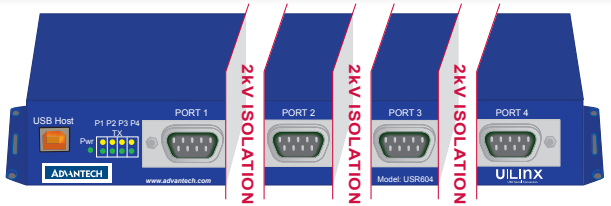
# SELECTING A USB-SERIAL CONVERTER
## FOR YOUR NEXT PROJECT

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

- **What is the serial data type of the device you are connecting too?**
  - RS-232
  - RS-422/RS-485 (2-wire or 4-wire connections)
  - TTL 3.3V
- **How many serial ports do you want supported from one USB port?**
  - Advantech B+B offers 1, 2 and 4 port solutions.
- **Are you considering Serial Isolation to help protect against surges, spikes and grounding issues?**
  - Some Advantech B+B models offer 2kV isolation on each serial port.
- **Mechanical things you should consider:**
  - What physical serial connector best suits the application - DB9 or Terminal Block?
    Most prefer a DB9 for an RS-232 connection and a Terminal Block for RS-422/485 connections.
  - Are you considering a design with a high retention USB connector?
    A firm grip retains positive connection so you do not disrupt data communications.
  - Is there a particular mounting format or physical size that fits the application best?
    Inline, compact design (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 converter – from the USB bus or from 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?
  - Do you need a device that supports UL or UL Class 1 / Division 2 ratings?
  - 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, Cabinets, Surge Protection
  - When do you need product? Do you need samples for proof of concept and full production?

**Assistance**

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




### WHAT IS PORT-TO-PORT ISOLATION?

Most isolated USB to Serial Converters isolate the upstream device from the downstream device. This is fine when you are working with a single-port unit. However, with multi-port devices, you need the additional protection offered by Port-to-Port Isolation.

Simply put, Port-to-Port-Isolation isolates the upstream device from the downstream devices as well as the downstream devices from each other. This is the only way you can ensure that ground loops or surges cannot be transferred through Port 1 to a device connected to Port 2 and so on.

### LOCKED SERIAL NUMBERS EXPLAINED

Advantech B+B configures single-port USB to serial converters in two ways:

1. **Standard format** – each product has a unique serial number. If your converter will always be used with the same computer, the standard serialized model is all you need.

2. **Locked serial** format uses the same serial number that is associated with a model type. If the converter is shared among several computers, like field service laptops, the locked serial number model lets you plug-and-play without having to worry about matching the two.

| DESCRIPTION | Serialized | Locked Serial Number |
|---|---|---|
| Every unit is assigned a unique COM port | ✔ | - |
| Same type model numbers share same COM port | - | ✔ |
| Ideal applications | Fixed Locations | Field Service |

When ordering Locked Serial Number versions, add "-LS" to the end of the item number.
Serialized and Lock Serial Number versions sell for the same price.

# USB-SERIAL CONVERTER

PRODUCT SELECTION GUIDE (continued)

## HIGH RETENTION USB PORTS GRIP STANDARD USB CABLES TIGHT

The world is fast adopting USB as a cost-effective, useful tool. But, without a strong retention mechanism for the connector, it can been deemed inadequate for some industrial applications. Manufacturers have responded with proprietary connectors and cables featuring a custom thumbscrew. While this attempts to address the issue, it adds cost and size. Worse yet, it requires the purchase of a custom USB cable that you will not find at a local store when you are stuck on a job site.

Now you can forget about annoying cable disconnections due to vibration. Advantech B+B designs high-retention Type B 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 off-the-shelf USB cable connections. The interface meets Class1/Division 2 minimum withdrawal requirements of 15N. Look for the orange port – you can rest assured your USB connections will hold together in demanding applications.

## USB to Serial Selection Table

| |  |  |  |  |  |  |  |
|---|---|---|---|---|---|---|---|
| Product Series: | **In-Line Isolated** | **In-Line** | **In-Line Miniature** | **TTL** | **Industrial** | **DIN Rail Mount** | **Panel Mount** |
| **USB PORTS** | | | | | | | |
| High Retention USB Connector * | ✔ (select model#s, see * below) | ✔ | - | - | ✔ | ✔ | ✔ |
| **SERIAL PORTS** | | | | | | | |
| Number of Serial Ports | 1 | 1 | 1 | 1 | 4 | 1, 2 | 2, 4 |
| Serial Interface | RS-232 or RS-422/485 | RS-422/485 | RS-232 or RS-422/485 | TTL (3.3V) | RS-232/422/485 | RS-422/485 | 1 RS-232 or RS-422/485 |
| Serial Connector | DB9 or Pluggable Terminal Block | Pluggable Terminal Block | DB9 or Pluggable Terminal Block | DB9 | DB9 | Terminal Block | DB9 or Terminal Block |
| Data Rates (maximum) | 12 Mbps (USB)<br>460.8 kbps (RS-232, RS-422/485) | 1.5, 12 Mbps (USB)<br>460.8 kbps (RS-232, RS-422/485) | 12 Mbps (USB)<br>921.6 kbps (RS-232/485) | 12 Mbps (USB)<br>460.8 kbps (TTL) | 1.5, 12, 480 Mbps (USB)<br>921.6 kbps (RS-232/422/485) | 12 Mbps (USB)<br>921.6 kbps (RS-422/485) | 12 Mbps (USB)<br>921.6 kbps (RS-422/485) |
| Isolation | 2kV | - | - | - | 2kV (port-to-port) | 2kV (port-to-port) | 2kV (port-to-port) |
| Surge Protection | 15kV ESD (select models) | - | - | 600W TVS | +/- 0.5kV DC Ports,<br>+/- 1 kV Signal Ports | 15kV ESD | 15kV ESD |
| Locked Serial Number Options | ✔ | ✔ | ✔ | - | - | - | - |
| **SPECIFICATIONS** | | | | | | | |
| Operating Temperature Range | 0 to +70 °C | 0 to +70 °C | 0 to +70 °C | 0 to +70 °C | -40 to +80 °C | 0 to +70 °C | 0 to +70 °C |
| Power Input | USB Bus | USB Bus | USB Bus | USB Bus | 10-48 VDC | USB Bus | USB Bus or 10-30 VDC |
| Enclosure | IP30 plastic | IP30 plastic | Plastic | Plastic | IP30 metal | Plastic | Plastic |
| DIN Rail Mount | - | - | - | - | ✔ | ✔ | - |
| Panel Mount | - | - | - | - | 6 mounting options | - | ✔ |
| In-Line Mount | ✔ | ✔ | ✔ | ✔ | - | - | - |
| UL | - | - | - | - | UL C1/D2 | - | ✔ |
| **MODEL #** | | | | | | | |
| | BB-USO9ML2-A | BB-USPTL4* | BB-232USB9M | BB-TTL3USB9M | BB-USR604* | BB-USOPTL4DR-2* | BB-USO9ML2-2P* |
| | BB-USO9ML2-LS-A | BB-USPTL4-LS* | BB-232USB9M-LS | | | | BB-USO9ML2-4P* |
| | BB-USO9ML4* | | BB-485USB9F-2W-LS | | | | BB-USOPTL4-2P* |
| | BB-USOPTL4* | | BB-485USB9F-4W | | | | BB-USOPTL4-4P* |
| | BB-USOPTL4-LS* | | BB-485USB9F-4W-LS | | | | |

* Features high retention USB port/s.