**ADAM-4561
1-port Isolated USB to
RS-232/422/485 Converter**

User's Manual

1.1 Introduction

Advantech's ADAM-4561 allows PC users to connect their serial devices to systems that use USB interface. By attaching the ADAM-4561 to a PC, it will no longer be necessary to open the chassis or turn off the PC to install the hub. With the ADAM-4561, the user instantly gets one extra high-speed RS-232/422/485 ports. In addition, since the power is derived from the USB port, there are not any cumbersome power adapters. This makes the ADAM-4561 especially suitable for printers, POS system and industrial control devices.

Compliant with USB v1.1, the ADAM-4561 features a lot of powerful functions such as high-speed 115.2 Kbps, support for various operating systems, independent RS-232/422/485 port and more. By simply plugging in a USB hub, the ADAM-4561 eliminates configuration issues associated with expensive, antiquated card solutions. This eliminates the need to remove the PC cover and or to reboot the operating system during installation. The user only installs the driver, and follows the on-screen instructions. This reduces a lot of programming time.

The USB interface, now standard on virtually all new PCs, offers significant advantages over earlier bus types. A signal USB interface can connect up to 127 devices at data rates up to 12 Mbps. This kind of easy and convenient connectivity means that your network can grow with your needs.

1.2 Features:

- Full compliance with USB v1.1 specifications.
- RS-232/422/485 port supported
- Transmission speed up to 115.2 Kbps
- Isolation protection 3,000 V_{DC} provided
- Automatic RS-485 data flow control
- No external power supply necessary; the ADAM-4561 derives its power from the USB port.
- Plug-and-play installation.
- No additional IRQs or I/O ports required.
- Hot swap function supported
- Drivers for Widows 98/ME/2000

1.3 Specifications

- **Compatibility:** USB v1.1 standard
- **Interface:** Network: USB
  Serial: 3-wire RS-232, RS-422, RS-485
- **Port:** 1 Independent RS-232/422/485 ports
- **Connector:** Network: USB-type A connector (Type A to Type B cable provided)
  Serial: twist-pair cable
- **Transmission speed:** 75 bps to 115.2 Kbps
- **Parity bit:** odd, even, none
- **Data bit:** 5, 6, 7, 8
- **Stop bit:** 1, 1.5, 2
- **RS-232** Signals: Tx, Rx, GND
- **Isolation protection:** 3,000 V_{DC} (RS-422/485)
- **Driver Supported:** Windows 98/ME/2000, Linux (available soon)
- **Power Consumption:** 270mA @ 5 V(Typical)
  300mA @ 5 V(Max.)
- **Max. Distance:** 15 ft (4.6m)
- **Case:** ABS with captive mounting hardware
- **Placement:** DIN-rail, panel mounting, piggyback stack
- **Operating Temperature:** 0° to 70° C
- **Storage Temperature:** -25° to 80° C
- **Operating Humidity:** 20% to 95% (non-condensing)
- **Storage Humidity:** 0% to 95% (non-condensing)

1.4 Package Checklist

- ADAM-4561
- ADAM-4561 User's Manual
- Driver v1.00 disk
- One Type A to Type B USB cable
- NYLON DIN-rail Mounting Adapter
- SECC Panel Mounting Bracket

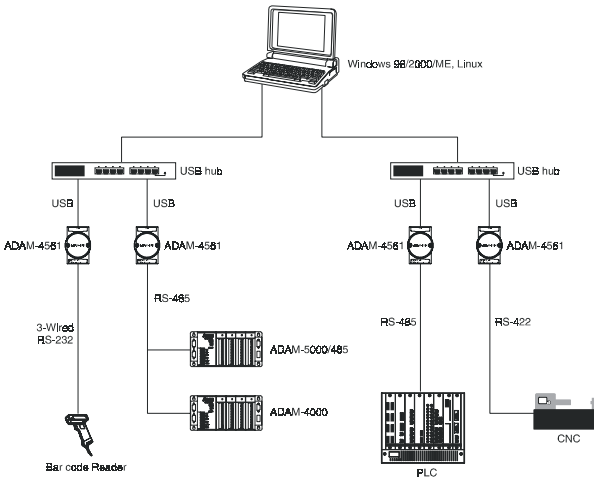If you have any questions about USB standard, please refer to the web site: www.usb.org

2.1 Hardware Installation

2.1.1 Network Architecture

Traditional serial port communication uses a COM port board that slides into one of the slots at the back of your PC. With the ADAM-4561, you can access the COM port from USB ports. The ADAM-4561 can be integrated into the network architecture of any protocol.

Note: *all the operating systems on your host must support USB v1.1 standard, such as Windows 98/ME/ 2000. USB devices are used in "Master-Slave" architecture. Before you use ADAM-4561, you must determine the master PC.*

The following illustration shows the network architecture:

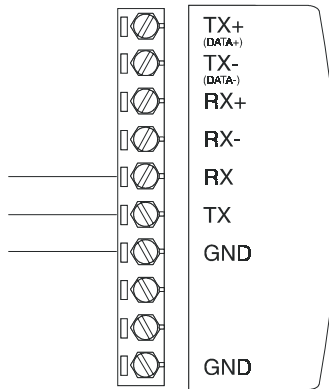***Figure 2-1:Network Architecture***

2.1.2 Network Connection

When using the ADAM-4561, you will simply plug one end of USB cable (included in package) into ADAM-4561, and the other end into the USB hub or your host PC.

2.1.3 Serial Connection

The model of the ADAM-4561 that you purchased has 10 pin connector for connecting serial ports on the bottom of module. Only one set of twisted-pair cables is required to transmit both Data and RTS signals for RS-485 interface.
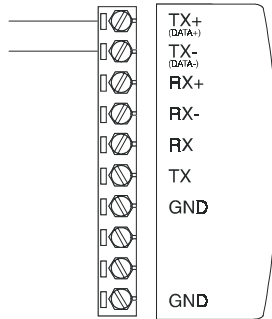
Note: In USB v1.1 standard, If you have used the COM3, COM4…..
COMn of host PC. When you plug ADAM-4561 in the host PC, the COM port will be COMn+1.

Wiring for RS-232 Connection
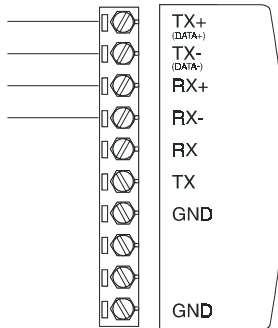

TX+
(DATA+)
TX-
(DATA-)
RX+
RX-
RX
TX
GND

GND

Figure 2-2: Wiring of RS-232 Connection

Wiring of RS-485 Connection

Figure 2-3: Wiring of RS-485 Connection

Wiring of RS-422 Connection

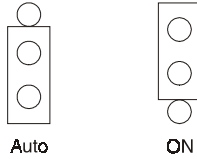
Figure 2-4: wiring of RS-422 Connection

2.1.4 Jumper Settings

Jumper JP1 sets the driver enable mode selection. If jumpers JP1 is set at "AUTO," the driver automatically senses the direction of the data flow and switches the direction of transmission. Handshaking is unnecessary. If jumper JP1 is set to "On," the driver is always enabled, and always in high or low status. The user must select a mode before beginning RS-422 applications.

JP1:

Auto   ON

3.1 Software Installation

3.1.1 Driver and Utility Installation

In order to use a PC to control serial devices connected to the ADAM-4561, you must first have a host running Windows 98/ME/2000. Following are the installation instructions to set up the ADAM-4561.

1. Insert the ADAM-4561 Driver utility diskette into the floppy drive (e.g. A:\) on the host PC.

2. Use your Windows Explorer to e specify a default installation path *C:\Control Panel/System/Device manager.* After you have specified the installation path, click the *Next* button.
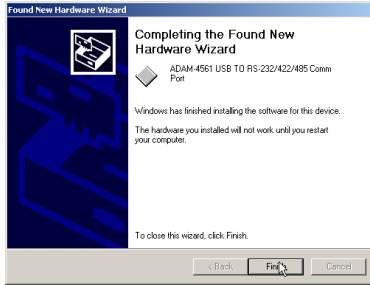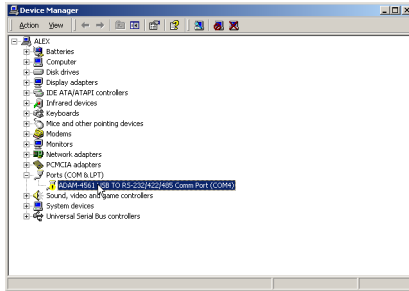

3. Change directory to A:\

4. Select your operating system

5. Click **Finish** *button*

6. If you want to check if the driver is installed or not, run **Device manager.**

7. Click it and you will see the detail information.