

SELECTING A USB PORT ISOLATOR FOR YOUR NEXT PROJECT

Use the selection table on p2 to quickly narrow your search for a USB Port Isolator that best suits your next project. Below are a few helpful questions to help narrow your selection:

- **What is the speed of your peripheral device?**
 - 1.5 Mbps (low speed)
 - 12 Mbps (full speed)
- **How many ports do you want supported from one USB port?**
 - B+B SmartWorx offers 1 and 2 port models.
- **Are you considering a level of isolation protection against surges, spikes or grounding issues?**
 - B+B SmartWorx isolators offer 2kV or 3kV isolation protection.
- **Mechanical things you should consider:**
 - What physical USB connector best suits the application - Type B female/male, Type A female/male?
 - Most B+B models feature a Type B female upstream port and Type A female downstream port/s.
 - Are you considering high retention USB connectors?
 - Most B+B isolators feature high-retention USB ports that grip ordinary USB cables tightly.
 - Is there a particular mounting format or physical size that fits the application best?
 - Inline, compact, portable (common for field service applications).
 - DIN rail mountable (good for in-cabinet designs).
 - Panel mountable (use on desktop or flat panel mount).
 - How do you plan to power the isolator – from the USB bus or an external power supply?
- **What environmental or safety aspects are you looking for?**
 - Is the device meant for field service or will it be left alone in a harsh environment application?
 - Are shock, vibration or drop testing specification needed for the application?
- **Once you have a product selected, you should ask a few more questions:**
 - Do you have all the accessories needed to make the connections you need?
 - Cables, Power Supplies, mounting adapters, etc.
 - When do you need product? Do you need samples for proof of concept and full production?

Assistance

If you need additional product assistance, contact B+B SmartWorx Technical Support.

USB PORT ISOLATORS – SMALL COST, PREMIUM PROTECTION

B+B SmartWorx' USB port isolators protect against harmful noise, ground loops, surges and spikes. From compact isolators for field service applications to rugged, EMC tested isolators for unfriendly electrical environments, B+B USB port isolators will keep your computer/laptop and critical data secure and safe.

These USB isolators are tested in unfriendly electrical environments – near variable frequency drives, motor control centers, welding and other large electrical loads. Use where a USB host and peripheral device operate at different ground potentials or to eliminate supply noise from USB host.

B+B SmartWorx designs high-retention USB port connectors into most USB products. These orange color high retention ports are 50% stronger than conventional ones, so they hold on tight to standard USB cables requiring up to 3.2 lbs force to disconnect them and meet Class I/Division 2 minimum withdrawal requirements of 15N – perfect for high vibration applications.

Important to note is that, while each version of USB is backwards compatible with its predecessors, it cannot make earlier version devices go any faster. For example, a USB 2.0 port can communicate with a USB 1.1 device, but only at the USB 1.1 speed inherent to the device.

The reverse is also true. A USB 2.0 device attached to a USB 1.1 port can only operate at USB 1.1 speeds. To get full USB 2.0 speed, both the host USB port and the connected device must be USB 2.0 capable.

B+B UH4xx series isolators are *fixed* at either 12 Mbps or 1.5 Mbps speeds. This is an important distinction because “low-speed” isolators will not work with “full-speed” devices and vice versa.

B+B UHRxx series isolators contain a USB hub chip that makes them “smart” in that they can *self-select* between 1.5 Mbps “low-speed” and 12 Mbps “full-speed.”

The following table shows data capabilities of B+B SmartWorx USB isolators. None of these isolators are capable of operating at “high-speed” 480 Mbps.

B+B USB Isolators – Protocol, Data Rate, Speed		
USB Protocol	Rate	USB Speed
USB 1.1, 2.0	1.5 Mbps	Low Speed
USB 1.1, 2.0	12 Mbps	Full Speed

USB PORT ISOLATORS

PRODUCT SELECTION GUIDE (continued)

APPLICATIONS

- Industrial Manufacturing Automation • Medical
- Laboratory • Point-of-Sale • HVAC • Field Service

USB ISOLATORS – SELECTION TABLE

						
Product Series:	1-port, 4kV, 12 Mbps Ruggedized	2-port, 4kV, 12 Mbps Ruggedized	1-port, 4kV, 12 Mbps	1-port, 2kV, 12 Mbps	1-port, 4kV, 1.5 Mbps	1-port, 2kV, 1.5 Mbps
USB PORTS						
Number of Ports	1	2	1	1	1	1
High Retention USB (C1/D2)	✓	✓	✓	✓	✓	✓
Upstream Port	1 Type B	1 Type B	1 Type B	1 Type B	1 Type B	1 Type B
Downstream Port	1 Type A	2 Type A	1 Type A	1 Type A	1 Type A	1 Type A
Downstream Power	500 mA	500 mA	100 mA	100 mA	100 mA	100 mA
Speed	Smart-selectable: 12 Mbps (full speed) or 1.5 Mbps (low speed)	Smart-selectable: 12 Mbps (full speed) or 1.5 Mbps (low speed)	12 Mbps (full speed)	12 Mbps (full speed)	1.5 Mbps (low speed)	1.5 Mbps (low speed)
USB Protocol	1.1, 2.0	1.1, 2.0	1.1	1.1	1.1	1.1
PROTECTION						
Isolation	4kV	4kV	4kV	2kV	4kV	2kV
ESD Protection (Level 4)	8 kV Contact, 15 kV Air	8 kV Contact, 15 kV Air	8 kV Contact, 15 kV Air	8 kV Contact, 15 kV Air	8 kV Contact, 15 kV Air	8 kV Contact, 15 kV Air
SPECIFICATIONS						
Temperature	0 to +50 °C	0 to +50 °C	-40 to +80 °C	-40 to +80 °C	-40 to +80 °C	-40 to +80 °C
Power Input	10 to 30 VDC, external	10 to 30 VDC, external	5 VDC, USB bus	5 VDC, USB bus	5 VDC, USB bus	5 VDC, USB bus
DIN Rail Mount	✓ (w/ optional DIN adapter clips)	✓ (w/ optional DIN adapter clips)	-	-	-	-
Panel Mount	✓	✓	-	-	-	-
In Line Mount	-	-	✓	✓	✓	✓
Shock/Vibration/Drop	✓	✓	-	-	-	-
MODEL #	UHR401	UHR402	UH401	UH401-2KV	UH401SL	UH401SL-2KV