SUNIX®

DevicePort® Advanced Mode Powered COM Ethernet enabled RS-232 Port Replicator

User's Manual

First Edition, June 2014

Driver & Manual Download

Please visit SUNIX website http://www.sunix.com

by searching keyword "DevicePort Advanced Mode" or

"DPAS" for detail.

Scanning QR code on the product to get latest driver, firmware,

user manual, and product information update.

User's Manual

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Trademarks

Safety Information

1. Keep this User's Manual for future reference.
2. Always read the safety information carefully.
3. Keep this equipment away from direct sunlight, or in humid or damp places.
4. Do not place this equipment in an unstable position, or on vibrating surface before setting it up.
5. Do not use or place this equipment near magnetic fields, televisions, or radios to avoid electronic interface that affects device performance.
6. Do not attempt to disassemble or repair the equipment or the warranty would be useless.
7. To avoid damaging your system and equipment, please make sure that your computer is off before you install the product.

Regulatory Compliance

FCC Class B Declaration

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications.

Operation of this equipment 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. Modifications not authorized by the manufacturer may void users authority to operate this device.

This equipment meets the requirements of EC Electromagnetic Compatibility Directive (2004/108/EC)

For EU (European Union) member users: According to the WEEE (Waste electrical and electronic equipment) Directive, do not dispose of this product as household waste or commercial waste. Waste electrical and electronic equipment should be appropriately collected and recycled as required by practices established for your country. For information on recycling of this product, please contact your local authorities, your household waste disposal service or the shop where you purchased the product.

Table of Contents

1.
Introduction

SUNIX DevicePort® series is the ideal choice to enable your current Legacy I/O devices networking. It allows users to expand RS-232 ports over Ethernet connection, and it works on any windows based desktop, thin client, laptop, All-in-one, and tablet PC computers. SUNIX DevicePort® works in virtually any available PC system and compatible with Microsoft Windows operating systems.

SUNIX DevicePort® series is provided kinds of Legacy I/O ports for connecting terminals, modems, printers, scanners, cash registers, bar code readers, keypads, numeric displays, electrical scales, data acquisition equipment, and other serial devices for the PC and compatible systems.

The following topics covered in this chapter:

- **1.1 Overview**
- **1.2 Package Checklist**
- **1.3 Product Features**
- **1.4 System Requirements**
- **1.5 Product Application**
- **1.6 Product Specifications**

1.1 Overview

Thanks for purchasing SUNIX DevicePort® Advanced Mode product that is the ideal choice to enable your current RS-232 devices networking. User can expand multiple RS-232 ports on PC windows based system over Ethernet connection. With SUNIX DPL2000Q High-Performance Ethernet-UART controller and exclusive I/O Redirection Technology, DevicePort® creates physical COM ports that support real time data communication, Smart COM on/off-line deployment, and Ethernet-COM port hot-plug capability; user can expand RS-232 COM port easily without complex software configuration. SUNIX DevicePort® improves solution deployment efficiency to achieve greater reliability in commercial and industrial automation applications.

1.2 Package Checklist

Please check if the following items are present and in good condition upon opening your package. Contact your vendor if any item is damaged or missing.

- SUNIX DevicePort® product
- Quick Installation Guide
- Power Jack to USB Type-A Male Cable, 120cm (4ft.)

By scanning QR code on the product to get least driver, firmware, user manual, and product information update.

1.3 System Requirements

This section lists the hardware, operating system, and software requirements for SUNIX DevicePort® Advanced Mode product.

- Intel® Pentium® processor 1G or above.
- System memory 256 MB RAM or above.
- Microsoft® Windows XP, 7, 8, 8.1 or above OS.
- Microsoft®.NET Framework 3.5 or 3.5 service pack1.
  (.NET Framework 4.0 or 4.5 does not support)

1.4 Product Features

- Expands multiple independent RS-232 serial ports over Ethernet networking.
- Built-in SUNIX DevicePort® DPL2000Q High-Performance Ethernet-UART controller.
- SUNIX DevicePort® proprietary Ethernet I/O Redirection Technology. [*Note1]
  - Serial communication with real time data transmits and receives.
  - Physical COM port accessible via Windows Device Manager.
  - Up to 255 COM ports can be setup on a windows system simultaneously.
- Accessing Legacy COM port by using existing software and application.
- Provides RS-232 serial ports with +5VDC power output via COM 9th pin.
- Flexible port configuration with DevicePort on/off-line smart COM deployment.
  - Auto connection and mapping with MAC address bound.
  - Keeps physical COM port in system when DevicePort under off-line mode.
  - Serial signal staging until DevicePort recovery back to on-line mode.
- Built-in dual 10/100 Ethernet ports for Ethernet cascading capability.
- Low power consumption design of 2.5W for meeting Green Environmental movement.
- 15KV ESD protection for all serial signal lines meeting IEC-61000-4-2 standard.
- CE, FCC, VCCI, C-Tick, BSMI and RoHS certified, with Microsoft WHQL approval.

Note:

Ethernet I/O Redirection technology is SUNIX proprietary protocol for COM, LPT, and digital I/O expansion over categpry6/5 Ethernet cable.

![SUNIX logo]

**Expand legacy I/O ports over Ethernet connection**

The growth and advances of small form factor PC continues to meet challenges and open up new opportunities. SUNIX DevicePort® products are specifically developed to meet such requirements and to replace current add-on card solutions. Users can expand legacy I/O ports over Ethernet connection that improves solution deployment efficiency to achieve greater reliability in commercial and industrial automation applications.
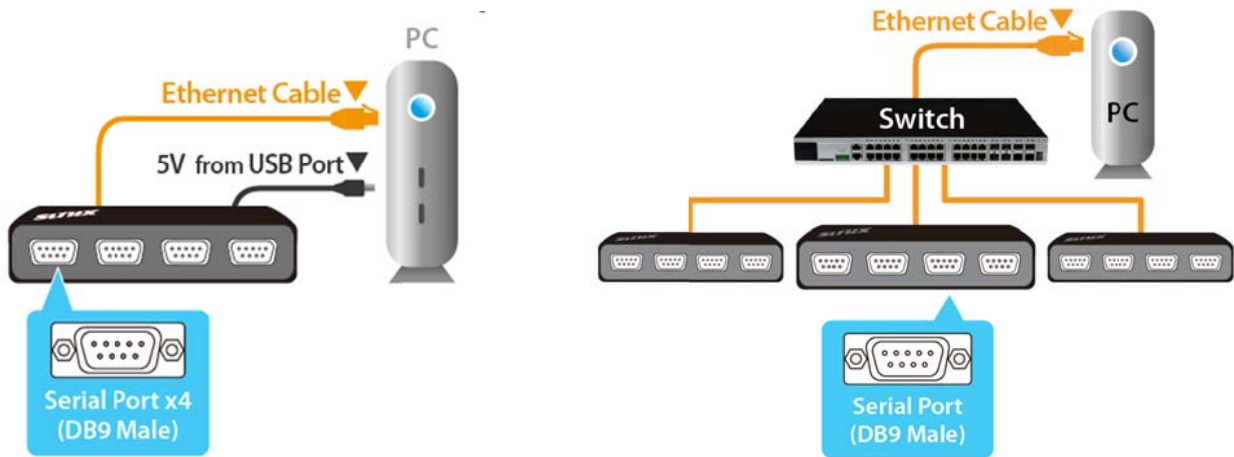
DevicePort® Advanced Mode supports both Direct-Link and Ethernet-Link connections

Cascading Ethernet Ports Make Wiring Easy

SUNIX DevicePort® has two 10/100 Ethernet ports built-in that can act as Ethernet switch for easy setup. One port connects directly to the network or server, and the other port can be connected to another Ethernet device or other DevicePort® via Daisy Chain mode. This will prevent complicated cabling setup, and reduce overall investment cost on networking equipment, such as switches.
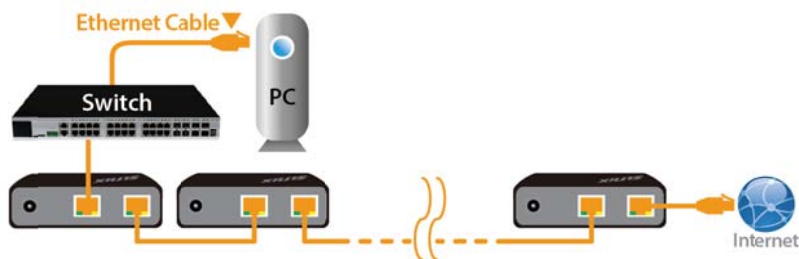
DevicePort® Daisy Chain Topology

SUNIX DevicePort® proprietary Ethernet I/O Redirection Technology

With Ethernet hot-plug and system auto-detect capability, user can expand RS-232 COM and Printer LPT port easily without complex software configuration. Just simply plug in the RJ45 Ethernet cable between SUNIX DevicePort® and PC Host, the computer system will create physical COM/LPT ports automatically with real time data transmit and receive communication. User can easily access the port by using existing software application, and TCP socket protocol re-compiling are not necessary.
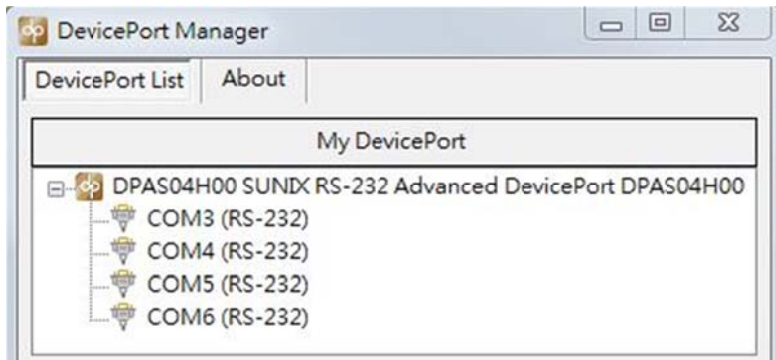
DevicePort® supports physical COM port mapping over Ethernet connection

SUNIX DevicePort® patented Powered COM Technology

SUNIX Powered COM feature can output +5VDC power to serial devices via DB9 COM port ninth pin. User can enable or disable Powered COM feature by software utility settings. Each COM port support +5VDC@750mA power current output to serial devices, such as barcode scanner, keypad, or serial display. It's convenient for users connecting serial devices without addition external power supply.

Smart COM Off-Line Deployment

SUNIX DevicePort® Advanced mode supports off-line mapping feature that able to keep hardware COM port resources within the system device manager even when DevicePort® being disconnected from the network. There are two major benefits on this Off-Line feature:

Ethernet Hot-Plug and Plug-n-Play capability – SUNIX DevicePort® will create or remove physical COM/LPT ports automatically from the system resources. However, most application software does not allow hardware COM/LPT to drop when specific ports are opened. Under certain harsh network environment scenario, to prevent application software to crash, DevicePort® off-line mapping feature will keep hardware COM/LPT port address within the system device manager when DevicePort® being disconnected from the network. After DevicePort® is re-connected back to the network, data communications will recover back to the same resources automatically.

Secondly, DevicePort® off-line mapping feature can also use to deploy to the system architecture design. System administrator can setup and create COM/LPT port right at the application software without physically making Ethernet connection to DevicePort®. SUNIX will provide corresponding API function library which allows software developers to easily develop their programs to manipulate any serial COM communication.
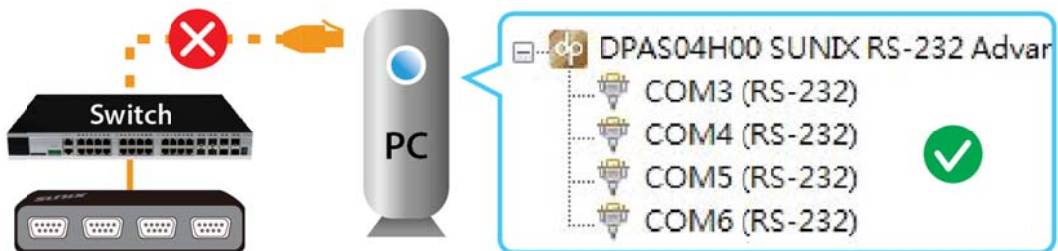

DevicePort® COM ports keep alive in the system without DevicePort® connecting

1.5 Product Applications

DevicePort® on Data Acquisition

With SUNIX DevicePort® Ethernet I/O Redirection Technology, traditional data collection which in the form of waveforms, on/off signals, or temperature readings have been greatly improved by the Ethernet networking feature. Ethernet allows systems to be more distributed, and remote monitoring is also possible. Here is the innovated example for centralized data acquisition solution;

A controller must be used (generally a PC or PLC) to connect to sensors and the SCADA/HMI system under traditional data acquisition infrastructure

Traditional Solution
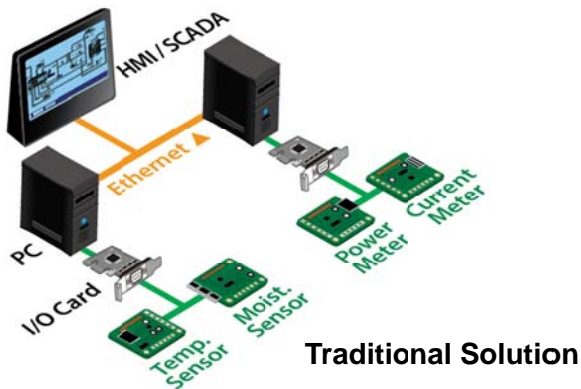
With SUNIX DevicePort®, data acquisition infrastructure changes from a centralized and localized system to a distributed and remotely monitored system. It also saves huge among of initial hardware investment and future maintenance cost.


SUNIX DevicePort® Solution
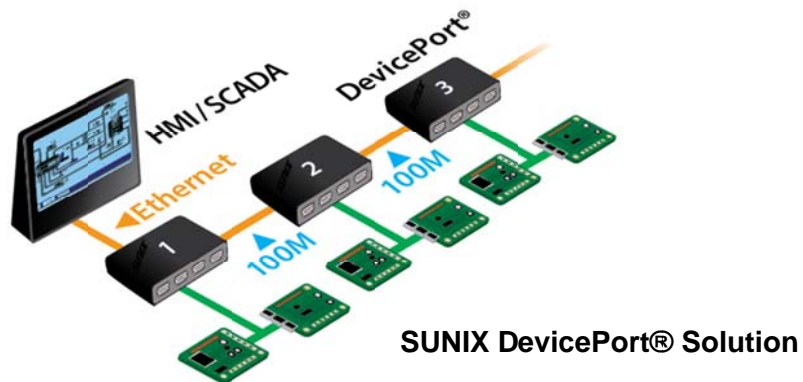
The best approach in deploying a distributed Ethernet-based data acquisition system is to create a device link through daisy-chain topology that saves implementation costs such as switches, cable wiring, as well as labor costs. SUNIX DevicePort® improves deployment efficient to achieve greater reliability in commercial and industrial automation applications, such as factory automation, security and surveillance systems.

DevicePort® on Mobile Tablet Computers

The Tablet computer market share is reaching its saturation point in the consumer market, but for enterprise applications, it has just started to pick up steam; as in commercial automation solution. Tablet computers can help to enhance employee productivity and increase sales incentives for many small businesses and retail sales sectors. However, most tablet computers lag with physical I/O connectivity; additional I/O docking stations are needed to make those peripheral connections; this will eventually reducing tablet computers mobility and conveniences.

With SUNIX DevicePort, Ethernet enabled Port Replicator, it's easy to expand Legacy RS-232 COM and Printer LPT ports wirelessly on tablet computers. By simply connecting the RJ45 Ethernet cable between the SUNIX DevicePort® and WiFi Access-Point, the tablet computers will create physical COM/LPT ports automatically with real time data communication within the same network. User can easily access COM and LPT ports remotely by using the existing software application without any need for physical cable connection on your tablet computers.
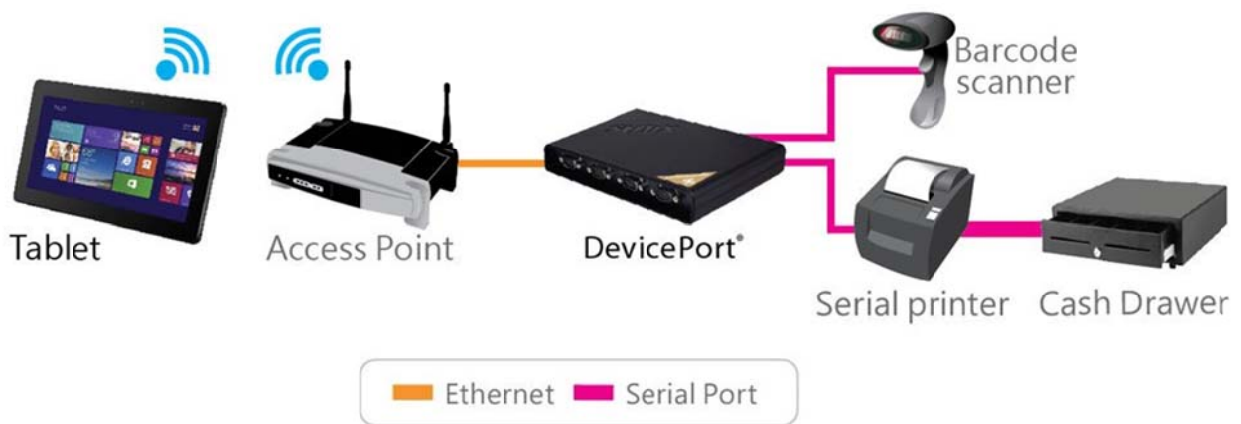
DevicePort® Mobile I/O Redirection Technology

1.6 Product Specifications

Serial Communication

Interface	RS-232	Baud rate	50bps ~115.2Kbps (Optional for 921.6Kpbs)
Controller	SUNIX DPL2000Q	Stop bit	1, 1.5, 2
BUS	Ethernet	Parity	even, odd, none, mark, space
No. of Port	2, 4, 8, 16 or 32-port (Product Dependent)	Flow Control	Xon/Xoff (software)
FIFO	1Kbyte Hardware / per port	Connector	DB9 Male
Signal	DCD, TxD, RxD, RTS, CTS, DTR, DSR, GND, RI		
Protection	±15KV ESD IEC6000-4-2 Air Discharge ±8KV ESD IEC61000-4-2 Contact Discharge ±4KV ESD IEC61000-4-2 Level2 Line-to-Line		

Ethernet Communication

Number of Ports	2-port Ethernet Switch Port
Speed	10/100 Mbps, auto MDI/MDIX
Connector	RJ45
Magnetic Isolation Protection	1.0K Built-in

Power Requirements

Input Voltage	+5VDC
Output Powered COM Capacity	+5VDC / Maximum 750mA / each port
Over Current Protection	1.1A PTC fuse for each power signal
Power Consumption	2.5W @ 5VDC (board only without power output to serial device)
Connector	DC-Jack

Driver Support

Microsoft Client	XP / 7 / 8 / 8.1 /10 (X86/X64)
Microsoft Server	2003 / 2008 / 2012R2 (X64)

Regulatory Approvals

| Hardware EMC	● EUR: CE EN55022 Class B, EN55024 ● US: FCC Part 15 Class B ● TAIWAN: BSMI: CNS13438 ● AS/NZS: C-Tick: CISPR22 AS/NZS ● JAPAN: VCCI
Software Driver	Microsoft WHQL Windows ● Microsoft Client: XP/7/8/8.1/10 (X86/X64) ● Microsoft Server: 2003/2008/2012R2 (X64)

Environment

Operation Temperature	0 to 45°C (32 to 113°F)
Operation Humidity	5 to 95% RH (non-condensing)
Storage Temperature	-20 to 85°C (-4 to 185°F)

Physical Characteristics

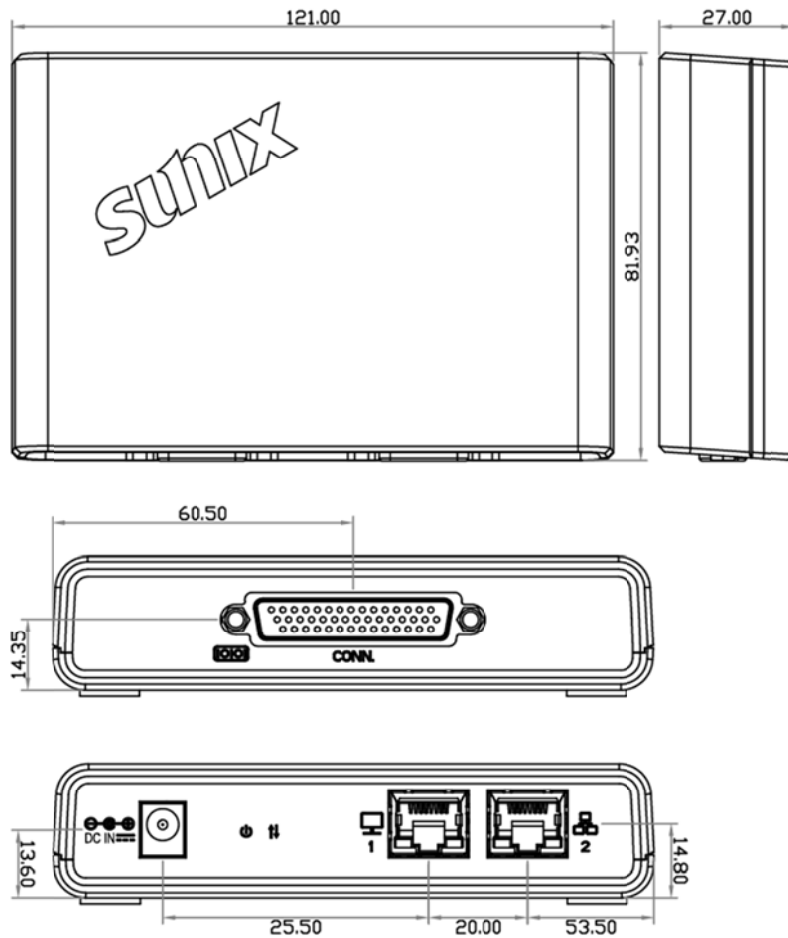|	
Housing	ABS, PC, Metal
Weight	(Product Dependent)
Dimensions	(Product Dependent)

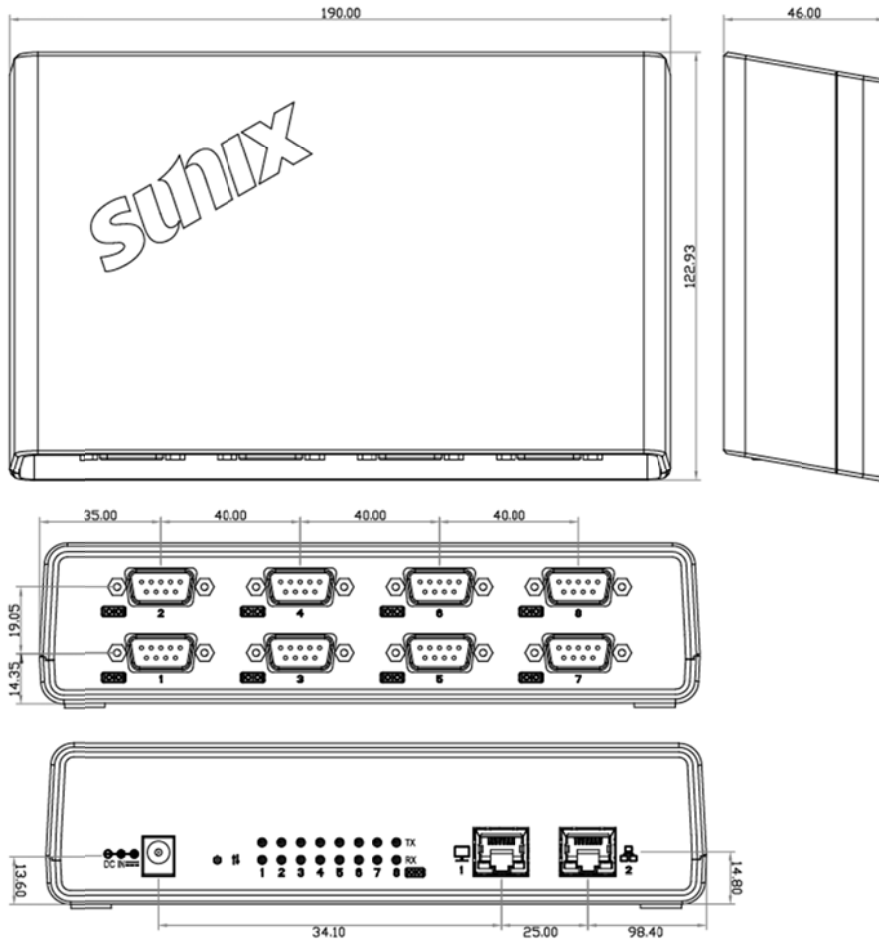- **2-port Model (DB9M Type)**
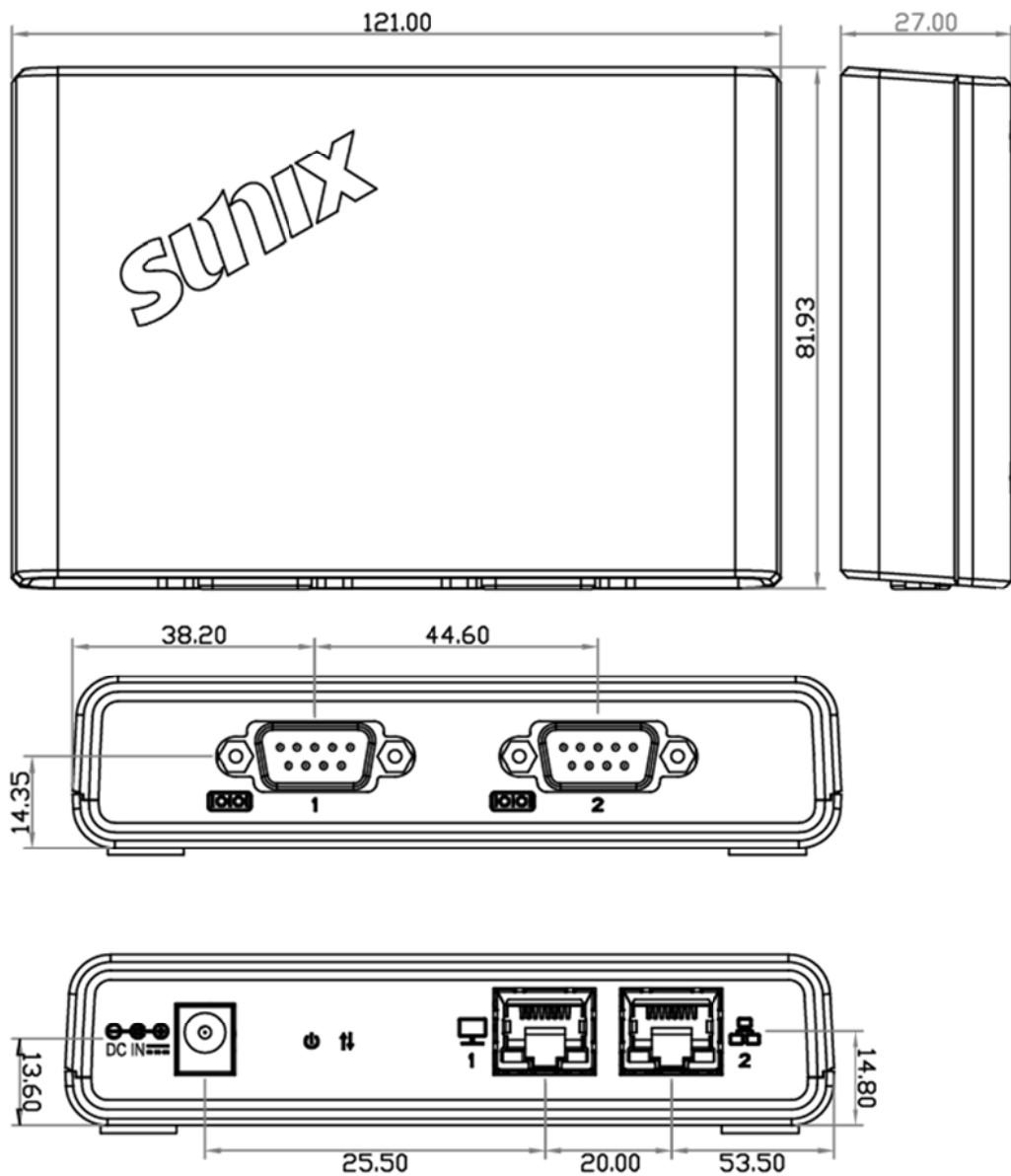
- **4-port Model (DB9M Type)**
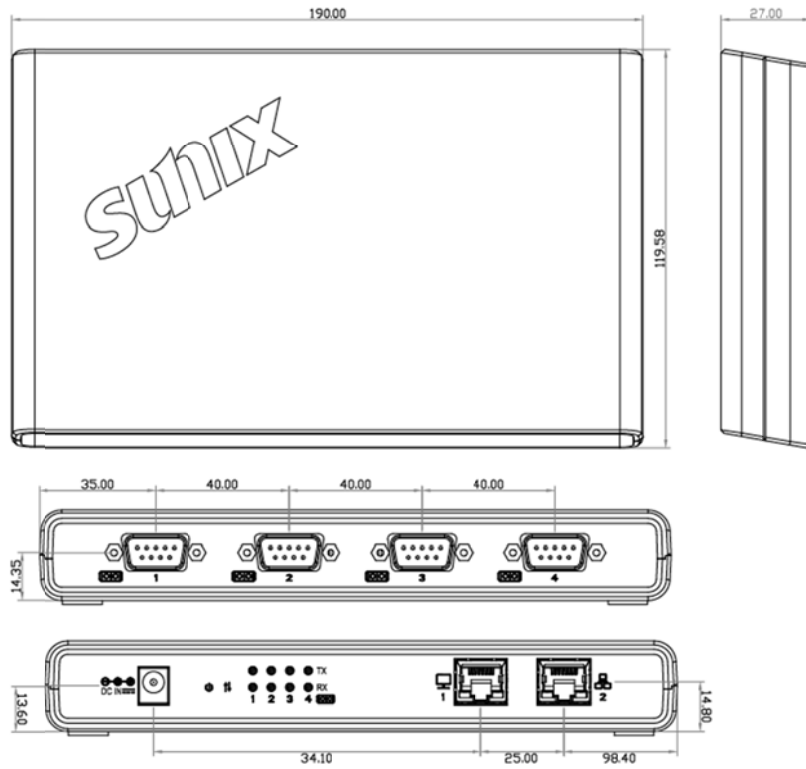
- **4-port Model (DB44F Type)**

- **8-port RS-232 (DB9M Type)**

2.
Hardware Installation

This chapter includes information about hardware installation for SUNIX DevicePort®. The following topics are covered:

- **2.1 Hardware Guide**
- **2.2 Hardware Installation**
- **2.3 Pin Assignments**

2.1 Hardware Guide

This chapter provides the definitions of I/O port.

| No.	Function	Descriptions
①	Power DC Jack	Input power range **+5V**DC
②	Power LED	ACT when power on
③	Mapping LED	ACT when COM port mapping ready in system
④	Rx Data LED	ACT when serial COM port receive data
⑤	Tx Data LED	ACT when serial COM port transmit data
⑥	Ethernet Port 1 (RJ45 Type)	Ethernet connection (Ethernet Switching Port)
⑦	Ethernet Port 2 (RJ45 Type)	Ethernet connection (Ethernet Switching Port)
⑧	COM Port (DB9M Type)	COM port number sequence (Product Dependent)
⑨	Reset Button	Use Reset Button to restore factory default settings

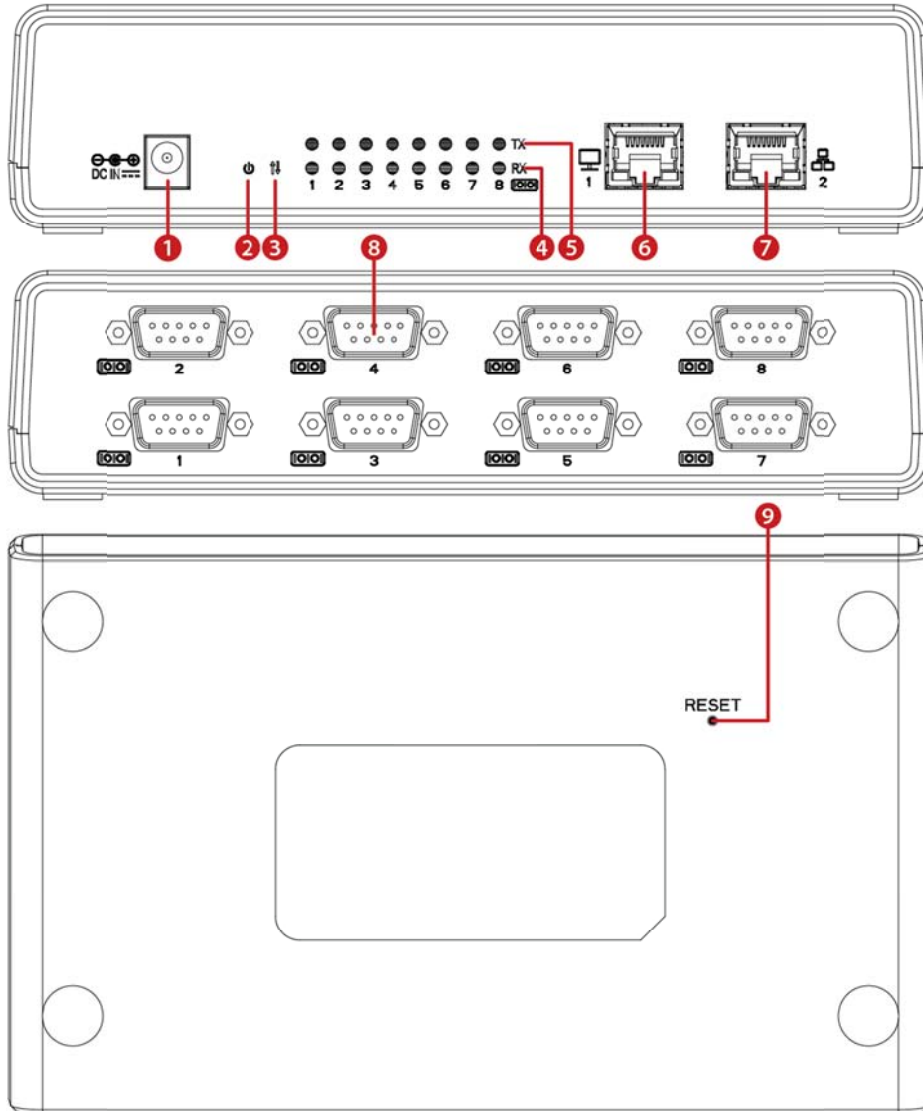● **2-port Model (DB9M Type)**
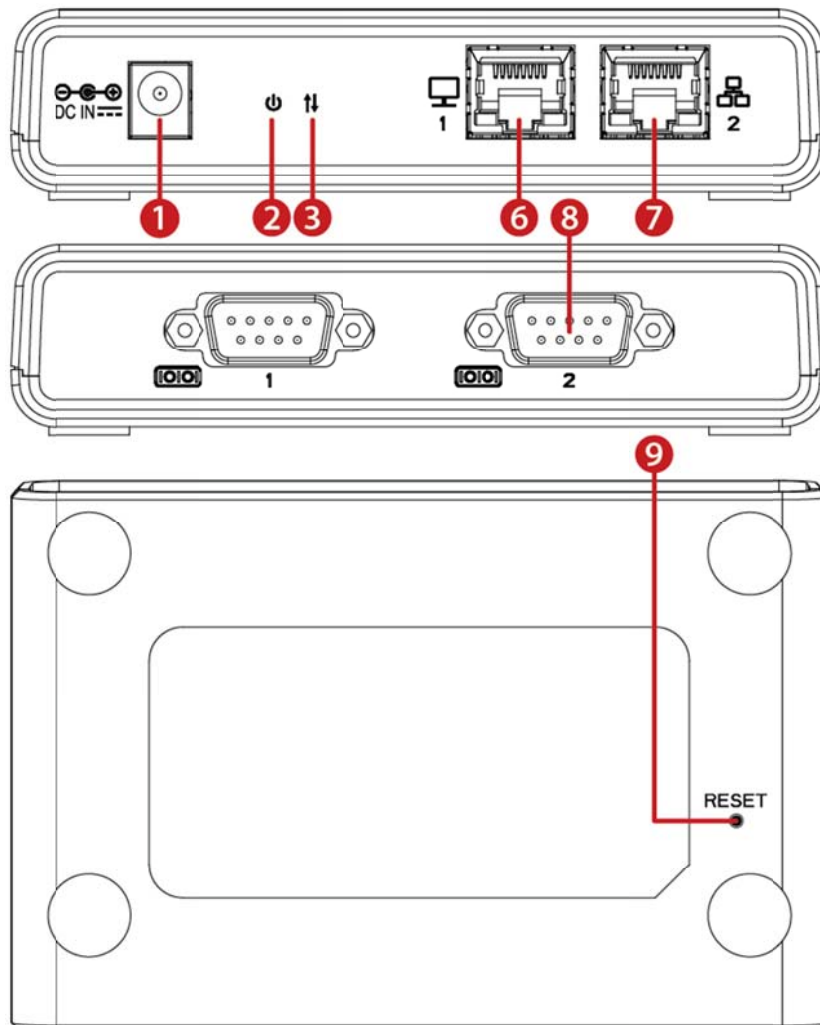
- **4-port Model (DB44F Type)**
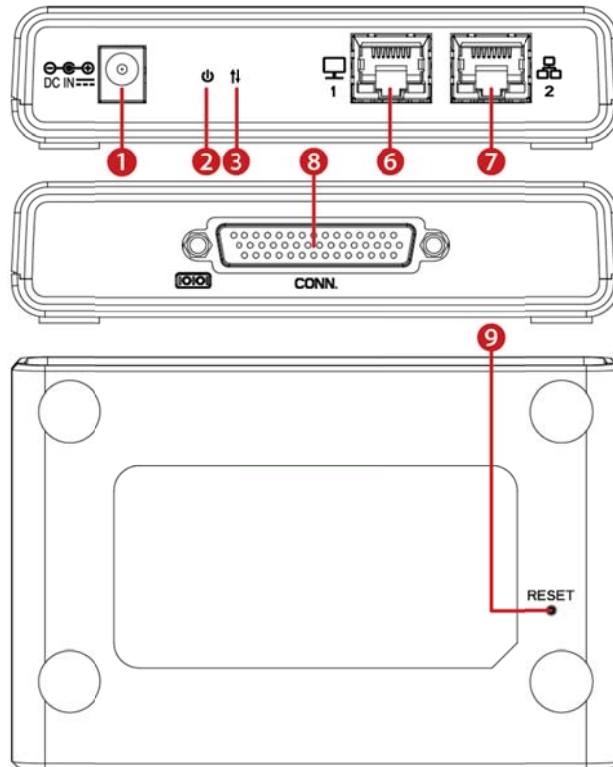
- **4-port Model (DB9M Type)**
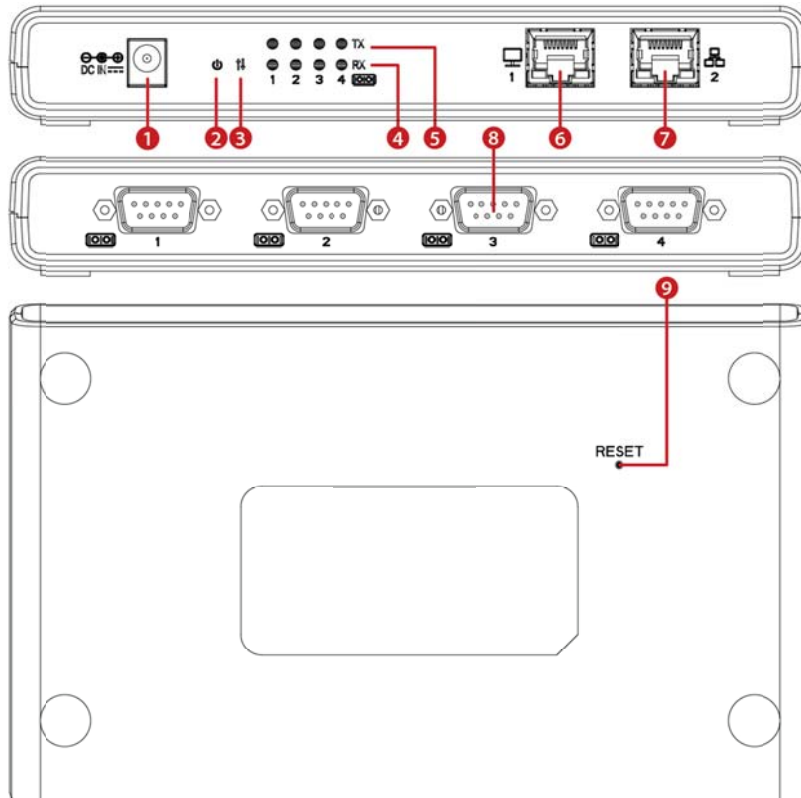
● **8-port Model (DB9M Type)**

2.2 Hardware Installation

The hardware installation of SUNIX DevicePort® Advanced Mode product is easy to carry out. Follow the steps below to connect the related devices.

Step1. Connect power from USB power cable or power adapter.
Connect the single DC output connector of the power adapter to the power jack on the back of the SUNIX DevicePort®. You can use enclosed USB cable to connect external +5VDC power from PC's USB port or an AC/DC power adapter connection from AC outlet.
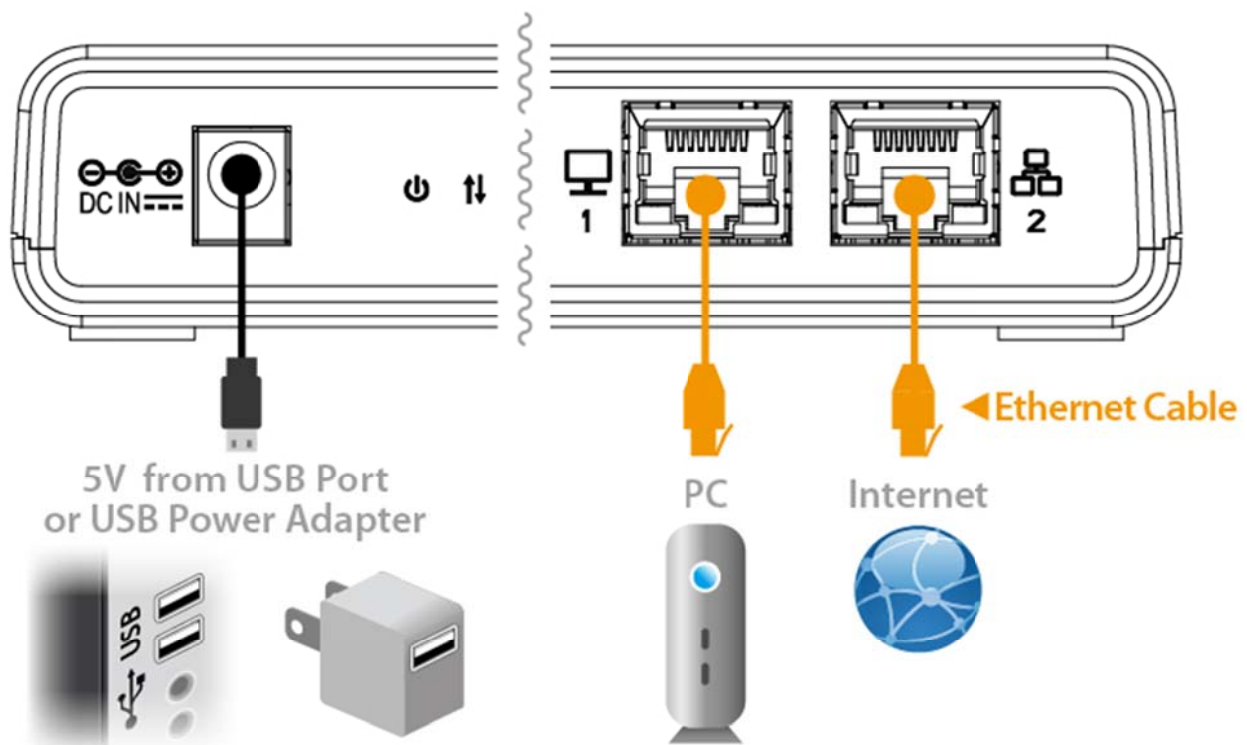
Step2. Connect SUNIX DevicePort® to PC or Ethernet network.
Attach one end of the Ethernet cable with RJ-45 connectors to your PC's Ethernet port or Ethernet switch Hub port, and the other end to SUNIX DevicePort® Ethernet port 1 or 2.

Step3. Multiple DevicePort® with daisy chain network.

SUNIX DevicePort® has two 10/100 Ethernet cascading ports built-in that can act as Ethernet switch for easy setup. One port connects directly to the network or server, and the other port can be connected to another Ethernet device or other DevicePort® via Daisy Chain mode. This will prevent complicated cabling setup, and reduce overall investment cost on networking equipment, such as switches.

Attach one end of the Ethernet cable with RJ-45 connectors to your PC's Ethernet port or Ethernet Switch Hub, and the other end to the **LAN downstream** **port** **number 1** of **first layer** SUNIX DevicePort®.

Attach the second Ethernet cable connection between **LAN upstream** **port number** **2** of **first layer** SUNIX DevicePort® and **LAN downstream** **port number 1** of **second layer** SUNIX DevicePort®.

You can repeat above operation to multiple layers. SUNIX DevicePort® daisy chain network topology supports maximum 255 COM and 3 LPT ports expansion.


DevicePort® Advanced Mode Daisy Chain Topology
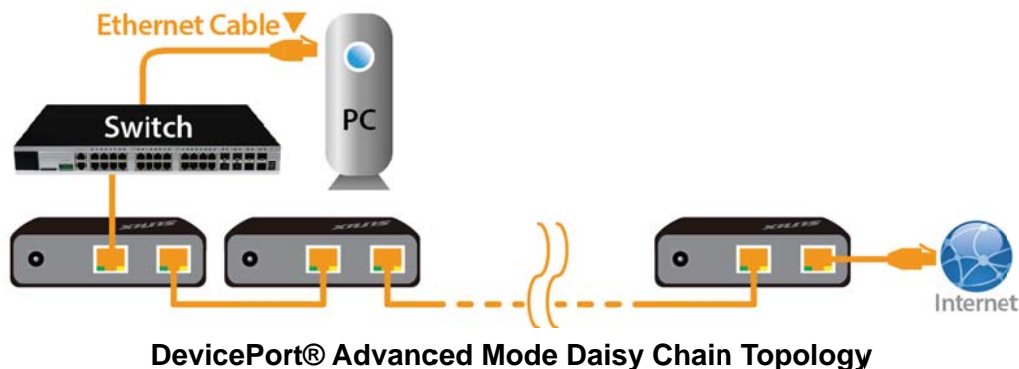
Note:

In order to make sure serial (RS-232/422/485) connecting with real time data communication, be sure to deploy SUNIX DevicePort® products in the same local networking environment with your PC server. SUNIX DevicePort® does not support hinge of different network segment nor cross router connection.

2.3 Pin Assignment

This chapter provides the RS-232 powered COM pin assignments of SUNIX DevicePort®.
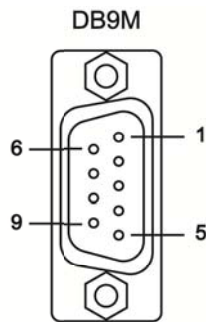
PIN	Define
1	DCD
2	RxD
3	TxD
4	DTR
5	GND
6	DSR
7	RTS
8	CTS
9	RI / +5VDC

SUNIX patented Powered COM feature can output +5VDC power to serial devices via DB9 COM port ninth pin. Each COM port support +5VDC@750mA power current output to serial devices, such as barcode scanner, keypad, or serial display. It's convenient for users connecting serial devices without additional power adapter. User can enable or disable Powered COM feature by software utility settings. Please refer to chapter 4.3 for detail. DevicePort **Default setting is standard RS-232 signal without 5VDC power output.**

CAUTION

1. Be sure to clarify your serial device power voltage sourcing and COM port pin number to prevent any further problem, before connecting Powered COM to your serial device

2. Wrong operation damages connected serial device. SUNIX is NOT responsible for user's wrong operation, including wrong input power voltage, wrong power output setting, or carelessness cable wiring.

3. SUNIX DevicePort® has to source +5VDC power from PC's USB port or additional power adapter accessory, and total power output capacity depends on the power source ability.

Ethernet RJ45 Interface:

SUNIX DevicePort® is provided standard Ethernet ports. According to the link type, DevicePort® uses CAT 3, 4, 5,5e UTP cables to connect to any other network device (PCs, servers, switches, routers, or hubs).　Please refer to the following table for cable specifications.

Cable Types and Specifications

Cable	Type	Max.　Length	Connector
10BASE-T	Cat. 3, 4, 5　100-ohm	UTP 100 m (328 ft)	RJ-45
100BASE-TX	Cat. 5　100-ohm UTP	UTP 100 m (328 ft)	RJ-45

#

With 100BASE-TX/10BASE-T cable, pins 1 and 2 are used for transmitting data, and pins 3 and 6 are used for receiving data.

SUNIX DevicePort® supports auto MDI/MDI-X operation. You can use a straight- through 100BASE-TX/10BASE-T cable to connect PC to DevicePort®.

RJ45 LED Definition:
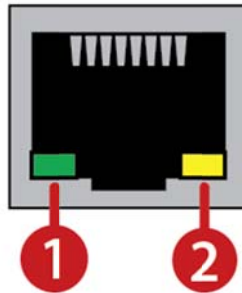
No.	LED	Function	Descriptions
1.	Green	Link	LED act when 100M Ethernet Link
1.	N.A.	Link	LED does NOT act when10M Ethernet Link
2.	Yellow	Action	LED act when data communication

3.
Driver Installation

After connecting SUNIX DevicePort® Advanced Mode product to your system successfully, please follow the step by step software installation guide to confirm how to install appropriate driver and configure the serial port settings. By scanning QR code on the product or visiting SUNIX official website *http://www.sunix.com* to download least driver.

The driver for SUNIX DevicePort® supports Windows operating systems, and you can select your requirement in the following chapter:

The following topics covered in this chapter:

- **3.1 Windows Driver Installation**
- **3.2 Microsoft®.NET Framework 3.5 Installation**
- **3.3 Windows Driver Uninstallation**
- **3.4 Verify Installation**

![SUNIX logo]

3.1 Windows Driver Installation

Please refer to following instructions to install SUNIX DevicePort® driver for the first time under Windows operation system. You will need to connect SUNIX DevicePort® to PC ready, before installing the driver.

(1) You can download the latest driver from SUNIX official website (*http://www.sunix.com*) by searching "DevicePort Advanced Mode" or "DP**A**S".

(2) Please execute ***Setup.exe*** to install driver. Driver InstallShield Wizard will show up and please wait for driver install procedure running.
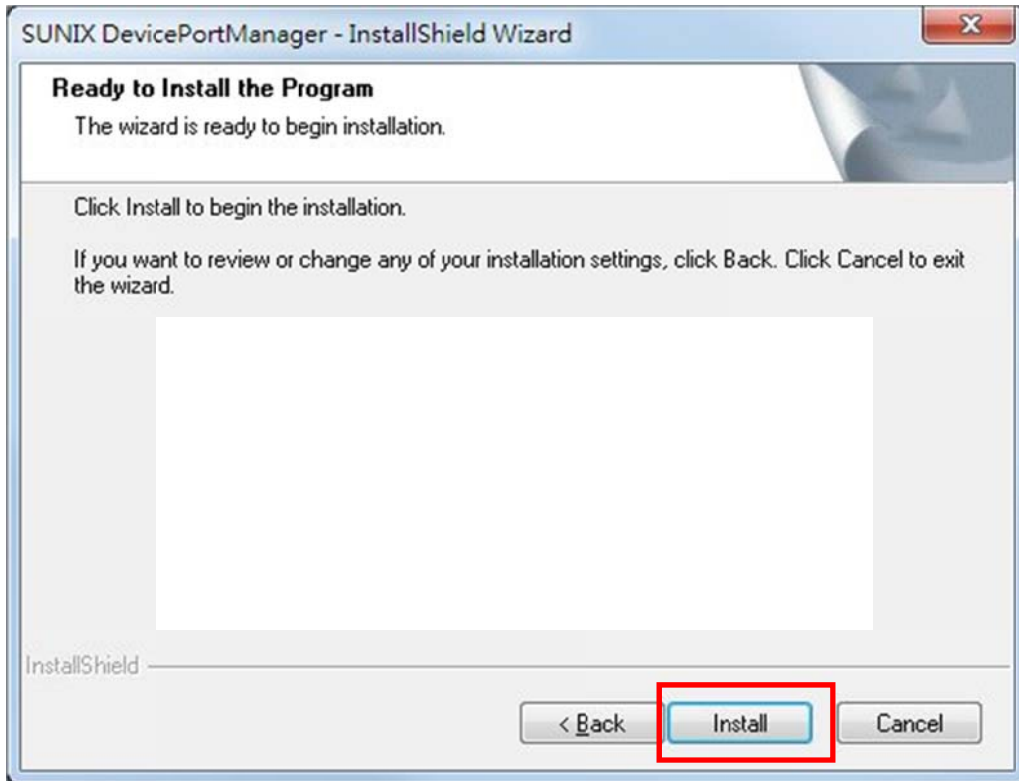

Setup.exe
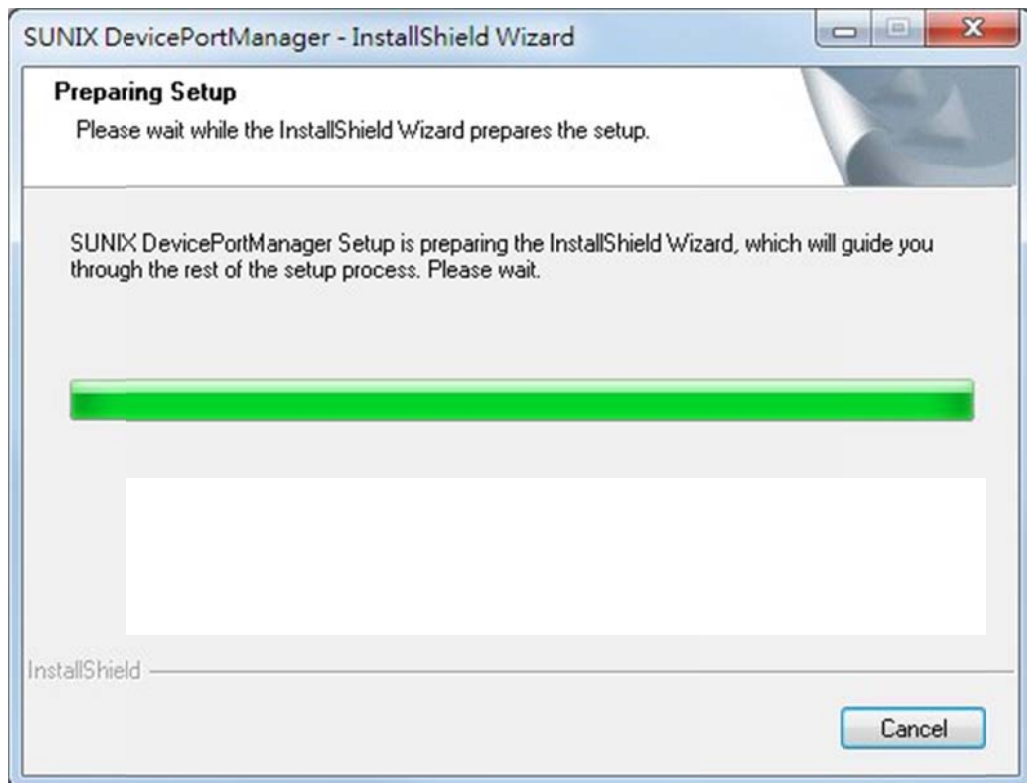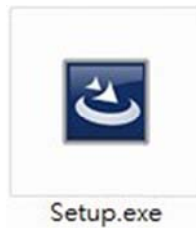
SUNIX.

(3) Click "**Next**" to continue driver installation steps.
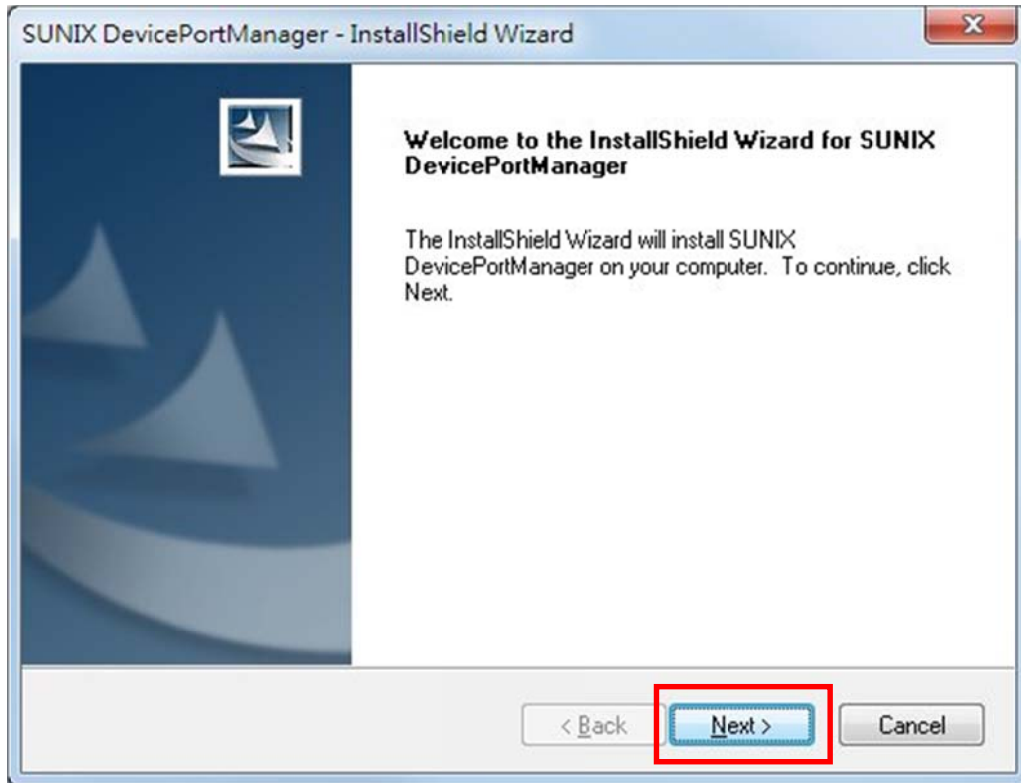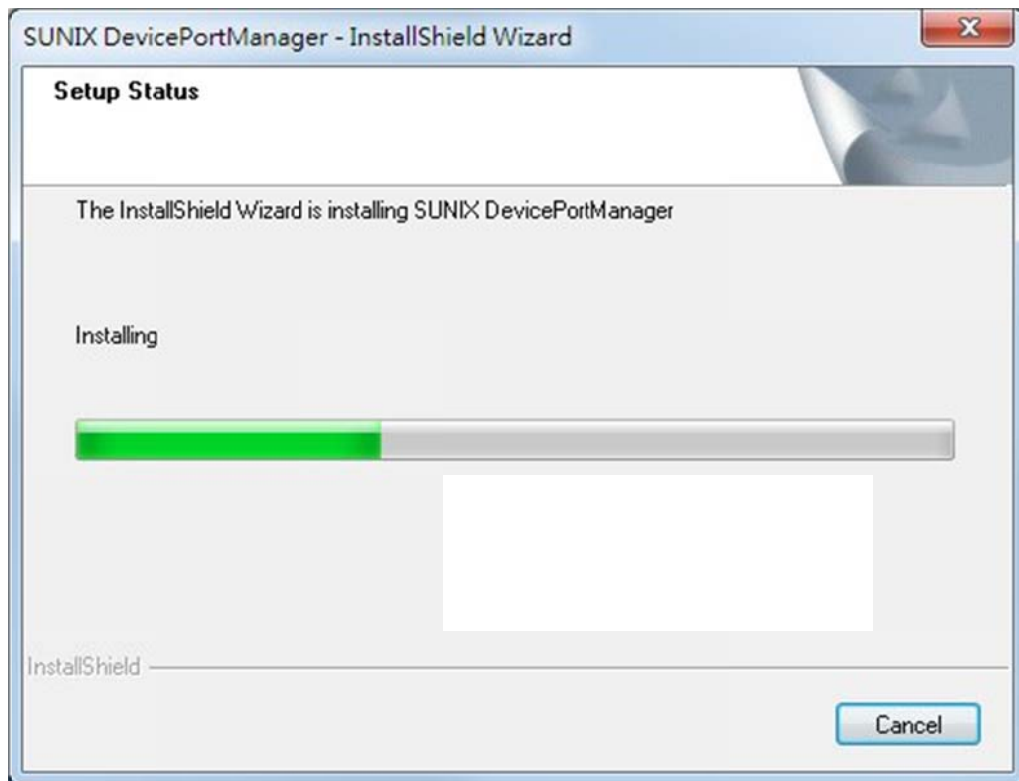

(4) Select SUNIX DevicePort Manager Utility destination location.
   Click "**Next**" to continue driver installation steps.
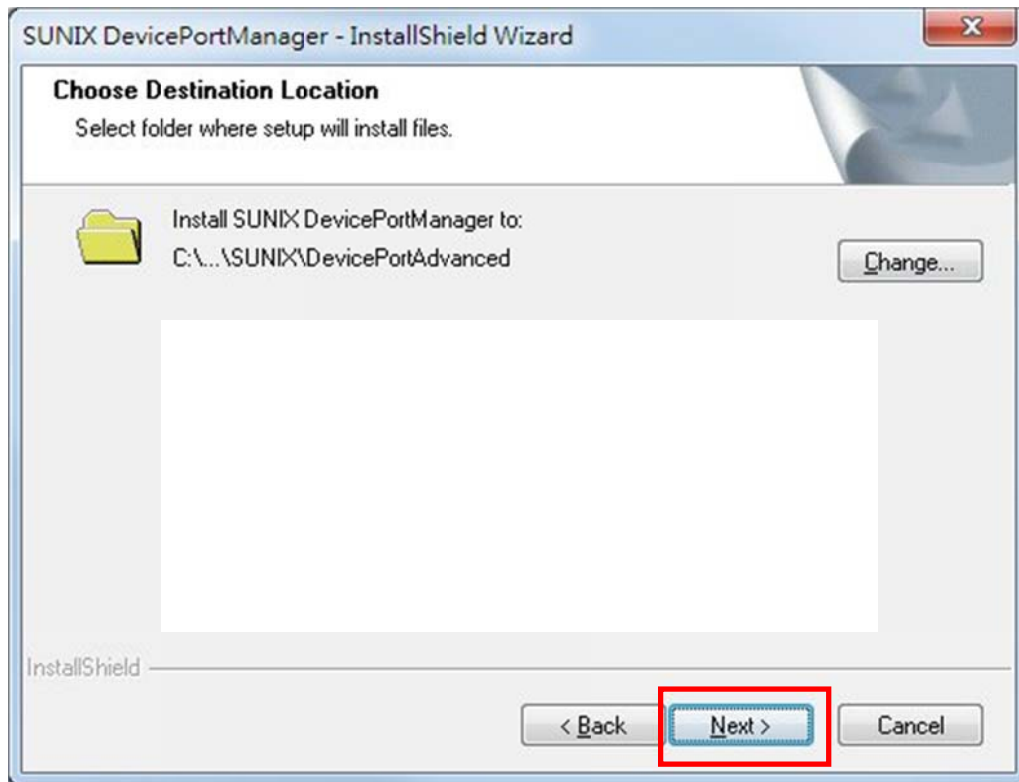
(5) Click "**Install**" to continue driver installation steps.
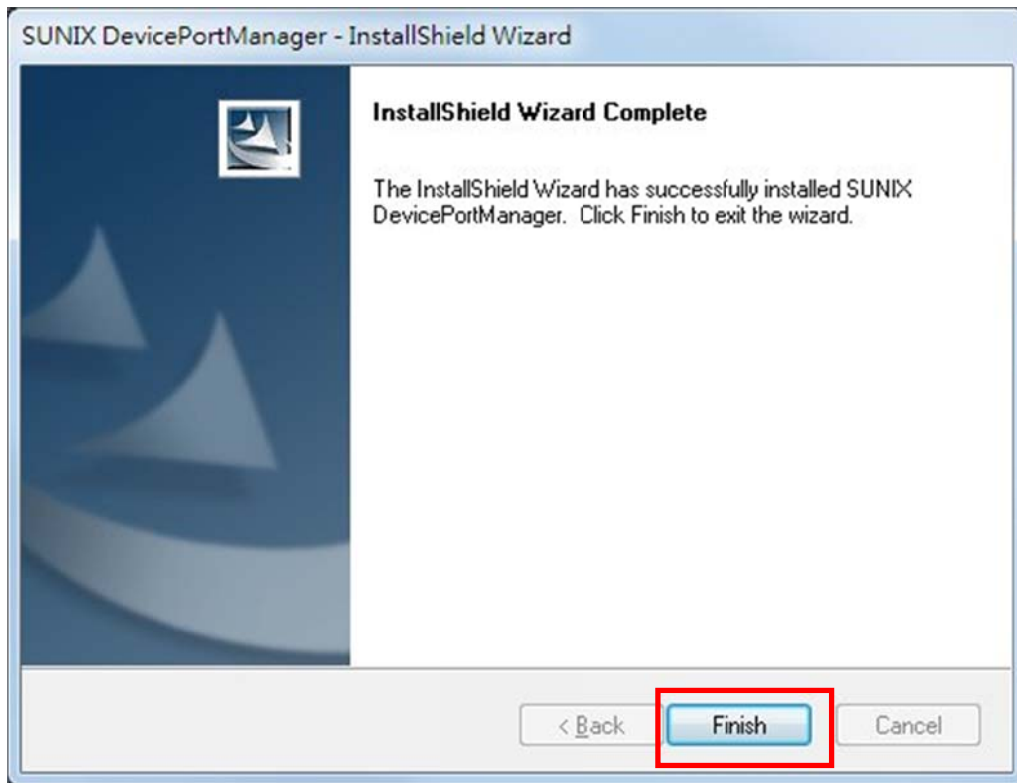

(6) System will install driver automatically. It takes about one minute.

(7) Click "**Install**" to continue driver installation steps.

(8) Click "**Finish**" to end installation steps.

(9) If your operation system does not include Microsoft®.NET Framework 3.5 (or 3.5 service pack1) package, Windows 8/8.1/10 wizard will show this warning screen as below. Please click "**Download and install this feature**".
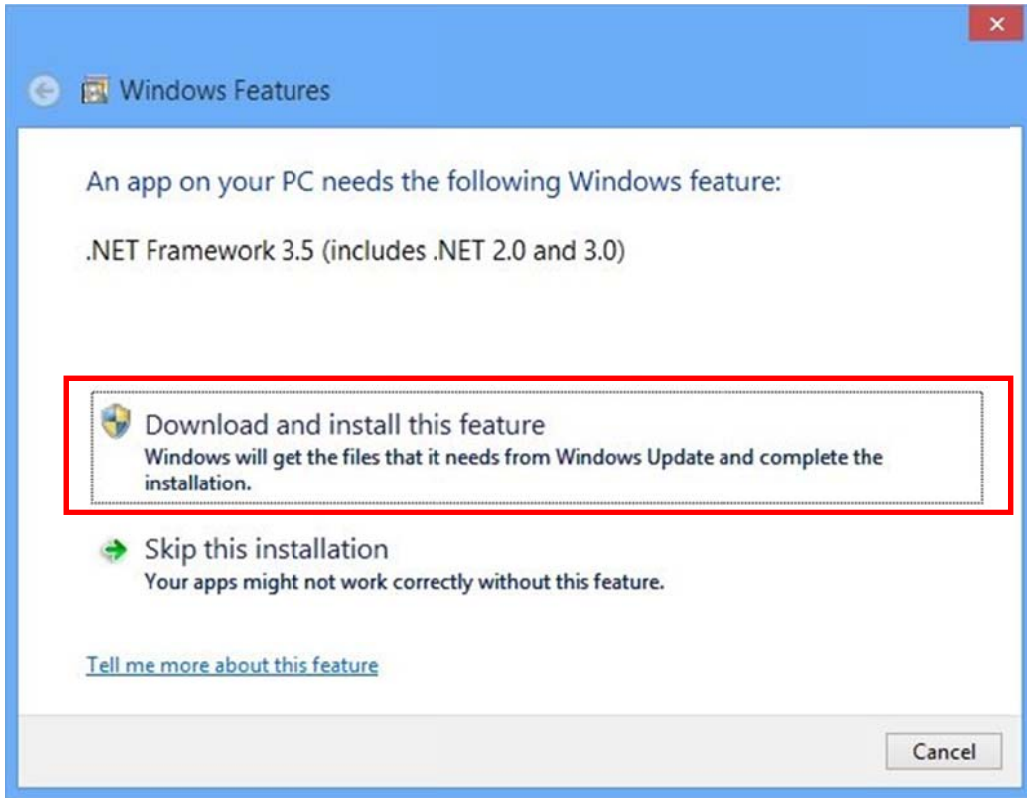
(10) System will search and download required files from internet. Be sure to connect your PC to internet and system will download it automatically. You may take 10~15 minutes downloading required files, and it depends on your internet connection performance.
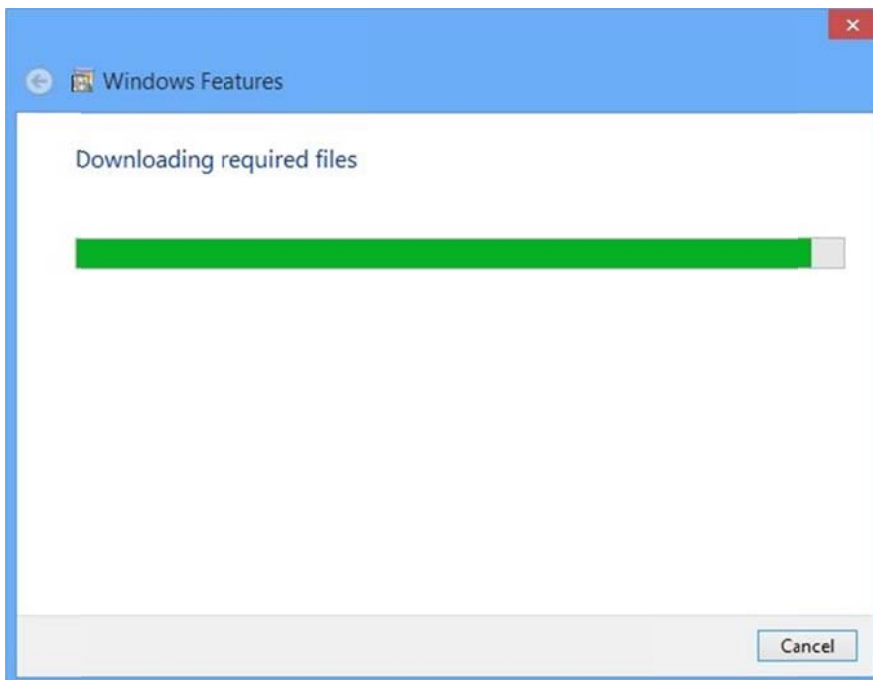
(11) After downloading Microsoft®.NET Framework 3.5 ready, system will install it automatically. Please reboot your PC to enable this new feature.
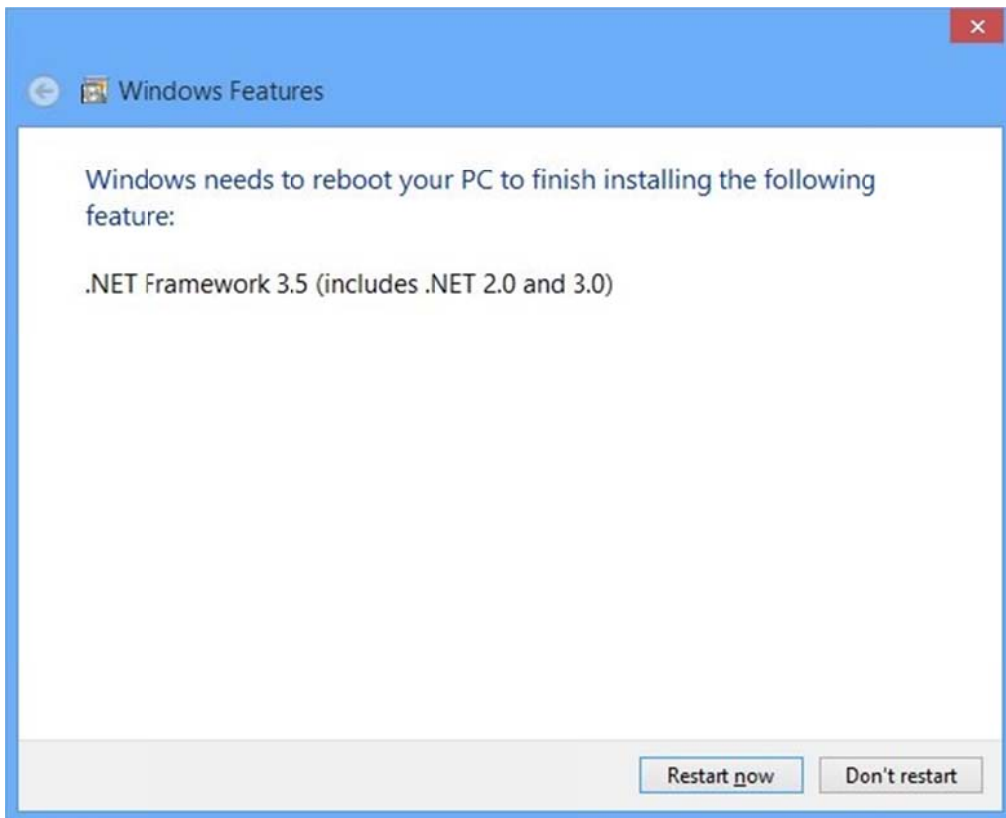
Note:

Under Windows XP operation system, user will not read above Microsoft®.NET Framework 3.5 required wizards. User has to download and install Microsoft®.NET Framework 3.5 (or 3.5 service pack1) software package by themself. Please refer to chapter 3.2 Microsoft® .NET Framework 3.5 Installation for more detail.

3.2 Microsoft® .NET Framework 3.5 Installation

SUNIX DevicePort application design bases on Microsoft®.NET Framework software, and Microsoft®.NET Framework 3.5 (or 3.5 service pack1) is required. The table in this topic provides the operating system for the Microsoft® .NET Framework editions.

Operating System	.NET Framework Edition	Remarks
Windows **XP**	N.A.	User has to install .NET Framework 3.5
Windows **Vista**	.NET Framework **3**	-
Windows **7**	.NET Framework **3.5**	-
Windows **8 / 8.1**	.NET Framework **4** or **4.5**	User has to install .NET Framework 3.5
Windows **10**	.NET Framework **4** or **4.5**	User has to install .NET Framework 3.5
Server **2008**	.NET Framework **4**	User has to install .NET Framework 3.5
Server **2012**	.NET Framework **4** or **4.5**	User has to install .NET Framework 3.5

Please note that Microsoft®.NET Framework 4 or 4.5 is NOT include previous editions. User has to install Microsoft®.NET Framework 3.5 or 3.5 Service Pack 1 separately. Due to Microsoft® licensed issue, .NET Framework 3.5 setup package is not included, user can go to Microsoft official website (http://www.microsoft.com/) or search keyword ".NET Framework 3.5" to download software package.
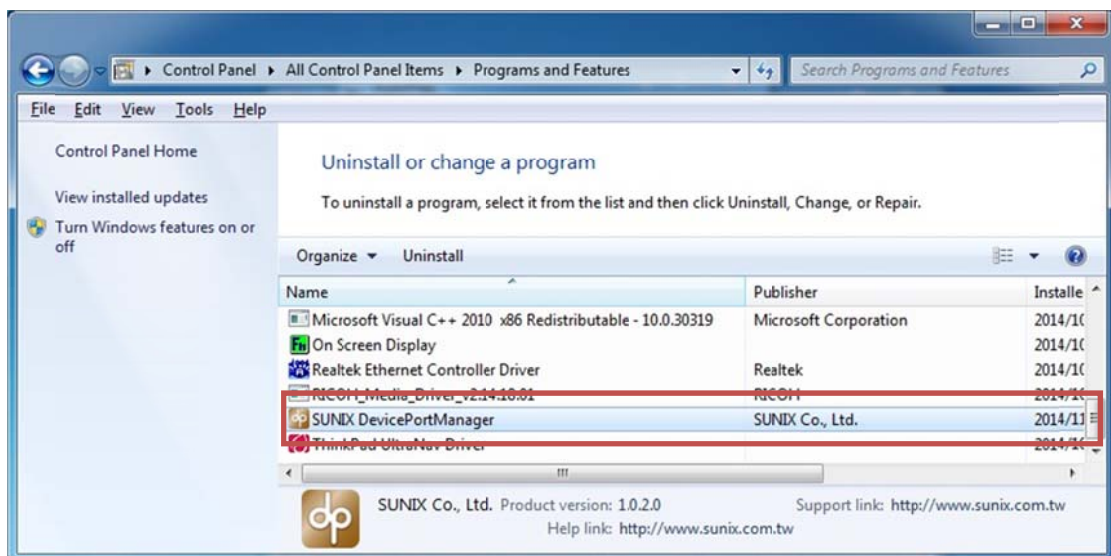
3.3 Windows Driver Uninstallation

Please refer to following instructions uninstall SUNIX DevicePort® driver.

(1) Click on the "**Programs and Features**" tab in the Windows Control Panel.

Start > Controller Panel > Programs and Features

(2) Entry Uninstall or change a program page, and double click "**SUNIX DevicePort Manager**" to process driver uninstallation procedure.

3.4 Verify Installation

You can access Windows "**Device Manager**" to verify proper installation.

(1) Click on the "**Programs and Features**" tab in the Windows Control Panel.

Start > Controller Panel > Device Manager
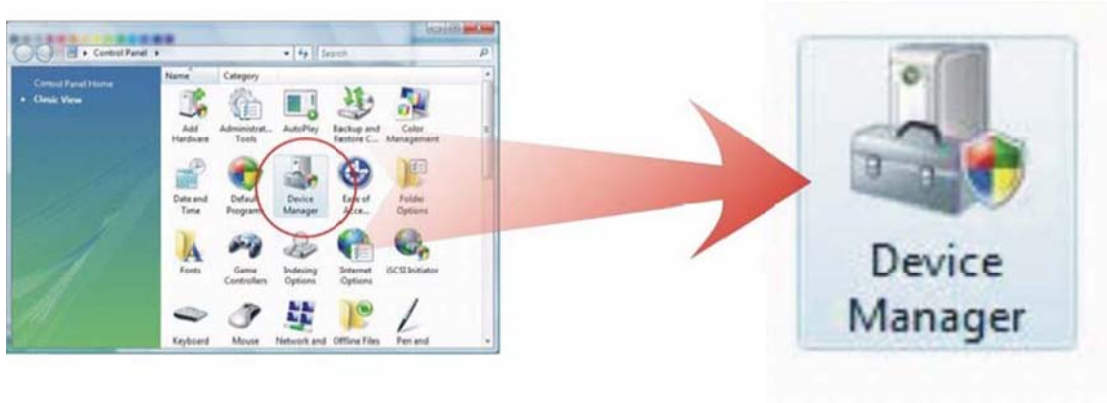
(2) In the Device Manager window, you should see SUNIX COM port under **Ports (COM & LPT)**. (4-port DevicePort® in this example)

(3) You also can check SUNIX DevicePort® box and COM/LPT port mapping status over **SUNIX DevicePort® Manager** by executing **dp icon** on the windows desktop system tray.
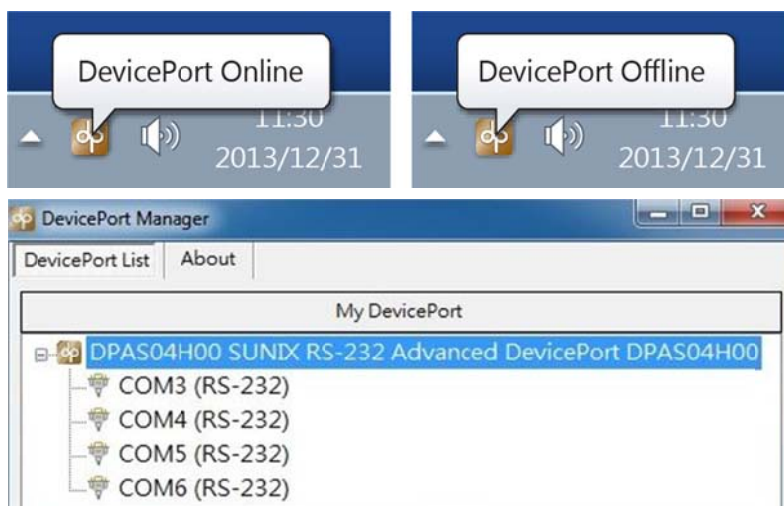
4.
DevicePort® Configuration

This chapter shows SUNIX DevicePort® Manager Utility operating and Serial COM settings that user came with usually, such as MAC address, device name, COM port number, baud rate, and other features.

The following topics covered in this chapter:

- **4.1 SUNIX DevicePort Manager Utility Operating**
- **4.2 SUNIX DevicePort Hardware Settings**
- **4.3 Configure Serial Port Settings**

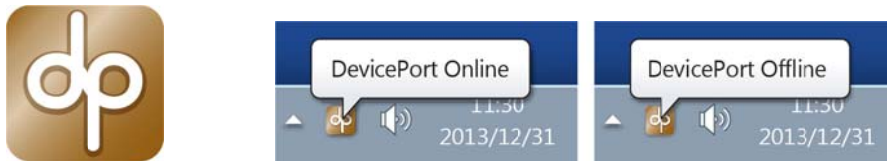# 4.1 SUNIX DevicePort Manager Utility Operating

SUNIX DevicePort® Manager Utility (Microsoft Windows version) is design for DevicePort® Advanced Mode product. DevicePort® Manager Utility provides DevicePort® management and port mapping features for user remotely control and configure DevicePort® product over Ethernet network operation.

Access **SUNIX DevicePort® Manager** by executing golden **dp icon** on the windows desktop system tray. User can view connected SUNIX DevicePort® box status in the utility.

SUNIX DevicePort® Manager Utility is divided into three tables.
(1) **My DevicePort:** List DevicePort® connection and port-mapping are ready in the system.

(2) **Paired DevicePort:** List DevicePort® was mapping ready, but off-line connection now.
    However COM port resource still keeps in the system, it's called as "**Off-line Mapping**".

(3) **Available DevicePort:** List DevicePort® items are free for connection.
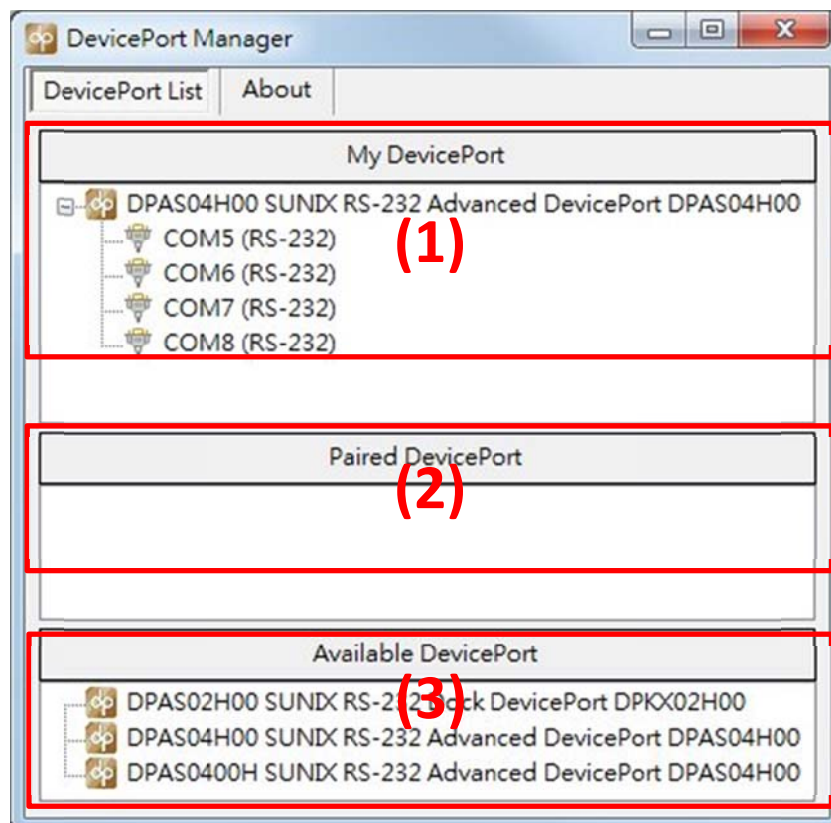
(1) Searching DevicePort® on the Network

After **SUNIX DevicePort® Manager** drivers are installed and launched; connecting SUNIX DevicePort® advanced mode product in the same network area with PC server, and you can discover DevicePort® list free for connection in the **Available DevicePort** table.

SUNIX DevicePort® Manager utility will sent broadcast domain to all DevicePort® products within the same LAN segment. SUNIX DevicePort® will respond automatically and show in the discovery list, so it's not necessary scan or search DevicePort® product manually.

You can discover DevicePort® connection list on DevicePort® Manager utility. This is an example for a 4-port DevicePort® Advanced Mode product connecting screen shot.
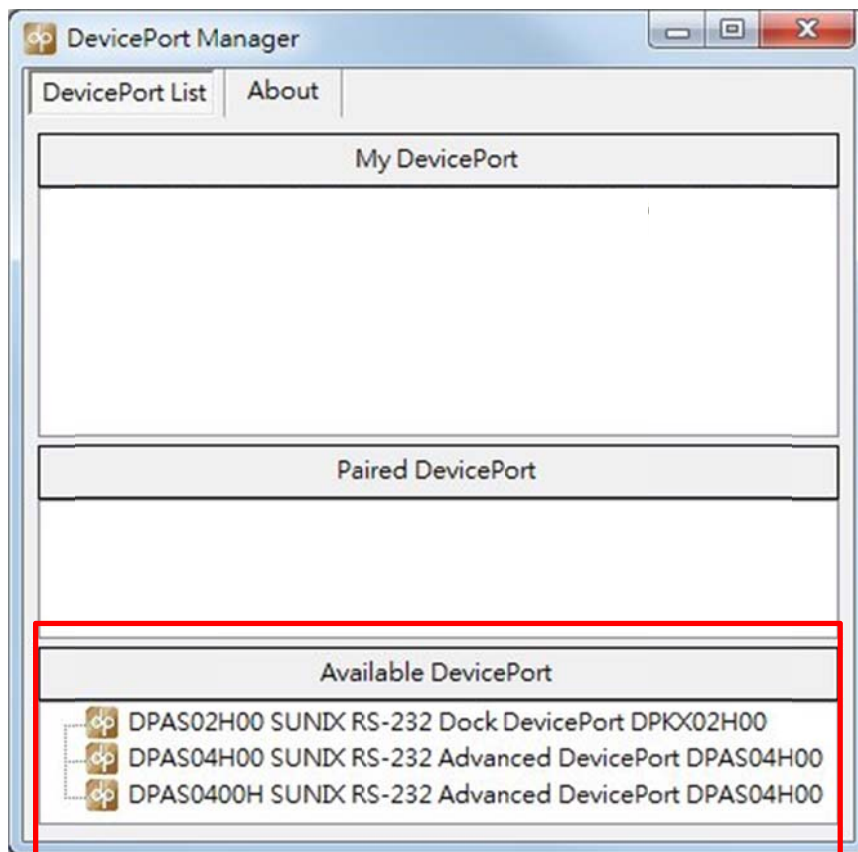
To identify SUNIX DevicePort® items in the networking, you can move on your mouse on the DevicePort® discovery list, and you can read their respective MAC address.
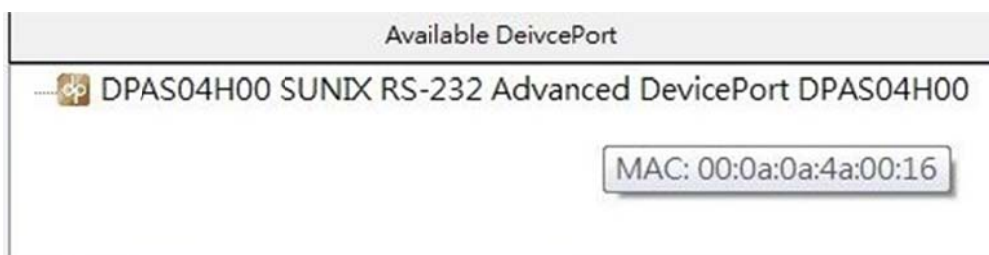
(2) Connect DevicePort® on the Network

To connect DevicePort®, please double click or right-click mouse on the discovered DevicePort® in **Available DevicePort** table.
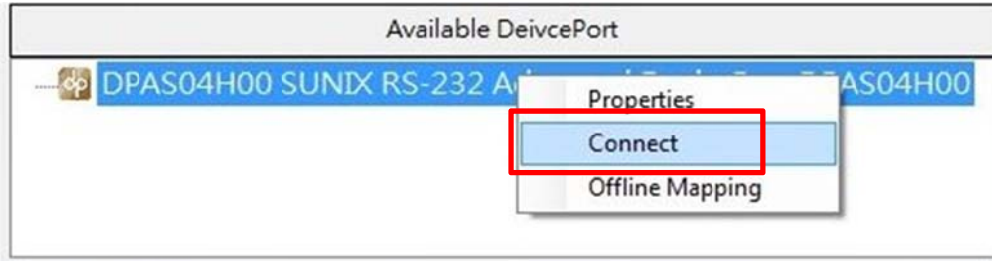
If discovered DevicePort® connects successfully, this authorized DevicePort® item will change status to the **My DevicePort** table in the DevicePort Manager Utility.
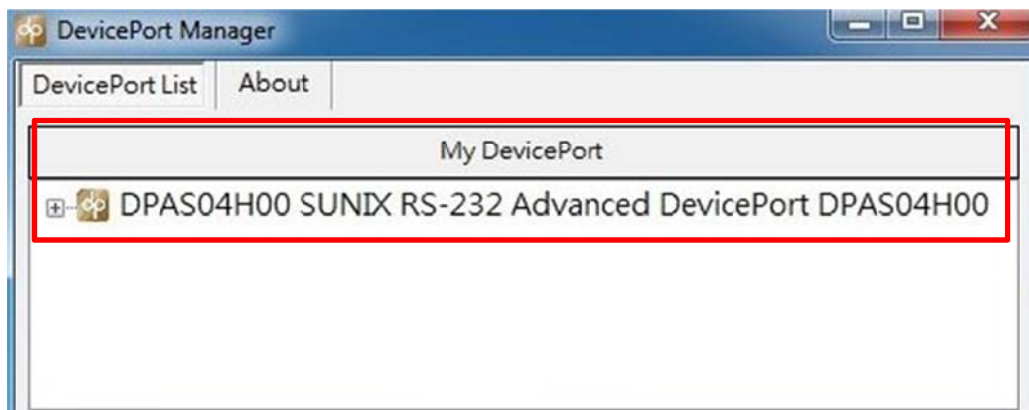
When connect discovered DevicePort®, if "**Enter Password**" prompts for a password, you have to enter the authorized password; then you can access this secure DevicePort® item.

> **Note:**
> Disable password access protection is factory default setting. If you forgot access password, please use Reset Button to restore factory default settings manually.

(3) DevicePort® Port Mapping on the PC Server

Click "**+**" sub-tree to open DevicePort® detail. COM port mapping status will show up on DevicePort® Manager "**My DevicePort**" table. This is an example for a 4-port DevicePort® Advanced Mode product screen shot.
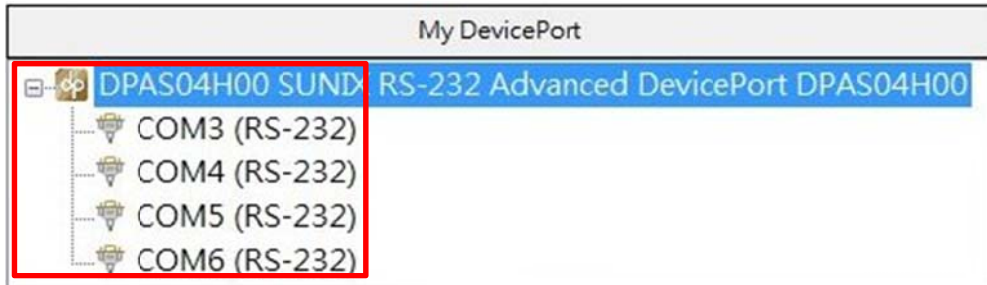
User can access Windows "**Device Manager**" to verify COM port mapping status. Below picture shows 4-port DevicePort® COM port mapping result, and user should discover SUNIX COM port COM3, COM4, COM5, and COM6 under **Ports (COM & LPT) item**.

(4) Disconnect DevicePort® from the PC Server

To disconnect DevicePort® from PC server, please right-click mouse on the specified DevicePort® under **My DevicePort** table, and select "**Disconnect**".

If DevicePort® disconnects successfully, this specified DevicePort® item will change status back to the "**Available DevicePort**" table in the DevicePort Manager Utility.

In addition, to release COM port mapping resources from the system (hardware device manager), running "**Disconnect**" operation is necessary. Though remove physical Ethernet cable connection between PC Server and DevicePort® product, DevicePort® will NOT release COM port resources from the system. SUNIX DevicePort® goes to "Offline Mapping" status.

Note:

DevicePort® Auto-Connection feature will be disable automatically once running "**Disconnect**" operation. User has to reconfigure (enable) Auto-Connection feature manually in DevicePort® Manager advanced settings. Please refer to chapter 4.2 DevicePort® Auto-Connection settings.

(5) DevicePort® Off-Line Mapping on the PC Server

To release DevicePort® connection from PC server, but keep COM port alive in the system, please right-click mouse on the specified DevicePort® item under **Available DevicePort** table, and select "**Offline Mapping**". Or just remove Ethernet physical cable connection between PC Server and DevicePort® product.

If DevicePort® Offline mapping process is ready; this specified DevicePort® item changes status to the "**Paired DevicePort"** table in the DevicePort Manager Utility. Also it goes to "**Available DevicePort"** status for other host connecting purpose, such as DevicePort® Device Sharing feature.
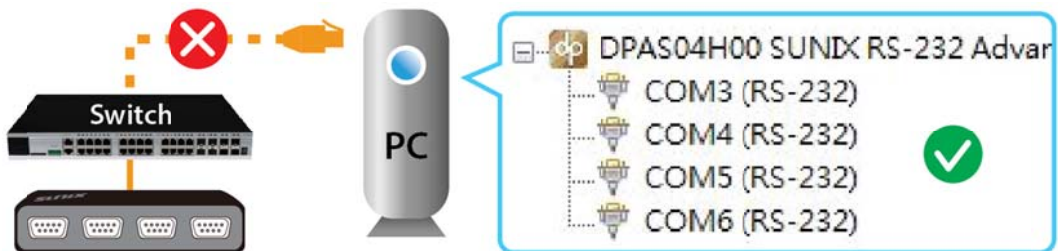

To re-build DevicePort® connection from offline mapping mode, please right-click mouse on the specified DevicePort® item and select "**Connect**" under Paired DevicePort table. Select "**Discount**" to release COM port mapping resources from the system (device manager).

SUNIX DevicePort® Advanced mode supports off-line mapping feature that able to keep hardware COM port resources within the system device manager even when DevicePort® being disconnected from the network. There are two major benefits on this Off-Line feature:

Ethernet Hot-Plug and Plug-n-Play capability – SUNIX DevicePort® will create or remove physical COM/LPT ports automatically from the system resources. However, most application software does not allow hardware COM/LPT to drop when specific ports are opened. Under certain harsh network environment scenario, to prevent application software to crash, DevicePort® off-line mapping feature will keep hardware COM/LPT port address within the system device manager when DevicePort® being disconnected from the network. After DevicePort® is re-connected back to the network, data communications will recover back to the same resources automatically.

Secondly, DevicePort® off-line mapping feature can also use to deploy to the system architecture design. System administrator can setup and create COM/LPT port right at the application software without physically making Ethernet connection to DevicePort®.

DevicePort® COM ports keep alive in the system without DevicePort® connecting

4.2 SUNIX DevicePort Hardware Settings

SUNIX DevicePort® Advanced Mode supports real time data communication, Smart COM on/off-line deployment, and Ethernet-COM port hot-plug capability features; user can expand RS-232 COM port conveniently. Please follow the guide to configure DevicePort® settings, such as MAC address, device name, COM port number, baud rate, and other features.

Ethernet connecting between SUNIX DevicePort® and PC server side is ready. You will read "**DevicePort Online**" information shows up on the windows desktop system tray. Be sure to enable **DevicePort® Auto-Connection** feature firstly, and please refer to DevicePort® Auto-Connection settings chapter.

Conversely, after removing Ethernet cable connection between SUNIX DevicePort® and PC, you will read "**DevicePort Offline**" information shows up on the windows desktop system tray. SUNIX DevicePort® goes to "Offline Mapping" status.

Note: Be sure to keep DevicePort Manager Utility alive in your system, please do NOT close, disable or remove it from windows startup process.

(1) DevicePort® Hardware Configuration

After authorized DevicePort® connection is ready, please right-click mouse on the specified DevicePort® under **My DevicePort** table, and select "**Properties**". You can go to DevicePort® hardware advanced settings, including device name, MAC address, and firmware update.

Firstly, DevicePort® information shows up in the **General** page, including model number, device name, MAC address, firmware version, and connecting host source.

User can modify device name, MAC address, access password, auto-connection, and firmware update in the **Settings** page. Be sure to click "**OK**" to enable your modification before closing this window.
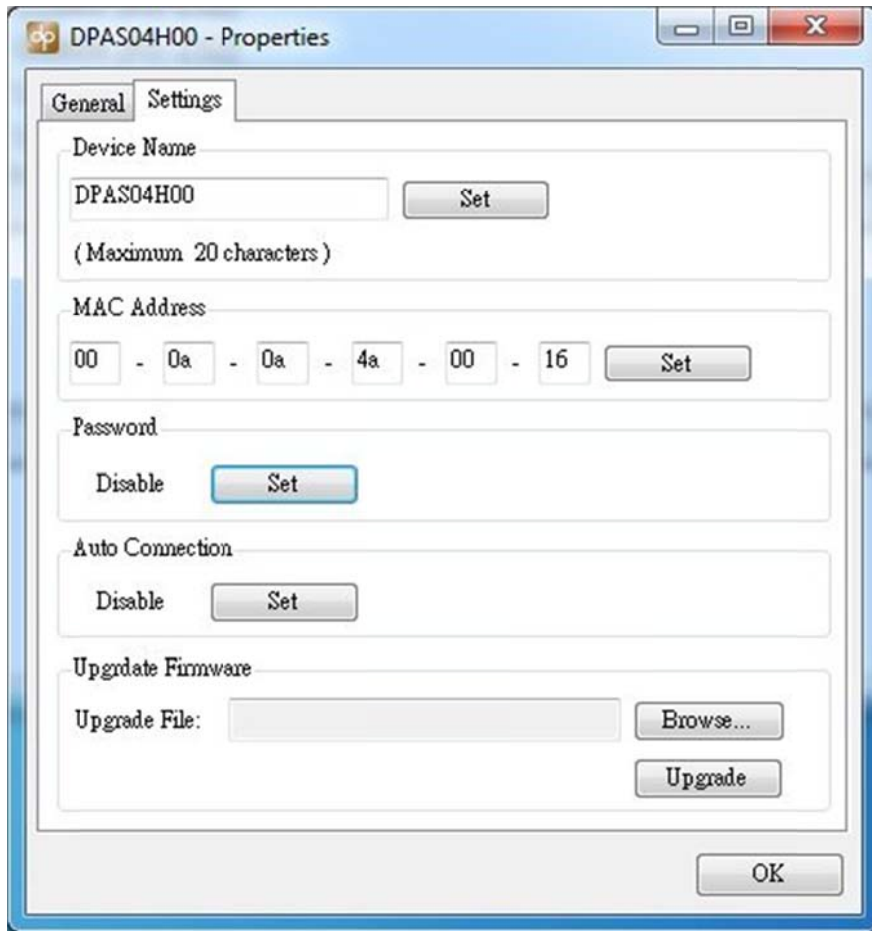
(2) Device Name

DevicePort® "**Device Name**" is specially designed to allow easy identification of the multiple DevicePort® units on the network. You can input maximum 20 characters. Click "**Set Device Name**" to save settings.

![SUNIX logo]

(3) MAC Address

MAC Address (Media Access Control Address) is a unique identifier assigned to network DevicePort® for communications on the physical network segment. To prevent MAC address conflict problem, user can modify it by himself. Click "**Set**" to save settings.

(4) Access Password (Default = Disable)

Enable access password to prevent DevicePort® access from unauthorized host on the network. Users can configure password settings in this page.

Disable: Factory default setting. The DevicePort® will not have password protection
        DevicePort® can be accessed and configured by anyone who connects in.

Enable: DevicePort® cannot be accessed without password protection.

Click the "**Set**" check box to enable access word feature and user can change/edit new password. You can input maximum 31 characters both in "**New Password**" and "**Confirm Password**" boxes.

Click "**Change**" to change password, and click "**OK**" to save new password setting.
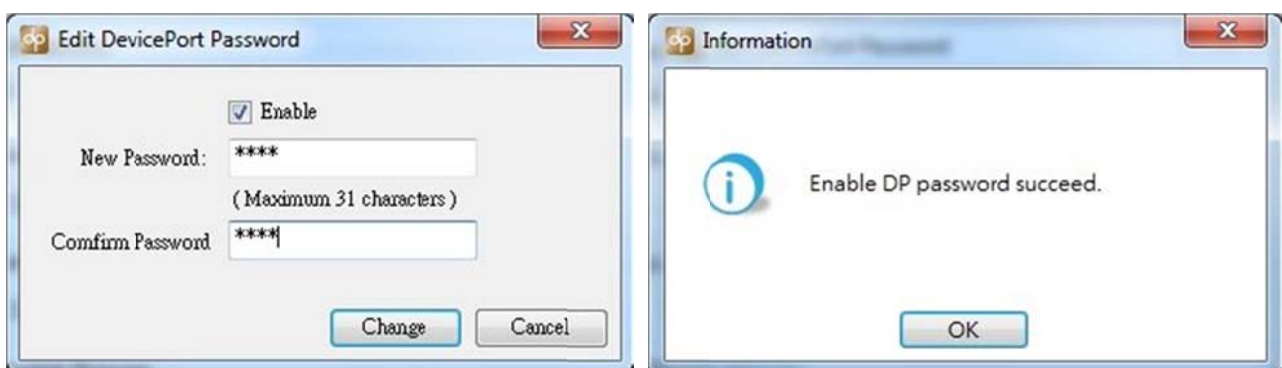
Error message shows up when incorrect password input. This secure DevicePort® could not be connected, but off-line mapping process would be enabled.
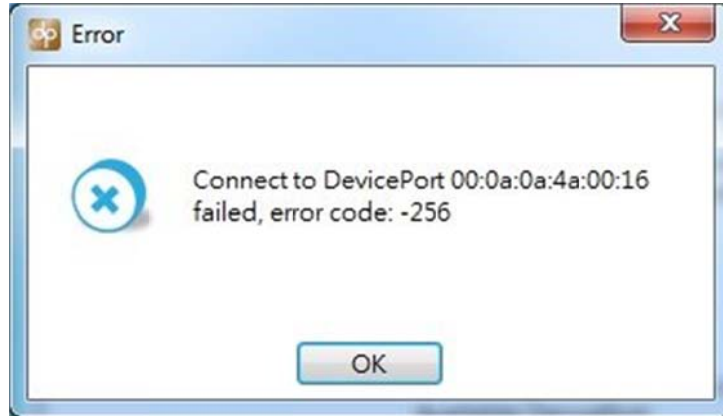

User could access DevicePort® off-line mapping feature without password protection. It is use to deploy DevicePort® to the enormous network system architecture design. System administrator can setup and create COM/LPT port right at the application software without physically making Ethernet connection to DevicePort®.

Note:
Disable password access protection is factory default setting. If you forgot access password, please use Reset Button to restore factory default settings manually.

(5) Auto Connection　(Default = Disable)

Enable Auto Connection to make connection between authorized DevicePort® and PC server automatically. When authorized DevicePort® unit goes to online, PC server will identify, connect, and port-mapping without additional operation. Users can configure connecting type in this page.

Auto Connection

Disable　[Set]

Disable: Factory default setting. DevicePort® connection has to done manually.

Enable: DevicePort® can be connected from authorized PC server automatically

Note:
DevicePort® Auto-Connection feature will be disabled automatically once running "**Disconnect**" operation. User has to reconfigure (enable) Auto-Connection feature manually in DevicePort® Manager Auto-Connection settings.

(6) Upgrade Firmware

Download the latest firmware from SUNIX official website and click "**Browse...**" to select correct firmware ".**bin**" file. Click "**Upgrade**" to upgrade DevicePort® to the latest firmware version.
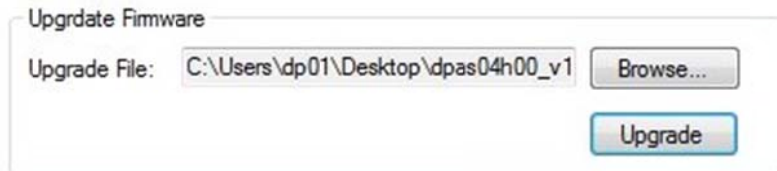
Click "**OK**" to process DevicePort® firmware upgrade procedure. Users can check the progress of firmware upgrading process in status column. Please be patient of DevicePort® upgrading process.

After FW upgrade process successfully, please reboot (power off and on) DevicePort®.

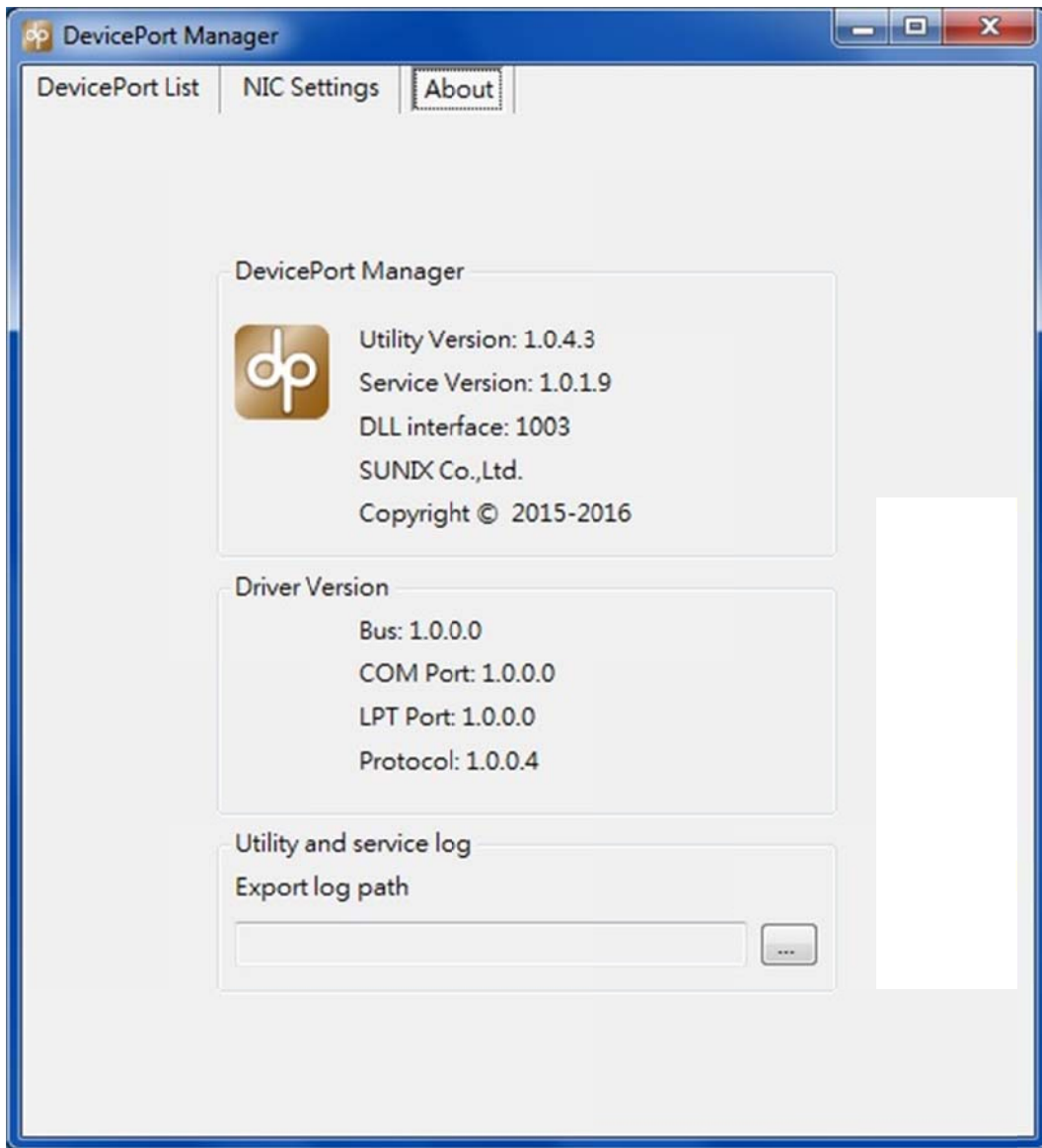> **Caution:**
> Do **NOT** remove Ethernet connection or power-off DevicePort® when running firmware upgrade process.

(7) DevicePort® Manager Utility information

DevicePort® Manager utility version and driver version show in the "**About**" page.

(8) NIC Settings (NIC: Network Interface Controller)

When PC host system cannot find DevicePort® on the network, user can appoint the specific NIC (Network Interface Controller) that connected to DevicePort®. For example, according to below picture, there is a DevicePort connect with PC host system over Realtek PCIe Ethernet Add-on Card, instead of Intel Wireless Ethernet Adapter.

Uncheck the unnecessary NIC (Network Interface Controller), and Click "**Apply**" to save settings. If you are using USB-Ethernet adapter, you can click "**Refresh NIC**" to update system real time status.
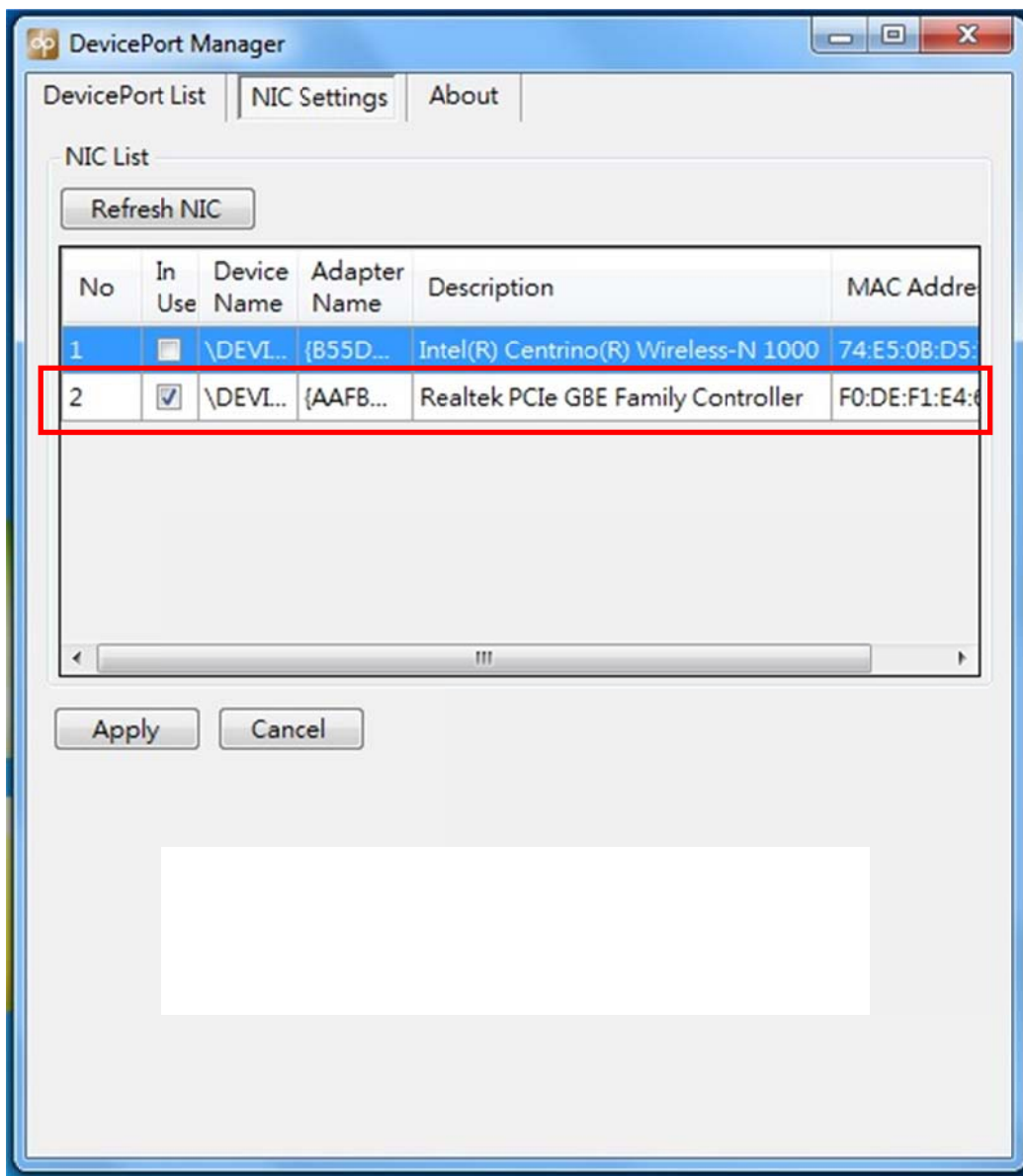
(9) Export Log file

When communication issue happens, user can export log file to analyze. Click icon and save log file to specified path. You could email log files to SUNIX technical support (info@sunix.com) to get help.
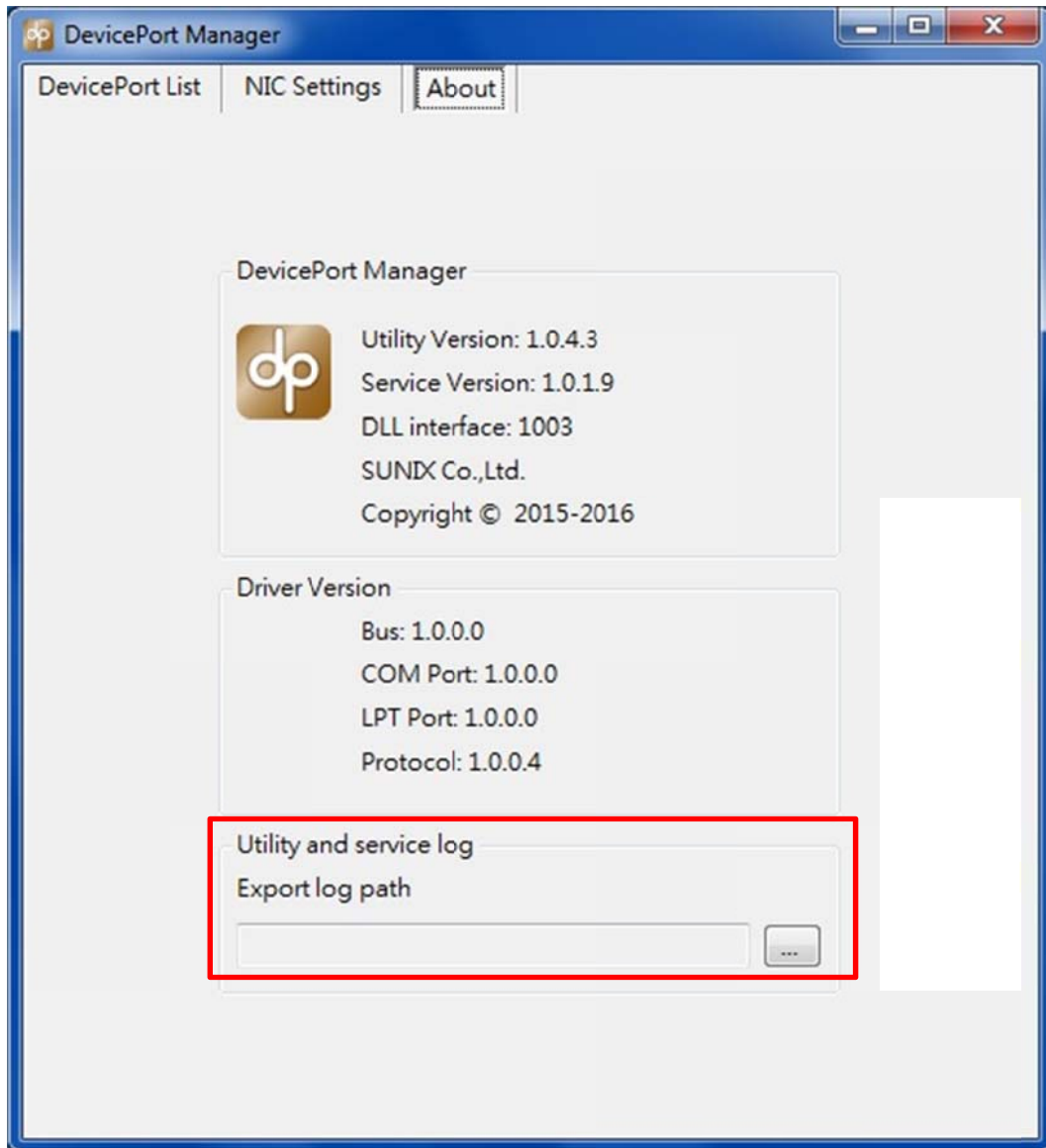
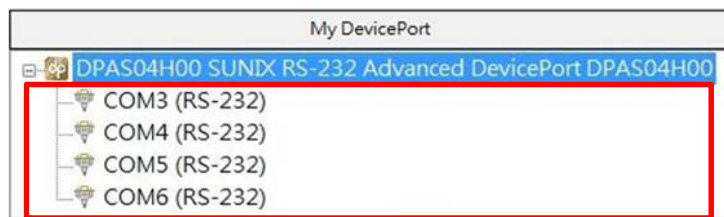## 4.3 Configure Serial Port Settings

After DevicePort® drivers are installed; please refer to following instructions to configure Serial COM settings.

Please launch "**DevicePort Manager**" utility first and open sub-tree of DevicePort® detail. There is COM port mapping detail on "**My DevicePort List**" table. This is an example for a 4-port DevicePort® Advanced Mode screen shot.

Double click on the selected COM port, and users can configure serial port's settings in this page, including Baud rate, Parity, Data bits, Stop bits, Flow Control, COM port number, RS-232 interface and Powered COM features. Click "**Apply**" to save settings.
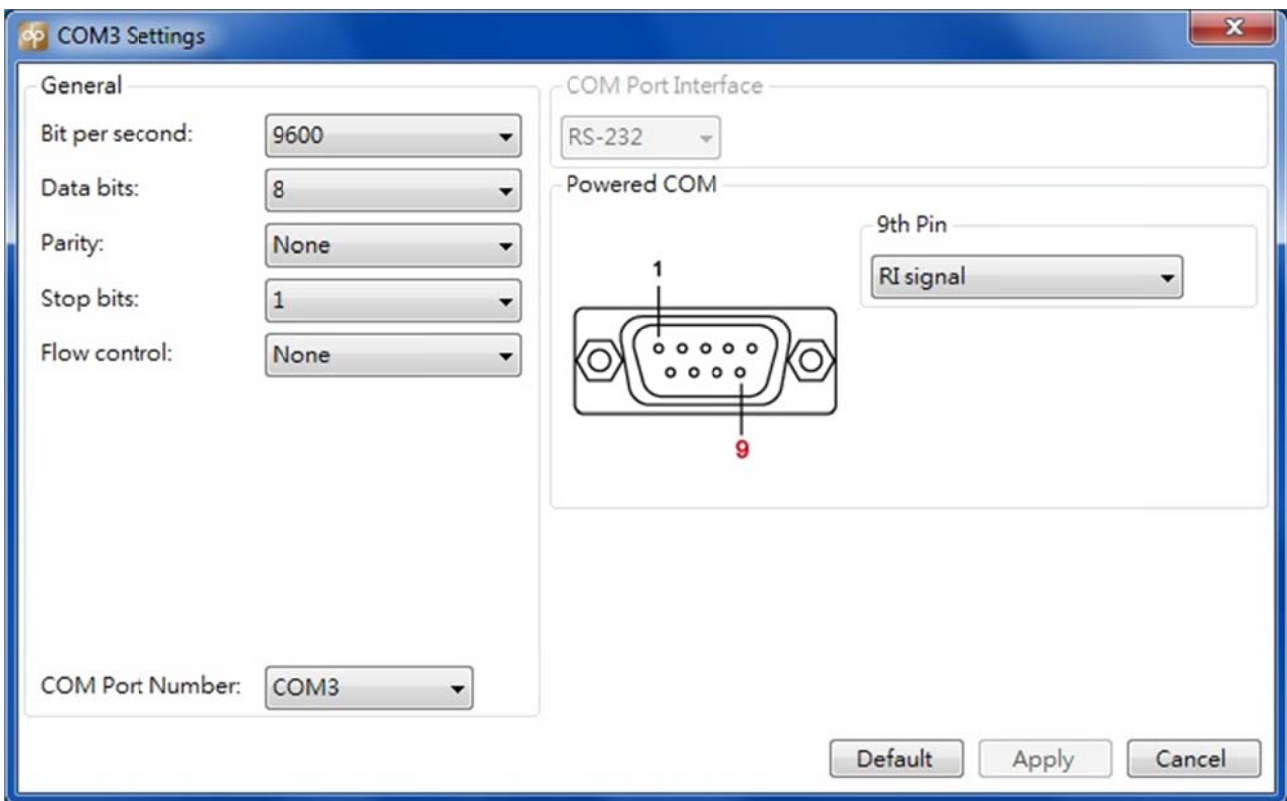
(1) COM port Parameter Settings

SUNIX DevicePort® COM port parameter can be configured in the section.

Baud Rate: (Default = 9600 bps)
DevicePort® supports baud rate setting from 50bps to 115.2 Kbps.
(High speed model up to 921.6Kbps)

Data bits: (Default = 8 bits)
DevicePort® supports data bits setting from 5 to 8 bit.

Parity: (Default = None)
DevicePort® supports parity setting including None, Even, Odd, Space, and Mark.
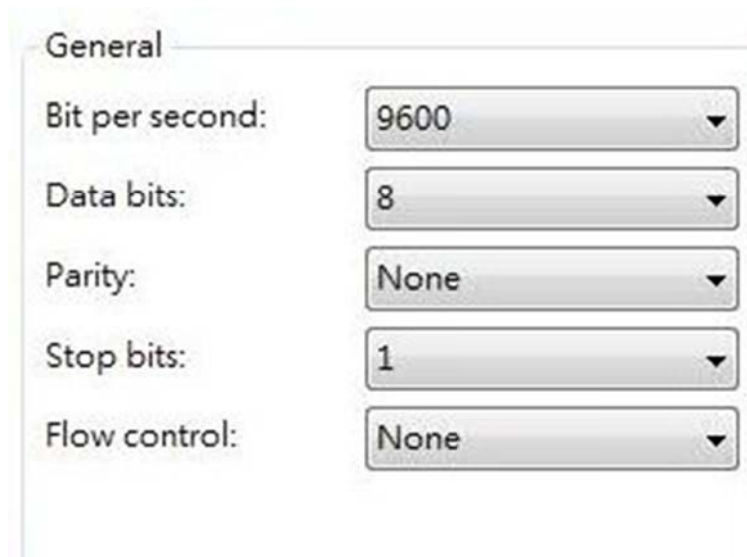
Stop bits: (Default = 1 bit)
DevicePort® supports stop bits setting 1, 1.5 or 2 bits.
Stop bits will be set to 1.5 when Data bits is set to 5 bits.

Flow Control: (Default = None)
DevicePort® supports flow control setting including None, Hardware, and Xon/Xoff.

General	
Bit per second:	9600
Data bits:	8
Parity:	None
Stop bits:	1
Flow control:	None

(2) COM Port Number

You can select COM Port number form COM1 to COM255. If this COM port is using now, there is a "in use" message shown behind COM number that you cannot access.
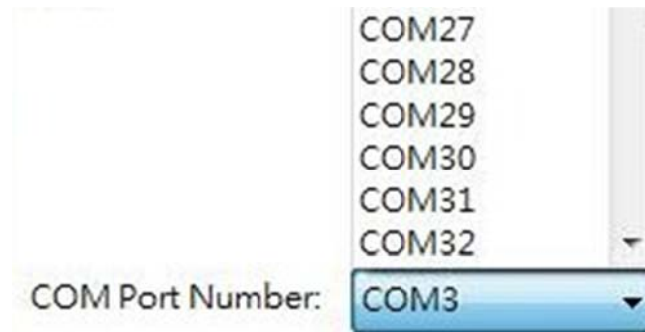
(3) COM Port Interface (Product Dependent, Default = RS-232)

DevicePort® supports kinds of models, including pure RS-232, pure RS-422/485 or 3-in-1 RS-232/422/485 interfaces. It depends on what kind of product you bought. This picture shows standard RS-232 DevicePort screen shot.

(4) Powered COM (Product Dependent, Default = No power output, Standard RS-232)

DevicePort® supports COM port with +5VDC power output feature. User can enable Powered COM feature in this section. It depends on what kind of product you bought. This picture shows RS-232 DevicePort with +5VDV Powered COM feature screen shot.
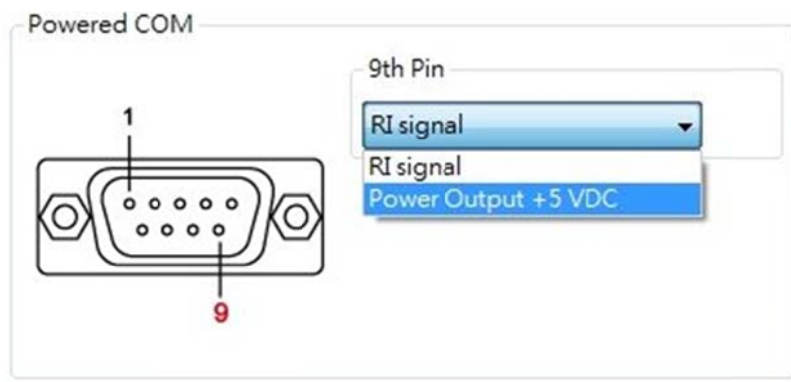
After selecting "**Power Output +5VDC**" option ready, click "**Apply**" to save settings. System will pop-up warning messages that user has to re-confirm enabling Powered COM function. Click **"OK"** to save settings and enable Powered COM feature.

Pay attention that wrong power setting and wrong operation damages connected serial device. SUNIX is NOT responsible for user's wrong operation, including wrong input power voltage, wrong power output setting, or carelessness cable wiring.

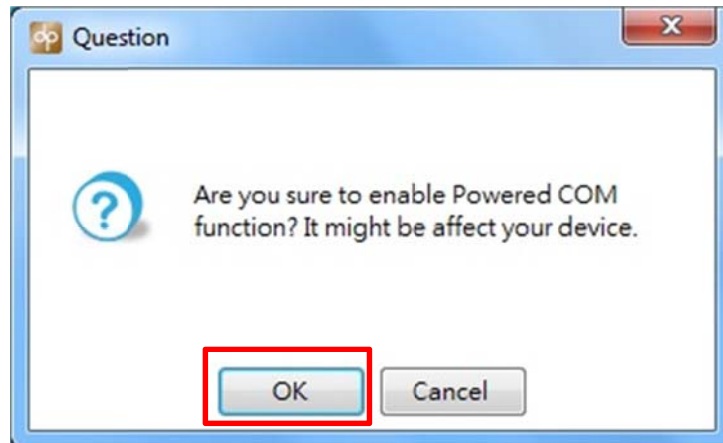And then you can read "**RI Powered +5V**" on the specific COM port. (COM3 enables +5V Powered COM feature in this example)
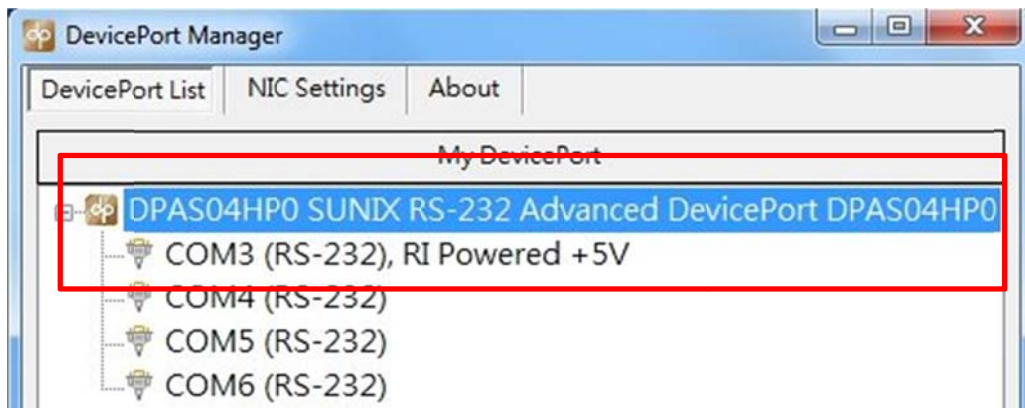
Note:
1. System default setting is Normal Mode, standard RS-232 pin define.
2. No described pins mean standard RS-232 definition.
3. SUNIX DevicePort® has to source +5VDC power from PC's USB port or additional power adapter accessory.
4. Powered COM +5VDC power output capacity depends on the power source ability. For example, each serial device sources 500mA power current from COM port, so total 4-port power consumption is 2000mA@5VDC. To keep system and connected devices stable, a 5V@2500mA or higher power source is necessary. (SUNIX DevicePort® also asks 5VDC@500mA power consumption).

5.
Appendix

This chapter shows some problems that user came with usually. Also you can check it if the DevicePort® could not work properly in your system after following hardware and software installation steps. In addition, you could contact with us for detail technical product information.

In this appendix, we cover the following topics:

- **5.1 Troubleshooting**
- **5.2 Product Family**
- **5.3 Contact Information**

5.1 Troubleshooting

1. System fails to find the DevicePort® or COM/LPT port.
Answer:
It may cause by following issue:

a. DevicePort® is not properly connected to the PC server. Please connect DevicePort® to your PC Ethernet port directly without bridging any switch hub or access point.

b. Be sure to deploy SUNIX DevicePort® products in the same local networking environment with your PC server. Please read chapter 2 hardware guide for detail

c. Make sure DC power is properly connected to DevicePort®. You can identify it by Power LED on DevicePort®. Please read chapter 2 hardware guide for detail

d. Make sure your PC's Ethernet port is enable. You can read and check it by

   Controller Panel > Network and Internet > Network Connections

e. After driver install ready, be sure to check "DevicePort® Manager" service is working. There's one golden dp logo on the windows desktop tray.

   Or you can access DevicePort® Manager utility program from this link.
   C:\Program Files\SUNIX\ DevicePortAdvanced\ DevicePortManager.exe

f. DevicePort® hardware itself might be defective or crash. You can reset DevicePort® power again, try another PC to test it, or contact us for technical support.

2. My DevicePort® does not support Auto-Detect feature.

Answer:

It may cause by following issue:

a. Be sure to keep "**DevicePort Manager**" utility alive in your windows desktop system
   tray, please do NOT close, disable or remove it.

b. Be sure to keep "**DevicePort Manager**" utility alive when windows startup, please do
   NOT disable or remove it from windows startup process. You can re-install SUNIX
   DevicePort® driver again to fix this problem.
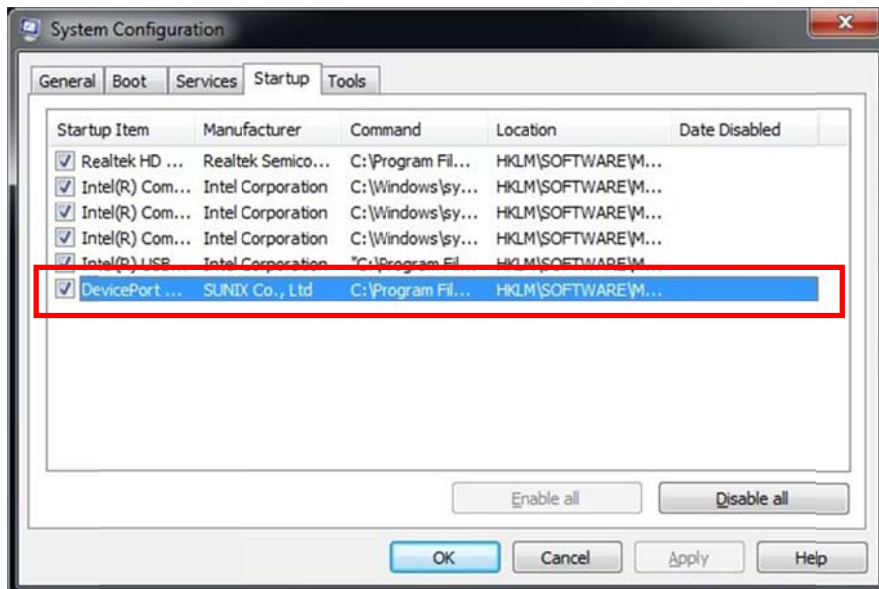
c. Please enable "**Auto Connection**" feature in the DevicePort® settings.
   Please read manual chapter 4.2.6 for detail

3. There is no respond from "**DevicePort Manager**"**, after dis/connecting DevicePort®**
   from/to PC host.

Answer:

It may cause by "DevicePort Manager" utility crash, please reboot your computer to
reset it.

4. How to install COM port on my system?

Answer:

SUNIX DevicePort® supports Ethernet auto-detect capability, user can expand RS-232 COM and LPT port easily. After driver installed ready at the first time, plug RJ45 Ethernet cable between SUNIX DevicePort® and PC host side, system will create physical COM/LPT ports automatically with real time data transmit and receive communication. User can easily access port by using existing software and application.

DevicePort® runs procedure as below.

Ethernet Connection ready > DevicePort® detecting > Connect & Port Mapping
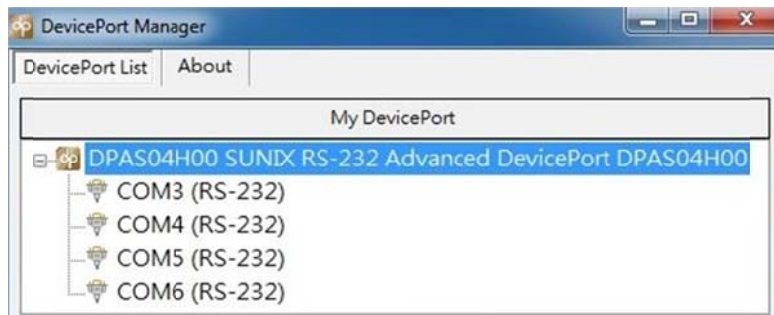
5. Should I install driver for each DevicePort® boxes when Multiple DevicePort® daisy chain network.

Answer:

Driver install required only at the first time. So you do not need to re-install driver again for your second DevicePort® unit connecting.

## 6. Could I connect DevicePort® Advanced mode to switch hub or AP routers?

Answer:

Yes, you can. If DevicePort® Advanced mode connects to public switch hub or router, there are somebody may connect to this DevicePort® without your expecting. So be sure to enable access password to prevent unauthorized host connecting.

7. How to expand more than multiple COM ports by using DevicePort® ?
Answer:

SUNIX DevicePort® DevicePort® Advanced Mode supports both Direct-Link and Ethernet-Link connections in the same network. There is no DevicePort® unit connecting limitation, but maximum 255 COM and 3 LPT ports in one PC system.
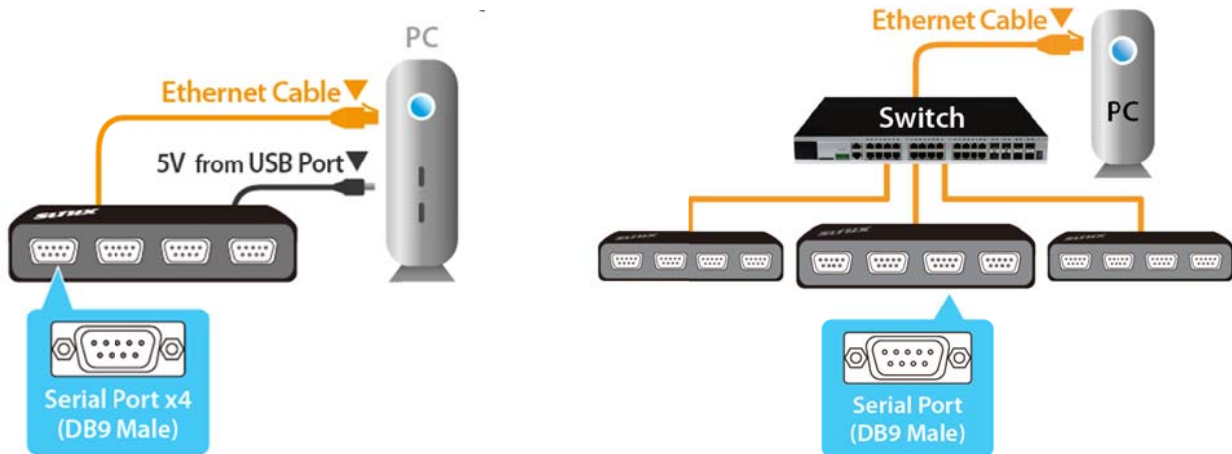
8. Will DevicePort® lower my Internet performances when access COM serial data at the same time?
Answer:

SUNIX DevicePort® product built-in dual 10/100 Ethernet channels, one for data downstream to PC host and the other upstream port to Ethernet switch. User can access internet over DevicePort® bridge. Serial data communication asks very low bandwidth; most of serial devices asks 9600bps,N,8,1 data transfer rate, so it should not cause your internet accessing trouble. According to our testing, one single 8-port RS-232 DevicePort® product expenses about 10Mbp/s data transferring rate with full loading (921Kbps, N,8,1) test. About 10% bandwidth of standard 10/100Mb network environment.

However, to make sure efficient and safe communication, DevicePort® will put serial communication data from COM ports as the first priority than other internet data packages.

9. May I know system resource of COM or LPT port?

Answer:

SUNIX DevicePort® is an Ethernet enable devices. System or BIOS will not allocate any resource for COM or LPT ports. So COM port does not locate at any legacy ISA address 3F8, 3E8, 2F8,2E8 and LPT port does not locate at 378, 278, 3BC legacy ISA address either.

10. My DevicePort cannot communicate with my serial device, however without problem communicating over on-board COM port.
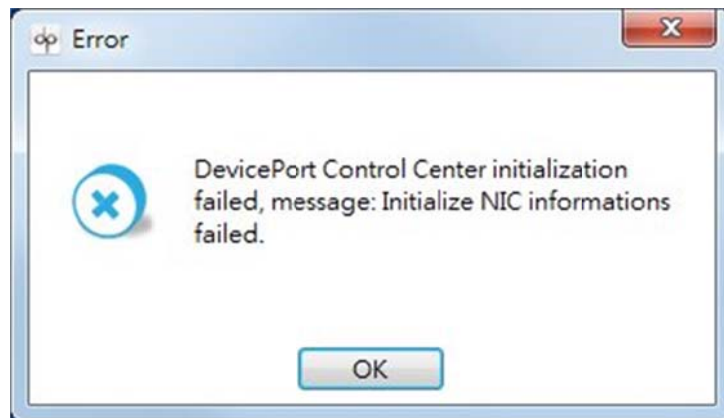
Answer:

Please follow up manual chapter 4.2.8 to export log file, and sent log files to SUNIX technical support to verify.

11. DevicePort Manager utility initialization fails.

Answer:

It may cause by communicating time-gap between PC's Ethernet driver and DevicePort® driver. DevicePort® Manager utility does not initialize successfully when PC system booting.


However, you still can execute DevicePort® Control Center program from this link:

C:\Program Files\SUNIX\DevicePort\ DevicePortControlCenter.exe

If above error message always happen when your PC booting, please try to update your Ethernet card's driver from NIC (Network interface controller) vendor. Or you could send your PC system and NIC information to us to get help.

12. I cannot access DevicePort® over WiFi AP (Access Point).
Answer:
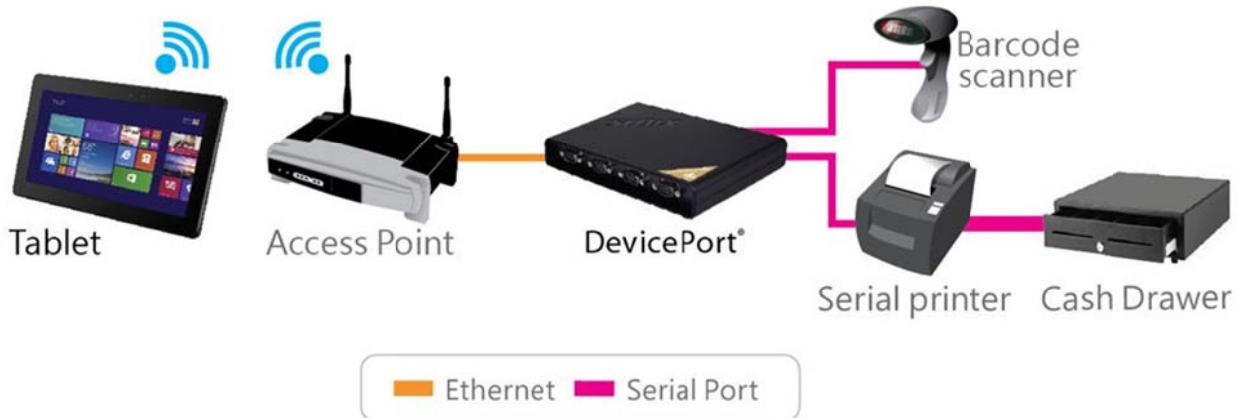
There are tablets will create several virtual NIC adapters to confuse the DevicePort® data communication. Please only keep the "real" NIC in the system, and uncheck virtual NIC adapter option in the NIC Settings table. Click "Apply" to save settings. For example, according to below picture, there is a DevicePort wireless-connection with PC tablet over Broadcom 802.11abgn Wireless Adapter.
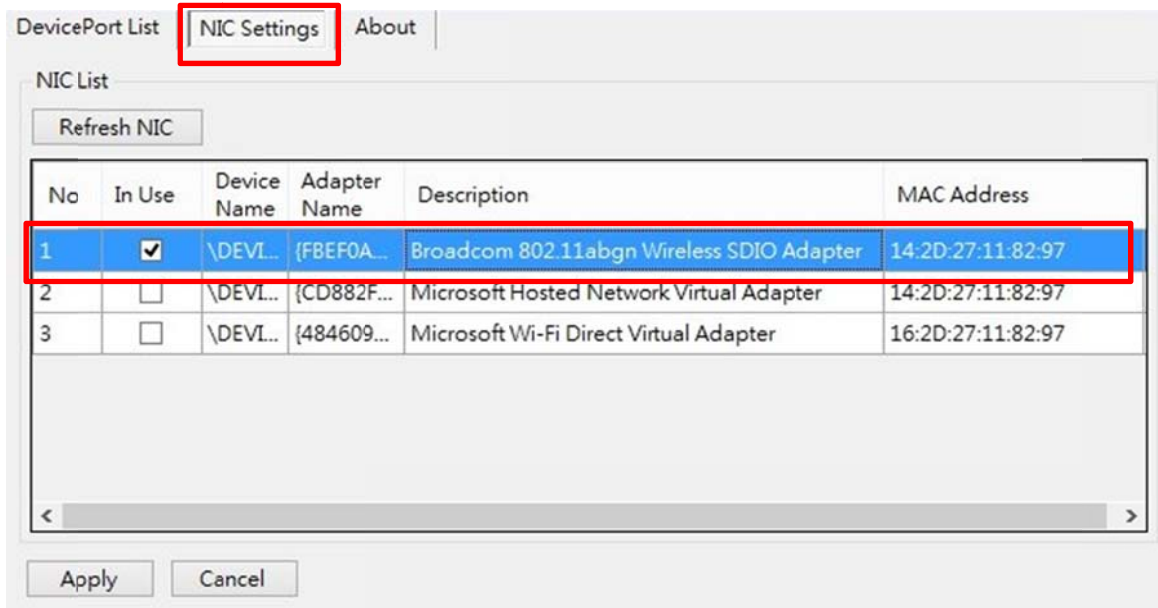
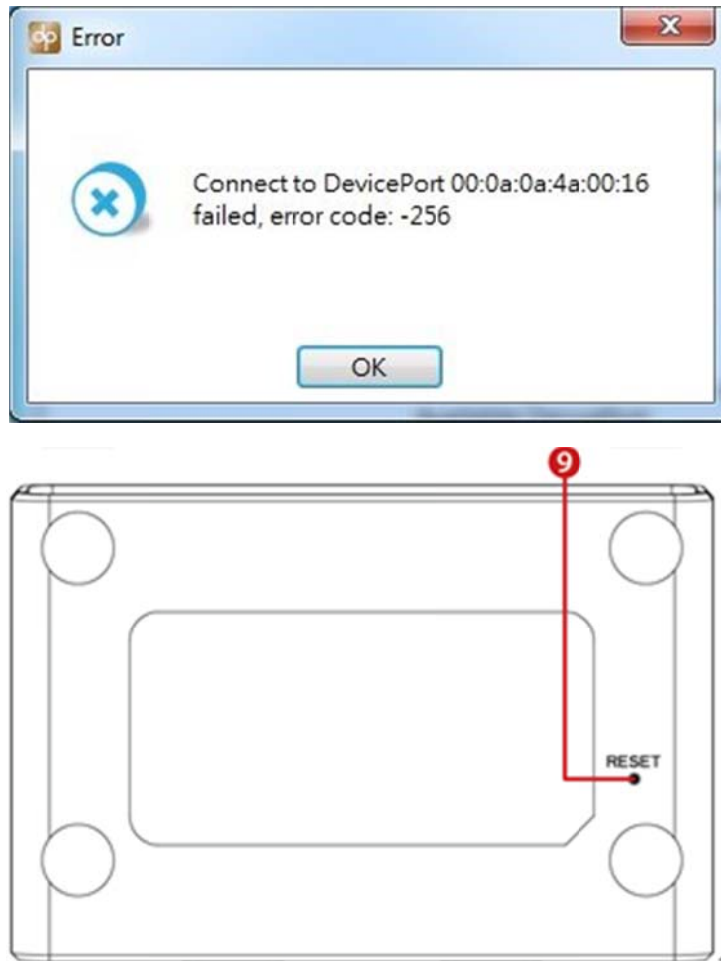**13. I forgot the password to access secure DevicePort®.**

Answer:

If you forgot access password, please use Reset Button to restore factory default settings manually. Factory default setting is free for connection without password protection.

Reset button allocates at the bottom side of DevicePort® that makes "No.9" in the picture.

![sunix logo]

5.2 Product Family

■ RS-232

Mode	Port	Connector	Baud Rate	ESD Protection	PoweredCOM	Model
Dock	8	DB9M	921.6Kbps	±15KV	-	DPKX08H00
	8	DB9M	115.2Kbps		-	DPKS08H00
	4	DB9M	921.6Kbps		-	DPKX04H00
	4	DB9M	115.2Kbps		-	DPKS04H00
	4	DB44F	115.2Kbps		-	DPKS04HZ0
	4	DB9M	115.2Kbps		5VDC	DPKS04HP0
	4	DB44F	115.2Kbps		5VDC	DPKS04HZP
	2	DB9M	921.6Kbps		-	DPKX02H00
Advanced	2	DB9M	115.2Kbps	±15KV	-	DPKS02H00
	2	DB9M	115.2Kbps		5VDC	DPKS02HP0
	32	RJ45	921.6Kbps		-	DPAS32G00
	16	RJ45	921.6Kbps		-	DPAS16G00
	8	DB9M	921.6Kbps		-	DPAX08H00
	8	DB9M	115.2Kbps		-	DPAS08H00
	4	DB9M	921.6Kbps		-	DPAX04H00
	4	DB9M	115.2Kbps		-	DPAS04H00
	4	DB44F	115.2Kbps		-	DPAS04HZ0
	4	DB44F	115.2Kbps		5VDC	DPAS04HZP

■ Multi I/O

Mode	Port		Connector		Speed		ESD Protection	Model
	COM	Printer	COM	Printer	COM	Printer		
Dock	2	1	DB9M	DB25F	115.2Kbps	2.7MBps	±15KV	DPKM21H00
	1	1	DB9M	DB25F	115.2Kbps	2.7MBps		DPKM11H00
Advanced	2	1	DB9M	DB25F	115.2Kbps	2.7MBps	±15KV	DPAM21H00
	1	1	DB9M	DB25F	115.2Kbps	2.7MBps		DPAM11H00

■ Printer

Mode	Port	Connector	Speed	ESD Protection	Model
Dock	1	DB25F	2.7MBps	±15KV	DPKP01H00
Advanced	1	DB25F	2.7MBps	±15KV	DPAP01H00

5.3 Contact Information

Customer satisfaction is our number one concern, and to ensure that customers receive the full benefit of our products, SUNIX services has been set up to provide technical support, driver updates, product information, and user's manual updates.

The following services are provided

E-mail for technical support

.... info@sunix.com

World Wide Web (WWW) Site for product information:

...........................http://www.sunix.com

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