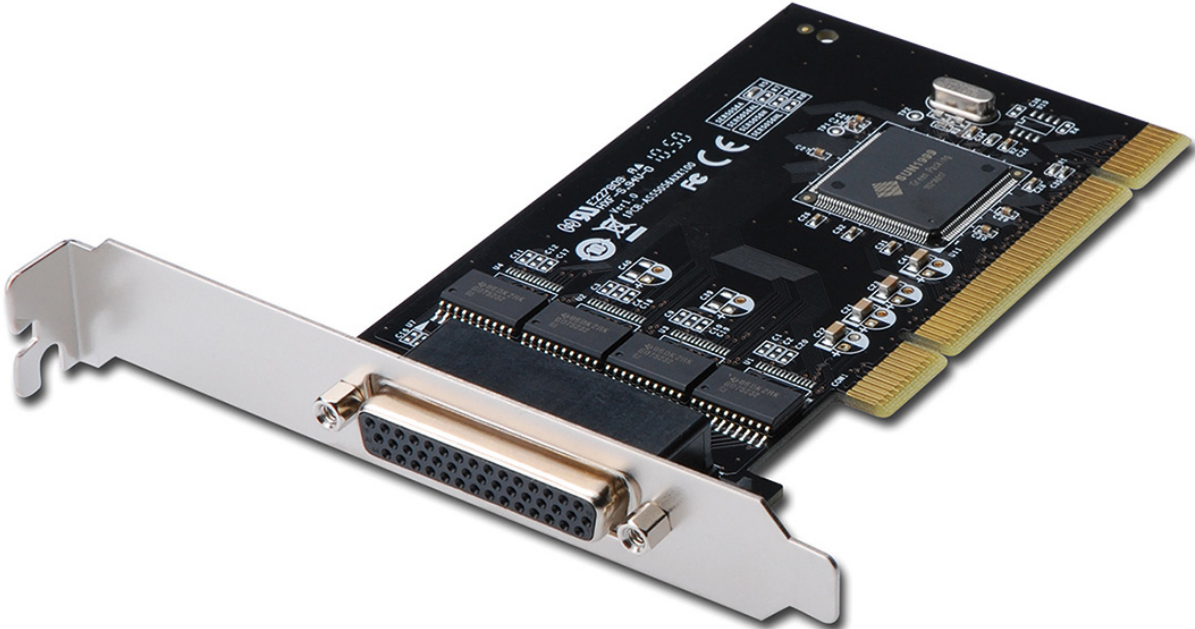# DIGITUS®

UNIVERSAL PCI RS-232 BOARD

User Manual

DS-33002-1

Features

- Expands Multi RS-232 serial ports on the system
- High performance SUNIX 16C950 compatible UART controller on-board.
- Ultra low power consumption design for Green Environment.
- Compliance with PCI 33MHz Version 3.0/2.3/2.2/2.1 specification.
- Supports both 64-bit PCI-X & 32-bit PCI bus slot.
- Data transmission speeds up to 115.2Kbps.
- On-chip hardware auto flow control to guarantee no data loss.
- Built-in ± 2KV ESD protection for all serial signals.
- Plug-n-Play, I/O address and IRQ assigned by BIOS.
- Support Microsoft Windows, Linux, and DOS.

System Requirements

- Windows® XP / Vista / 7 / 8.x / 10 (X86/X64)
- Windows Server 2003/2008/2012/2016(X64)
- Windows XP Embedded / POSReady 2009 / POSReady / Embedded System 2009
- Linux 2.x / 3.x / 4.x
- DOS
- FreeBSD 5.3~5.5 / 6.0~6.4
- QNX 6.3.2/6.4.0
- * IBM OS/2 WARP 3/WARP 4
- * SCO UnixWare 7.1.3/7.1.4/ Open Server 5.0.7/6.0
- * Sun Microsystems Solaris 10

Package Contents

1 x RS-232 Universal PCI Multi-Port Communication Board
1 x Driver CD
1 x User Manual

Hardware Installation

1. Turn your PC's power off, and shut off the power to any peripheral.
2. Remove the power plug from the plug socket.
3. Remove the cover from the computer case.

4. If fitted. Remove the metal cover plate on the rear of a free PCI slot.
5. Insert Universal PCI Multi-Port Communication Board into the free PCI slot and screw it firmly on the bracket side.
6. Place the cover back onto the computer.
7. Insert the plug into the plug socket.

Driver Installation
For Windows® XP/Vista/Win7/8/10 (32/64 bit)

1. After the board is physically installed and the PC boots up, system will detect the PCI Serial card and prompt for driver installation wizard, please choose cancel.
2. Put CD driver bound with product in your CD/DVD ROM drive. Please select autorun.exe, then select "Driver Installation".
3. Select the product interface "PCI/PCI-104".
4. Please select the O.S. version you are using, system will process the driver installation step automatically.
5. Select driver language for your operation system.
6. Click "Next" to continue driver installation steps.
7. Click "Install" to continue driver installation steps. System will install driver automatically. It takes about one minute.
8. Click "Finish" to end installation steps.

For Linux
1. Driver install
   Please create a directory under root directory, e.g./temp, do commands:
   # cd/
   # mkdir temp
   After get driver file "snx_Vx.x.x.x.zip". Copy file to/temp directory, then extract and install, do commands:
   # cp snx_Vx.x.x.x.zip/temp
   # cd/temp
   # unzip snx_Vx.x.x.x.zip

```
# cd/temp/snx
# make clean; make install
**************************************************************
* If system is Suse 9.0 and errors occur when
* "make clean; make install", do commands:
* # cd/usr/src/linux/
* # make cloneconfig
* # make dep
* then do "make clean; make install" again in/temp/snx
**************************************************************
```

Load driver module, do command:
```
# modprobe snx
```
or
```
# insmod/temp/snx/driver/snx.ko (snx.o for kernel 2.4)
```

Check driver module, do command:
```
# lsmod | grep snx
```

Unload driver, do command:
```
# rmmod snx
```

2. Device node creation
   Each serial port has one device node which is named "ttySNX?"
   maximum up to 32 serial ports.

   This setp will be done when do "make clean; make install", if device
   nodes aren't in/dev, do commands:

   ```
   # cd/temp/snx/snxmknod
   # ./snxmknod
   ```

   This will create device nodes in/dev.

   If there are more than two boards installed, serial port device naming
   convention please refer to F1.

To Verify Driver Installation

Click on the **"Device Manager"** tab in System Properties, which you access from the Windows Control Panel. You should see a **"4-Port Serial Card"** under the **"Multifunction adapters"** item and **"COM Port (COMx)"** under the **"Ports (COM & LPT)"**

Port Configuration

1. **Configure Serial Port Settings**
   - Please launch the "Device Manager".
   - Right click the "SUNIX Serial Card" item from the "Multifunction adapters" sub-tree and click "Properties".
   - On the "Port Control" tab, select a port to configure.
     * Click "OK" to approve the settings for the selected port.
     * Click "Set to All" to approve the settings for all COM ports.

2. **COM Port Number Settings**
   - Under Port Number, select a COM number to assign to the serial port. Click "OK" to approve the settings for the selected port.

3. **COM I/O Resource**
   - User can read the COM "IO Range" and "IRQ" located in system by selecting COM port.
   - IRQ and I/O address is automatically assigned by the mainboard PCI BIOS automatically (before COM card driver installing). User can NOT assign legacy ISA address (3F8, 3E8, 2F8, 2E8) for the specific COM port. But for IRQ setting, user can set specific IRQ value for this PCI bus slot via mainboard's BIOS settings (not via SUNIX driver). But all COM ports will share one IRQ value.

4. **FIFO Settings**
   - Select an Rx FIFO Trigger and Tx FIFO Size.
   - The default Rx FIFO Trigger is 112 bytes. The default Tx FIFO Size is 128 bytes. Click "Set to All" to change this setting for all serial ports on the board. Then click "OK" to save the settings.
   - Receive FIFO interrupt trigger level:
   When the level of data in the receiver FIFO reaches this value, a receiver data interrupt is triggered.

- Transmit FIFO interrupt trigger level:

  When the level of data in the transmit FIFO falls below this value, a transmitter interrupt is triggered. Setting this value to zero will not trigger an interrupt until the transmitter is completely idle.
- The FIFO trigger levels can be fine-tuned to gain optimum performance, depending on system performance, baud rate used levels of serial traffic etc.

5. Advanced Settings

- User can control RS-232 communication in Advanced Port Control page through "Advanced" settings.
- Clock Rate

  This is the "Data Rate" value for on board crystal frequency of input clock. The baud rate can optionally be adjusted according to the data rate required. The clock pre-divisor is used to divide the input clock prior to baud rate generation.

  This parameter must match with the oscillator (crystal) frequency on the board. System default is 14745600 Hz. We do NOT recommend for modification without SUNIX instruction.

  User can click "Defaults" button back to manufactory settings.