DA-PRP-HSR-I210 Expansion Module Installation Guide

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DA-PRP-HSR-I210 Expansion Module Installation Guide

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1. Introduction

Thank you for purchasing Moxa's DA-PRP-HSR-I210 expansion card for the DA-820C Series industrial computer. This manual includes information on installation the hardware and driver for the expansion card.

Overview

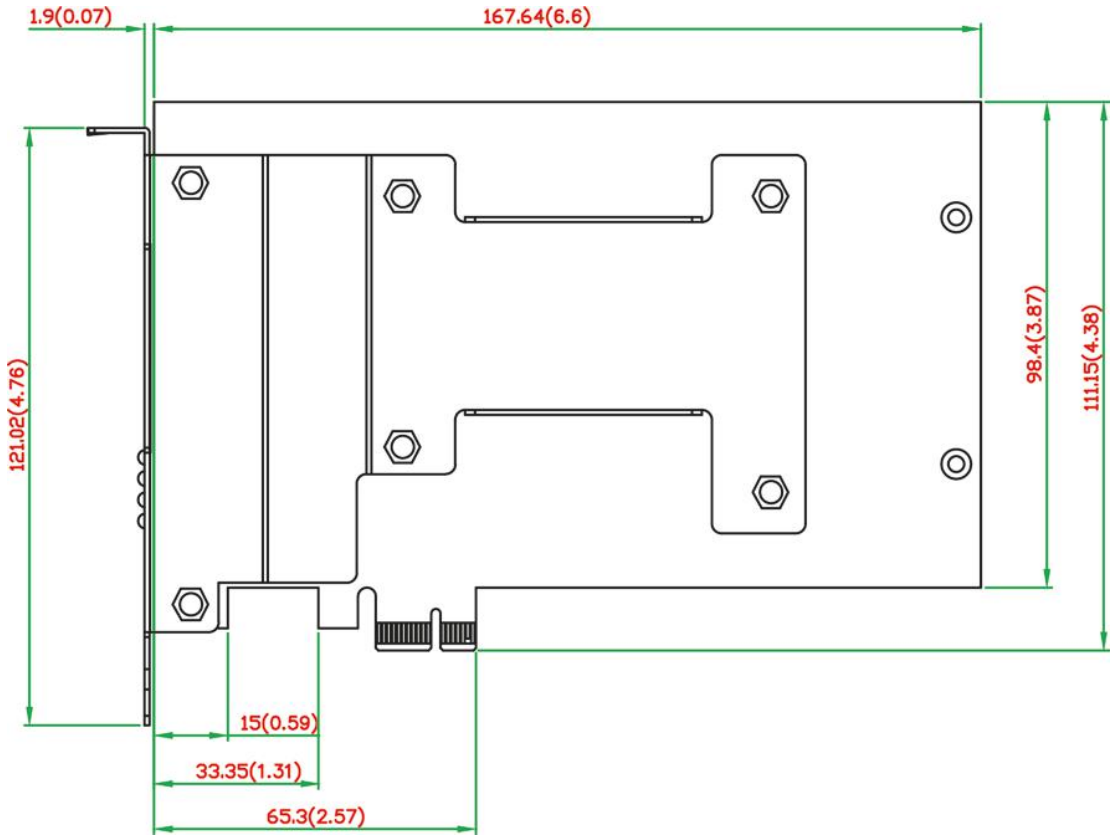
The DA-PRP-HSR-I210 expansion card is compliant with IEC 62439-3 Clause 4 (PRP) and IEC 62439-3 Clause 5 (HSR) standards to ensure the highest system availability and data integrity for mission-critical applications that require zero-time recovery and redundancy.

With its dual Gigabit Ethernet port design, the DA-PRP-HSR-I210 provides high performance for redundant network systems. In addition, the DA-PRP-HSR-I210 features a built-in native PRP/HSR management middleware with MMS server that allows SCADA systems to collect IEC 62439-3 registers from multiple devices for easy network diagnosis, troubleshooting, device management, and monitoring.

Moxa's DA-820C Series industrial computer with the DA-PRP-HSR-I210 expansion card is the ideal solution for power substation automation and process automation systems.

Appearance

Dimensions


1.9(0.07)
167.64(6.6)
121.02(4.76)
98.4(3.87)
111.15(4.38)
15(0.59)
33.35(1.31)
65.3(2.57)

2. Hardware Installation

This chapter describes the basic hardware installation of the DA-PRP-HSR-I210 expansion card.

Handling Static-sensitive Components

Static electricity can damage electronic components. To avoid damage, keep electronic components in their anti-static bags until you are ready to use them.

To reduce the possibility of damage to an electronic component from electrostatic discharge, take the following precautions:

- Wear a wrist strap to ground yourself while working with electronic components.
- Limit your movement; movement can create static electricity around you.
- Hold the component by its edges or frame.
- Avoid touching solder joints, pins, or exposed printed circuitry.
- Do not place the component directly onto a metal surface.
- While the component is still in its anti-static bag, place it in contact with an unpainted metal part for at least two seconds to discharge any static electricity from the package and from your body.
- After you remove the component from its package, install it directly. If you need to put the component down, place it on its anti-static bag.
- Take additional care when handling components in air-conditioned rooms and in cold weather because air conditioning and heating reduce indoor humidity and increase static electricity.

Installing the DA-PRP-HSR-I210 Expansion Card

NOTE

The DA-PRP-HSR-I210 expansion card can only be installed in a DA-820C computer. You can install up to three DA-PRP-HSR-I210 expansion cards in the PCI slots 2 to 4 of a DA-820C computer. Start with slot 3 and then install expansion cards in other slots if you are installing more than one.

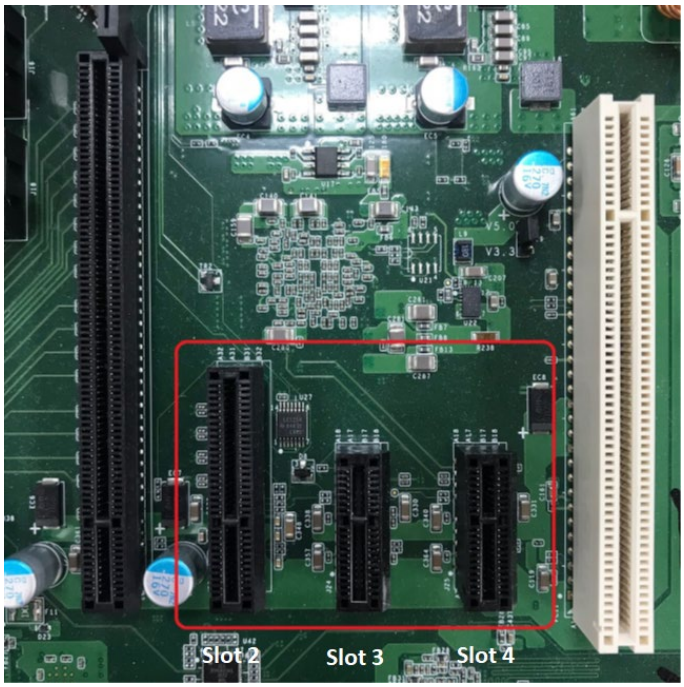
To install the DA-PRP-HSR-I210, complete the following steps:

1. Turn off the DA-820C computer and disconnect it from the power source.
2. Loosen the screws on the rear of the DA-820C computer and remove the top cover.

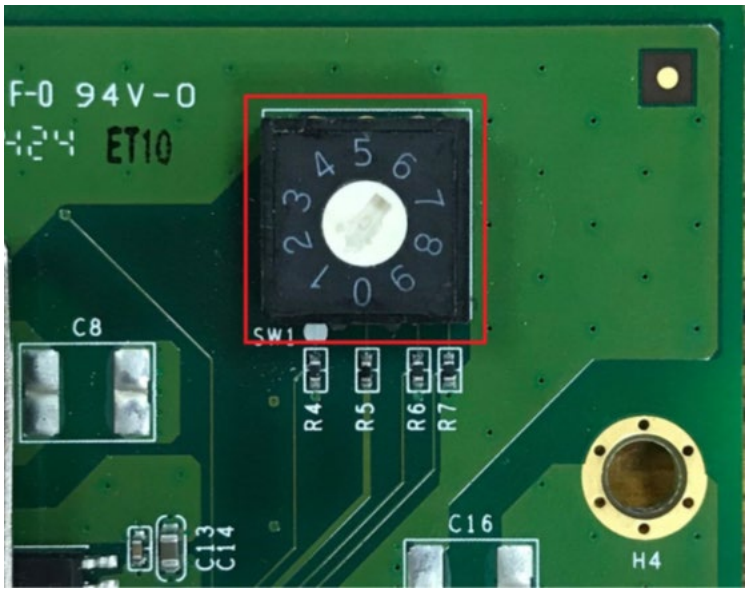
3. Remove the PCI slot cover on the rear panel and install the DA-PRP-HSR-1210 expansion card(s).

   The DA-PRP-HSR-I210 expansion card can be installed on PCI slots 2 to 4 of the DA-820C computer. If you need to install more than one expansion card, install the cards next to each other continuously in PCI slots 2 to 4.

   The following figure indicates the PCI connectors on the system board.



Similarly, turn the card index selection switch to **1** for the second DA-PRP-HSR-I210 card and turn the card index selection switch to **2** for the third DA-PRP-HSR-I210 installed. The following figure shows the location of the card index selection switch on the DA-PRP-HSR-I210.



6. Replace the PCI slot cover and fasten the screw to secure the DA-PRP-HSR-I210 to the computer chassis.
7. Put back the top cover on the DA-820C.
8. Install the driver and configure the PRP/HSR settings to start using the DA-PRP-HSR-I210.

9. For details on modifying the Ethernet settings or reassigning the system information for a DA-PRP-HSR-I210 card, see "*3. Installing the Driver and Utility*".

Removing the DA-PRP-HSR-I210 Expansion Card

To remove a DA-PRP-HSR-I210 from a DA-820C computer, complete the following steps:

1. Turn off the computer and disconnect the power source.
2. Loosen the screws on the rear of the DA-820C computer and remove the top cover.
3. Loosen the screw that secures the DA-PRP-HSR-I210 to the computer chassis.
4. Pull to remove the DA-PRP-HSR-I210 from the system board.
5. Replace the PCI slot cover and the top cover of the DA-820C computer.

LED Indicators

LED Name	Color	Function
1G_A	Yellow steady/blinking	1000 Mbps (Gigabit) Ethernet mode
1G_A	Off	No link
100M_A	Green steady/blinking	100 Mbps Ethernet mode
100M_A	Off	No link
1G_B	Yellow steady/blinking	1000 Mbps (Gigabit) Ethernet mode
1G_B	Off	No link
100M_B	Green steady/blinking	100 Mbps Ethernet mode
100M_B	Off	No link
PRP	Green	The DA-PRP-HSR-I210 is operating in PRP mode
HSR	Green	The DA-PRP-HSR-I210 is operating in HSR mode
Fault	Red	No Ethernet connection on LAN A or LAN B

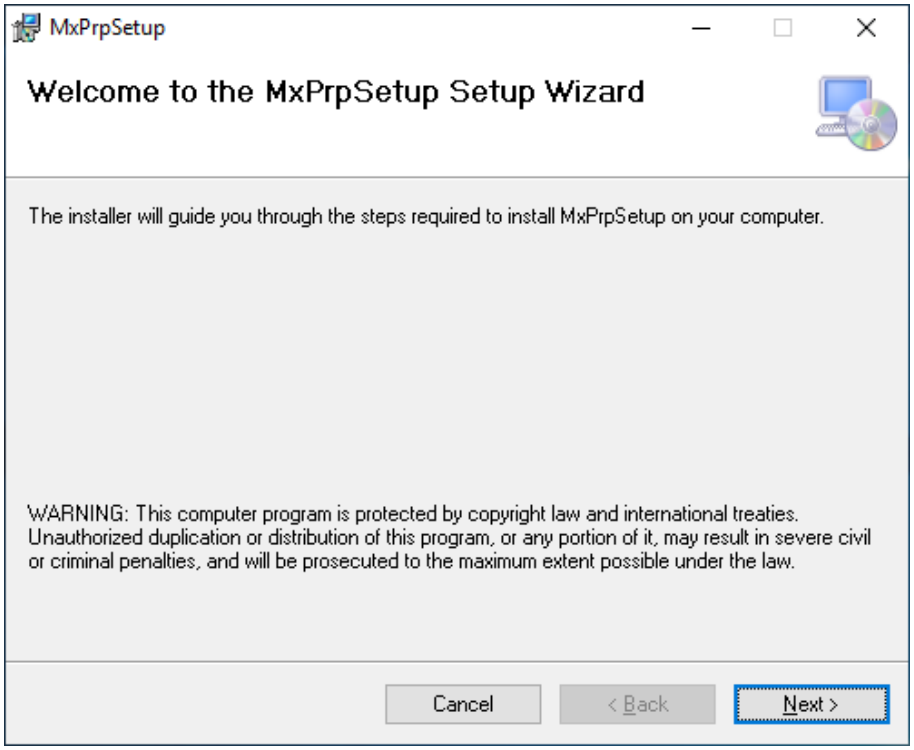
3. Installing the DA-PRP-HSR-I210 Driver and Utility

Installing the Driver and Utility

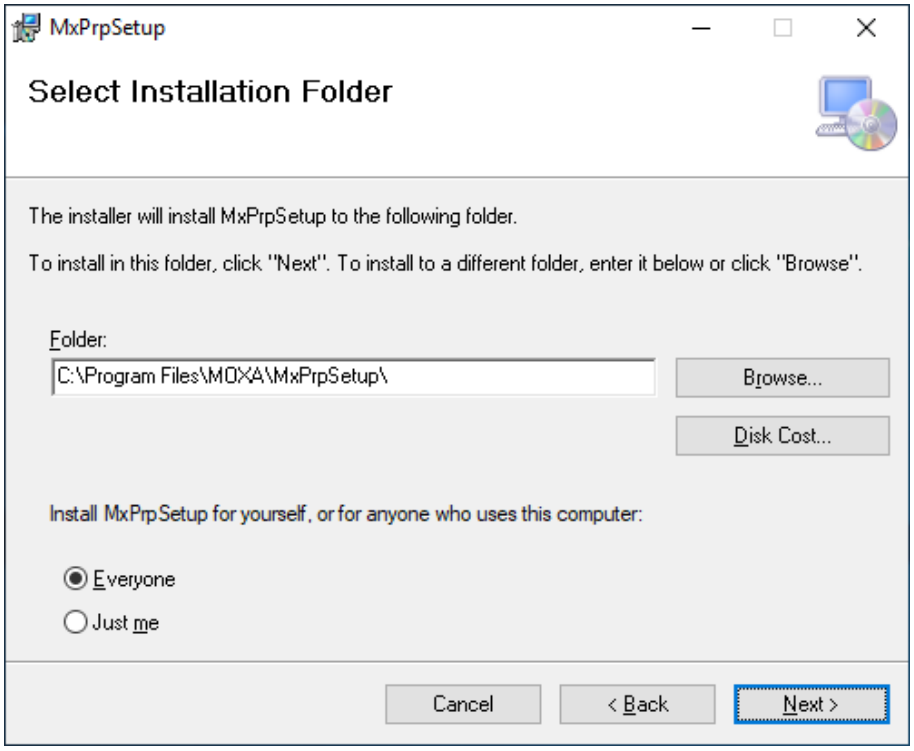
NOTE

The DA-PRP-HSR-I210 driver and utility are supported on Windows 10.

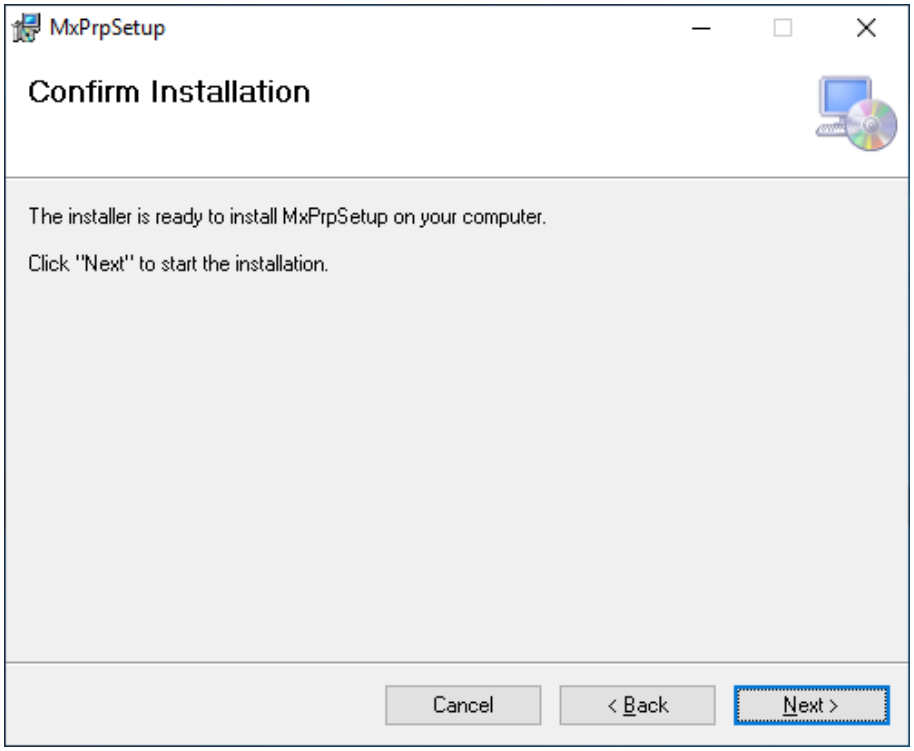
1. Connect a monitor, keyboard, and a mouse to the DA-820C computer.
   For more information, see the DA-820C Series Embedded Computer User's Manual.
2. Turn on the computer.
3. Download the DA-PRP-HSR-I210 driver from Moxa's support website at https://www.moxa.com/en/support to the DA-820C computer.
4. Double-click the **DA-PRP-HSR-I210_MxPrpSetup_x64.msi** file to start the installation process.
   The installation wizard will show the welcome page.
5. Click **Next**.



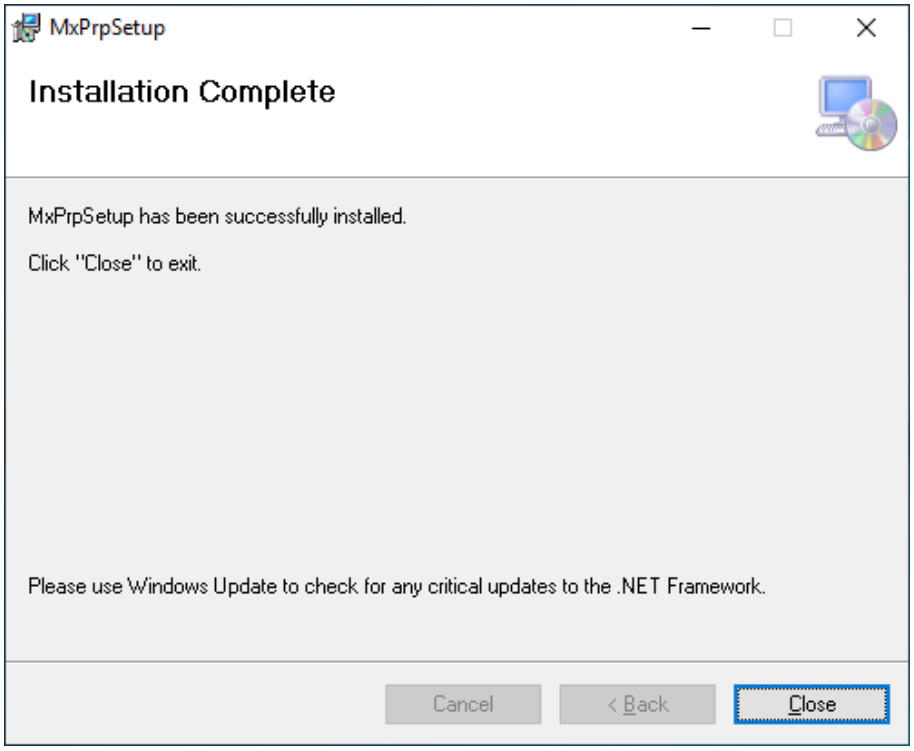
6. Accept the default installation directory or click **Browse** to select one and click **Next**.



7. Click **Next** to continue.

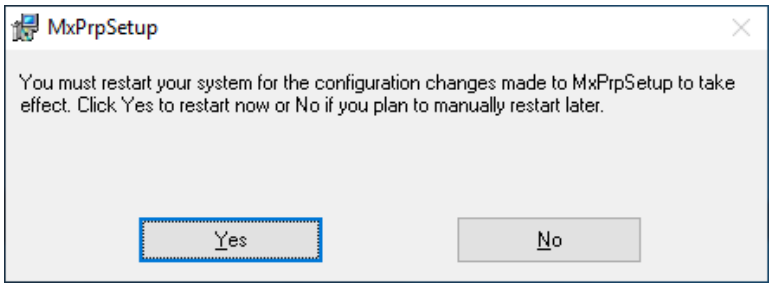


8. Click **Close** to complete the installation.

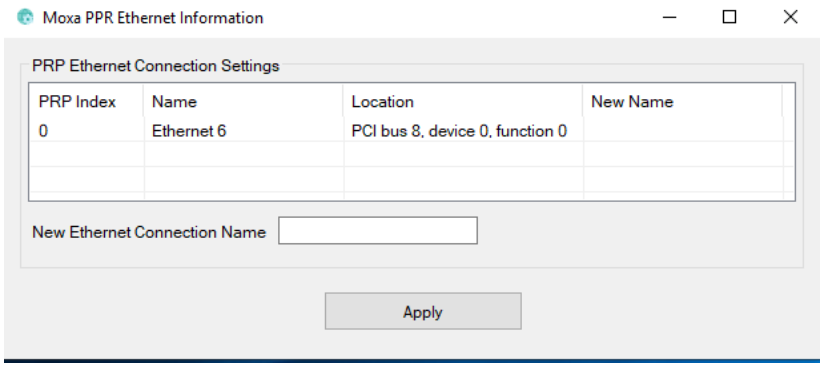


The Moxa PRP Service is installed on the computer.

9. In the message box that pops up, click **Yes**.



The **Moxa PRP Ethernet Information** utility will run automatically when you restart the computer.



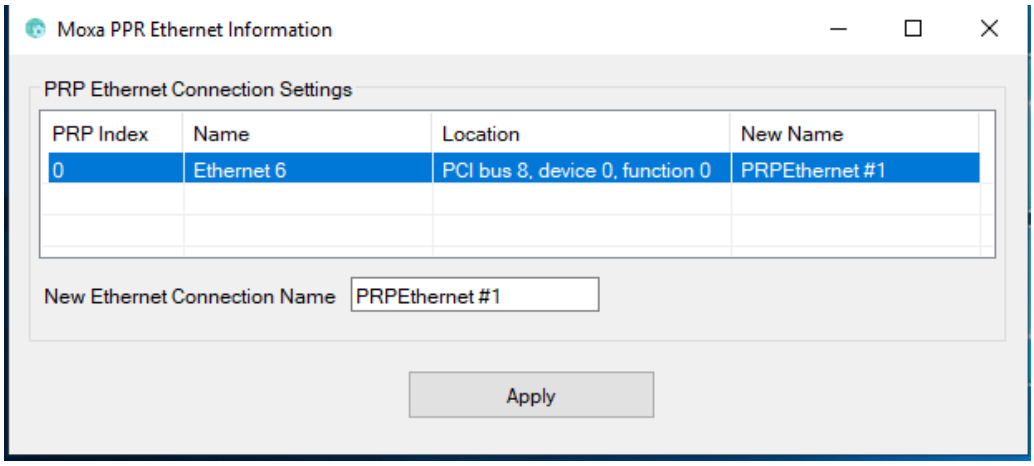
Changing the Default Name of the Expansion Cards

NOTE

If a new PRP card in installed on the computer or removed from the computer, the **Moxa PRP Ethernet Information utility** will run automatically when the computer reboots. Use the utility to configure the new card.

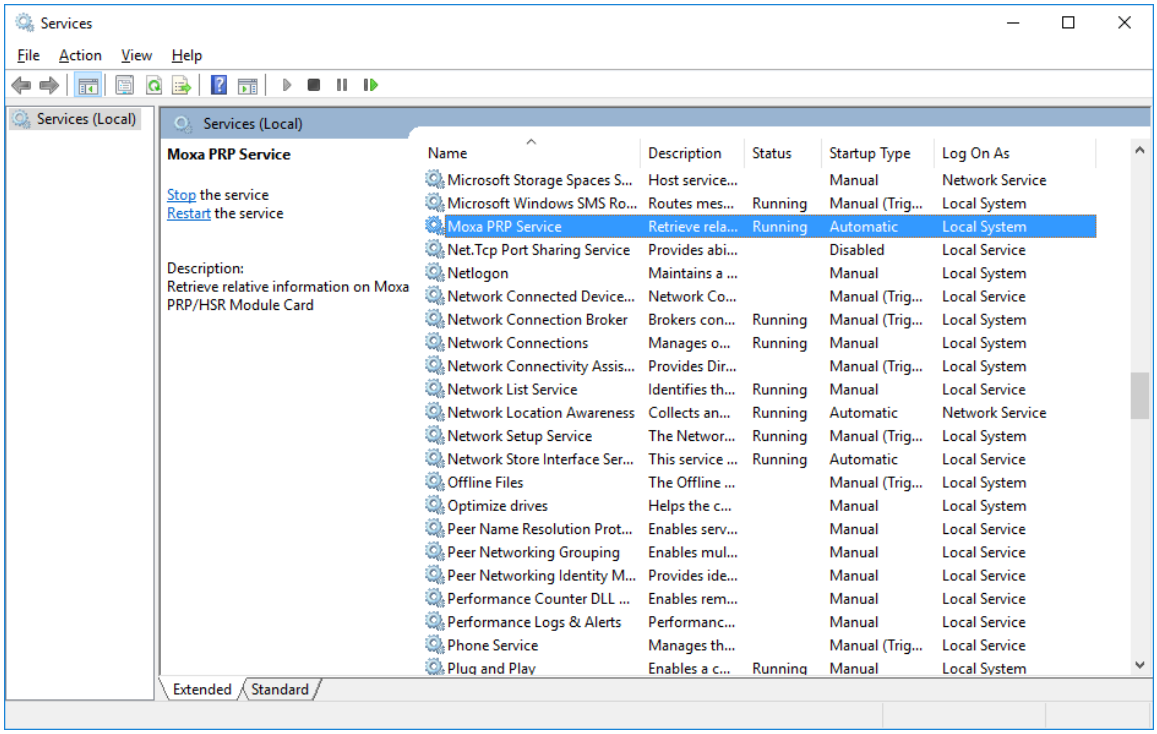
The utility sets a default name for each card, which can be changed. In the example below, the **PRP Index** represents the PRP index switch selection and the location of the PRP expansion card, which can be obtained from the device manager.

To change the default name for an expansion card, click on the entry for the card in the utility window, change the default name, and click **Apply**.

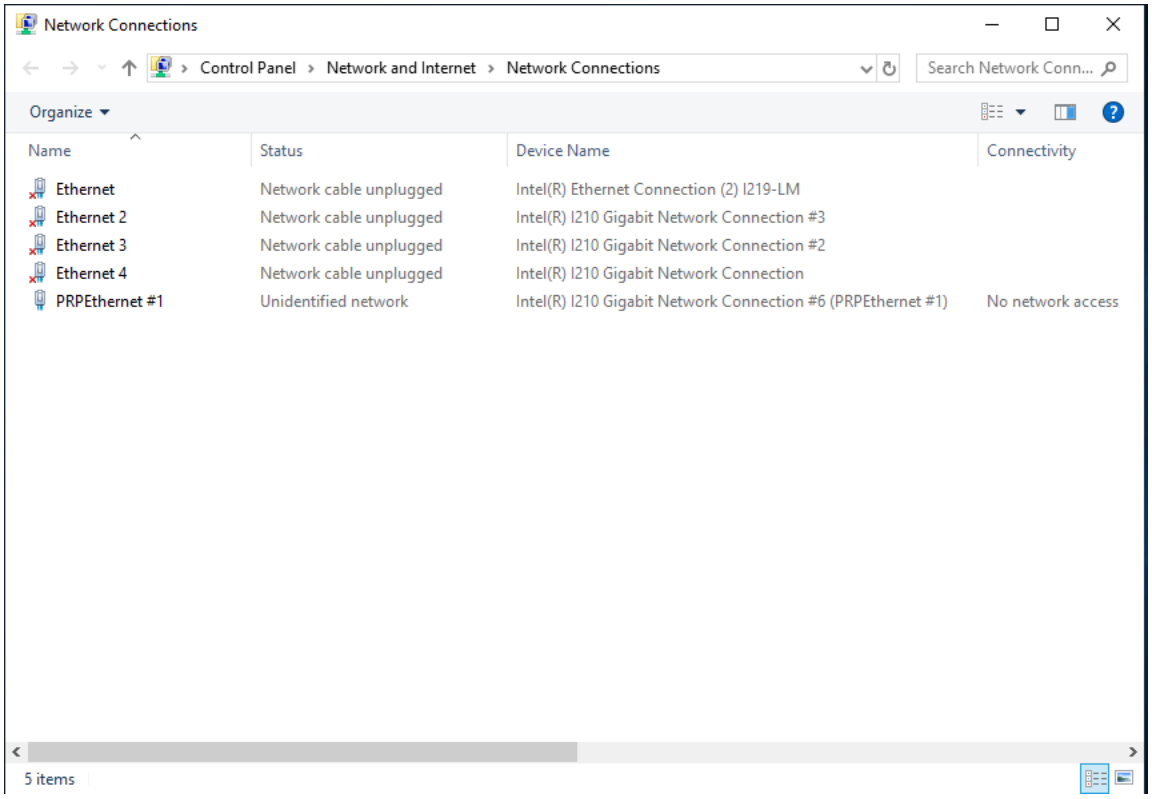


You will be prompted to restart the computer.

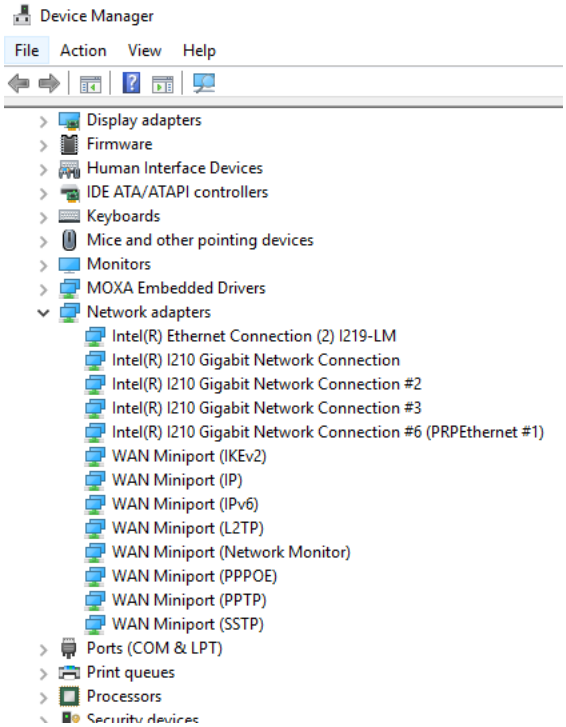
After the computer is restarted, the Moxa PRP Service will run.



The DA-PRP-HSR-I210 card uses the same Intel® Ethernet driver as the onboard Ethernet adapters. All expansion cards installed on the computer are shown as individual Ethernet adapters.



You can also confirm the name change of the expansion card by checking the Ethernet adapter names in the Device Manager.

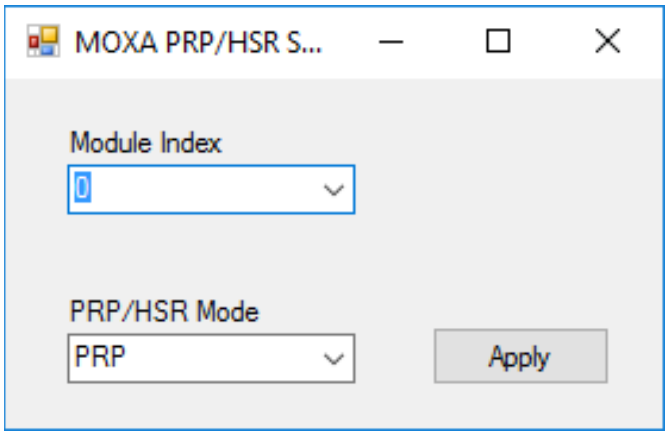


Configuring the Operation Mode

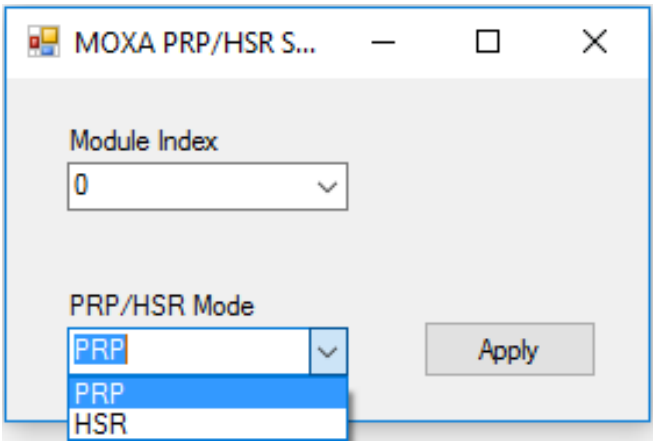
You can use the **Moxa PRP Settings** utility to set the operating mode (PRP or HSR) for a DA-PRP-HSR_I210 expansion card.

1. Run the **Moxa PRP Settings** utility from the Start menu.
2. Select the expansion card.

   If more than one DA-PRP-HSR-I210 expansion cards are installed on the computer, use the Module Index (0 to 2) drop-down menu to select the card that you want to configure.



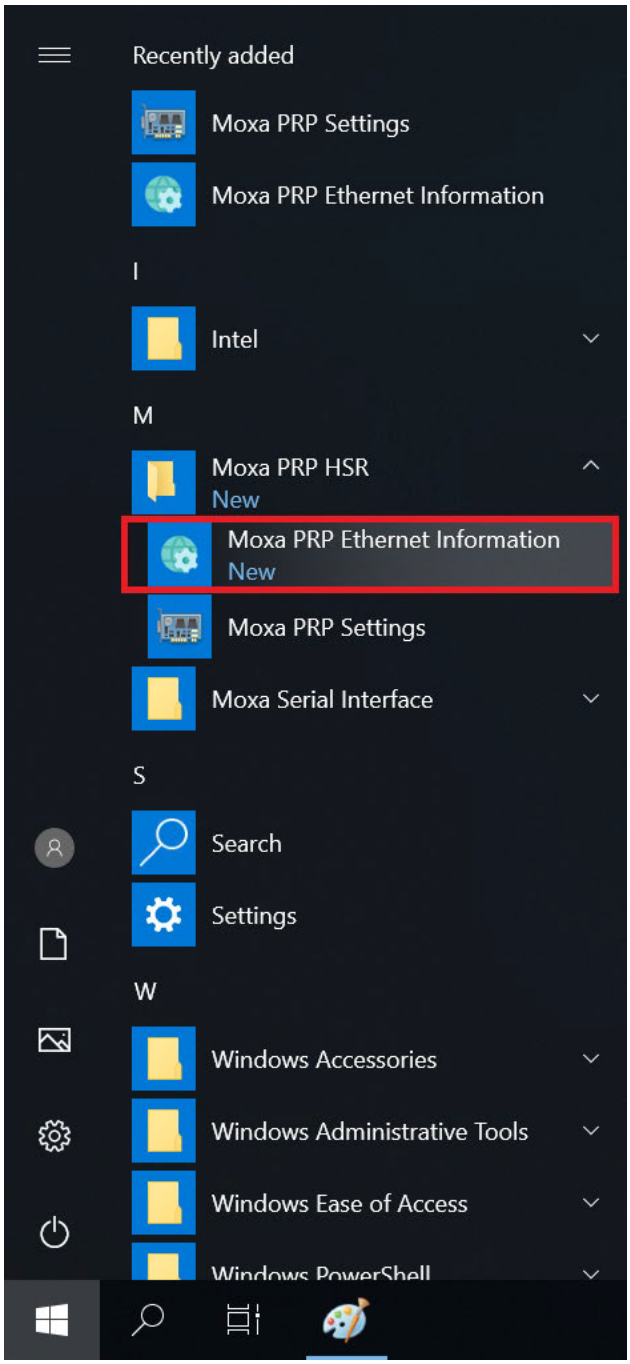
3. From the **PRP/HSR Mode** drop-down list, select an option and click **Apply**.



Redefining the Ethernet Information

The **Moxa PRP Ethernet Information** utility can be used to redefine the DA-PRP-HSR-I210 Ethernet information in the system.

1. Run the **Moxa PRP Ethernet Information** utility from the Start Menu.



2. In the utility screen, select the expansion card.

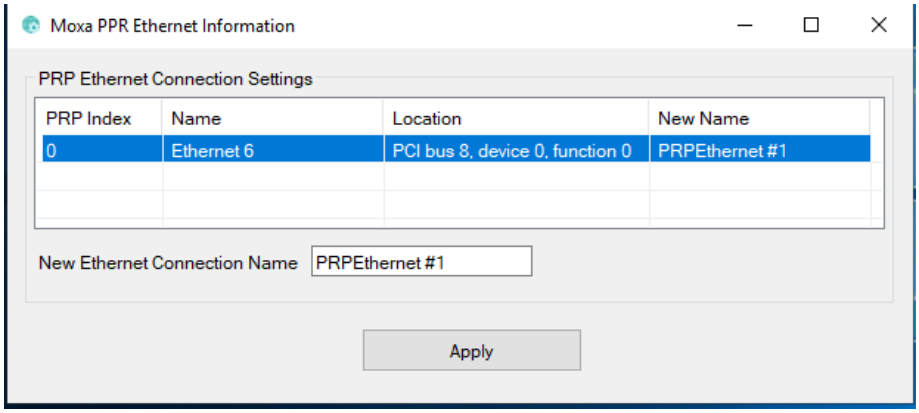
   PRP Index: Select the target PRP card index (the index set by the switch in the expansion card)

   Location: PCI bus location of the target PRP card.

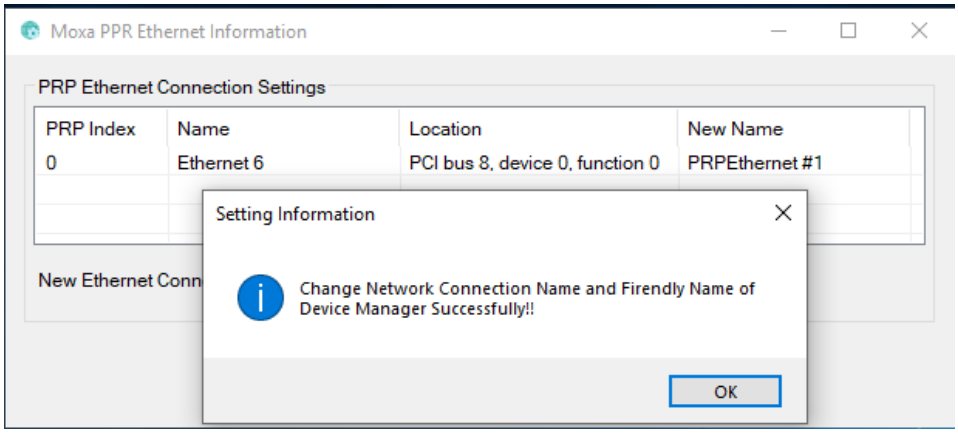
   Name: Type the network connection name of target PRP card.

   In this example, we are redefining the name of the card.

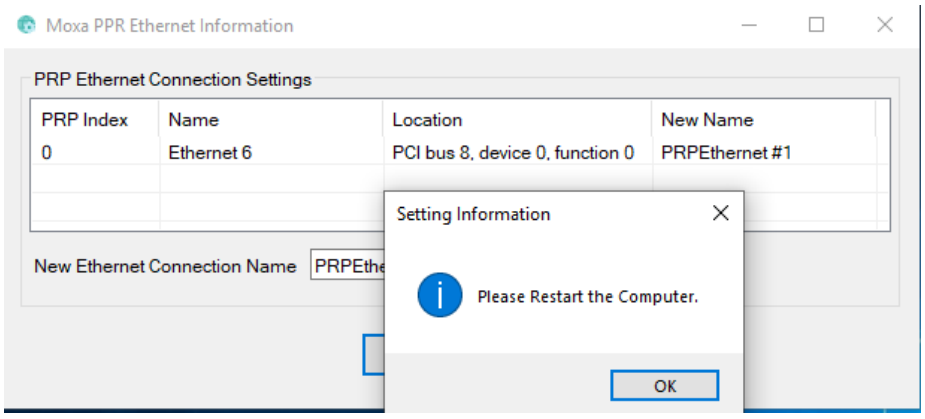
   New Name: The new name to set.



After the Ethernet information has been successfully redefined, a message is shown. Click **OK**.



3. Restart the computer.

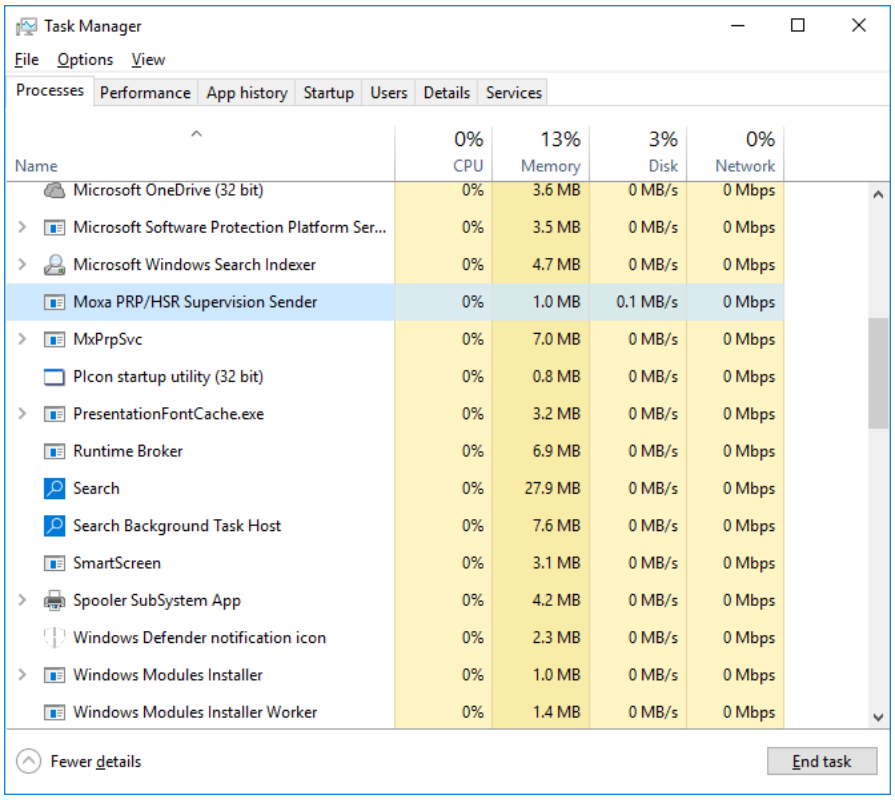


PRP/HSR Supervision Frame

The supervision frame of DA-PRP-HSR-I210 expansion card is based on WinPcap. Before you start sending the PRP/HSR supervision frame, you must download and install the WinPcap tool from https://www.winpcap.org/ and check the supervision frame.

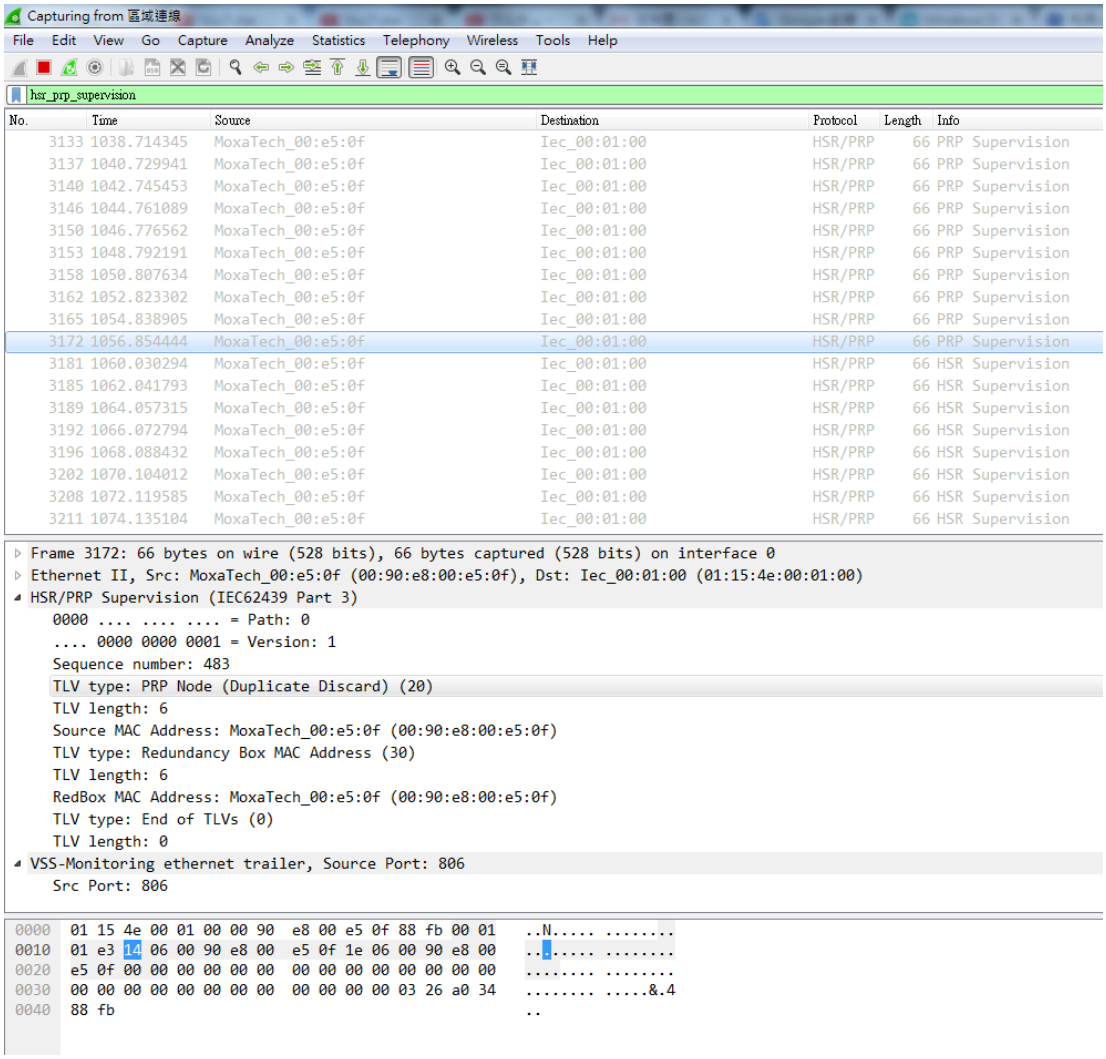
To check the PRP/HSR supervision frame, do the following:

1. Install the WinPcap tool on the DA-820C.
2. Install DA-PRP-HSR-I210_MxPrpSetup_x64.msi
3. Wait for the Moxa PRP Service to initialize.
4. The Moxa PRP/HSR Supervision Sender service will start running.



5. Install the Wireshark tool on a PC and run the tool with the "hsr_prp_supervision" filter to wait for the PRP supervision frames.
6. Connect port A or port B of the DA-PRP-HSR-I210 to the Ethernet port of the PC.
7. Use the Moxa PRP Settings utility to set the PRP/HSR mode.
8. Check the supervision frame using the Wireshark tool.

PRP Supervision Frame



HSR Supervision Frame