RemotePort USB—4-Port

**FEDERAL COMMUNICATIONS COMMISSION
AND
INDUSTRY CANADA
RADIO FREQUENCY INTERFERENCE STATEMENTS**

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 J 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.

Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de la classe A prescrites dans le Règlement sur le brouillage radioélectrique publié par Industrie Canada.

CE This product conforms to European Standard EN 55011/A1 Class A, and EN 50082-1 (IEC 801-2, IEC 801-3, IEC 801-4).

NORMAS OFICIALES MEXICANAS (NOM)
ELECTRICAL SAFETY STATEMENT

INSTRUCCIONES DE SEGURIDAD

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 deber 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 connectado 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 fisica 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 lineas de energia.

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 objectos liquidos 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: Objectos 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.

TRADEMARKS USED IN THIS MANUAL

Any trademarks mentioned in this manual are acknowledged to be the property of the trademark owners.

Contents

1. Specifications

Range (over Category 5 UTP)—328 ft. (100 m)

Cable—*Host USB:* Type A/B 2m; *Link:* Must be Category 5 UTP (or better). UTP cabling must have a straight-through conductor configuration with no crossover and terminated with 8-conductor RJ-45 connectors at both ends.

USB Speeds—1.5 Mbps and 12 Mbps (autosensing)

Temperature Tolerance— 39 to 104°F (4 to 40°C)

Certifications—FCC Part 15, Class A; CE; USB-IF

Indicators—LEDs: *LEX:* (1) Host, (1) Link, (1) Power; *REX:* (1) Link, (1) Power, (4) USB Port

Connectors—*LEX:* (1) RJ-45 UTP, (1) USB Type B; *REX:* (1) RJ-45 UTP, (4) USB Type A

USB Power—*At LEX:* 4 x 100 mA; *At REX:* 4 x 500 mA

Size—*LEX or REX:* 1.3"H x 4.2"W x 3.3"D (3.3 x 10.7 x 8.4 cm)

2. Introduction

2.1 What the Package Includes

Your RemotePort USB 4-Port package should contain the following items.

- (1) Local Extender (LEX)

- (1) Remote Extender (REX)

- (1) AC power adapter

- (1) 6.6-ft. (2-m) USB cable

- This users' manual

If anything is missing or damaged, call Black Box Technical Support at 724-746-5500.

2.2 What You Must Supply

- USB-compatible computer.

- Category 5 Unshielded Twisted Pair (UTP) cable (up to 328 ft. [100 m] long) with (2) RJ-45 connectors (if using surface cabling)

  OR

- Category 5 UTP cabling with (2) information outlets and (2) Category 5 UTP patch cords with RJ-45 connectors (if using premise cabling).

NOTE

The maximum length of the Category 5 UTP cable, including patch cords, must not exceed 328 ft. (100 m).

- USB device(s)

2.3 About the RemotePort USB

The RemotePort USB incorporates technology that breaks the 16.4 ft. (5 m) distance barrier for connection of USB peripheral devices and lets you enjoy the benefits of USB technology beyond the desktop. The RemotePort USB helps you locate USB devices up to 328 ft. (100 m) from the host computer. Plus, it can also supply power to remote low-power or high-power USB devices.

The RemotePort USB is composed of two individual units, the Local Extender (LEX) and the Remote Extender (REX).

2.3.1 THE LEX UNIT

The LEX unit connects a) to the host computer using a conventional USB cable and b) to a power outlet through an AC power adapter.
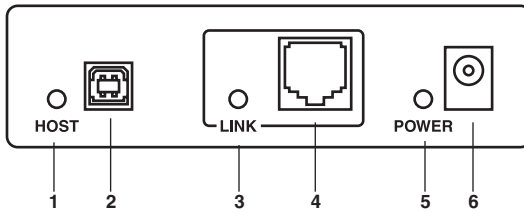

Figure 2-1. The LEX unit.

1. Host LED

2. USB Type B port

3. Link LED

4. RJ-45 connector

5. Power LED

6. Power connector

NOTE

You can connect the power adapter for the RemotePort USB to either the LEX unit or the REX unit. The location of the power adapter also depends on whether you are connecting high-power or low-power devices (see Section 2.5**, Power Handling).**

2.3.2 THE REX UNIT

The REX unit connects to the USB device using a conventional USB cable and, depending on your needs, to a power outlet through an AC adapter. The REX unit allows you to connect up to four USB devices.
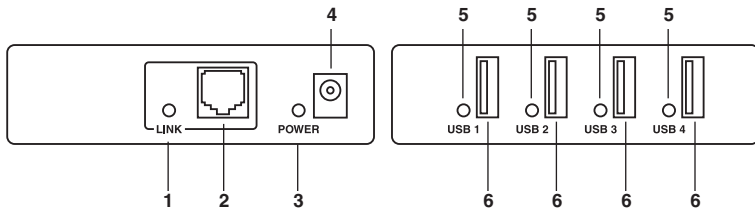

Figure 2-2. Front and rear views of the 4-port REX unit.

1. Link LED

2. (1) RJ-45 connector

3. Power LED

4. Power connector

5. (4) USB port LEDs

6. (4) USB Type A ports

2.3.3 CONNECTING LEX TO REX

The LEX and REX units are interconnected by up to 328 ft. (100 m) of Category 5 Unshielded Twisted Pair (UTP) cabling. The UTP cabling must have a straight-through connector configuration with no crossover and be terminated with 8-conductor RJ-45 connectors at both ends. See Figure 2-3 (on the next page) for a typical RemotePort USB application.

NOTE

Category 5 UTP cabling is the standard data communications cable installed in most commercial and some residential buildings.
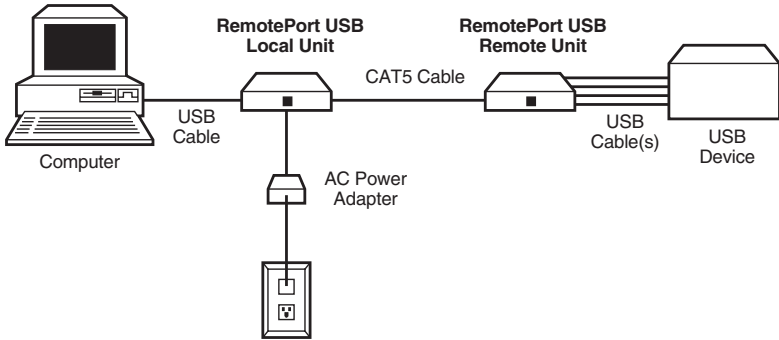
Figure 2-3. RemotePort USB connection.

2.4 USB Cables

USB cables have two distinct connectors. The Type A connector is used to connect the cable from a USB device to the Type A port on a computer or hub. The Type B connector is used to attach the USB cable to a USB device.
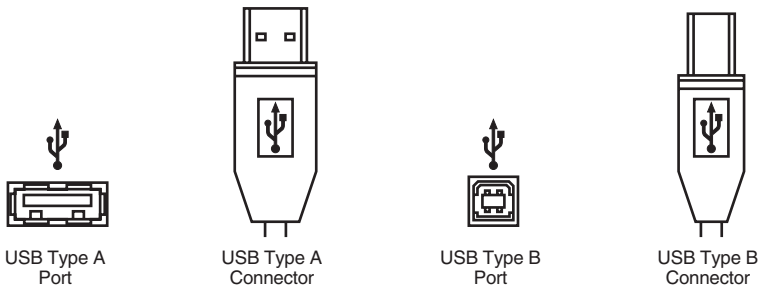

USB Type A
Port

USB Type A
Connector

USB Type B
Port

USB Type B
Connector

Figure 2-4. USB connectors and ports.

2.5 Power Handling

Some USB devices are powered directly from the USB bus and do not require individual power supplies. The RemotePort USB can provide power to these devices so they can operate remotely.

Bus-powered devices are further divided into low-power and high-power categories. Low-power devices typically include mice, joysticks, and keyboards without hubs. High-power devices generally include cameras and keyboards with hubs. To determine if a device is high-power or low-power, consult the user documentation for the device.

The RemotePort USB can supply the necessary power to either low-power or high-power devices when configured as follows:

- To operate up to four low-power devices, connect the power adapter to the LEX unit or to the REX unit, as convenient.

- To operate up to four high-power devices, connect the power adapter to the REX unit.

NOTE
Devices with their own power source are considered (from a USB perspective) to be low-power devices.

2.6 Applications

The RemotePort USB lets you take advantage of different configurations, including simple extension, multiple device extensions, and multiple location extensions. When daisychaining USB hubs, the RemotePort USB acts as a single hub and can occupy any of the (up to) five positions in the USB chain.

NOTE
Each USB chain must not contain more than four standard USB hubs and one RemotePort USB unit.

Many configurations are possible when the RemotePort USB is used in conjunction with conventional USB hubs and devices. However, the following three configurations are most common.

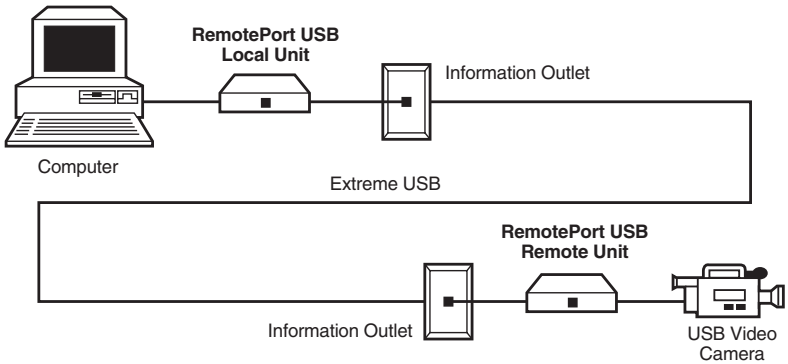### 2.6.1 SINGLE DEDICATED EXTENSION

**Figure 2-5. Single dedicated extension connecting
a USB video surveillance camera.**

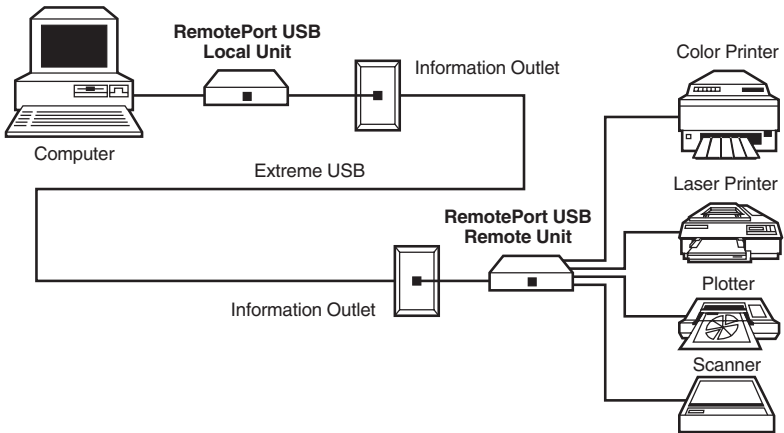### 2.6.2 MULTIPLE DEVICE EXTENSION

Figure 2-6. Multiple device extension connecting a USB publishing station.

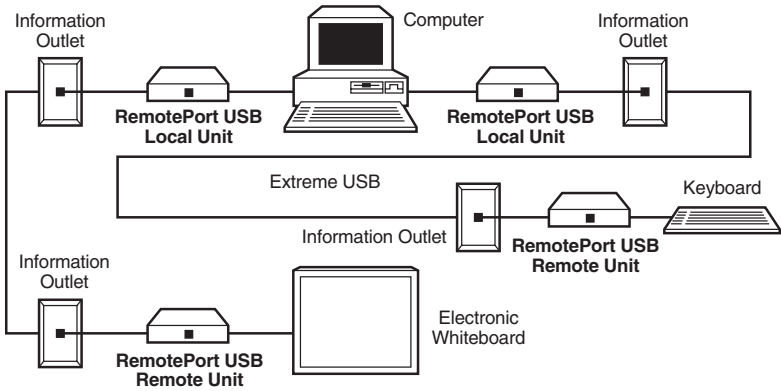### 2.6.3 MULTIPLE LOCATION EXTENSION

**Figure 2-7. Single dedicated extension connecting
a USB electronic conference room.**

3. Installation

3.1 Before You Begin

Before you can install the RemotePort USB, you will need to prepare your site.

1. Determine where the host computer will be located and set up the computer.

2. Determine where you will operate the USB devices.

3. Determine whether your USB devices are low-power or high-power (see **Section 2.5**).

4. If you will be using surface cabling, make sure you have enough Category 5 UTP cabling to connect the two locations.

   OR

   If you will be using premise cabling, make sure Category 5 cabling is installed between the two locations with Category 5 information outlets located near both the computer and the USB devices.

5. Install any software required to operate the USB devices. Refer to the documentation for these devices as required.

3.2 Install the LEX Unit

1. Place the LEX unit near the host computer.

2. Plug the Type B connector on the USB cable (included) into a USB port on the LEX.

3. If the power adapter will be located with the LEX unit:

   a. Plug the power adapter into a suitable AC outlet.

   b. Connect the power adapter to the LEX unit.

4. Plug the Type A connector on the USB cable into the USB port on the computer.

3.3 Install the REX Unit

1. Place the REX unit near the USB device.

2. Connect the USB devices to the USB ports on the REX.

3. If the power adapter will be located with the REX unit:

   a. Plug the power adapter into a suitable AC outlet.

   b. Connect the power adapter to the REX unit.

3.4 Connect the REX Unit to the LEX Unit

NOTE

For proper operation, use only Category 5 unshielded twisted pair (UTP) to connect the LEX to the REX. The UTP cabling must have a straight-through conductor configuration with no crossover. Also, it must be terminated with 8-conductor RJ-45 connectors at both ends.

3.4.1 WITH SURFACE CABLING

1. Plug one end of the Category 5 UTP cabling (not included) into the RJ-45 connector on the LEX unit.

2. Plug the other end of the Category 5 UTP cabling into the RJ-45 connector on the REX unit.

3.4.2 WITH PREMISE CABLING

1. Plug one end of a Category 5 patch cord (not included) into the RJ-45 connector on the LEX.

2. Plug the other end of the patch cord into the Category 5 information outlet near the host computer.

3. Plug one end of the second Category 5 patch cord (not included) into the RJ-45 connector on the REX.

4. Plug the other end of the second patch cord into the Category 5 information outlet near the USB device.

3.5 Check the Installation

To verify that you've installed your RemotePort USB correctly, make sure that the following LEDs are lit.

1. Power indicators on the LEX and REX units.

2. Link indicators on the LEX and REX units.

3. Host indicator on the LEX unit.

4. Device indicators on the REX unit for all ports in use.

Once these LEDs light, the RemotePort USB is operating normally and the connected peripheral devices are ready to use.

4. Troubleshooting

4.1 Problems, Causes, and Solutions

Problem: The LEDs on the REX or LEX unit are not lit.

Cause: The RemotePort USB is not receiving power.

Solution: Make sure the power adapter is securely connected to the LEX or REX unit as appropriate and to a proper local power-supply outlet.

Problem: The Link LEDs on the LEX and REX units are not lit.

Cause: The connection between the LEX and REX units is not correct.

Solution: Make sure that the proper Category 5 UTP cable with straight-through conductors is connected between the REX and LEX units.

Problem: "USB Hub Power Exceeded" message appears on the computer screen.

Cause: The USB device connected to the REX is a high-power device and the power is connected to the LEX.

Solution: To operate up to four high-power devices with the RemotePort USB, connect the power adapter to the REX unit and to a proper local power-supply outlet.

Problem: The Host LED on the LEX and the USB LED on the REX are not lit.

Cause:

    a. The link between the LEX and the computer is not correct.

    b. The computer is not functioning.

    c. The computer does not recognize the RemotePort USB.

Solution:

1. Make sure that all cables are securely connected.

2. Remove and then reconnect the power adapter to the RemotePort USB.

3. Reset the computer.

4. Make sure that the RemotePort USB has been recognized as a "Generic USB Hub" by the computer. If it is not recognized, call Black Box Technical Support at 724-746-5500 for assistance.

Problem: The USB power LED on the REX unit is not lit.

Cause:

    a. The connection between the USB device and the REX unit is not correct.

    b. The USB device is malfunctioning.

    c. The RemotePort USB is malfunctioning.

    d. The USB device is not compatible with the RemotePort USB.

Solution:

1. Make sure that the USB device is securely connected to the USB port on the REX.

If the USB port LED on the REX unit is still not lit:

2. Disconnect the RemotePort USB from the computer.

3. Connect the USB device directly to the USB port on the computer.

4. If the device does not function properly, consult the user documentation for the device.

   OR

   If the device is functioning properly when connected directly to the computer:

   a. Connect another device (of a different type) to the RemotePort USB.

   b. If the second device does not work, the RemotePort USB may be malfunctioning. Contact Black Box Technical Support at 724-746-5500 for assistance.

   OR

   If the second device does not work properly, the first USB device may not be compatible with the RemotePort USB. Call Black Box Technical Support for assistance.

Problem: The LEDs on the REX and LEX units are lit, but a USB device does not work.

Cause:

a. The USB device is malfunctioning.

b. The RemotePort USB is malfunctioning.

c. The USB device is not compatible with the RemotePort USB.

Solution:

1. Disconnect the RemotePort USB from the computer.

2. Connect the USB device directly to the USB port on the computer.

3. If the device does not function properly, consult the user documentation for the device.

   OR

   If the device is functioning properly when connected directly to the computer:

a. Connect another device (of a different type) to the RemotePort USB.

b. If the second device does not work, the RemotePort USB may be malfunctioning. Contact Black Box Technical Support at 724-746-5500 for assistance.

OR

If the second device does work properly, the first USB device may not be compatible with the RemotePort USB. Contact Black Box Technical Support for assistance.

4.2 Calling Black Box

If you determine that your RemotePort USB is malfunctioning, do not attempt to alter or repair the unit. It contains no user-serviceable parts. Contact Black Box at 724-746-5500.

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.

4.3 Shipping and Packaging

If you need to transport or ship your RemotePort USB:

- Package it carefully. We recommend that you use the original container.

- If you are shipping the RemotePort USB for repair, make sure you include everything that came in the original package. Before you ship, contact Black Box to get a Return Material Authorization (RMA) number.

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