



USB 3.0 Active Extension Cable

## User Manual

Extend USB 3.0 up to 15 meters (nearly 50 feet) over active copper cabling.



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This equipment generates, uses, and can radiate radio-frequency energy, and if not installed and used properly, that is, in strict accordance with the manufacturer's instructions, may cause interference to radio communication. It has been tested and found to comply with the limits for a Class A computing device in accordance with the specifications in Subpart B of Part 15 of FCC rules, which are designed to provide reasonable protection against such interference when the equipment is operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference, in which case the user at his own expense will be required to take whatever measures may be necessary to correct the interference.

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

This digital apparatus does not exceed the Class A limits for radio noise emission from digital apparatus set out in the Radio Interference Regulation of Industry Canada.

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## Instrucciones de Seguridad (Normas Oficiales Mexicanas Electrical Safety Statement)

1. Todas las instrucciones de seguridad y operación deberán ser leídas antes de que el aparato eléctrico sea operado.
2. Las instrucciones de seguridad y operación deberán ser guardadas para referencia futura.
3. Todas las advertencias en el aparato eléctrico y en sus instrucciones de operación deben ser respetadas.
4. Todas las instrucciones de operación y uso deben ser seguidas.
5. El aparato eléctrico no deberá ser usado cerca del agua—por ejemplo, cerca de la tina de baño, lavabo, sótano mojado o cerca de una alberca, etc.
6. El aparato eléctrico debe ser usado únicamente con carritos o pedestales que sean recomendados por el fabricante.
7. El aparato eléctrico debe ser montado a la pared o al techo sólo como sea recomendado por el fabricante.
8. Servicio—El usuario no debe intentar dar servicio al equipo eléctrico más allá a lo descrito en las instrucciones de operación. Todo otro servicio deberá ser referido a personal de servicio calificado.
9. El aparato eléctrico debe ser situado de tal manera que su posición no interfiera su uso. La colocación del aparato eléctrico sobre una cama, sofá, alfombra o superficie similar puede bloquea la ventilación, no se debe colocar en libreros o gabinetes que impidan el flujo de aire por los orificios de ventilación.
10. El equipo eléctrico debe ser situado fuera del alcance de fuentes de calor como radiadores, registros de calor, estufas u otros aparatos (incluyendo amplificadores) que producen calor.
11. El aparato eléctrico deberá ser conectado a una fuente de poder sólo del tipo descrito en el instructivo de operación, o como se indique en el aparato.
12. Precaución debe ser tomada de tal manera que la tierra física y la polarización del equipo no sea eliminada.
13. Los cables de la fuente de poder deben ser guiados de tal manera que no sean pisados ni pellizcados por objetos colocados sobre o contra ellos, poniendo particular atención a los contactos y receptáculos donde salen del aparato.
14. El equipo eléctrico debe ser limpiado únicamente de acuerdo a las recomendaciones del fabricante.
15. En caso de existir, una antena externa deberá ser localizada lejos de las líneas de energía.
16. El cable de corriente deberá ser desconectado del cuando el equipo no sea usado por un largo periodo de tiempo.
17. Cuidado debe ser tomado de tal manera que objetos líquidos no sean derramados sobre la cubierta u orificios de ventilación.
18. Servicio por personal calificado deberá ser provisto cuando:
  - A: El cable de poder o el contacto ha sido dañado; u
  - B: Objetos han caído o líquido ha sido derramado dentro del aparato; o
  - C: El aparato ha sido expuesto a la lluvia; o
  - D: El aparato parece no operar normalmente o muestra un cambio en su desempeño; o
  - E: El aparato ha sido tirado o su cubierta ha sido dañada.

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# Chapter 1: Specifications

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## 1. Specifications

<b>Range</b>	15 meters (49.21 feet) over active copper cable
<b>Speed</b>	USB 3.0: Up to 5 Gbps <i>NOTE: The USB3ACE-15 is not backward-compatible with USB 2.0/1.1.</i>
<b>Physical</b>	
<b>Connectors</b>	USB connector on device side: (1) USB 3.0 Type A locking receptacle; USB connectors on host side: (1) USB 3.0 Type A host connector, (1) USB 3.0 Type A power connector (required for devices drawing more than 2.5 W)
<b>Cable Diameter</b>	6.9 mm (2.7")
<b>Jacket Material</b>	PVC
<b>Bend Radius</b>	28 mm (1.1")
<b>Mounting Slots on Device Side</b>	Slots for cable ties
<b>Power</b>	
<b>Power Source</b>	Bus power
<b>Available Power to Device</b>	5 V, 900 mA*  *When both connectors are plugged into the host computer.
<b>Environmental</b>	
<b>Temperature Tolerance</b>	Operating: 32 to 113° F (0 to 45° C); Storage: -4 to +158° F (-20 to +70° C)
<b>Storage Humidity</b>	10 to 90% relative humidity, noncondensing
<b>Compliance</b>	
<b>EMC</b>	FCC (Class B), CE (Class B)
<b>Environmental</b>	RoHS2 (CE)
<b>Flammability</b>	VW-1 (UL 1581)
<b>Machine Vision</b>	Works with AIA USB3 Vision™ compliant devices
<b>Warranty</b>	2 years

## 2. Overview

### 2.1 Introduction

The USB 3.0 Active Extension Cable (USB3ACE-15M) incorporates patented ExtremeUSB® technology, enabling users to extend beyond an approximate 9.6-foot (3-meter) cable limit for USB 3.0 peripheral devices. With the USB3ACE-15M, USB 3.0 devices can be extended 49.21 feet (15 meters) from the computer.

### 2.2 Features

- Extends a USB 3.0 connection up to 15 meters (49.21 feet).
- Supports USB 3.0 throughputs up to 5 Gbps.
- Bus-powered from host computer—no external power supply needed.
- USB 3.0 device port provides 5-V, 900-mA power.
- Use the cable's second USB power connector if your device needs additional power.
- Includes a Locking USB connector.
- Slots on device port simplify cable-tie mounting.
- Rugged grade cabling.
- A Status LED at device port indicates power, enumeration, and over-current.
- Works with AIA USB3 Vision™ compliant devices.
- Includes the ExtremeUSB® suite of features:
  - Transparent USB extension.
  - True plug and play; no software drivers required.
  - Works with all major operating systems: Windows®, Mac OS X®, and Linux®.

### 2.3 What's Included

- 15-m (49.21-ft.) USB 3.0 active copper cable
- Zip-tie strap
- Printed quick start guide

This user manual/installation guide can be downloaded from the Black Box Web site.

To download this user manual/installation from the Web site:

1. Go to [www.blackbox.com](http://www.blackbox.com)
2. Enter the part number (USB3ACE-15M) in the search box.
3. Click on the "Resources" tab on the product page, and select the document you wish to download.

### 2.4 Hardware Description

Figure 2-1 shows the USB 3.0 Active Extension Cable (USB3ACE-15M). Table 2-1 describes its components.

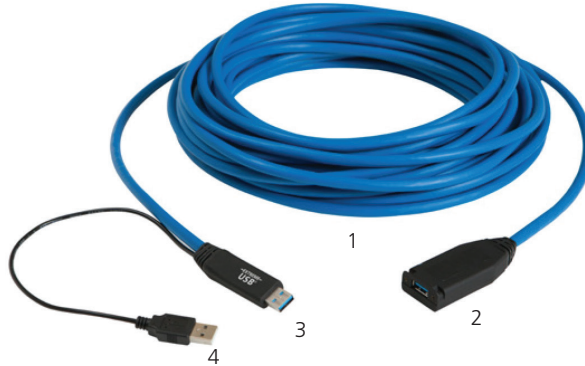


Figure 2-1. USB 3.0 Active Extension Cable (USB3ACE-15M).

Table 2-1. Components of the USB 3.0 Active Extension Cable (USB3ACE-15M).

Number in Figure 2-1	Component	Status	Description
1	Power/Status LED	Green	Active cable is powered on.
		Red	Active cable is not powered on or not detected by host.
2	USB 3.0 Type A locking receptacle	Connected and locked	Connects to USB 3.0 device via a locking-type connector as per AIA USB3 Vision™ standards.
		Connected, but not locked	USB standard connector is attached to a USB 3.0 device.
		Not connected	USB connector on cable is not attached to a USB 3.0 device.
3	USB 3.0 host connector	Connected	Attached to USB 3.0 port on computer.
4	USB power connector	Optional*	You can connect an additional USB power cable to the host computer. We recommend plugging this connector into the host computer when you are using USB devices that draw more than 2.5 W of power.

\*Use this connector when you are linking to USB devices that draw more than 2.5 W of power.



## 3. Installation

### 3.1 Example Application



Figure 3-1. Typical application.

### 3.2 Additional Items You Will Need for Installation

- USB 3.0 compatible computer (host computer) with a USB 3.0 compliant operating system.
- USB 3.0 compatible device (for example, camera or storage drive).
- Optional cable to connect the USB device to the USB3ACE-15M (if required, for example, a USB 3.0 camera).

**CAUTION:** The USB3ACE-15M is not backward-compatible with USB 2.0/1.1 devices. Per the USB-IF specification, USB 3.0 devices must attempt enumeration on USB 3.0 first. If your USB 3.0 device enumerates on USB 2.0 first, then your device is out of spec and will not operate with this cable.

**CAUTION:** The USB3ACE-15M will not operate on a USB 2.0 port; make sure you connect it to a USB 3.0 port.

#### Connection Instructions

### 3.3 Installation Steps

Before you get started, ensure that all the drivers required for your USB 3.0 device(s) are installed.

1. Plug the USB3ACE-15M's USB 3.0 host connector into a USB 3.0 port on your computer.
2. We recommend plugging the USB3ACE-15M's USB power connector into any USB port on your computer. This step is essential if your USB 3.0 device is not self-powered or draws more than 2.5 W of power.
3. Attach your USB 3.0 device into the SP3001-15's USB 3.0 receptacle. AIA USB3 Vision locking USB connectors are supported if needed.

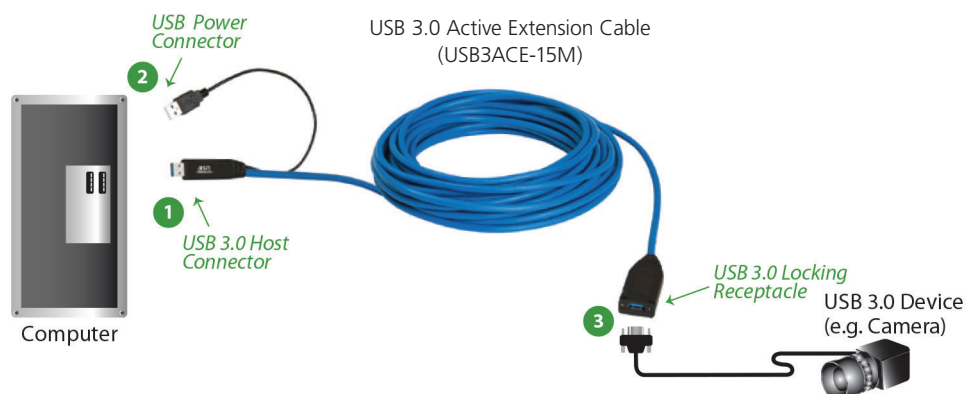


Figure 3-2. Installation steps.

## Chapter 3: Installation

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Conveniently secure your configuration by wrapping the included cable tie around the USB 3.0 receptacle's two mounting slots.



Figure 3-3. Cable tie mounting slots on USB 3.0 receptacle.

*NOTE: Most USB 3.0 self-powered devices and flash drives require less than 2.5 W of power, while many of the USB 3.0 cameras need more than 2.5W of power. When more than 2.5W of power is required, plug both connectors of the USB3ACE-15M into the host computer.*

*CAUTION: The USB3ACE-15M is a rugged and robust cable. However, bending this cable beyond the bend radius of 28-mm (1.10") might damage the cable. For optimal performance, use the USB3ACE-15M according to the product specifications (see Chapter 1).*

### 3.4 Compatibility

The USB3ACE-15M complies with USB 3.0 specifications governing the design of USB devices. However, we do not guarantee that all USB 3.0 devices are compatible with the USB3ACE-15M, because some configurations might impact the operation of USB 3.0 devices over extended distances.

*CAUTION: The USB3ACE-15M supports only USB 3.0 devices. USB 2.0 and 1.1 devices will not function using this cable.*

## 4. Troubleshooting

### 4.1 Troubleshooting Tips

The following table provides troubleshooting tips. The topics are arranged in the order in which they should be executed in most situations. If you are unable to resolve the problem after following these instructions, please contact Black Box Technical Support at 724-746-5500 or [info@blackbox.com](mailto:info@blackbox.com) for further assistance.

Table 4-1. Troubleshooting tips.

Problem	Cause	Solution
The LED on the cable is red.	<ul style="list-style-type: none"> <li>The USB 3.0 device draws more than 2.5 W of power and the USB power connector is not plugged in.</li> <li>The USB3ACE-15M is not recognized by the host computer.</li> <li>The host computer is not providing enough power.</li> <li>The USB3ACE-15M is malfunctioning.</li> </ul>	<ol style="list-style-type: none"> <li>1. Disconnect the SP3001-15 from your host computer.</li> <li>2. Plug in the USB power connector first, and then plug in the host connector.</li> <li>3. If this problem persists, move the USB power connector to another USB port on the host computer.</li> <li>4. Contact Black Box Technical Support at 724-746-5500 or <a href="mailto:info@blackbox.com">info@blackbox.com</a>.</li> </ol>
The LED light on the cable is green but the USB 3.0 device does not operate correctly, or is detected as an "Unknown Device" in the operating system.	<ul style="list-style-type: none"> <li>The USB 3.0 device enumerates on USB 2.0 before USB 3.0.</li> <li>The USB 3.0 device is malfunctioning.</li> <li>The computer does not recognize the USB 3.0 device.</li> <li>The application software for the device is not operating.</li> <li>The USB3ACE-15M is malfunctioning.</li> </ul>	<ol style="list-style-type: none"> <li>1. Disconnect the USB3ACE-15M from the computer.</li> <li>2. Connect the USB device directly into the USB 3.0 port on your computer.</li> <li>3. If your USB device does not operate properly, consult the user documentation for this device.</li> <li>4. Update your system BIOS, chipset, or USB host controller drivers from your system/motherboard manufacturer's website.</li> <li>5. If your USB device operates properly when it is directly connected to the computer, connect another USB 3.0 device (of a different type) to the USB3ACE-15M. Connect the USB3ACE-15M to your computer.</li> <li>6. If your second USB 3.0 device does not operate, the USB3ACE-15M may be malfunctioning. Contact Black Box Technical Support at 724-746-5500 or <a href="mailto:info@blackbox.com">info@blackbox.com</a>.</li> <li>7. If your second USB 3.0 device does operate properly, your first device may not be compatible with the USB3ACE-15M.</li> </ol>

## Chapter 4: Troubleshooting

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### 4.2 Contacting Black Box

If you determine that your USB 3.0 Active Extension Cable (USB3ACE-15M) is malfunctioning, do not attempt to alter or repair the unit. It contains no user-serviceable parts. Contact Black Box Technical Support at 724-746-5500 or [info@blackbox.com](mailto:info@blackbox.com). Before you do, make a record of the history of the problem. We will be able to provide more efficient and accurate assistance if you have a complete description, including:

- the nature and duration of the problem.
- when the problem occurs.
- the components involved in the problem.
- any particular application that, when used, appears to create the problem or make it worse.
- Host computer make and model.
- Type of operating system installed (e.g. Windows 8, Mac OS X, etc.).
- Make and model of the USB 3.0 device attached to the product.
- Description of the installation.
- Description of the problem.

### 4.3 Shipping and Packaging

If you need to transport or ship your USB 3.0 Active Extension Cable (USB3ACE-15M):

- Package it carefully. We recommend that you use the original container.
- If you are returning the unit, make sure you include everything you received with it. Before you ship for return or repair, contact Black Box to get a Return Authorization (RA) number.







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