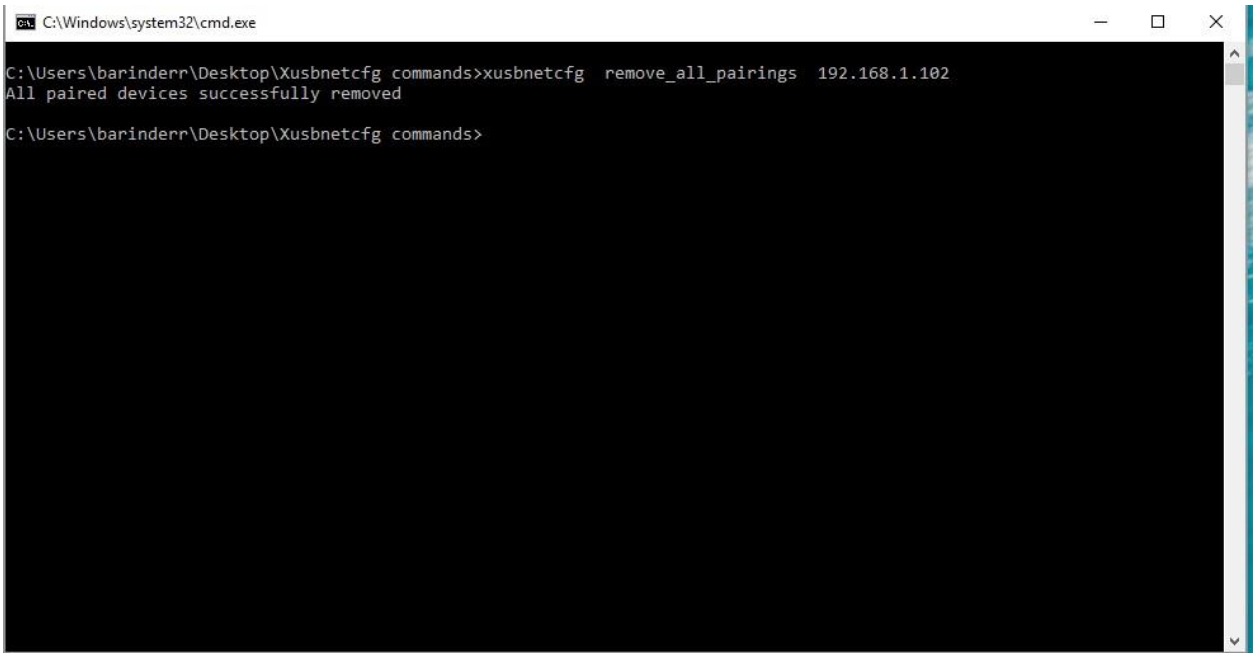
   `xusbnetcfg remove_all_pairings 192.168.1.102`




LEDs behave is as follows:

| LEX device | REX device |
|---|---|
| • Power LED lights<br>• Link LED unlit<br>• Host LED unlit<br>• Activity LED unlit | • Power LED lights<br>• Link LED flashes (Trying to pair with LEX)<br>• Host LED unlit<br>• Activity LED unlit |

**To unpair the REX:**




Under correct operation LEDs behave is as follows:

| LEX device | REX device |
|---|---|
| • Power LED lights<br>• Link LED unlit<br>• Host LED unlit<br>• Activity LED unlit | • Power LED lights<br>• Link LED unlit<br>• Host LED unlit<br>• Activity LED unlit |

# Pairing Devices

You can pair LEX devices to REX devices by using the IP and Mac Address of the extenders you want to pair.

There are two commands available. If you are using Simultaneous User Interaction and need to pair multiple REXs to a single LEX, use the "`pair-to-device`" command.

If you are only pairing a single LEX and REX together, you can use the "`force-pair-to-device`" command which instructs the device to clear all of its existing pairings and then try to pair with a different device specified in this message.

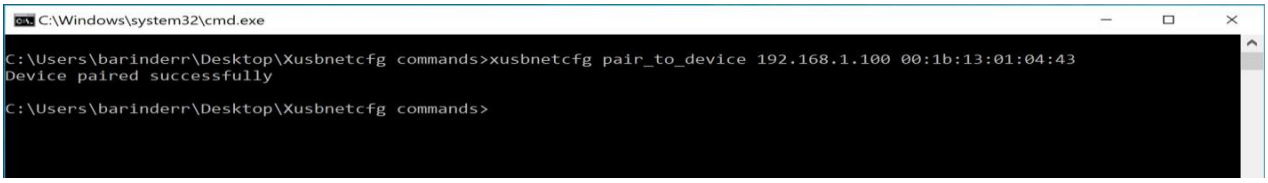
**To pair devices:**

1. Type `xusbnetcfg pair_to_device <LEX IP> <REX MAC>`
2. Type `xusbnetcfg pair_to_device <REX IP> <LEX MAC>`

   **EXAMPLE:**

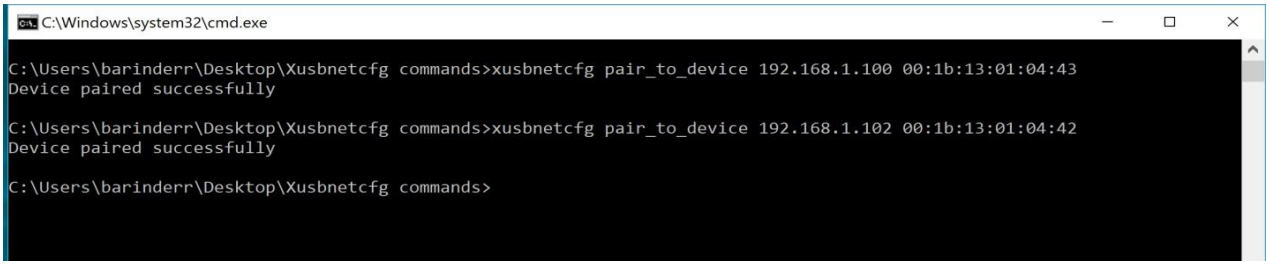
   `xusbnetcfg pair_to_device 192.168.1.100 00:1b:13:01:04:43`

   `xusbnetcfg pair_to_device 192.168.1.102 00:1b:13:01:04:42`




LEDs behave is as follows:

| LEX device | REX device |
|---|---|
| • Power LED lights<br>• Link LED flashes (Trying to pair to a REX)<br>• Host LED unlit<br>• Activity LED unlit | • Power LED lights<br>• Link LED unlit<br>• Host LED unlit<br>• Activity LED unlit |




LEDs behave is as follows:

| LEX device | REX device |
|---|---|
| • Power LED lights<br>• Link LED lights<br>• Host LED Flashes<br>• Activity LED unlit | • Power LED lights<br>• Link LED lights<br>• Host LED Flashes<br>• Activity LED unlit |

The link is established.

# Inserting a USB device into the REX

LEDs behave is as follows:

| LEX device | REX device |
|---|---|
| • Power LED lights<br>• Link LED lights<br>• Host LED lights<br>• Activity LED flashes | • Power LED lights<br>• Link LED lights<br>• Host LED lights<br>• Activity LED flashes |

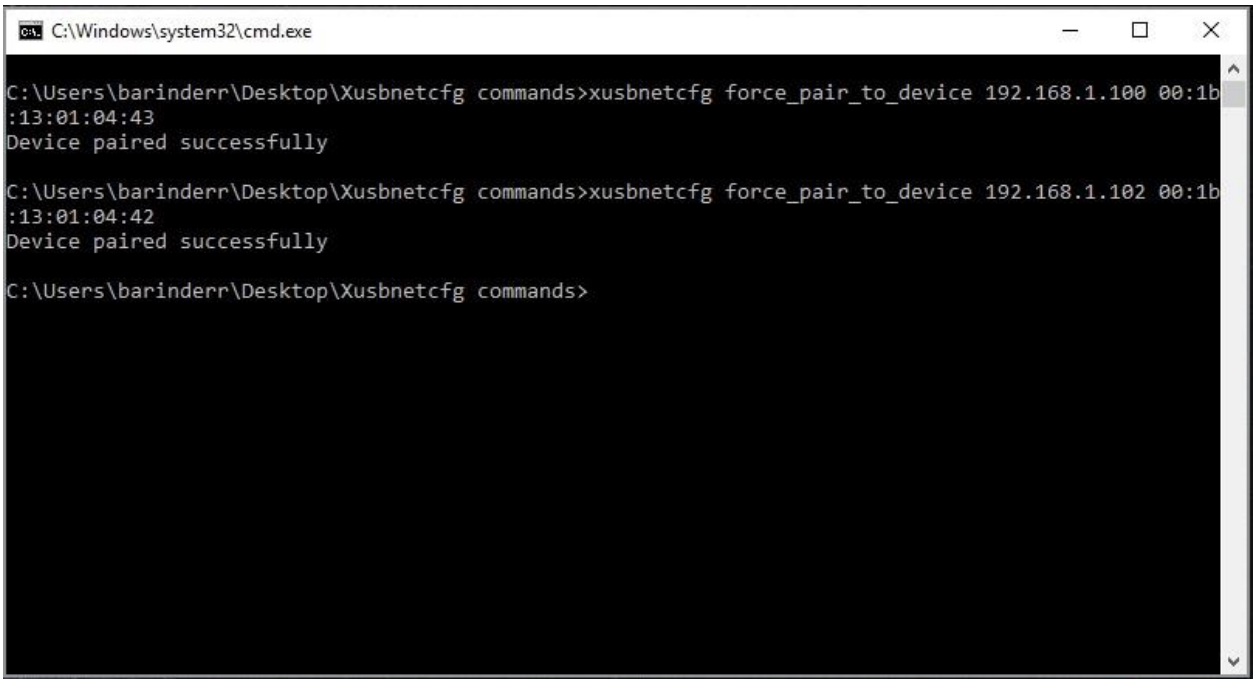
Alternatively, if you use the force pair command, all other existing pairings will be dropped:

1. Type `xusbnetcfg force_pair_to_device <LEX IP> <REX MAC>`
2. Type `xusbnetcfg force_pair_to_device <REX IP> <LEX MAC>`

   **EXAMPLE:**

   `xusbnetcfg force_pair_to_device 192.168.1.100 00:1b:13:01:04:43`

   `xusbnetcfg force_pair_to_device 192.168.1.102 00:1b:13:01:04:42`



# Resetting the Device

The Reset command only requires the IP of the device to reset.

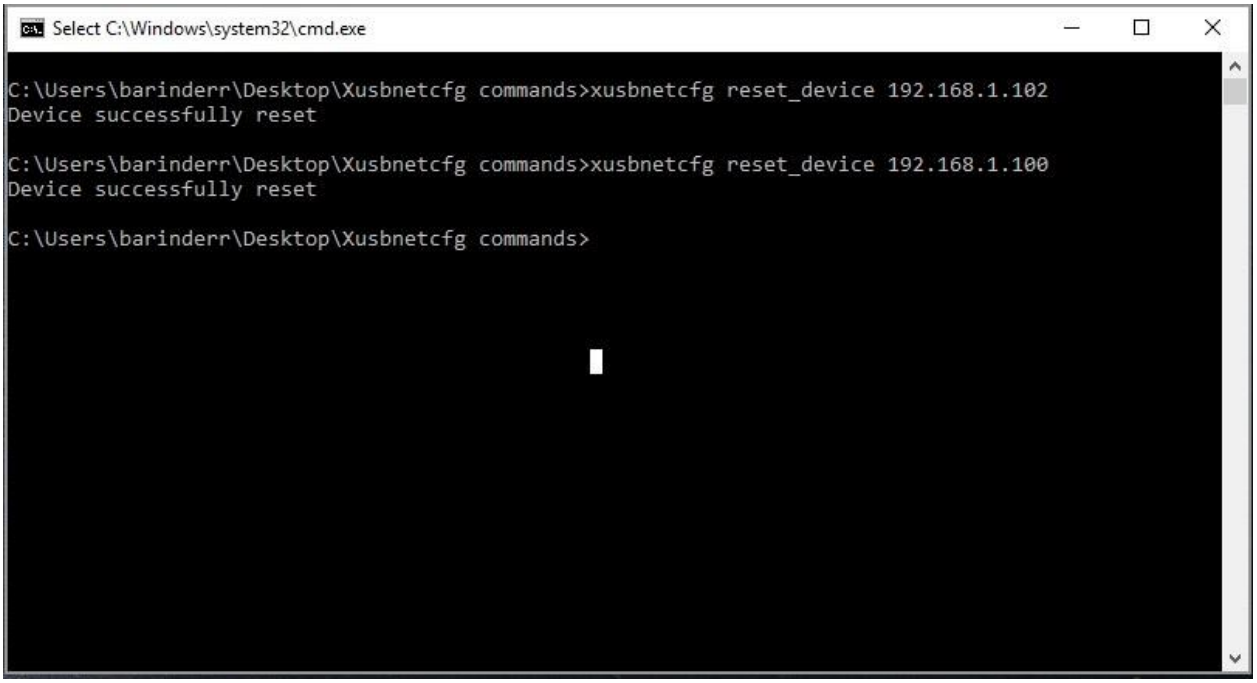
### To reset the device

- Type `xusbnetcfg reset_device <DEVICE IP>`

  **EXAMPLE:**

  `xusbnetcfg reset_device 192.168.1.102`

  `xusbnetcfg reset_device 192.168.1.100`




When any device is reset the LEDs will temporarily turn off except for power and then the device will re-pair.

# Setting Static IP Address

**To setting static IP address:**

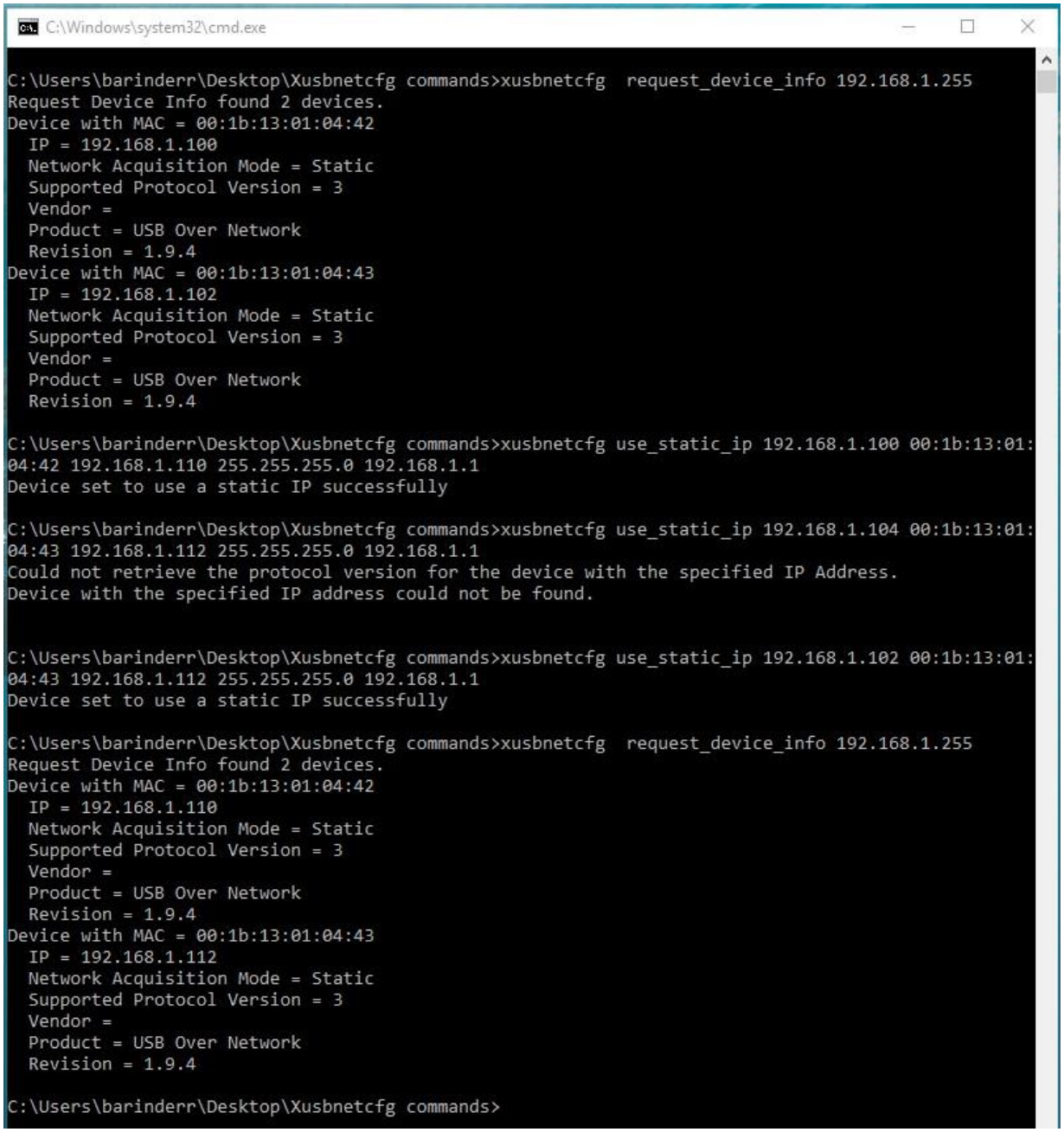
- Type `Xusbnetcfg use_static_ip <CURRENT IP> <DEVICE MAC> <DESIRED IP> <SUBNET_MASK><DEFAULT_GATEWAY>`

  **EXAMPLE:**

  `xusbnetcfg use_static_ip 192.168.1.100 00:1b:13:01:04:42 192.168.1.110 255.255.255.0 192.168.1.1`

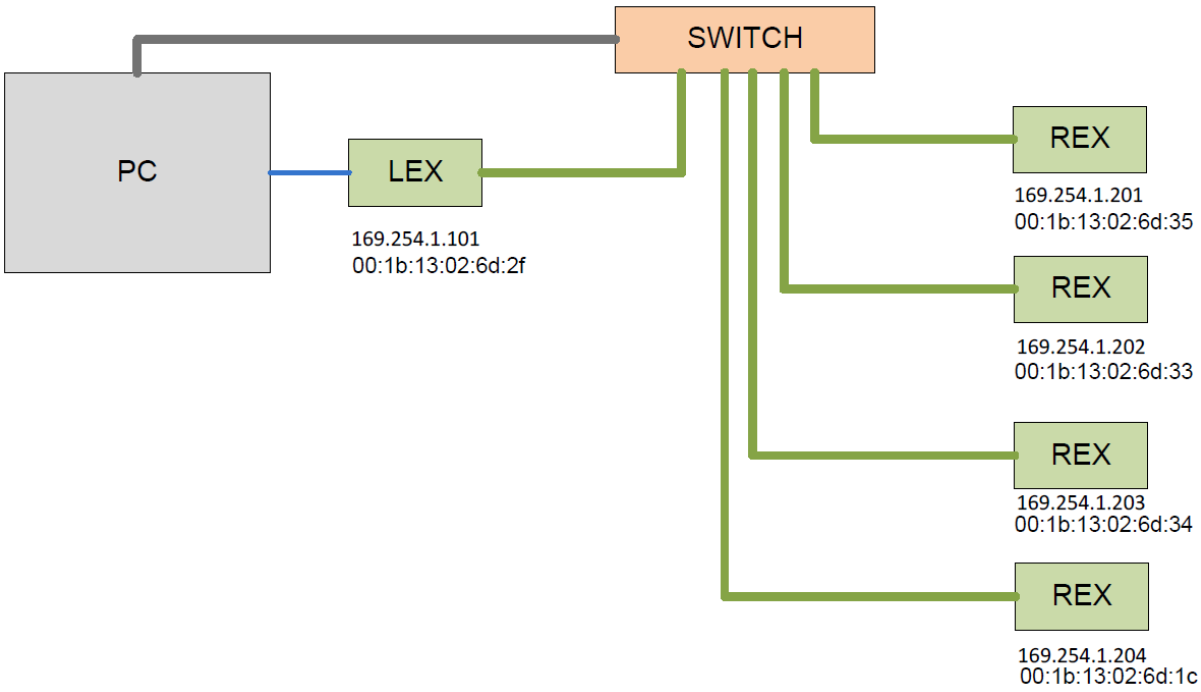
  `xusbnetcfg use_static_ip 192.168.1.102 00:1b:13:01:04:43 192.168.1.112 255.255.255.0 192.168.1.1`

The image below shows current IP of the devices and the result of setting a new IP address. It also shows the message if the device IP does not exist.



# Simultaneous Mode

Simultaneous Mode allows one LEX to be paired with up to seven REXs. In this example we shall pair one LEX with 4 REXs.



# Unpairing Devices

If the devices have been previously paired then the first step is to unpair the devices. There are two ways to do this.

### Unpairing Method#1: Unpairing All

1. Type `xusbnetcfg remove_all_pairings 169.254.1.101`

   Removes all pairings <LEX>

2. Type `xusbnetcfg remove_all_pairings 169.254.1.201`

   Removes all pairings <REX1>

3. Type `xusbnetcfg remove_all_pairings 169.254.1.202`

   Removes all pairings <REX2>

4. Type `xusbnetcfg remove_all_pairings 169.254.1.203`

   Removes all pairings <REX3>

5. Type `xusbnetcfg remove_all_pairings 169.254.1.204`

   Removes all pairings <REX4>

### Unpairing Method#2: Unpairing Individually

This method may be used if you wish to leave some existing pairings intact.

1. Type `xusbnetcfg remove_device_pairing 169.254.1.101 00:1b:13:02:6d:35`

   <LEX> <REX1>

2. Type `xusbnetcfg remove_device_pairing 169.254.1.101 00:1b:13:02:6d:33`

   <LEX> <REX2>

3. Type `xusbnetcfg remove_device_pairing 169.254.1.101 00:1b:13:02:6d:34`

   <LEX> <REX3>

4. Type `xusbnetcfg remove_device_pairing 169.254.1.101 00:1b:13:02:6d:1C`

   <LEX> <REX4>

5. Type `xusbnetcfg remove_device_pairing 169.254.1.201 00:1b:13:02:6d:2f`

   <REX1> <LEX>

6. Type `xusbnetcfg remove_device_pairing 169.254.1.202 00:1b:13:02:6d:2f`

   <REX2> <LEX>

7. Type `xusbnetcfg remove_device_pairing 169.254.1.203 00:1b:13:02:6d:2f`

   <REX3> <LEX>

8. Type `xusbnetcfg remove_device_pairing 169.254.1.204 00:1b:13:02:6d:2f`

   <REX4> <LEX>

# Pairing Devices.

**To simultaneously pair the devices:**

**LEX 1 to REX 1**

1. Type `xusbnetcfg pair_to_device 169.254.1.101 00:1b:13:02:6d:35` <LEX IP> <REX1 MAC>
2. Type `xusbnetcfg pair_to_device 169.254.1.201 00:1b:13:02:6d:2F` <REX1 IP> <LEX MAC>

**LEX 1 to REX 1 + REX 2**

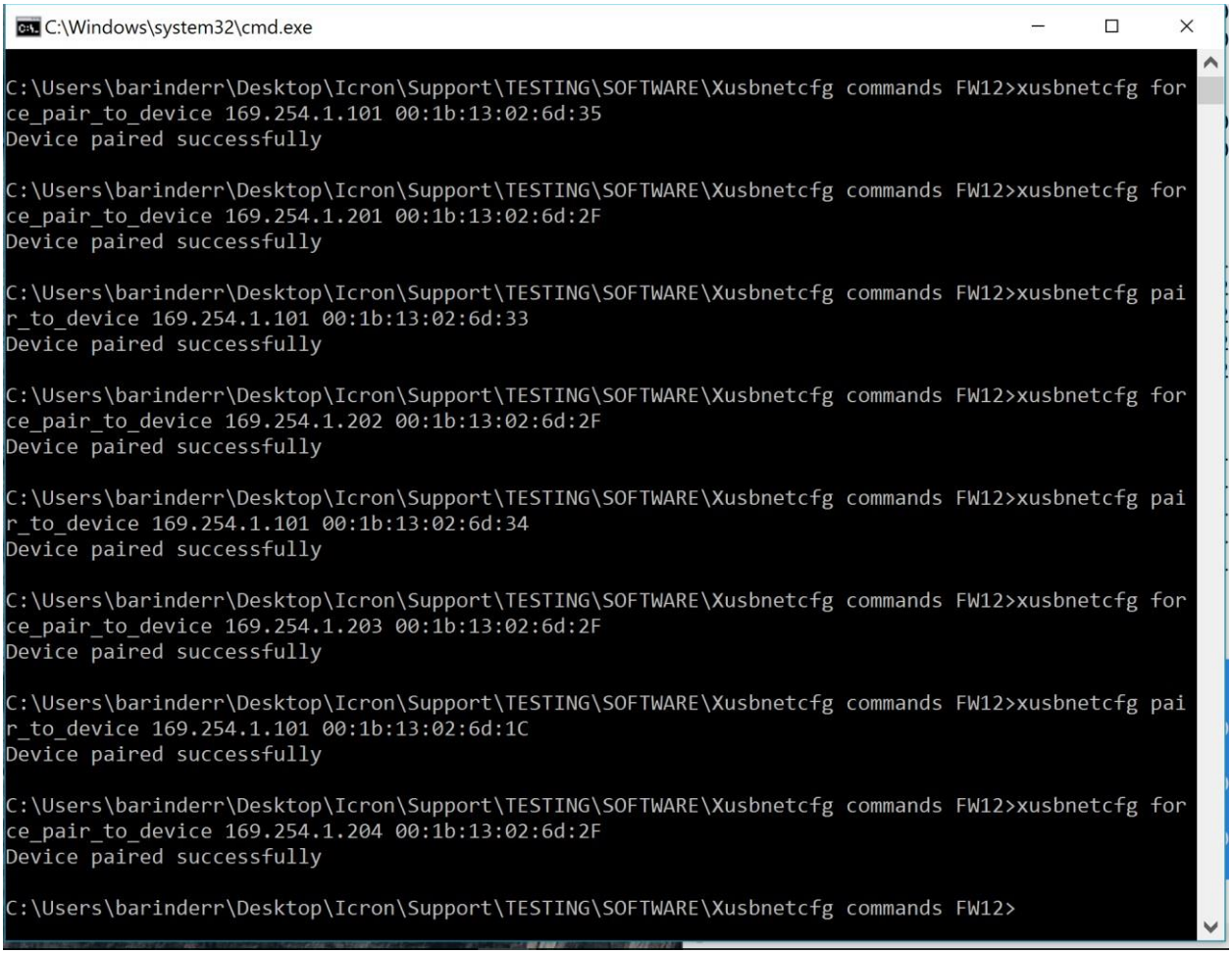
1. Type `xusbnetcfg pair_to_device 169.254.1.101 00:1b:13:02:6d:33` *<LEX IP> <REX2 MAC>*
2. Type `xusbnetcfg pair_to_device 169.254.1.202 00:1b:13:02:6d:2F` *<REX2 IP> <LEX MAC>*

**LEX 1 to REX 1 + REX 2 + LEX 3**

1. Type `xusbnetcfg pair_to_device 169.254.1.101 00:1b:13:02:6d:34` *<LEX IP> <REX3 MAC>*
2. Type `xusbnetcfg pair_to_device 169.254.1.203 00:1b:13:02:6d:2F` *<REX3 IP> <LEX MAC>*

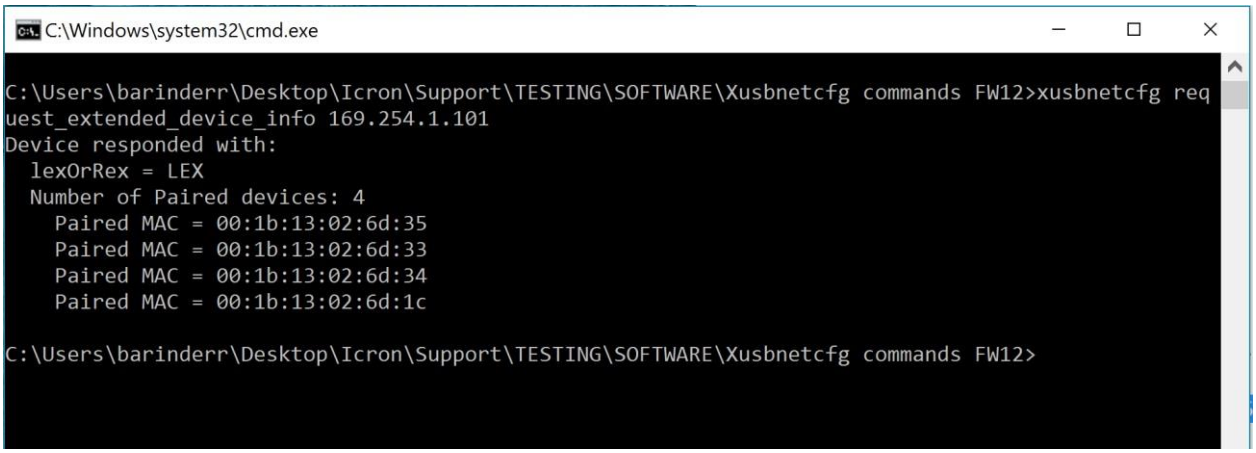
**LEX 1 to REX 1 + REX 2 + LEX 3 + LEX 4**

1. Type `xusbnetcfg pair_to_device 169.254.1.101 00:1b:13:02:6d:1C` *<LEX IP> <REX4 MAC>*
2. Type `xusbnetcfg pair_to_device 169.254.1.204 00:1b:13:02:6d:2F` *<REX4 IP> <LEX MAC>*




To verify, we can apply the following command to see what the LEX is paired with.

- Type `xusbnetcfg request_extended_device_info 169.254.1.101`




This example shows the LEX is paired to 4 REXs.

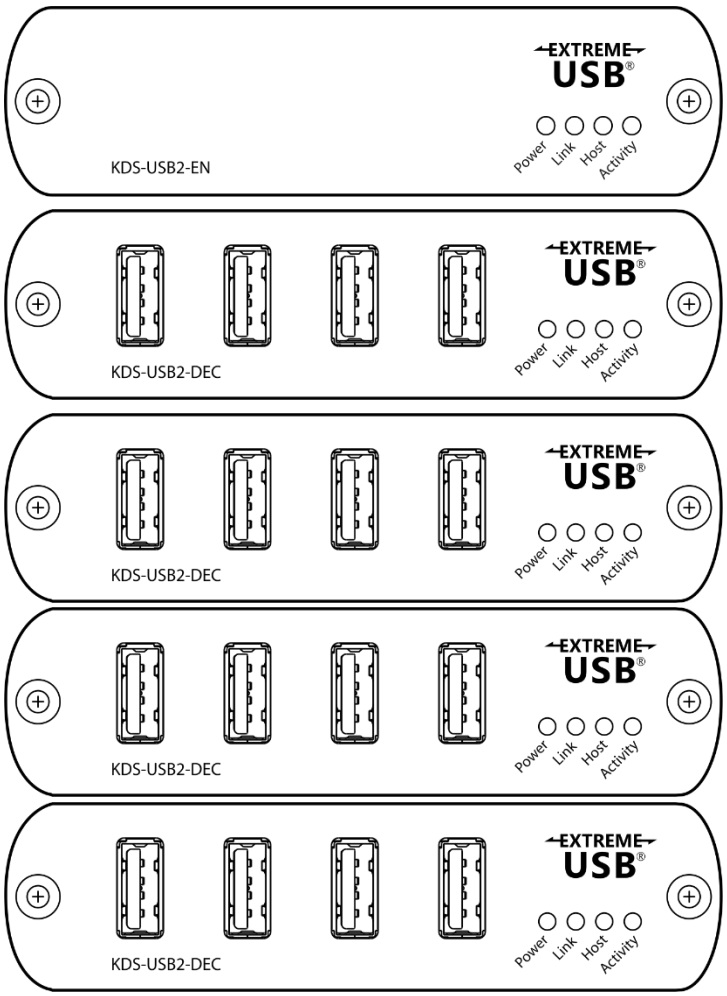
Under correct operation and with USB devices connected to each REX you will see:

**LEX device**

- Power LED lights
- Link LED lights
- Host LED lights
- Activity LED flashes

**Each REX device**

- Power LED lights
- Link LED lights
- Host LED lights
- Activity LED flashes



The warranty obligations of Kramer Electronics Inc. (“Kramer Electronics”) for this product are limited to the terms set forth below:

### What is Covered

This limited warranty covers defects in materials and workmanship in this product.

### What is Not Covered

This limited warranty does not cover any damage, deterioration or malfunction resulting from any alteration, modification, improper or unreasonable use or maintenance, misuse, abuse, accident, neglect, exposure to excess moisture, fire, improper packing and shipping (such claims must be presented to the carrier), lightning, power surges, or other acts of nature. This limited warranty does not cover any damage, deterioration or malfunction resulting from the installation or removal of this product from any installation, any unauthorized tampering with this product, any repairs attempted by anyone unauthorized by Kramer Electronics to make such repairs, or any other cause which does not relate directly to a defect in materials and/or workmanship of this product. This limited warranty does not cover cartons, equipment enclosures, cables or accessories used in conjunction with this product.

Without limiting any other exclusion herein, Kramer Electronics does not warrant that the product covered hereby, including, without limitation, the technology and/or integrated circuit(s) included in the product, will not become obsolete or that such items are or will remain compatible with any other product or technology with which the product may be used.

### How Long this Coverage Lasts

The standard limited warranty for Kramer products is seven (7) years from the date of original purchase, with the following exceptions:

1. All Kramer VIA hardware products are covered by a standard three (3) year warranty for the VIA hardware and a standard three (3) year warranty for firmware and software updates; all Kramer VIA accessories, adapters, tags, and dongles are covered by a standard one (1) year warranty.
2. Kramer fiber optic cables, adapter-size fiber optic extenders, pluggable optical modules, active cables, cable retractors, ring mounted adapters, portable power chargers, Kramer speakers, and Kramer touch panels are covered by a standard one (1) year warranty. Kramer 7-inch touch panels purchased on or after April 1st, 2020 are covered by a standard two (2) year warranty.
3. All Kramer Calibre products, all Kramer Minicom digital signage products, all HighSecLabs products, all streaming, and all wireless products are covered by a standard three (3) year warranty.
4. All Sierra Video MultiViewers are covered by a standard five (5) year warranty.
5. Sierra switchers & control panels are covered by a standard seven (7) year warranty (excluding power supplies and fans that are covered for three (3) years).
6. K-Touch software is covered by a standard one (1) year warranty for software updates.
7. All Kramer passive cables are covered by a lifetime warranty.

### Who is Covered

Only the original purchaser of this product is covered under this limited warranty. This limited warranty is not transferable to subsequent purchasers or owners of this product.

### What Kramer Electronics Will Do

Kramer Electronics will, at its sole option, provide one of the following three remedies to whatever extent it shall deem necessary to satisfy a proper claim under this limited warranty:

1. Elect to repair or facilitate the repair of any defective parts within a reasonable period of time, free of any charge for the necessary parts and labor to complete the repair and restore this product to its proper operating condition. Kramer Electronics will also pay the shipping costs necessary to return this product once the repair is complete.
2. Replace this product with a direct replacement or with a similar product deemed by Kramer Electronics to perform substantially the same function as the original product. If a direct or similar replacement product is supplied, the original product’s end warranty date remains unchanged and is transferred to the replacement product.
3. Issue a refund of the original purchase price less depreciation to be determined based on the age of the product at the time remedy is sought under this limited warranty.

### What Kramer Electronics Will Not Do Under This Limited Warranty

If this product is returned to Kramer Electronics or the authorized dealer from which it was purchased or any other party authorized to repair Kramer Electronics products, this product must be insured during shipment, with the insurance and shipping charges prepaid by you. If this product is returned uninsured, you assume all risks of loss or damage during shipment. Kramer Electronics will not be responsible for any costs related to the removal or re-installation of this product from or into any installation. Kramer Electronics will not be responsible for any costs related to any setting up this product, any adjustment of user controls or any programming required for a specific installation of this product.

### How to Obtain a Remedy Under This Limited Warranty

To obtain a remedy under this limited warranty, you must contact either the authorized Kramer Electronics reseller from whom you purchased this product or the Kramer Electronics office nearest you. For a list of authorized Kramer Electronics resellers and/or Kramer Electronics authorized service providers, visit our web site at www.kramerav.com or contact the Kramer Electronics office nearest you.

In order to pursue any remedy under this limited warranty, you must possess an original, dated receipt as proof of purchase from an authorized Kramer Electronics reseller. If this product is returned under this limited warranty, a return authorization number, obtained from Kramer Electronics, will be required (RMA number). You may also be directed to an authorized reseller or a person authorized by Kramer Electronics to repair the product.

If it is decided that this product should be returned directly to Kramer Electronics, this product should be properly packed, preferably in the original carton, for shipping. Cartons not bearing a return authorization number will be refused.

### Limitation of Liability

THE MAXIMUM LIABILITY OF KRAMER ELECTRONICS UNDER THIS LIMITED WARRANTY SHALL NOT EXCEED THE ACTUAL PURCHASE PRICE PAID FOR THE PRODUCT. TO THE MAXIMUM EXTENT PERMITTED BY LAW, KRAMER ELECTRONICS IS NOT RESPONSIBLE FOR DIRECT, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES RESULTING FROM ANY BREACH OF WARRANTY OR CONDITION, OR UNDER ANY OTHER LEGAL THEORY. Some countries, districts or states do not allow the exclusion or limitation of relief, special, incidental, consequential or indirect damages, or the limitation of liability to specified amounts, so the above limitations or exclusions may not apply to you.

### Exclusive Remedy

TO THE MAXIMUM EXTENT PERMITTED BY LAW, THIS LIMITED WARRANTY AND THE REMEDIES SET FORTH ABOVE ARE EXCLUSIVE AND IN LIEU OF ALL OTHER WARRANTIES, REMEDIES AND CONDITIONS, WHETHER ORAL OR WRITTEN, EXPRESS OR IMPLIED. TO THE MAXIMUM EXTENT PERMITTED BY LAW, KRAMER ELECTRONICS SPECIFICALLY DISCLAIMS ANY AND ALL IMPLIED WARRANTIES, INCLUDING, WITHOUT LIMITATION, WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. IF KRAMER ELECTRONICS CANNOT LAWFULLY DISCLAIM OR EXCLUDE IMPLIED WARRANTIES UNDER APPLICABLE LAW, THEN ALL IMPLIED WARRANTIES COVERING THIS PRODUCT, INCLUDING WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, SHALL APPLY TO THIS PRODUCT AS PROVIDED UNDER APPLICABLE LAW.

IF ANY PRODUCT TO WHICH THIS LIMITED WARRANTY APPLIES IS A “CONSUMER PRODUCT” UNDER THE MAGNUSON-MOSS WARRANTY ACT (15 U.S.C.A. §2301, ET SEQ.) OR OTHER APPLICABLE LAW, THE FOREGOING DISCLAIMER OF IMPLIED WARRANTIES SHALL NOT APPLY TO YOU, AND ALL IMPLIED WARRANTIES ON THIS PRODUCT, INCLUDING WARRANTIES OF MERCHANTABILITY AND FITNESS FOR THE PARTICULAR PURPOSE, SHALL APPLY AS PROVIDED UNDER APPLICABLE LAW.

### Other Conditions

This limited warranty gives you specific legal rights, and you may have other rights which vary from country to country or state to state.

This limited warranty is void if (i) the label bearing the serial number of this product has been removed or defaced, (ii) the product is not distributed by Kramer Electronics or (iii) this product is not purchased from an authorized Kramer Electronics reseller. If you are unsure whether a reseller is an authorized Kramer Electronics reseller, visit our web site at www.kramerav.com or contact a Kramer Electronics office from the list at the end of this document.

Your rights under this limited warranty are not diminished if you do not complete and return the product registration form or complete and submit the online product registration form. Kramer Electronics thanks you for purchasing a Kramer Electronics product. We hope it will give you years of satisfaction.

KRAMER

P/N: 2900-301401 Rev: 1

SAFETY WARNING

Disconnect the unit from the power supply before opening and servicing

For the latest information on our products and a list of Kramer distributors, visit our website where updates to this user manual may be found.

We welcome your questions, comments, and feedback.



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