Thank you for purchasing the Magenta Research USB Link. Please read this guide thoroughly before installation.

**FCC Radio Frequency Interference Statement Warning**

The USB Link has been tested and found compliant 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 installed and operated in a commercial environment. The USB Link generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with this user guide, may cause harmful interference to radio communications. Operation of the USB Link 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.

**CE Statement**

We, Magenta Research, declare under our sole responsibility that the USB Link, to which this declaration relates, is in conformity with European Standard EN 55022/A1 Class A, and EN 50082-1 (IEC 801-2, IEC 801-3, IEC 801-4)

**IC Statement**

This Class A digital apparatus complies with Canadian ICES-003.

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Introduction

This manual is intended to assist IT professionals install the USB Link (single or hub version). The instructions in this guide assume a general knowledge of computer installation procedures, familiarity with cabling requirements, and some understanding of USB devices.

**NOTE:** Notes give additional information that could make installation easier.

**USB Link Product Contents**

When you open your USB Link for the first time you should find the following items:

- USB Link User Guide
- Local Transmitter
- Remote Receiver
- AC power adapter (optional)
- USB cable (2m long)

To complete the installation, you will also require the following items that are not included with the product:

- USB compatible computer
- USB device
- Category 5 Unshielded Twisted Pair (UTP) cable with two RJ45 connectors (if using surface cabling), OR, Category 5 UTP cabling with two information outlets and two Category 5 UTP patch cords with RJ45 connectors (if using premise cabling)

**NOTE:** The maximum length of the Category 5 UTP cable, including patch cords, must not exceed 328 ft (100m).
The USB Link is composed of two individual units, the Local transmitter and the Remote Receiver.

**The Transmitter Unit**

The transmitter unit connects to the host computer using a conventional USB cable. Depending on your needs, it also connects to a power outlet through an AC power adapter.

![Front View](image)

1. Host LED  
2. Host Port (USB Type B)  
3. Link LED  
4. Link Port (RJ45)  
5. Power LED  
6. Power connector

**NOTE:** The power adapter for the single port receiver can be connected to either the transmitter unit or to the receiver unit, as convenient. With the receiver hub version, the location of the power adapter also depends on whether you are connecting high-power or low-power USB devices. (See Power Handling Section).
The Receiver Unit

The receiver unit connects to the USB device using a conventional USB cable. Depending on your needs, it also connects to a power outlet through an AC power adapter. The single port receiver unit allows you to connect one USB device. The hub receiver unit allows you to connect up to four USB devices.

Front View

Rear View (Hub Receiver)

1 Link LED
2 Link Port (RJ45)
3 Power LED
4 Power connector
5 Device LED(s)
6 Device Port(s) (USB Type A)

Network Cabling

The transmitter and receiver units are interconnected by up to 100 meters of Category 5 Unshielded Twisted Pair (UTP) cabling. The UTP cabling must have a straight-through conductor configuration, with no crossovers, and must be terminated with 8-conductor RJ45 connectors at both ends.

NOTE: Category 5 UTP cabling is the standard data communications cable installed in most commercial and some residential buildings.
USB Link

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.

Power Handling

Some USB devices are powered directly from the USB and do not require individual power supplies. These devices are called bus-powered devices. The USB Link can provide power to these devices so they can be operated remotely.

Bus-powered devices are further divided into low-power and high-power categories. Low-power devices are allowed to draw up to 100 mA from the USB. Typical examples include mice, joysticks, and keyboards without hubs. High-power devices are allowed to draw up to 500 mA from the USB. Typical examples 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 USB Links can supply power to both low-power and high-power devices when configured as follows:

Single Port Version

- To operate any USB device, connect the power adapter to the TRANSMITTER unit or to the RECEIVER unit, as convenient.

Hub Version

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

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

NOTE: Devices with their own power source are usually considered to be low-power devices from a USB perspective.
Compatibility

The USB Link complies with USB 1.1 specifications governing the design of full speed USB devices. However Magenta Research does not guarantee that all full speed USB devices are compatible with the USB Link.
Before You Begin

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

1. Determine where the host computer is to be located and set up the computer.
2. Determine where you want to locate the USB device(s).
3. Decide whether the power adapter is to be connected to the TRANSMITTER unit or the RECEIVER unit (see the discussion of power handling on page 4).
4. If you are using surface cabling, ensure you have enough Category 5 UTP cabling to connect the two locations.

OR

If you are using premise cabling, ensure Category 5 UTP cabling is installed between the two locations, with Category 5 information outlets located near both the computer and the USB device.

Installing the TRANSMITTER Unit

1. Place the TRANSMITTER unit near the host computer.
2. If the power adapter is to be located with the TRANSMITTER unit:
   a) Plug the power adapter into a suitable AC outlet.
   b) Connect the power adapter to the TRANSMITTER unit.
3. Plug the Type B connector on the USB cable (included) into the Host port on the TRANSMITTER.
4. Plug the Type A connector on the USB cable into the USB port on the computer.

Installing the RECEIVER Unit

1. Place the RECEIVER unit near the USB device.
2. If the power adapter is to be located with the RECEIVER unit:
   a) Plug the power adapter into a suitable AC outlet.
   b) Connect the power adapter to the RECEIVER unit.
Connecting the TRANSMITTER Unit to the RECEIVER Unit

**NOTE:** To ensure proper operation, we recommend that only Category 5 or better, Unshielded Twisted Pair (UTP) cabling be used to connect the TRANSMITTER unit to the RECEIVER unit. The UTP cabling must have a straight-through conductor configuration with no crossovers, and must be terminated with 8-conductor RJ45 connectors at both ends.

**With Surface Cabling**

1. Plug one end of the Category 5 UTP cabling (not included) into the Link port on the TRANSMITTER unit.
2. Plug the other end of the Category 5 UTP cabling into the Link port on the RECEIVER unit.

**With Premise Cabling**

1. Plug one end of a Category 5 patch cord (not included) into the Link port on the TRANSMITTER.
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 Link port on the RECEIVER.
4. Plug the other end of the second patch cord into the Category 5 information outlet near the USB device.

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

**Checking the Installation**

1. Check that the Power LEDs on the TRANSMITTER and RECEIVER units are both on.
2. Check that the Link LEDs on the TRANSMITTER and RECEIVER units are both on.
3. Check that the Host LED on the TRANSMITTER unit is on.
4. On the host PC, open the Device Manager applet. Expand the entry for Universal Serial Bus controllers by clicking the + sign. If the USB Link has been installed correctly you should find it listed as a Generic USB Hub.
Connecting a USB Device

1. Install any software required to operate the USB device(s). Refer to the documentation for the device(s), as required.
2. Connect the USB device to the Device port on RECEIVER.
3. Check that the Device LED on RECEIVER is on.
Troubleshooting

The following table provides troubleshooting help. 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 Magenta Research technical support for further assistance.

<table>
<thead>
<tr>
<th>Symptoms/Cause</th>
<th>Remedy</th>
</tr>
</thead>
</table>
| All LEDs on TRANSMITTER and RECEIVER are off.                                 | 1. Ensure that the power adapter is connected to TRANSMITTER or RECEIVER  
2. Check that the adapter is connected to a live source of electrical power   |
| **Cause:** The USB Link is not receiving power from the adapter                |                                                                        |
| Power LED on one unit is on, power LED on other unit is off.                  | 1. Ensure that a Category 5 UTP cable with straight-through conductors is connected between the TRANSMITTER and RECEIVER units.  
2. Connect a short Category 5 patch cord between the TRANSMITTER and RECEIVER units. Recheck the operation of the system. |
| **Cause:** There is no connection between the TRANSMITTER and RECEIVER units. |                                                                        |
| Link LEDs on TRANSMITTER and RECEIVER are off.                               | 1. Ensure that a Category 5 UTP cable with straight-through conductors is connected between the TRANSMITTER and RECEIVER units.  
2. Connect a short Category 5 patch cord between the TRANSMITTER and RECEIVER units. Recheck the operation of the system. |
<p>| <strong>Cause:</strong> There is no connection between the TRANSMITTER and RECEIVER units. |                                                                        |</p>
<table>
<thead>
<tr>
<th>Symptoms/Cause</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>USB Hub Power Exceeded</strong> message is displayed by the computer. <strong>Cause:</strong></td>
<td>1. Move the power adapter from TRANSMITTER to RECEIVER.</td>
</tr>
<tr>
<td>The USB device connected to RECEIVER is a high-power device and the power</td>
<td></td>
</tr>
<tr>
<td>adapter is connected to TRANSMITTER</td>
<td></td>
</tr>
<tr>
<td>**Link LED on TRANSMITTER is on; Host LED on TRANSMITTER is off. <strong>Cause:</strong></td>
<td></td>
</tr>
<tr>
<td>a) The computer is not functioning.</td>
<td>1. Disconnect all USB devices from the RECEIVER unit.</td>
</tr>
<tr>
<td>b) The TRANSMITTER unit is not connected to the computer.</td>
<td>2. Disconnect TRANSMITTER from the computer.</td>
</tr>
<tr>
<td>c) The computer does not support USB hubs.</td>
<td>3. Disconnect and then reconnect the power adapter to the Link.</td>
</tr>
<tr>
<td>d) The USB Link is malfunctioning.</td>
<td>4. Reconnect the TRANSMITTER unit to the computer.</td>
</tr>
<tr>
<td></td>
<td>5. In the Universal Serial Bus controllers section of Device Manager, check that the Link is</td>
</tr>
<tr>
<td></td>
<td>recognised as a “Generic USB Hub”.</td>
</tr>
<tr>
<td>Symptoms/Cause</td>
<td>Remedy</td>
</tr>
<tr>
<td>---------------</td>
<td>--------</td>
</tr>
</tbody>
</table>
| A device is connected to RECEIVER and the corresponding Device LED is off | 1. Disconnect the USB Link from the computer.  
2. Connect the USB device directly to the USB port on the computer.  
3. If the device does not operate properly, consult the user documentation for the device.  
4. If the device operates properly when directly connected to the computer, connect another device (of a different type) to the Link. Connect Link to the computer.  
5. If the second device does not operate, the Link may be malfunctioning.  
6. If the second device does operate properly, the first device may not be compatible with Link. |
| **Cause:**  
a) The USB device is malfunctioning.  
b) The computer does not recognize the USB device.  
c) The application software for the device is not operating.  
d) The USB Link is malfunctioning. |  
| All LEDs on both TRANSMITTER and RECEIVER are on but the device does not operate correctly | 1. Disconnect the USB Link from the computer.  
2. Connect the USB device directly to the USB port on the computer.  
3. If the device does not operate properly, consult the user documentation for the device.  
4. If the device operates properly when directly connected to the computer, connect another device (of a different type) to the Link. Connect Link to the computer.  
5. If the second device does not operate, the Link may be malfunctioning.  
6. If the second device does operate properly, the first device may not be compatible with Link. |
| **Cause:**  
a) The USB device is malfunctioning.  
b) The computer does not recognize the USB device.  
c) The application software for the device is not operating.  
d) The USB Link is malfunctioning. |
**Specifications**

<table>
<thead>
<tr>
<th>Feature</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Range (over Category 5 UTP cable)</strong></td>
<td>100 meters (328 ft)</td>
</tr>
<tr>
<td><strong>USB device support</strong></td>
<td>Full speed devices (12 Mb/s)</td>
</tr>
<tr>
<td></td>
<td>Low speed devices (1.5 Mb/s)</td>
</tr>
<tr>
<td><strong>USB hub support</strong></td>
<td>Any single chain can include four USB hubs and one Link, in any order.</td>
</tr>
<tr>
<td><strong>Power available to USB device at RECEIVER</strong></td>
<td></td>
</tr>
<tr>
<td>(Single)</td>
<td>1 x 500 mA</td>
</tr>
<tr>
<td><strong>Power available to USB device at RECEIVER</strong></td>
<td></td>
</tr>
<tr>
<td>(Hub)</td>
<td>4 x 100 mA (when powered at TRANSMITTER)</td>
</tr>
<tr>
<td></td>
<td>4 x 500 mA (when powered at RECEIVER)</td>
</tr>
<tr>
<td><strong>USB cable</strong></td>
<td>2 meters (6.6 ft)</td>
</tr>
<tr>
<td><strong>TRANSMITTER connector (upstream)</strong></td>
<td>1 x USB Type B</td>
</tr>
<tr>
<td><strong>TRANSMITTER connector (downstream)</strong></td>
<td>1 x RJ-45</td>
</tr>
<tr>
<td><strong>RECEIVER connector (upstream)</strong></td>
<td>1 x RJ-45</td>
</tr>
<tr>
<td><strong>RECEIVER connector (downstream)</strong></td>
<td>1 x USB Type A (Single)</td>
</tr>
<tr>
<td></td>
<td>4 x USB Type A (Hub)</td>
</tr>
<tr>
<td><strong>TRANSMITTER dimensions</strong></td>
<td>107 mm x 84 mm x 34 mm</td>
</tr>
<tr>
<td></td>
<td>4.25” x 3.4” x 1.4”</td>
</tr>
<tr>
<td><strong>TRANSMITTER weight</strong></td>
<td>0.3 kg (0.6 lb)</td>
</tr>
<tr>
<td><strong>RECEIVER dimensions</strong></td>
<td>107 mm x 84 mm x 34 mm</td>
</tr>
<tr>
<td></td>
<td>4.25” x 3.4” x 1.4”</td>
</tr>
<tr>
<td><strong>RECEIVER weight</strong></td>
<td>0.3 kg (0.6 lb)</td>
</tr>
<tr>
<td><strong>Total system shipping weight</strong></td>
<td>1.1 kg (2.4 lb)</td>
</tr>
<tr>
<td><strong>Temperature range</strong></td>
<td>4°C to 40°C</td>
</tr>
</tbody>
</table>