

**PDB-5**  
User's Guide

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# SYSTEM OVERVIEW

Topics covered in this chapter include:

- [Important Safety Instructions](#) (p. 1)
- [Basic System Info](#) (p. 3)
- [PDB-5 Overview](#) (p. 4)
- [Status Indicators](#) (p. 5)
- [The LEDs on the rear of the PDB-5 indicate PXL data status as follows:](#) (p. 5)

## Important Safety Instructions

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1. Read these instructions.
2. Keep these instructions.
3. Heed all warnings.
4. Follow all instructions.
5. Do not use this apparatus near water.
6. Clean only with dry cloth.
7. Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.
8. Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
9. Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wide blade or the third prong are provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
10. Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.
11. Only use attachments/accessories specified by the manufacturer.
12. Use only with the cart, stand, tripod, bracket, or table specified by the manufacturer, or sold with the apparatus. When a cart is used, use caution when moving the cart/apparatus combination to avoid injury from tip-over.
13. Unplug this apparatus during lightning storms or when unused for long periods of time.



14. Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.



Risk of electrical shock. No user-serviceable parts inside.

Observe all applicable electrical codes.

The power outlet with a protective earthing connection shall be installed near the equipment and shall be easily accessible.



Do not hot plug any cables. Damage to the connector pins may occur. Resulting damage is not covered under warranty.

Unit shall not be exposed to dripping or splashing.

To prevent injury, this apparatus must be securely attached to the floor/wall in accordance with the installation instructions.

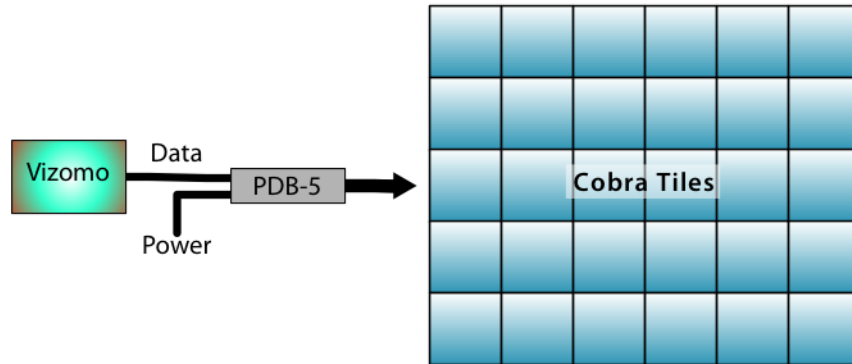
To reduce the risk of electric shock, do not expose this apparatus to rain or moisture

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## Basic System Info

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The diagram below provides an overview of a typical system using the PDB-5 along with Cobra tiles and a Vizomo processor.



**Figure 1.1** Basic Signal Flow

The Vizomo processor provides video data to the PDB-5 which combines that data with AC power and sends it to the Cobra tiles on one cable.

Detailed information on power and data distribution is provided in [Chapter 2- Operations, \(p. 6\)](#).

For information on the Vizomo processor, consult the Vizomo User's Guide, available on the Element Labs website (<http://www.elementlabs.com/vizomo>).

For information on the Cobra fixtures,  
consult the Cobra Installation Guide,

available on the Element Labs website  
(<http://www.elementlabs.com/cobra>).

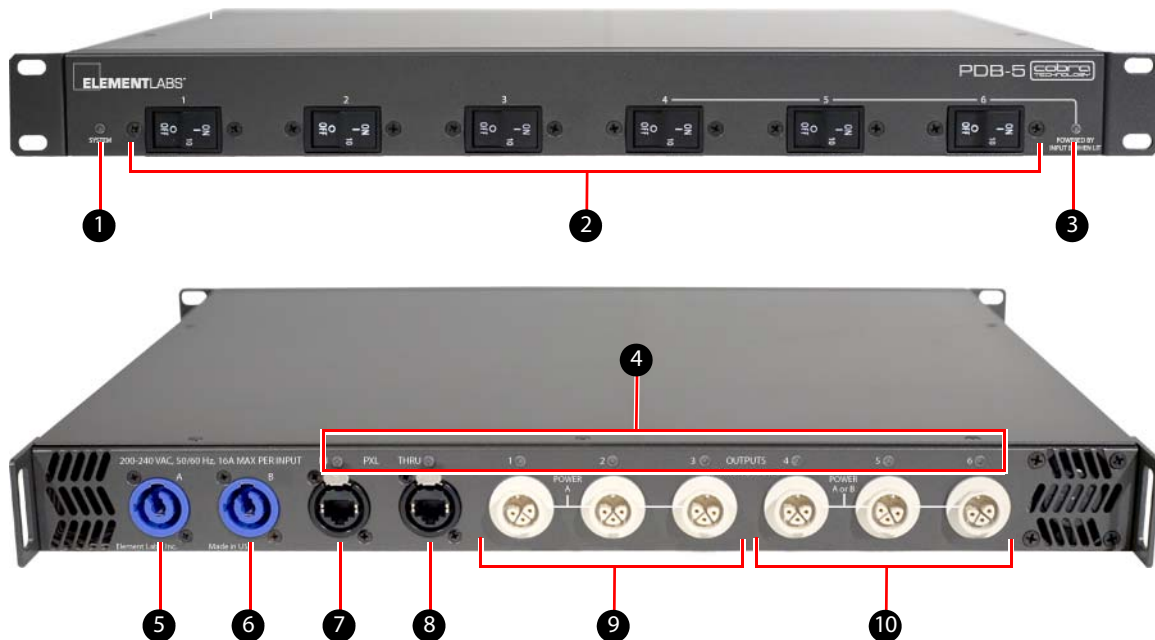
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**NOTE** When first powered on, the PDB-5 will take several minutes to be fully booted and configured.

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## PDB-5 Overview

The PDB-5 handles the power and data distribution for fixtures using the PXL data format, such as Cobra tiles, P1 Nodes, etc.



**1 System Status Indicator**

Indicates power and boot status.

**2 Circuit Breakers**

2-pole, 10A magnetic hydraulic circuit breakers for each of the 6 Cobra cable outputs.

**3 Power Input B Indicator**

Indicates presence of power input through connector B on the back panel. Input B powers outputs 4-6.

**4 Port Status Indicators**

Indicates link integrity, disabled, activity, speed, full-duplex.

**5 AC Power Input A**

200-240 VAC, 50/60 Hz, 16 A max. via PowerCon (blue) connector.

**6 AC Power Input B**

200-240 VAC, 50/60 Hz, 16 A max. via PowerCon (blue) connector.

**7 PXL Data Input**

Data input via RJ45 EtherCon (shown) or optional Fiber Optic (not shown) connector.

**8 PXL Data Output**

Data output via RJ45 EtherCon connector.

**9 Cobra Cable Outputs 1-3**

Integrated power and data outputs 1-3 via custom Cobra connectors. Powered by AC Power Input A.

**10 Cobra Cable Outputs 4-6**

Integrated power and data outputs via custom Cobra connectors. Powered by AC Power Input A, or B if present.

## Status Indicators

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### System Status Indicator

The LED on the front of the PDB-5 indicates system status as follows:

**Table 1.2** System Status Indicator States

Color	State	Description
Off	Steady	System is not powered on.
Green	Blinking	System is booting up.
Green	Steady	System is operating correctly.
Amber	Steady	System is receiving power, but not functioning correctly.

### Port Status Indicator

The LEDs on the rear of the PDB-5 indicate PXL data status as follows:

**Table 1.3** Port Status Indicator States

Color	State	Description
Off	Steady	No link.
Green	Steady	Link present.
Green	Blinking	Activity. Port is sending or receiving data.
Amber/Green	Alternating	Link fault.
Amber	Steady	Port is blocked and not forwarding data.
Amber	Blinking	Port is blocked and is not sending or receiving packets.

## OPERATIONS

Topics covered in this chapter include:

- [General Operations](#), (p. 6)
- [Cabling Overview](#), (p. 7)
- [Power Input/Output](#), (p. 8)
- [Data Input](#), (p. 9)
- [Cables and Connectors](#), (p. 10)

### General Operations

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The steps below provide the basic information to begin operating the PDB-5. Refer to [PDB-5 Overview](#) (p. 4) for connection information.

1. Connect the PXL data cable to the PXL Data Input jack on the back of the PDB-5.
2. Connect the power and data cable(s) from the fixture(s) to the appropriate Cobra Cable output(s) on the back of the PDB-5.
3. Connect the PowerCon end of the power cable to the AC Power Input A jack on the back of the PDB-5.
4. Connect the IEC end of the power cable above to a 200-240 VAC power source.

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**NOTE** When first powered on, the PDB-5 will take several minutes to be fully booted and configured.

---

## Cabling Overview

All power & data cabling between the PDB-5 and Cobra tiles is done through integrated cabling with color-coded male or female connectors.

Cobra connectors on the back of a PDB-5 and Cobra tile are color-coded as follows:

- Black Connector = Power & Data In
- White Connector = Power & Data Out

When interconnecting Cobra tiles, always attach the black connector to the black jack and the white connector to the white jack.

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**NOTE** The location of the white and black connectors is reversed between Cobra tiles for rental/staging and fixed installations.

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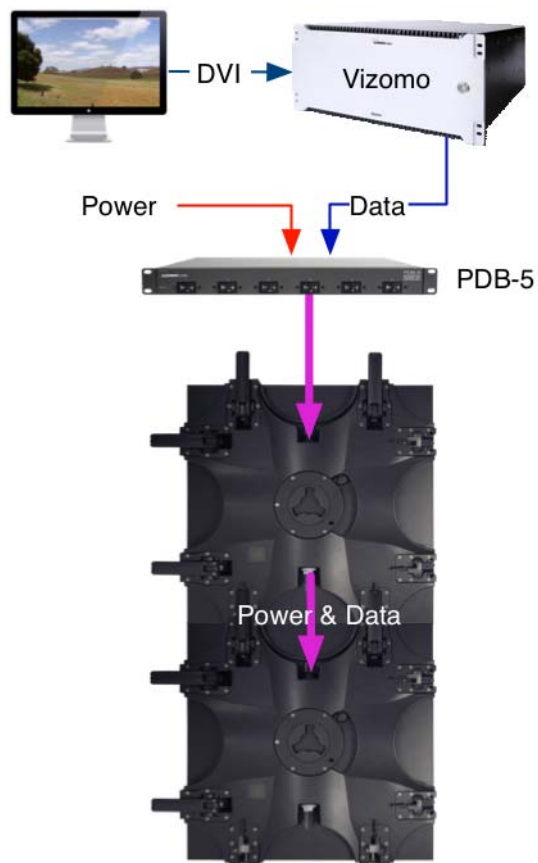


Figure 2.1 Power & Data Distribution Diagram

## Power Input/Output

Each PDB-5 has 2x 16 amp inputs and 6x 10 amp outputs with breakers for AC power distribution. The limit for each PDB-5 output is 10 A, with a total output of 32 A maximum per PDB-5, if both inputs A and B are used. The maximum number of Cobra tiles per PDB-5 port is 25.

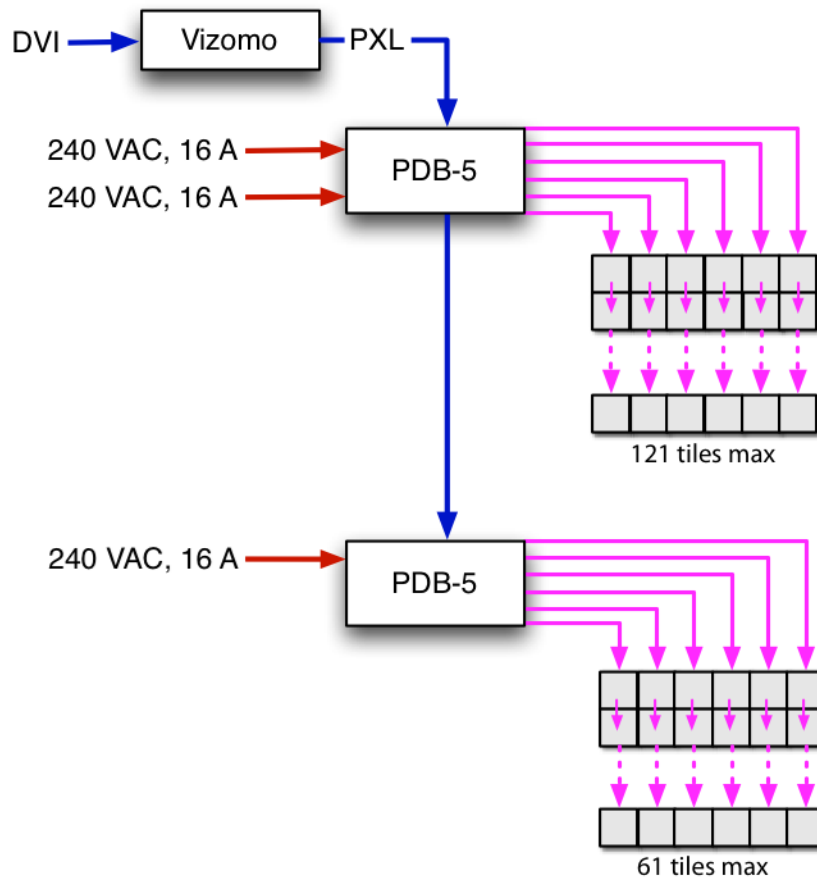


Figure 2.2 Power & Data Cabling Example - Cobra Tiles



Do not hot plug any cables. Damage to the connector pins may occur. Resulting damage is not covered under warranty.

Observe the following power guidelines when setting up your Cobra display. The tables below indicate maximum power consumption.

### Cobra 11

Max watts = TBA

Voltage	Amperage <sup>1</sup>		Max Panels per PDB-5 <sup>2</sup>	
	per Panel	per 25 Panels	w/1x16 A Input	w/2x16 A Inputs
240 VAC	TBA	TBA	TBA	TBA
220 VAC	TBA	TBA	TBA	TBA
208 VAC	TBA	TBA	TBA	TBA
200 VAC	TBA	TBA	TBA	TBA

1. PDB-5 has 32A limit (2x 16 A).
2. Maximum Cobra 11 panels per PDB-5 Port is 16.

### Cobra 16

Max watts @ 8000 nits = 55 w

Voltage	Amperage <sup>1</sup>		Max Panels per PDB-5 <sup>2</sup>	
	per Panel	per 25 Panels	w/1x16 A Input	w/2x16 A Inputs
240 VAC	0.23 A	5.7 A	70	140
220 VAC	0.25 A	6.3 A	64	128
208 VAC	0.26 A	6.6 A	61	121
200 VAC	0.28 A	6.9 A	58	116

1. PDB-5 has 32A limit (2x 16A).
2. Maximum Cobra 16 panels per PDB-5 Port is 25.

When running typical video content, the duty cycle (average power consumption) is about 30% of maximum.

## Data Input

Cobra and other PXL data-driven fixtures are designed to work exclusively with Element Labs' Vizomo processor.

Connect the User Ethernet port on the back of the Vizomo to the PXL input on the back of the PDB-5 with a CAT 5e patch cable. Then connect the appropriate output (1-6) to the Cobra tile input connector.

For detailed information on the Vizomo processor, consult the Vizomo User's Guide, available on the Element Labs website (<http://www.elementlabs.com/vizomo>).

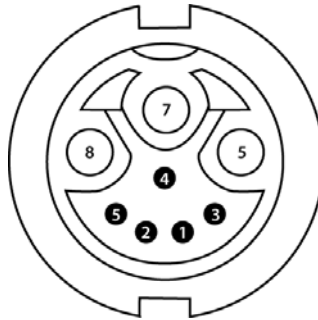
## Cables and Connectors

### Cobra Cable Pinouts

The following is the pinout information for the combined power and data cabling used in the PDB-5. The sex of the connector is determined by the power pins (the 3 largest pins).

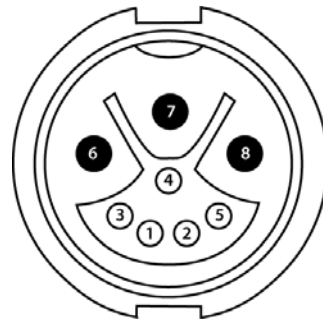


#### Power / Data Cable Female



Pin	Color	Description/Function
1	Orange/White	AWG 26 / TX+
2	Blue/White	AWG26 / RX+
3	Orange	AWG 26 / TX-
4	Shield	Drain
5	Blue	AWG26 / RX-
6	Brown	AWG18 / Phase
7	Green/Yellow	AWG 18 / Earth Ground
8	Blue	AWG18 / Neutral

#### Power / Data Cable Male



Notes: TX+ and TX- are twisted pair  
RX+ and RX- are twisted pair  
Both twisted pairs are shielded

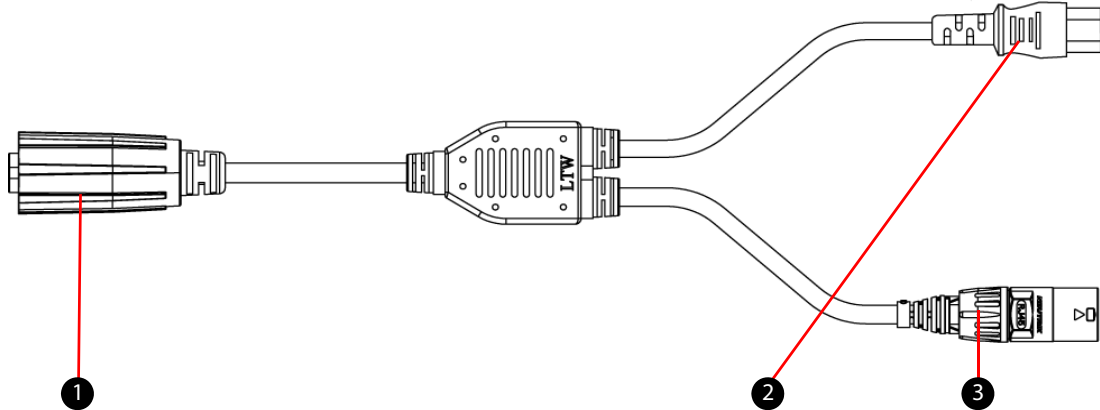
### Cobra Cable Couplers

#### Male - Female Coupler (p/n 656-0500)

The male-female coupler can be used to extend the length of a Cobra cable.



### Break-Out Cable (p/n 350-0675)



**1 Power and Data Input (Male)**

Combined power and data connector via proprietary Cobra Cable connector.

**2 Power Output**

AC power output via IEC female connector.

**3 Data Output**

PXL data output via Neutrik EtherCon (RJ45) connector.

## A

## SPECIFICATIONS

**PDB-5 Specifications**

Dimensions	483 x 406 x 43 mm [19 x 16 x 1.7 inches]
Mounting	Standard EIA 1U chassis
	Rack ears may be mounted on front or back
Weight	3.5 kg [7.7 lbs.]
Construction	Powder coated aluminum with steel rack ears
Environmental Rating	IP20
Compliance (pending)	ETL, CE, FCC & EN55022 Class A, RoHS
Mains Input / Output	2x 200 – 240 VAC 50/60 Hz, 16 A
Mains Connectors	2x 20 A PowerCon
Data Input / Output	PXL (from Vizomo Video Processor)
Data Input Connectors	RJ45 EtherCon In and Out (loop)
	Optional Fiber Optic Input
Cobra Outputs	Six (6) Cobra integrated power + data ports
Output Protection	2-pole, 10 A magnetic hydraulic circuit breaker per port
Output Capacity	10 A max per port, 32 A max total per PDB-5
	25 Cobra 16 tiles max per port
Indicators	Per-port status (Link integrity, disabled, activity, speed, full-duplex)
	System status
Thermal Output	~100 BTU/hr
Acoustic Noise	TBA

Operating Temperature	Normal Operating Conditions: -5°C to +45°C [20°F to 113°F] up to 1500 m [5,000 feet] -5°C to +40°C [20°F to 104°F] up to 3000 m [10,000 feet] -5°C to +35°C [20°F to 95°F] up to 4000 m [13,000 feet]
	Short-Term* Exceptional Operating Conditions: -5°C to +55°C [20°F to 131°F] at sea level -5°C to +50°C [20°F to 122°F] up to 1500 m [5,000 feet] -5°C to +45°C [20°F to 113°F] up to 3000 m [10,000 feet] -5°C to +40°C [20°F to 104°F] up to 4000 m [13,000 feet]
	* Not more than following in one year period: 96 consecutive hours, or 360 hours total, or 15 occurrences

## ORDERING INFO

## PDB-5 Parts and Accessories

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Part #	Description
420-0135	PDB-5 (Power & Data Distribution)
435-0119	1U Rack Shell
350-0207	EtherCon Cable - .5 m
350-0143	EtherCon Cable - 1 m
350-0136	EtherCon Cable - 3 m
350-0209	EtherCon Cable - 10 m
350-0210	EtherCon Cable - 30 m
350-0588	EtherCon Cable - 100 m
656-0210	EtherCon Coupler F/F
350-0654	Cobra Cable - .25 m
350-0661	Cobra Cable - 1 m
350-0656	Cobra Cable - 2 m
350-0658	Cobra Cable - 3 m
350-0655	Cobra Cable - 10 m
350-0657	Cobra Cable - 14 m
350-0659	Cobra Cable - 30 m
350-0672	Cobra Cable - 100 m
350-00660	Cobra Break-In Cable (Power & Data In)
350-0663	Cobra Break-In Cable, long, hardwire (Power & Data In)
350-0675	Cobra Break-Out Cable (Power & Data Out)
656-0500	Cobra Cable Coupler M/F

## NOTES

**PDB-5 User's Guide**

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**Safety Information**

The symbols below are used throughout this manual to identify important safety information. Heed all warnings and safety information.

Symbol	Meaning
	<b>Warning, Danger, or Caution</b> Risk of injury to yourself or the product.
	<b>Risk of Electrical Shock</b> Risk of severe electrical shock.



Risk of electrical Shock. No user-serviceable parts inside.

Observe all applicable electrical codes.

The power outlet shall be installed near the equipment and shall be easily accessible.

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## **Warranty Information**

Element Labs, Inc. warrants the PDB-5, a hardware product, against defects in materials and workmanship under normal use for a period of one (1) year from the date of retail purchase by the original end-user purchaser.

Element Labs, Inc. does not warrant that the operation of the product will be uninterrupted or error free. Element Labs Inc. is not responsible for damage arising from failure to follow instructions relating to the product's use.

## **Federal Communications Commission (FCC Statement)**

The PDB-5 has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules.

These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

## **Changes**

Element Labs provides this manual 'as is' without warranty of any kind, either expressed or implied, including but not limited to the implied warranties or merchantability and fitness for a particular purpose. Element Labs may make improvements and/or changes to the product(s) and/or the program(s) described in this publication at any time without notice.

This publication could contain technical inaccuracies or typographical errors. Changes are periodically made to the information in this publication; these changes are incorporated in new editions of this publication.

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## Related Information

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The following links provide detailed information on various hardware products mentioned in this manual.

### **Cobra™**

- Information: <http://www.elementlabs.com/cobra>
- Manual: <http://www.elementlabs.com/support>

### **RasterMAPPER™**

- Information: <http://www.elementlabs.com/support>
- Manual: <http://www.elementlabs.com/support>

### **Vizomo™**

- Information: <http://www.elementlabs.com/vizomo>
- Manual: <http://www.elementlabs.com/support>

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