DA-PRP-HSR Expansion Module Software Manual

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www.moxa.com/product

DA-PRP-HSR Expansion Module Software Manual

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Introduction

Thank you for purchasing Moxa's DA-PRP-HSR expansion module for the DA-820 series industrial computers.

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

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

Moxa's DA-820 series industrial computer with the DA-PRP/HSR is the ideal solution for power substation automation and process automation systems

This manual shows you how to install the MMS Device Manager and how to use the middleware to manage PRP/HSR devices. Through the MMS protocol, the MMS Device Manager integrates IEC 62439-3 information with SCADA.

The following topics are covered in this chapter:

- **Getting Started**
- **LED Indicators**

Getting Started

Before you install the MMS Device Manager, see the *DA-PRP-HSR Expansion Module Installation Guide* for information on installing the DA-PRP-HSR and driver.

LED Indicators

The following figure shows the LEDs on the DA-PRP-HSR.

The following figure describes the LEDs.

LED Name	LED Color	LED Function
1G_A	Yellow / Blinking	1000 Mbps (Gigabit) Ethernet mode.
	Off	No link.
100M_A	Green / Blinking	100 Mbps Ethernet mode.
	Off	No link.
1G_B	Yellow / Blinking	1000 Mbps (Gigabit) Ethernet mode.
	Off	No link.
100M_B	Green / Blinking	100 Mbps Ethernet mode.
	Off	No link.
PRP	Green	The DA-PRP-HSR is operating in PRP mode
HSR	Green	The DA-PRP-HSR is operating in HSR mode
Fault	Red	The DA-PRP-HSR is not functioning properly.

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Software Installation

The DA-PRP-HSR driver and utility are supported on Windows 7 and Windows Embedded 7 (32-bit or 64-bit). This chapter describes the installation procedure on Windows Embedded 7.

The following topics are covered in this chapter:

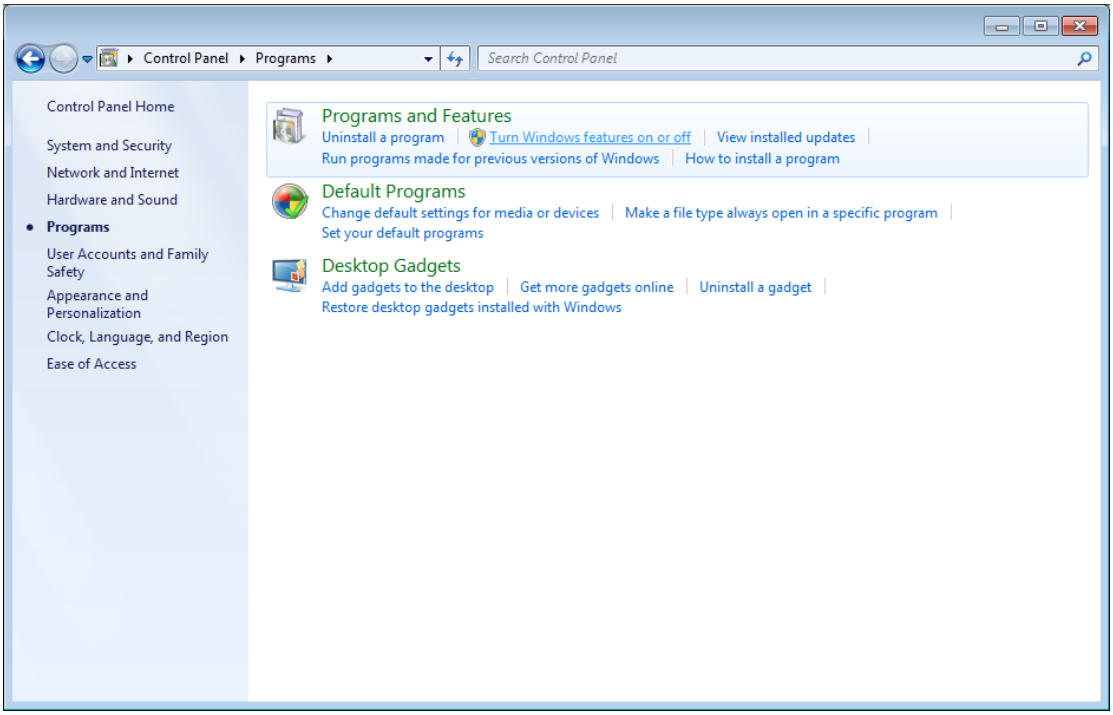
- **Installing the SNMP Agent**
- **Installing the SNMP Extension Agent**
- **Installing the MMS Device Manager**

Installing the SNMP Agent

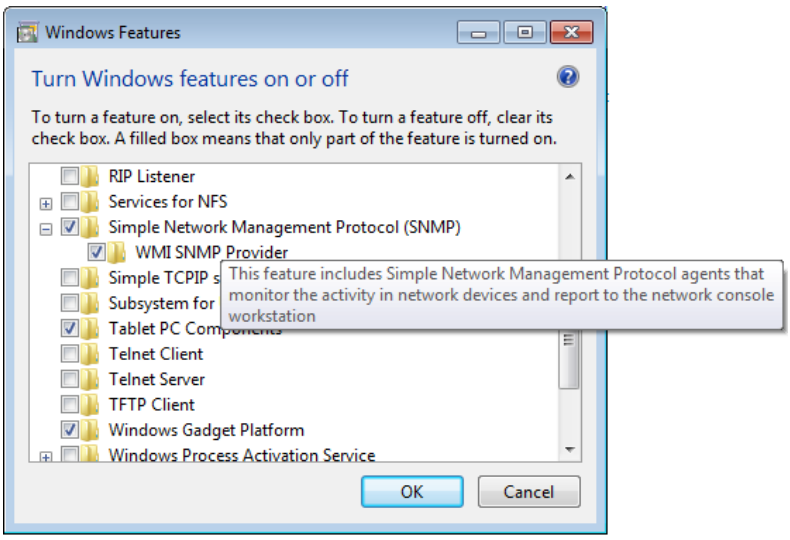
You must install the SNMP agent on the DA-820 computer because the MMS Device Manager uses SNMPV2c to collect information from PRP/HSR devices (for example, Reboxs, PRP/HSR switches, and native PRP/HSR computers).

NOTE Before you install the SNMP agent, make sure that the Windows SNMP service is running.

1. From the Start menu, click **Control Panel > Program > Programs and Features**.
2. (For Windows 7 Editions only) Click **Turn Windows features on or off**.

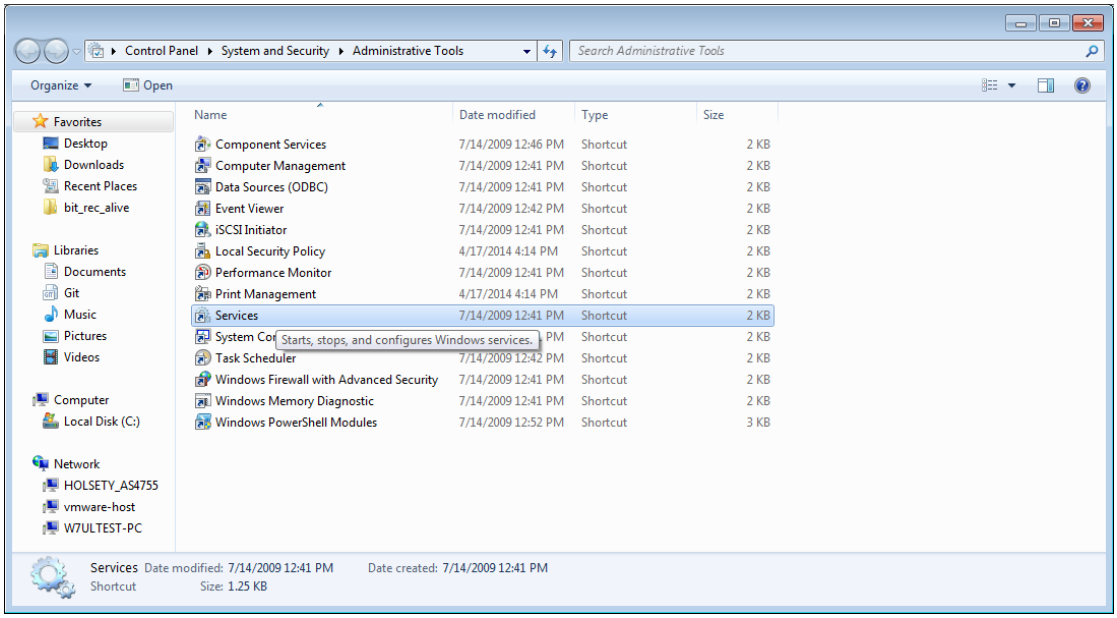


3. (For Windows 7 Editions only) In the Windows Features dialog box, select **Simple Network Management Protocol (SNMP)** and **WMI SNMP Provider**. Click **OK**.

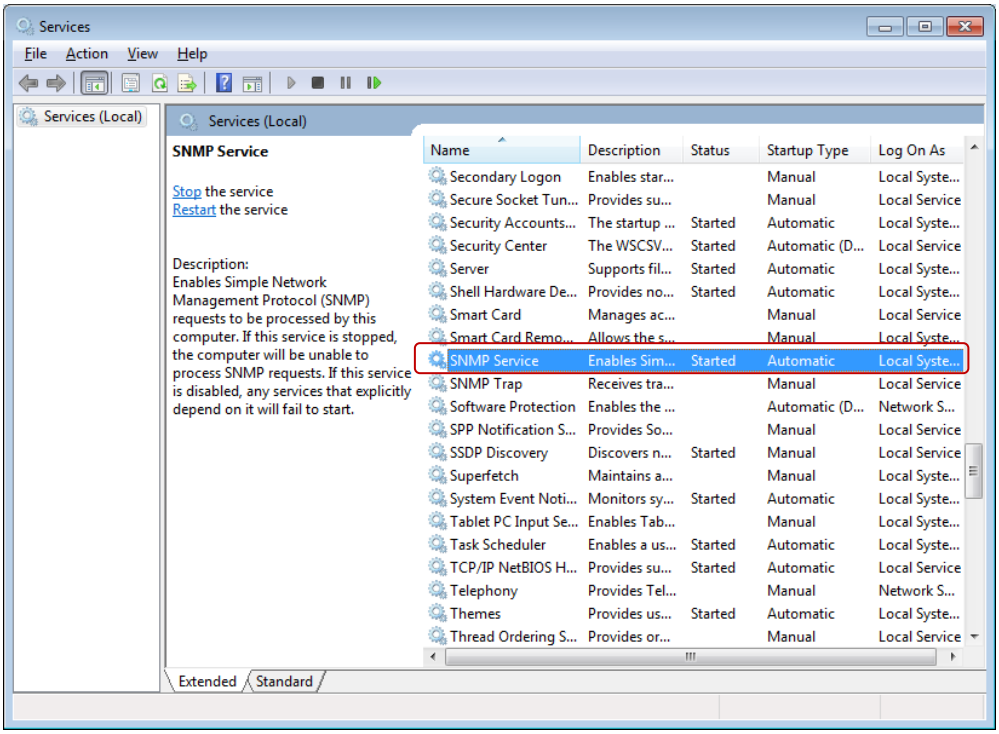


4. Configure the SNMP service. Complete the following steps:

   a. From the Start menu, click **Control Panel > System and Security > Administrator Tools > Services**.

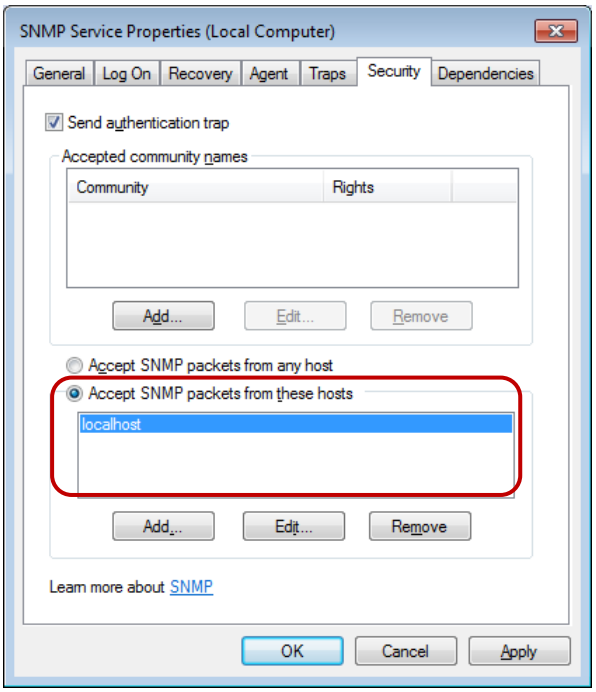


   b. In the **Services** area, right-click **SNMP service** to display the SNMP Service Properties screen.



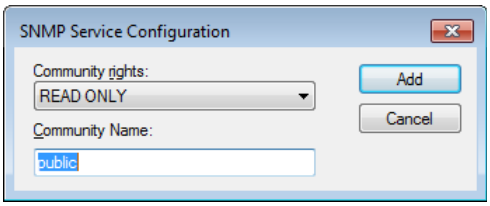
c. Click the **Security** tab and select **accept SNMP packets from these hosts**.

d. Click **Add** and specify the host name, IP or IPX address of a host and click **Add** again.

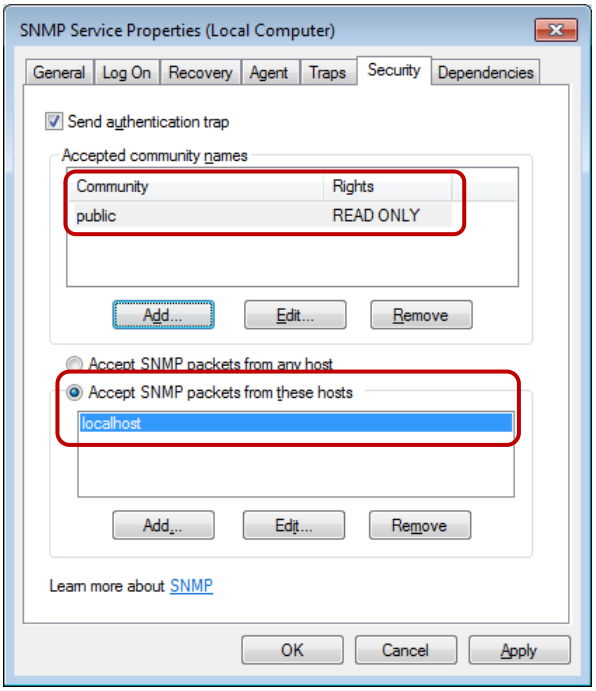


e. Under Accepted community names, click **Add** to set the community rights for the allowable hosts.

f. In the SNMP Service Configuration screen, select **READ ONLY** from the **Community rights** drop-down list and enter “public” in the **Community Name** field. Click **Add**.



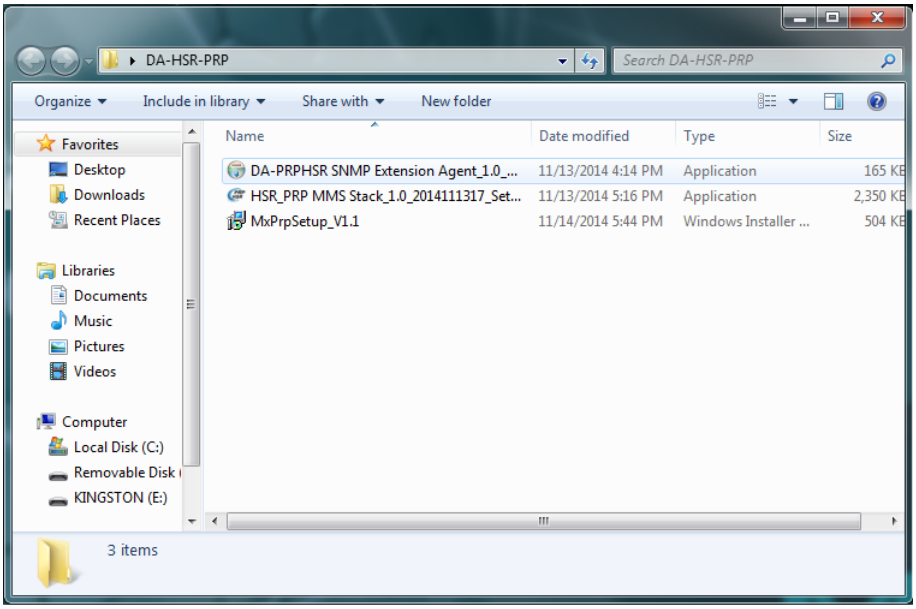
g. Verify the SNMP service properties and click **OK**.



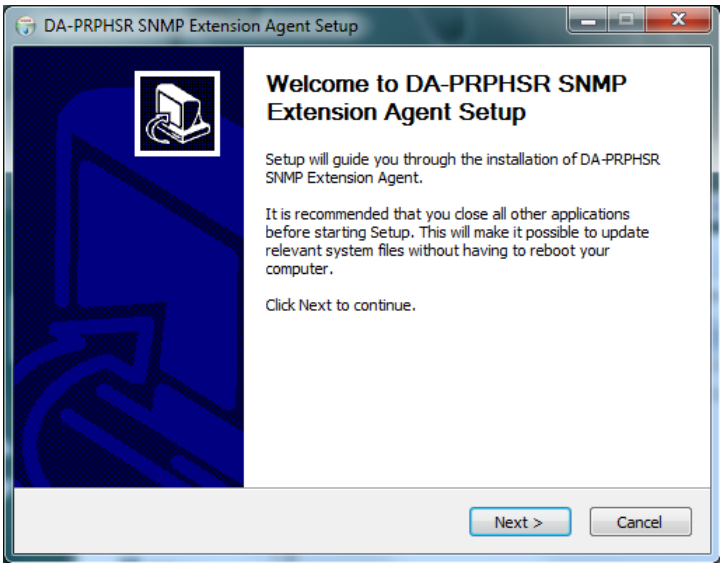
Installing the SNMP Extension Agent

After you have installed and configured the SNMP agent service, install the DA-PRPHSR SNMP extension agent that enables a DA-820 computer (with the DA-PRP-HSR expansion module) to support IEC62439 SNMP MIBs.

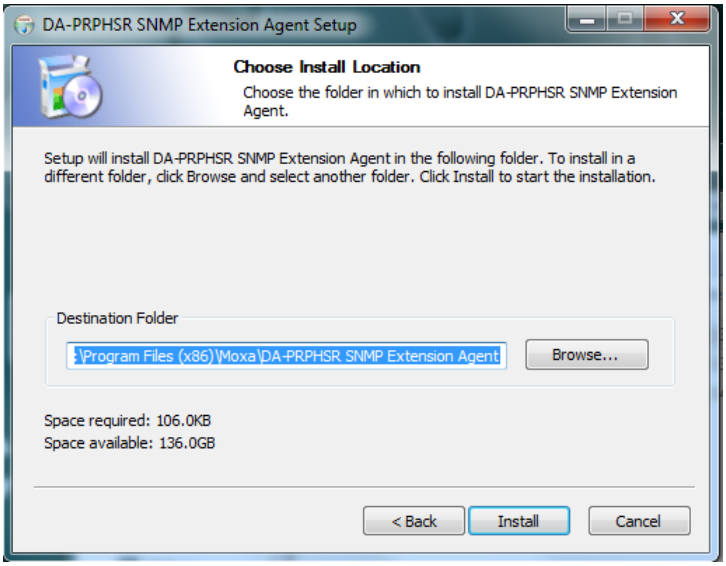
1. On the DA-PRP-HSR software CD/DVD, double-click **DA-PRPHSR SNMP Extension Agent_x.0.exe** to start the installation process.



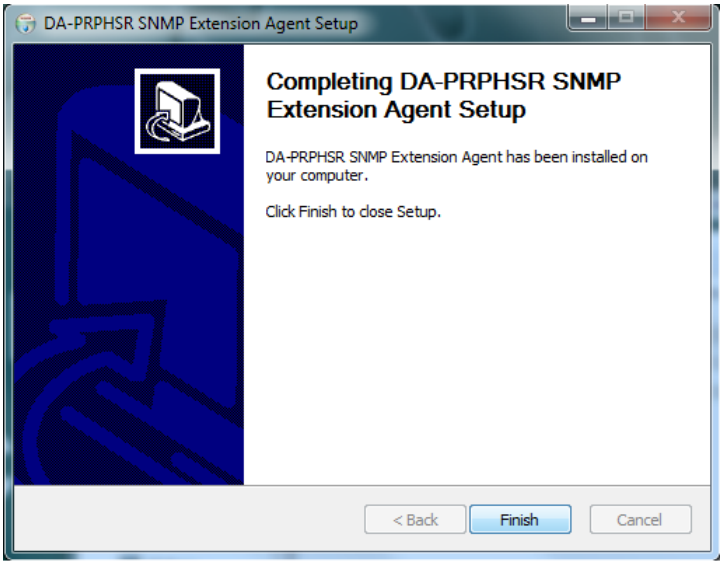
2. A Welcome screen appears. Click **Next**.



3. Accept the default destination folder or click **Browse** to select one. Click **Install**.



4. Click **Finish** to complete the installation process.

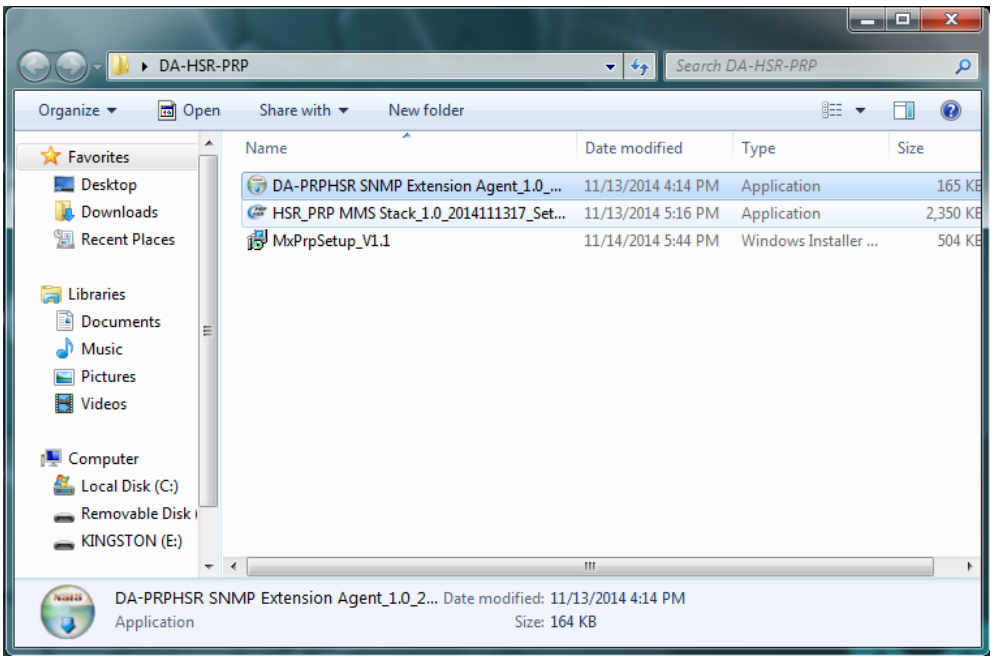


Installing the MMS Device Manager

The MMS Device Manager collects PRP/HSR device information through the MMS interface and acts as an MMS server to provide network management information based on the IEC62439-3 standard.

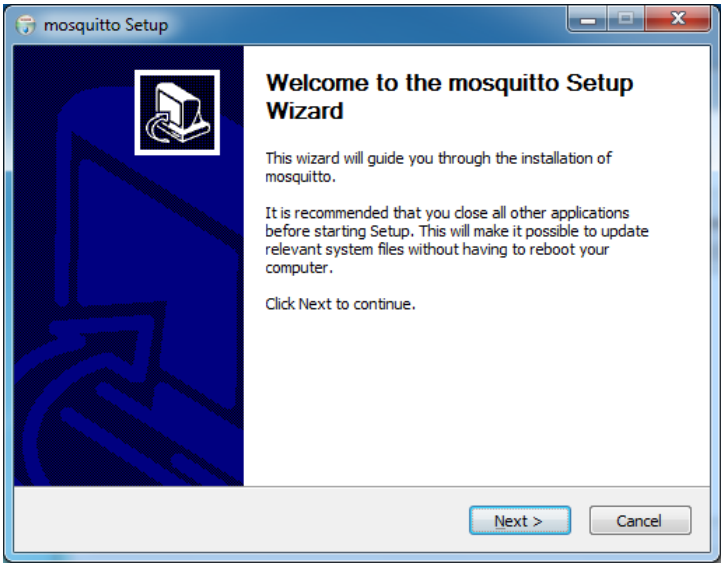
This section shows you how to install the MMS Device Manager.

1. From the DA-PRP-HSR software CD/DVD, double-click **HSR_PRP MMS Stack_Setup.exe** to start the installation process.

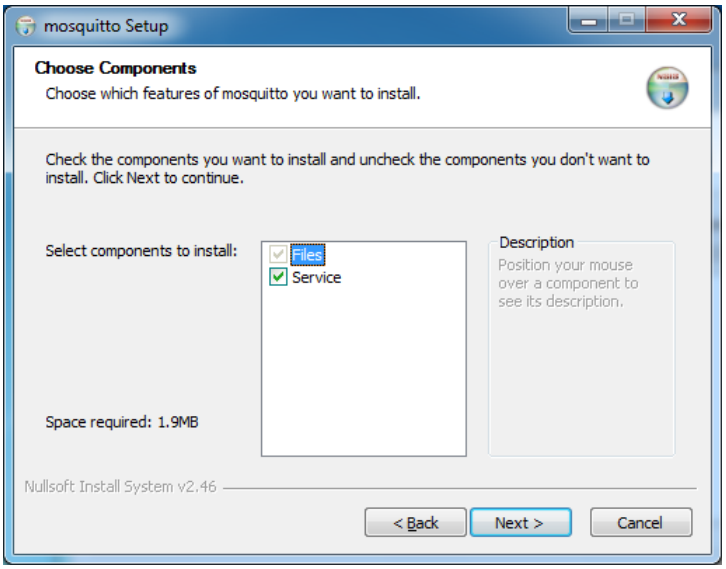


2. If the mosquitto service is not installed on the computer, the mosquitto Setup Wizard appears automatically. Click **Next** to start the mosquitto setup wizard.

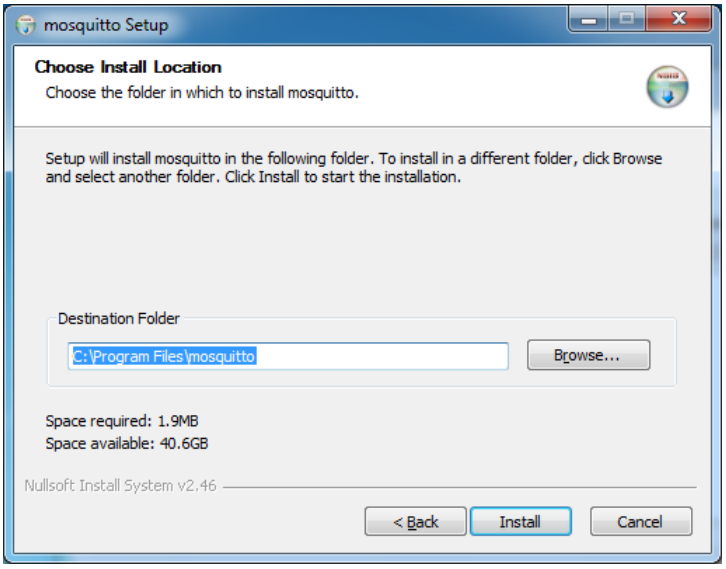
   mosquitto is a major component in the MMS Device Manager.



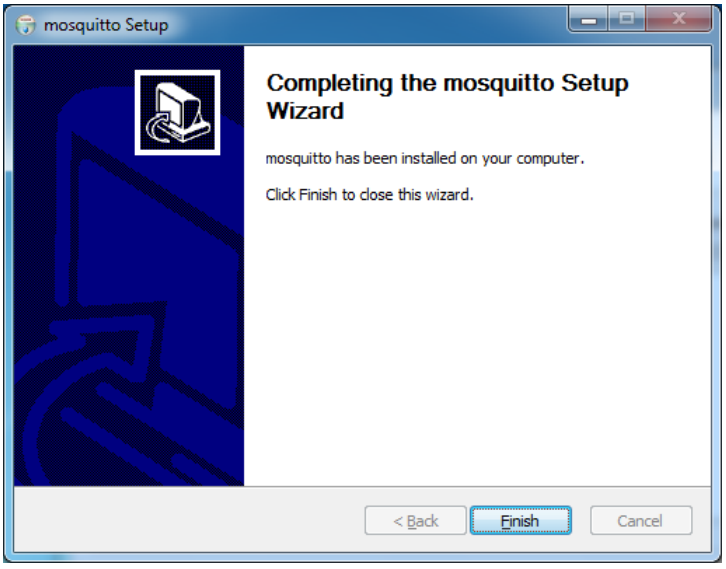
a. Select **Service** and click **Next**.



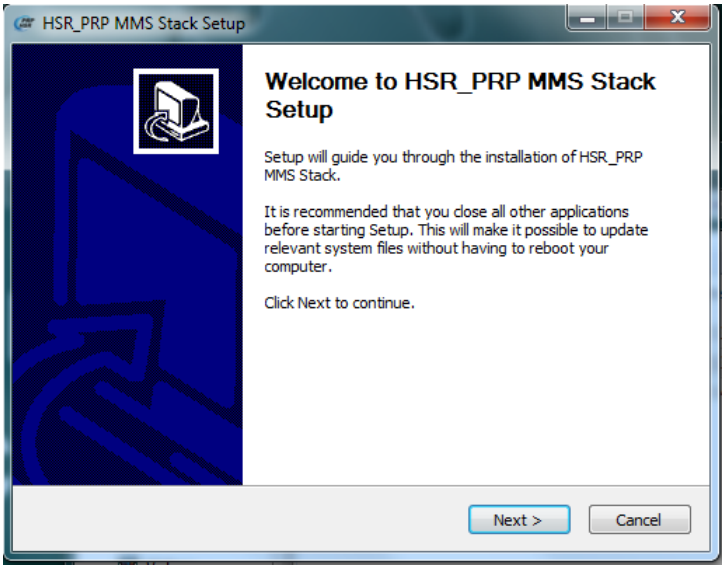
b. Accept the default destination folder or click **Browse** to select one. Click **Install**.



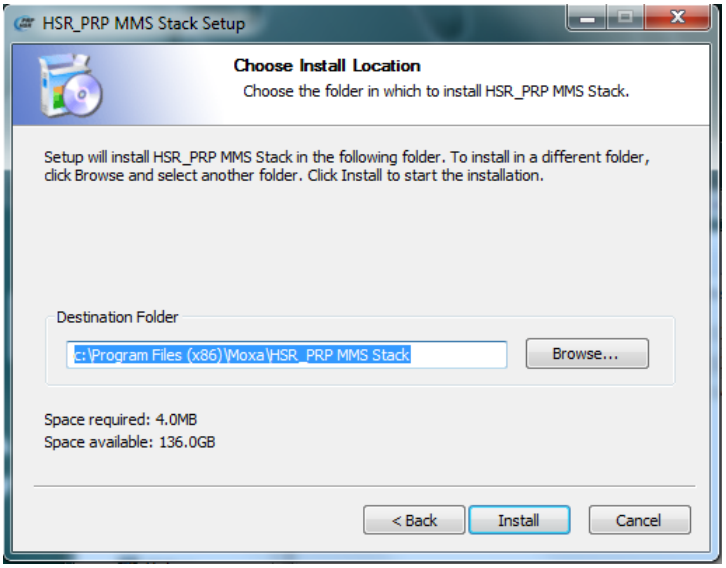
c. Click **Finish** to complete the mosquitto Setup Wizard.



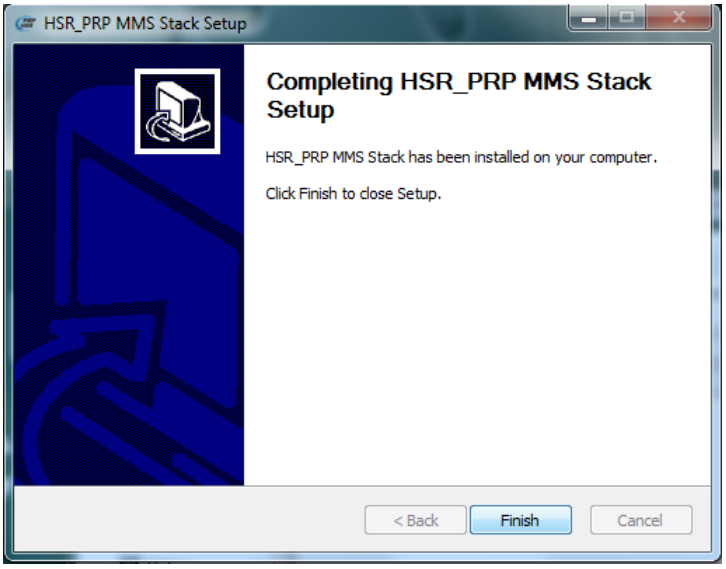
3. After the mosquitto service is installed, the HSR_PRP MMS Stack Setup screen appears. Click **Next**.



4. Accept the default destination folder or click **Browse** to select one. Click **Install**.



5. Click **Finish** to complete the installation process.



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Using the MMS Device Manager

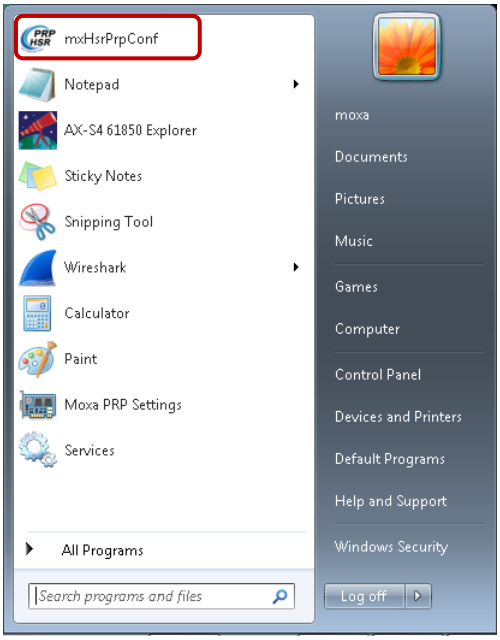
This chapter describes how to use the MMS Device Manager to manage PRP/HSR devices.

The following topics are covered in this chapter:

- **Starting the MMS Device Manager**
- **Adding a PRP/HSR Device**
  - Adding a Local PRP/HSR Device
  - Adding a Remote PRP/HSR Device
- **Configuring SNMP V2c Community**
- **Configuring the Management View**
- **Log Settings**
- **Configuring Polling Interval**
- **Exporting an ICD File**
- **Upgrading Software**

Starting the MMS Device Manager

To start the MMS Device Manager, click **mxHsrPrpConf** from the Start menu (or click Start **> All Programs > Moxa > HSR_PRP MMS Stack > mxHsrPrpConf**).



Adding a PRP/HSR Device

Before you can manage a PRP/HSR device (for example, Redbox, PRP/HSR switches, and computers), you must add the PRP/HSR device in the MMS Device Manager. A PRP/HSR device can be installed locally on the DA-820 computer or at a remote location.

Adding a Local PRP/HSR Device

This section shows you how to add a local PRP/HSR device (for example, a DA-PRP-HSR expansion module installed in the DA-820 computer).

1. In the MMS Device Manager, click **Option > Rebox**.
2. The **Options** dialog box appears. Enter the IP address of the PRP/HSR device and click **Add IP**.

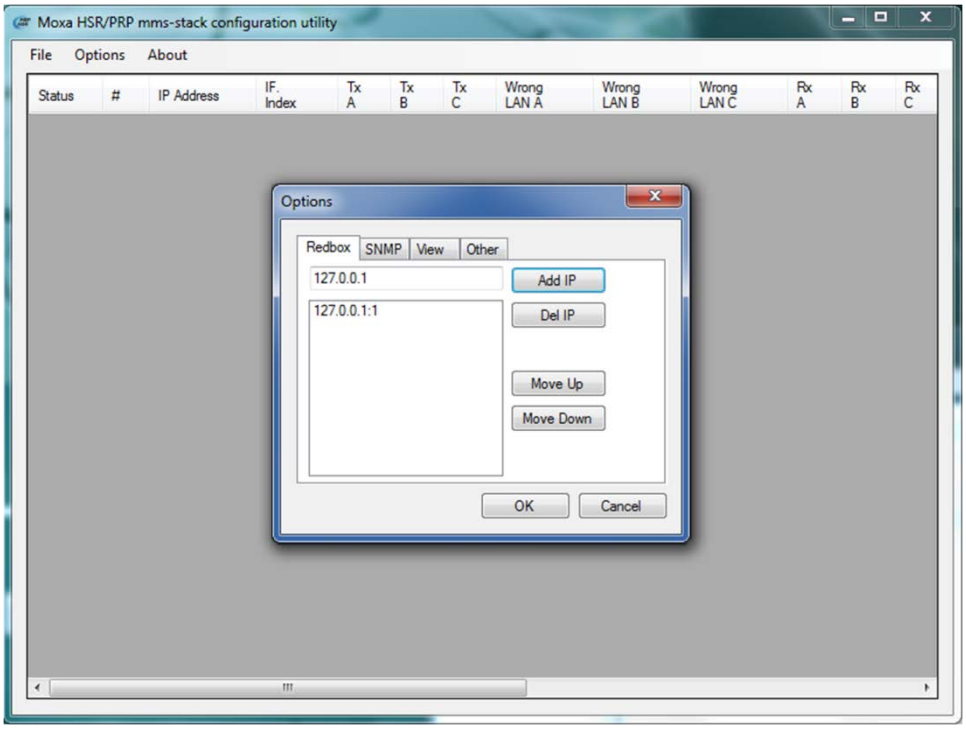
NOTE You can install up to three DA-PRP-HSR expansion modules in the DA-820 computer.

If you have installed more than one DA-PRP-HSR in a DA-820 computer, check the card index selection switch on the DA-PRP-HSR.

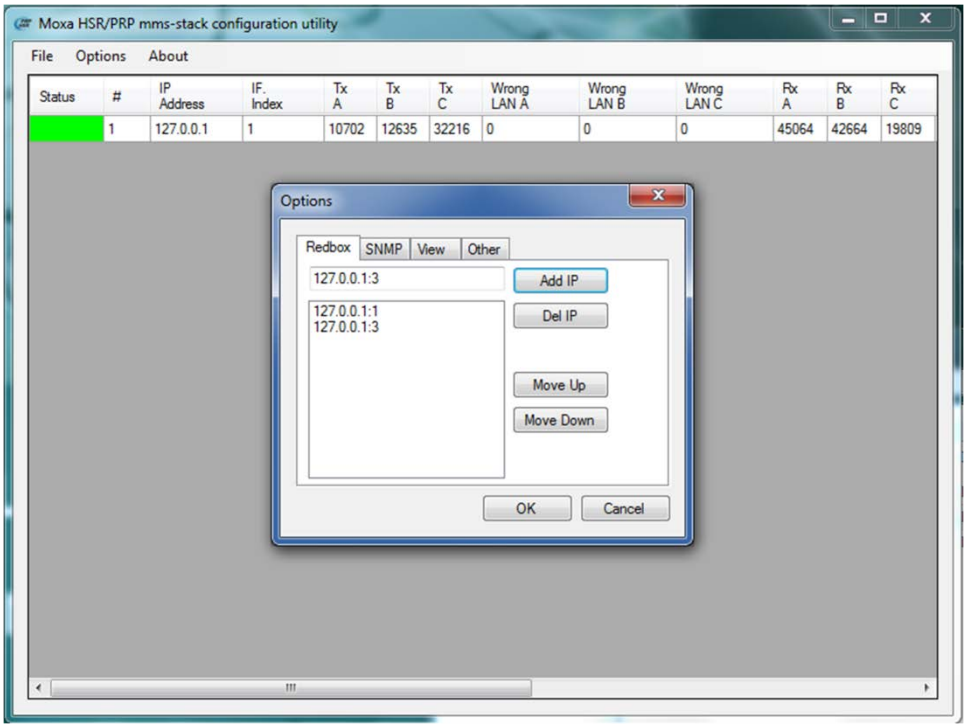
For example:
127.0.0.1:**1** is indicating the first DA-PRP-HSR expansion module with card index 1.
127.0.0.1:**2** is indicating the second DA-PRP-HSR expansion module with card index 2.
127.0.0.1:**3** is indicating the third DA-PRP-HSR expansion module with card index 3.

For more information on how to change the card index, see the *DA-PRP-HSR Installation Guide*.

The following figure shows an example.

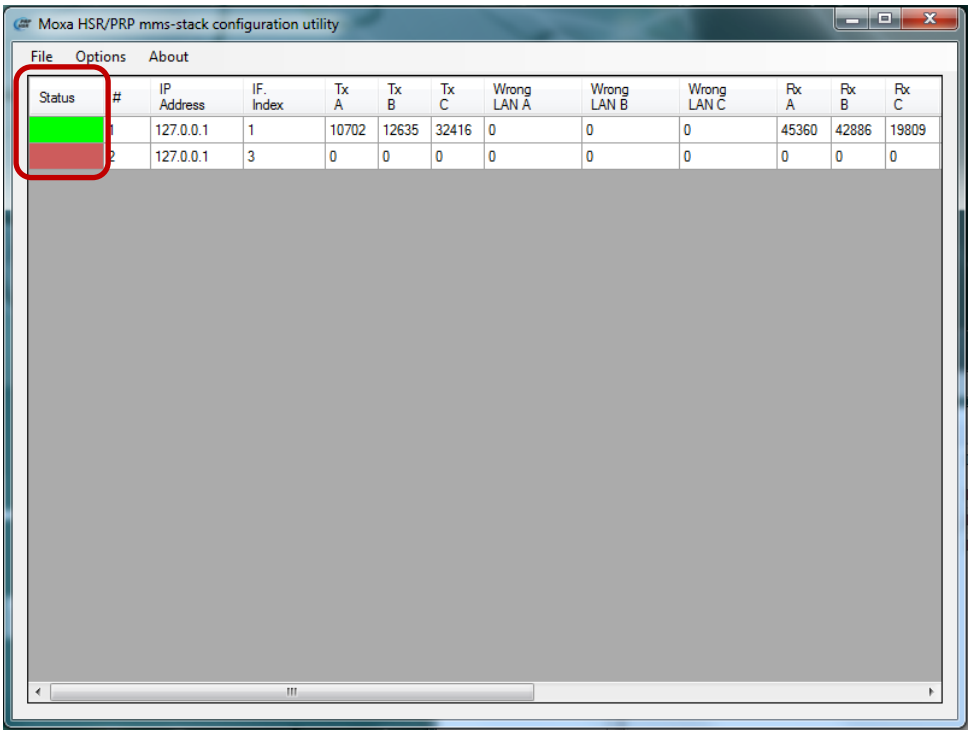


3. Repeat steps 1 and 2 to add more local PRP/HSR devices in the MMS Device Manager.



In the MMS Device Manager, the **Status** field can be one of the following colors:

- **Green**: Indicate that a PRP/HSR device is online and is been managed.
- **Red**: indicate that a PRP/HSR device is off-line and is not been managed by the MMS Device Manager.



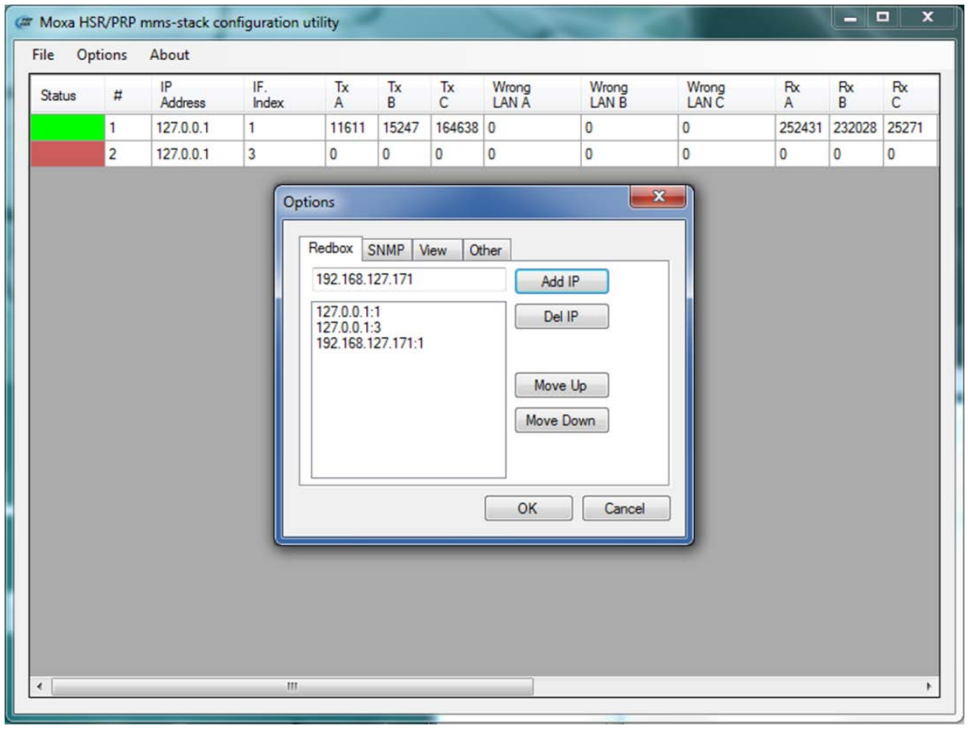
Adding a Remote PRP/HSR Device

You can add remote PRP/HSR devices (for example, Redbox, PRP/HSR switches, and computers) in the MMS Device Manager using one of the following methods:

- Add a remote PRP/HSR device manually in the MMS Device Manager.
- Import remote PRP/HSR device information from a text file

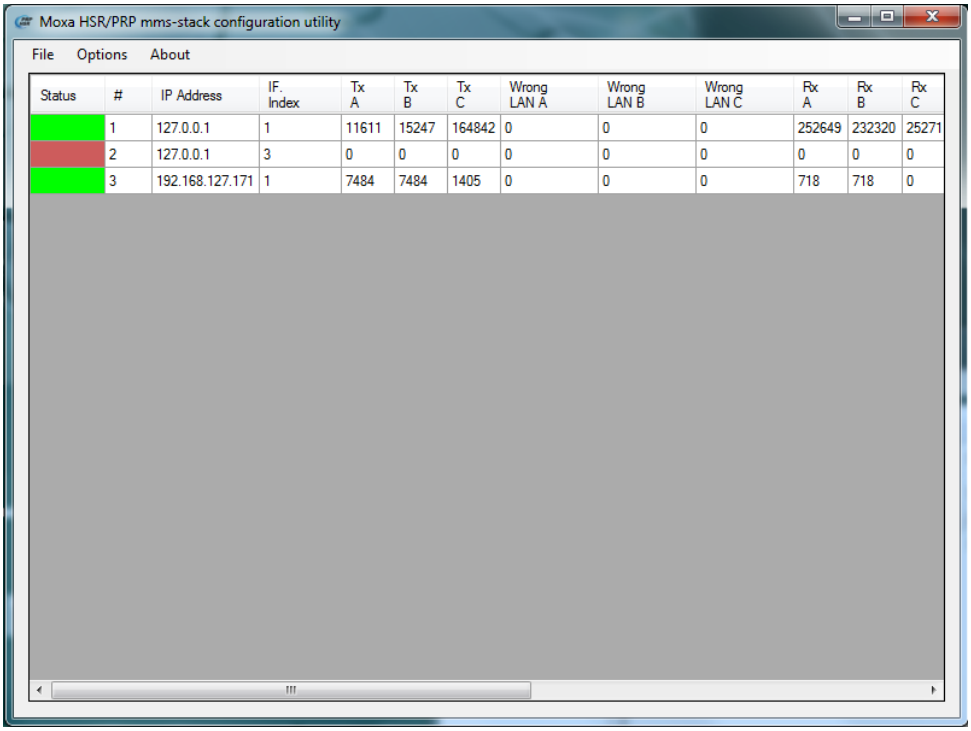
Using the MMS Device Manager

1. In the MMS Device Manager, click **Options > Redbox**.
2. The **Options** dialog box appears. Enter the IP address of the PRP/HSR device (for example, 196.168.127.171) and click **Add IP**.



NOTE The MMS Device Manager collects network information using SNMP protocol. Thus, the PRP/HSR devices that you want to monitor must be running the SNMP V2c service and provide data in a SNMP MIB (Management Information Base) compatible with IEC62439-3.

The following figure shows an example where a remote PRP/HSR device (with an IP address of 192.168.127.171) is connected to the MMS Device Manager. The Status field is green to indicate that the PRP/HSR device is online.

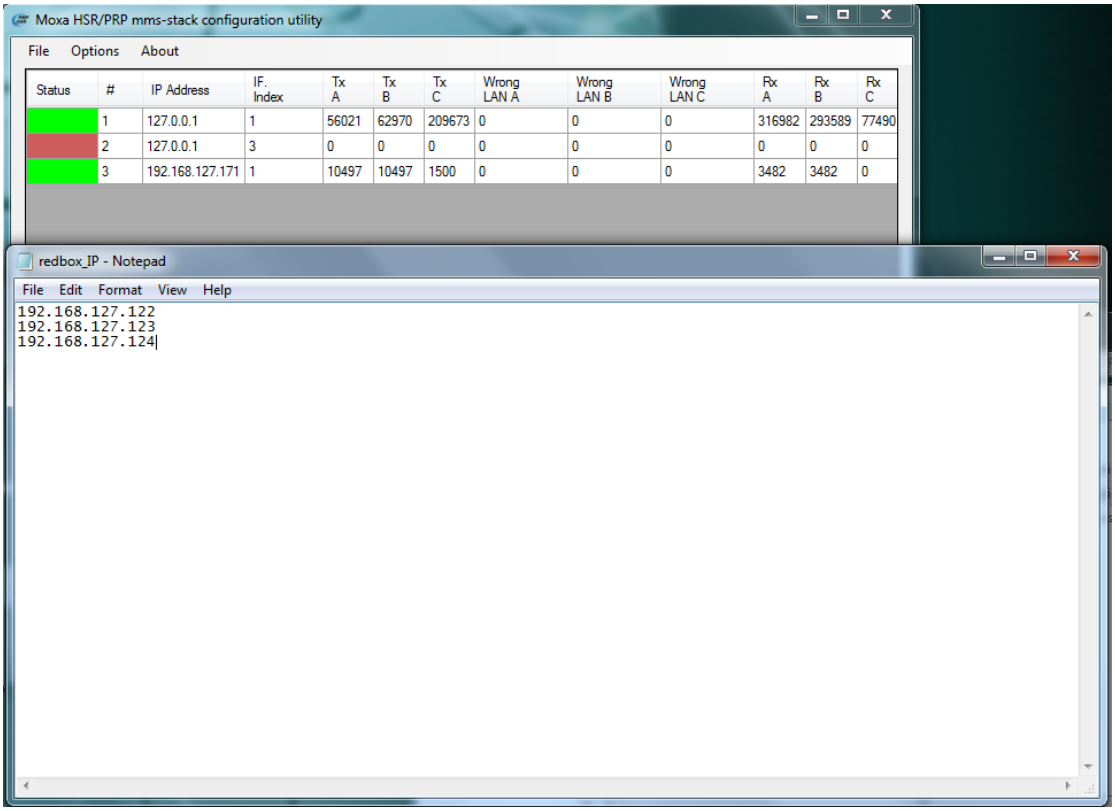


Importing PRP/HSR Device Information

To add multiple PRP/HSR devices into the MMS Device Manager at the same time, you can import a text file containing PRP/HSR device IP addresses.

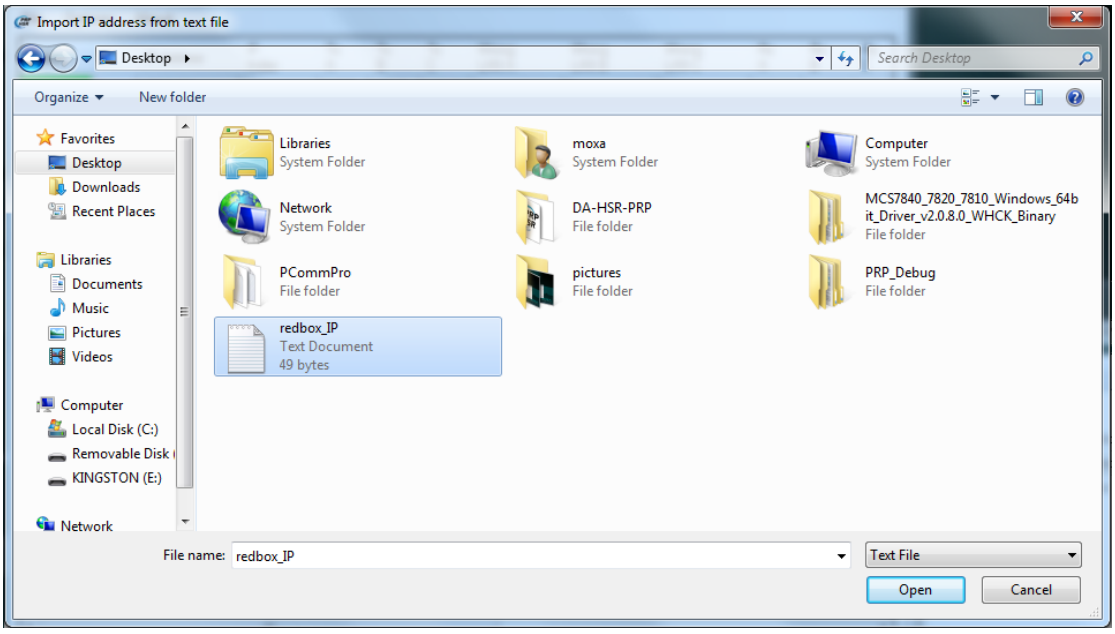
The following figure shows an example. The *redbox_IP.txt* file contains three PRP/HSR device IP address as follows:

192.168.127.122 (EOL)
192.168.127.123 (EOL)
192.168.127.124 (EOL)

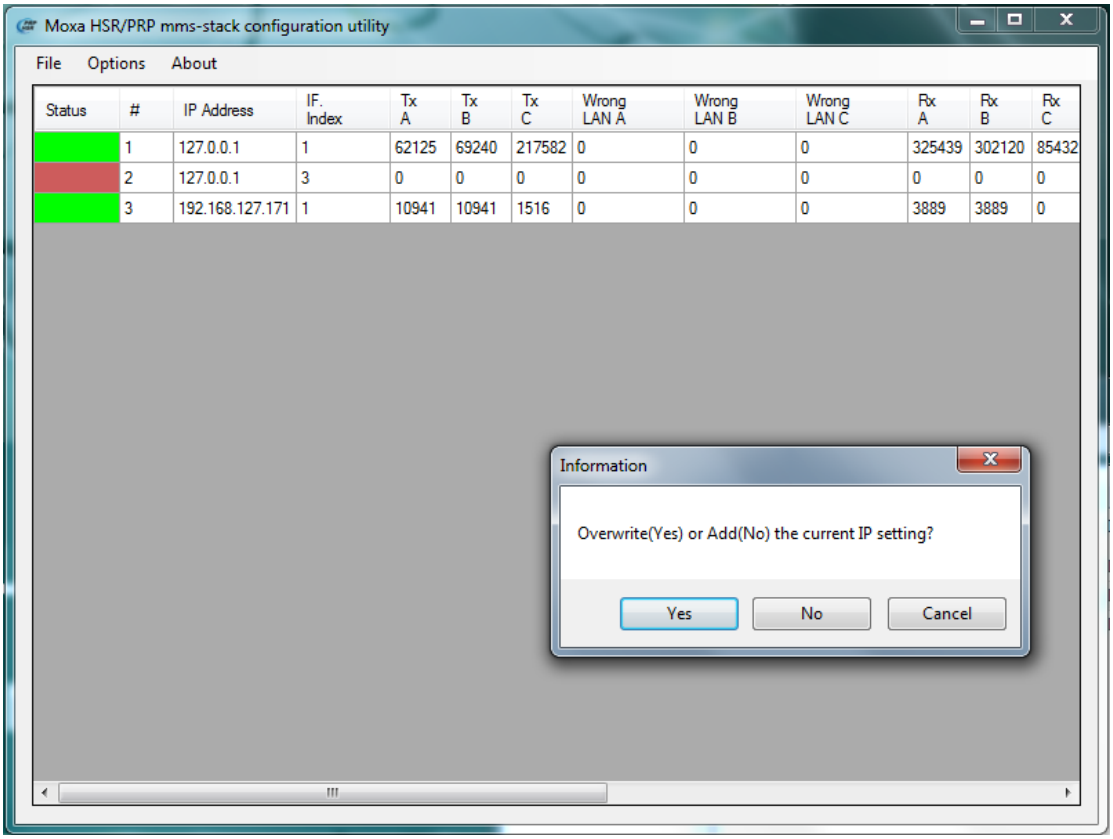


NOTE The MMS Device Manager can monitor and manage up to 200 PRP/HSR devices at a time.

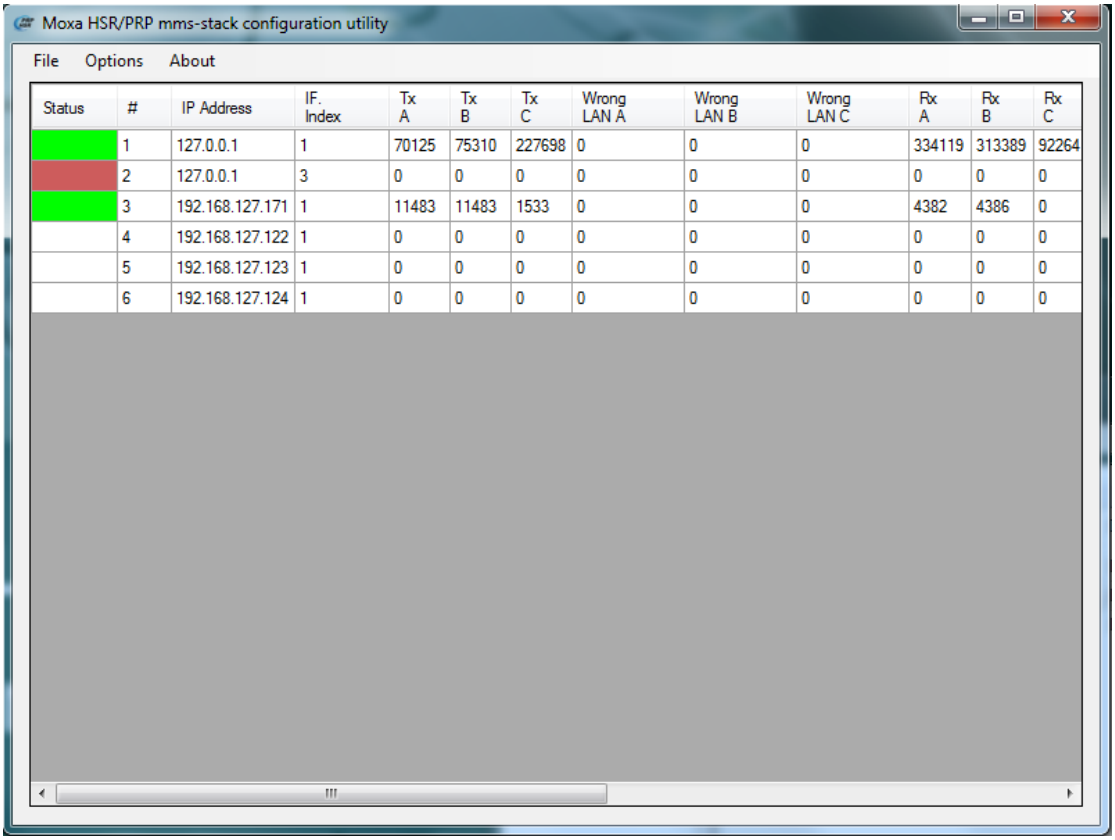
1. In the MMS Device Manager, click **File > Import Redbox IP address**.
2. Locate and select the text file containing the PRP/HSR device IP addresses and click **Open**.



3. An **Information** dialog box appears. Click one of the following options:
   - **Yes**: Overwrite existing IP address settings.
   - **No**: Add new device IP addresses.



The following figure shows an example where three new remote PRP/HSR devices are added. The MMS Device Manager is managing six PRP/HSR devices simultaneously.

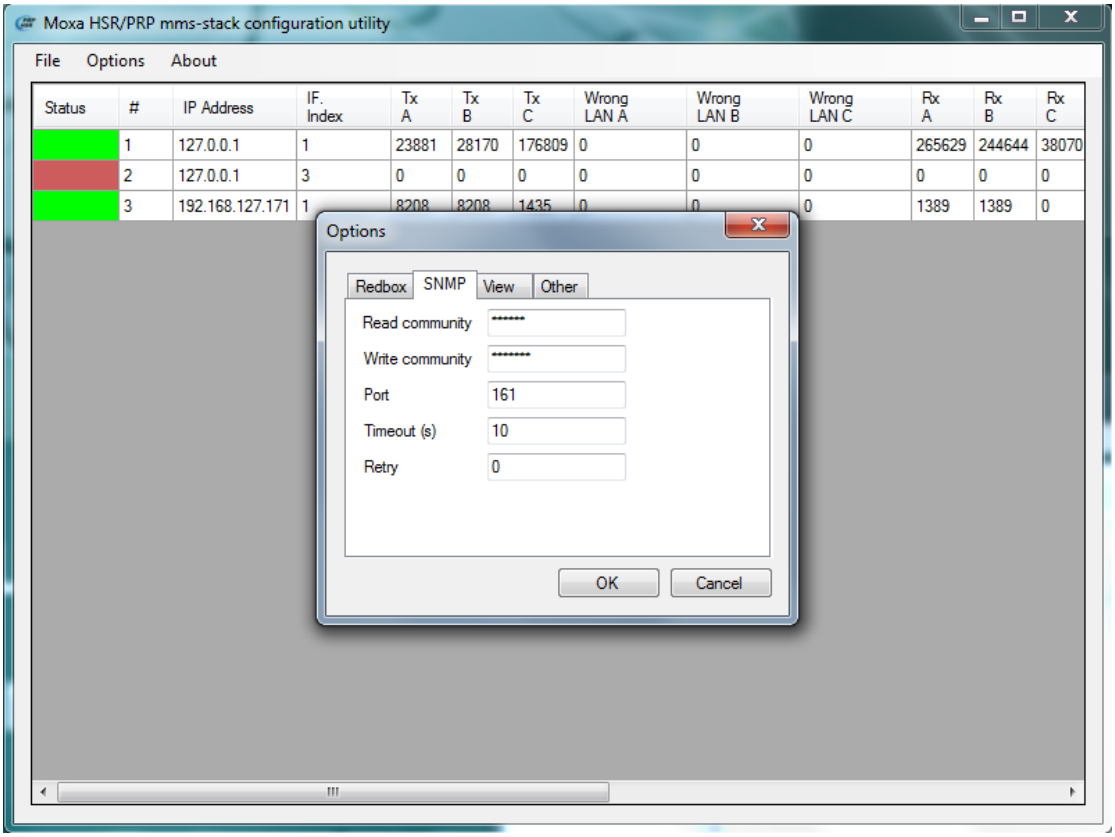


Configuring SNMP V2c Community

For the MMS Device Manager to access PRP/HSR devices using SNMP, you must configure the SNMP settings (for example, the community names and port number).

Click **Options** and select the **SNMP** tab. Configure the following fields and click **OK**.

- **Read community**: Enter the Read community name for authentication.
- **Write community**: Enter the Write community name for authentication.
- **Port**: Enter the SNMP port number
- **Timeout (s)**: Specify the connection timeout period (in seconds).
- **Retry**: Specify the number of connections to attempt.



Configuring the Management View

The MMS Device Manager displays a list of managed PRP/HSR devices and the related information. You can select the device parameters to display on the screen.

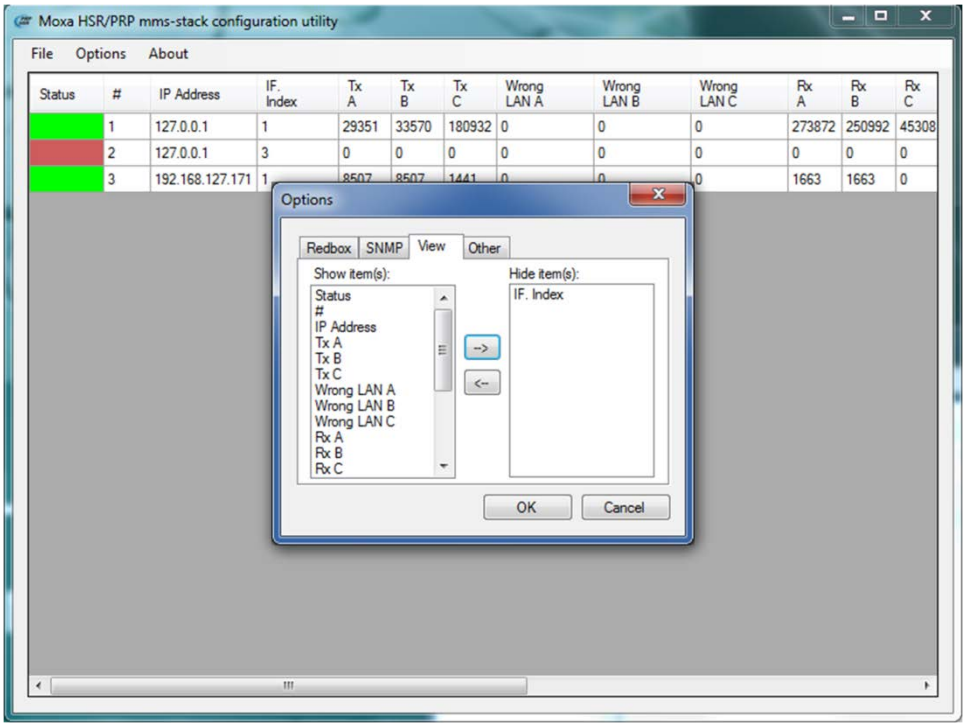
1. In the MMS Device Manager, click **Options** and select the **View** tab.

   By default, the system displays all device parameters.

2. Select the device parameter that you want to show and click the **<-** button to add the entry to the **Show item(s)** list.

   If you do not want the system to display a device parameter, select the option and click the **->** button to add the entry to the **Hide item(s)** list.

3. Click **OK**.

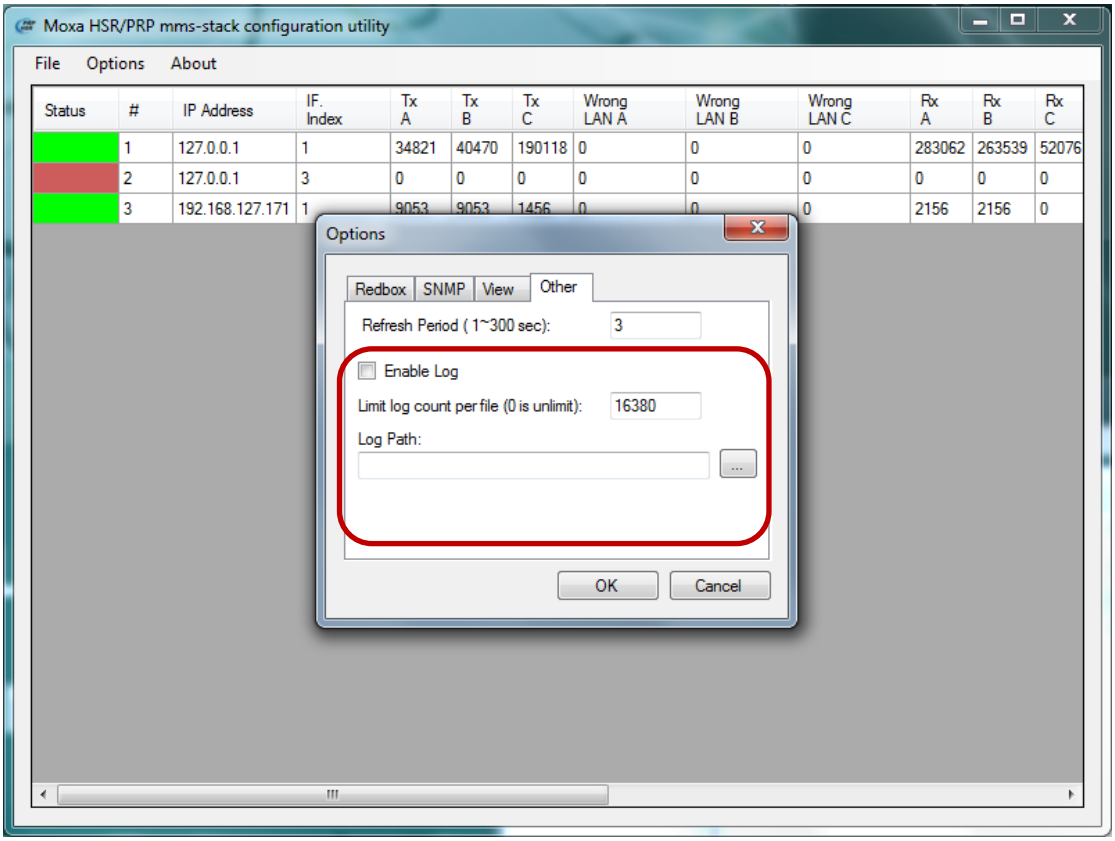


Log Settings

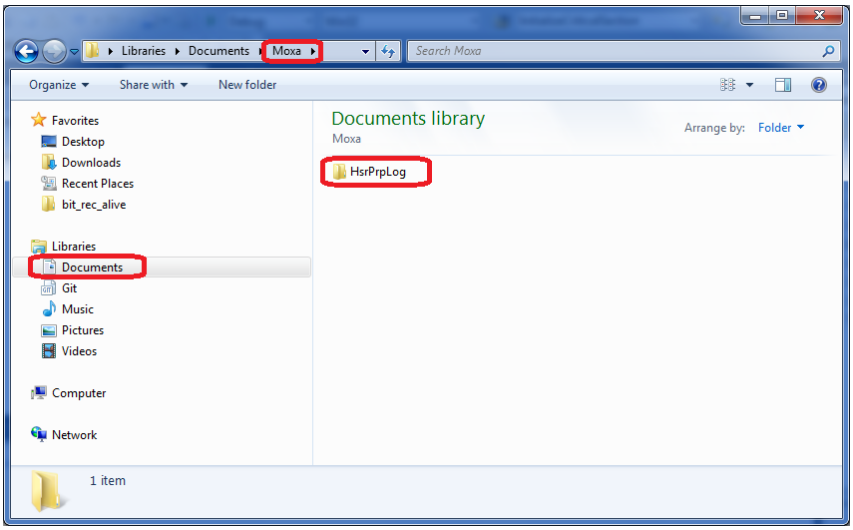
The MMS Device Manager records monitoring information in logs.

To configure log settings in the MMS Device Manager, click **Options** and select the **Other** tab. The following describes the related fields.

- **Enable Log**: Select this check box to enable the log function.
- **Limit log count per file**: Enter a number greater than 0 (no limit) to set the number of logs per log file. When the number of logs in a log file reaches this limit, the system automatically saves new logs in a new log file.
- **Log Path**: Specify the directory to store the log files.



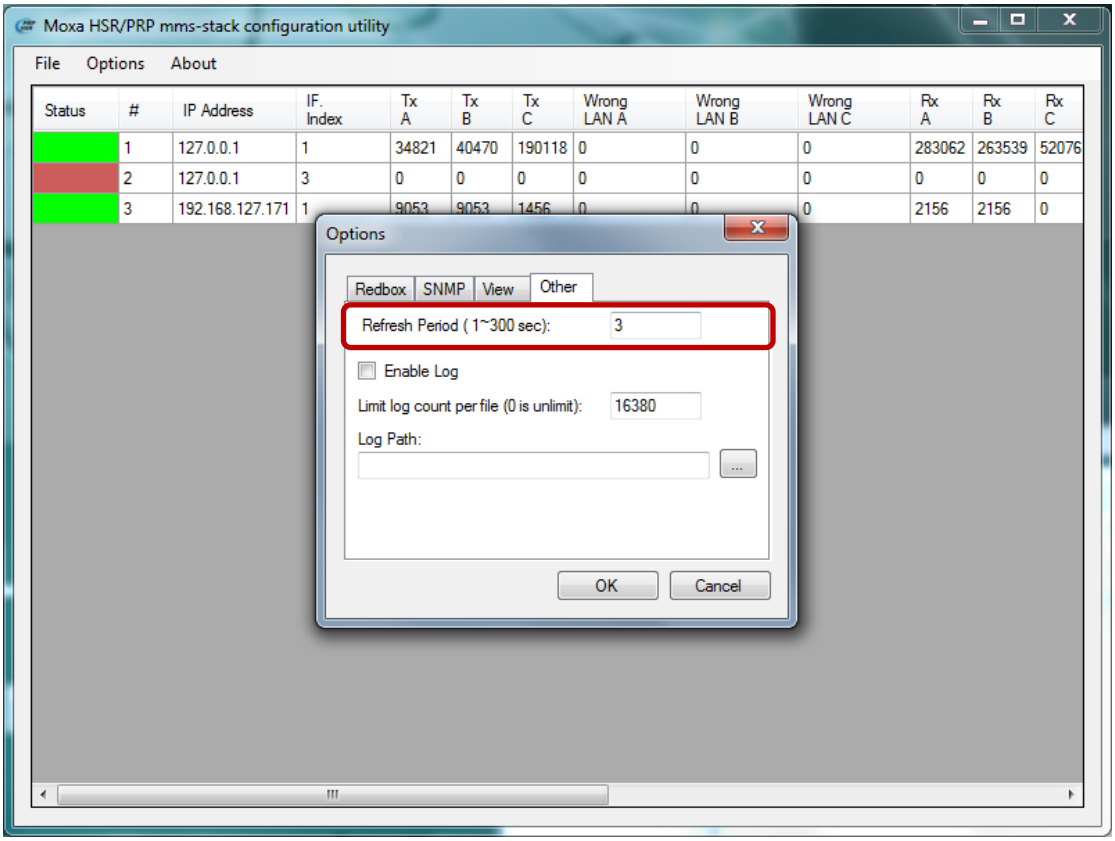
By default, the system stores logs in the *\Users\username\Documents\Moxa\HsrPrpLog* directory. The following figure shows an example.



Configuring Polling Interval

By default, the MMS Device Manager polls the managed PRP/HSR devices every three seconds and updates the device information on the screen

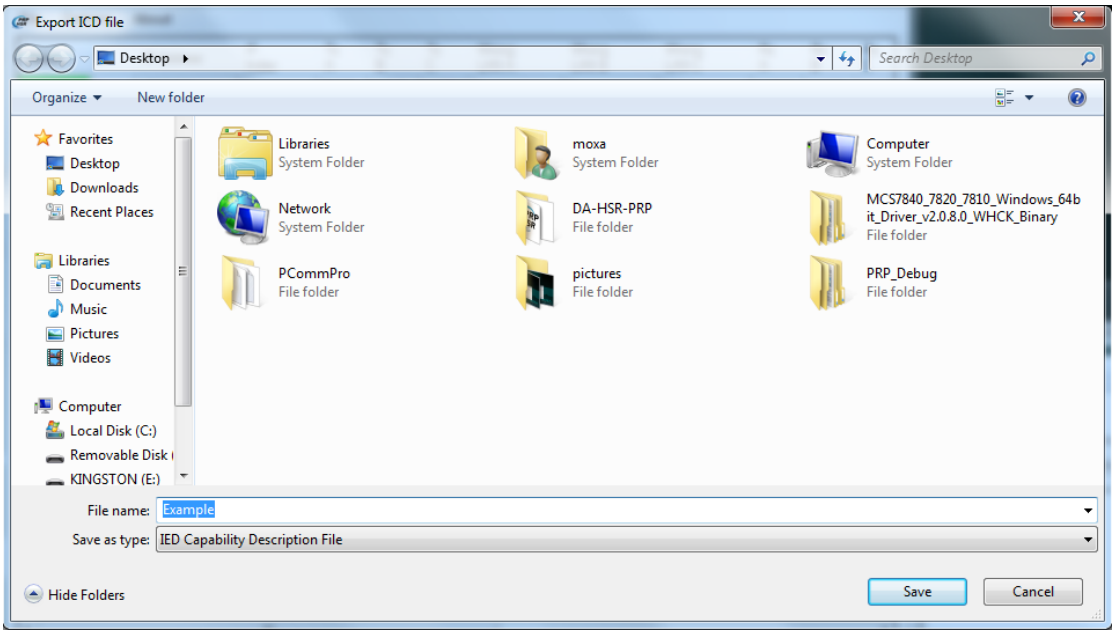
To configure the polling interval, click **Options** and select the **Other** tab. In the **Refresh Period** field, enter a number between 1 and 300.



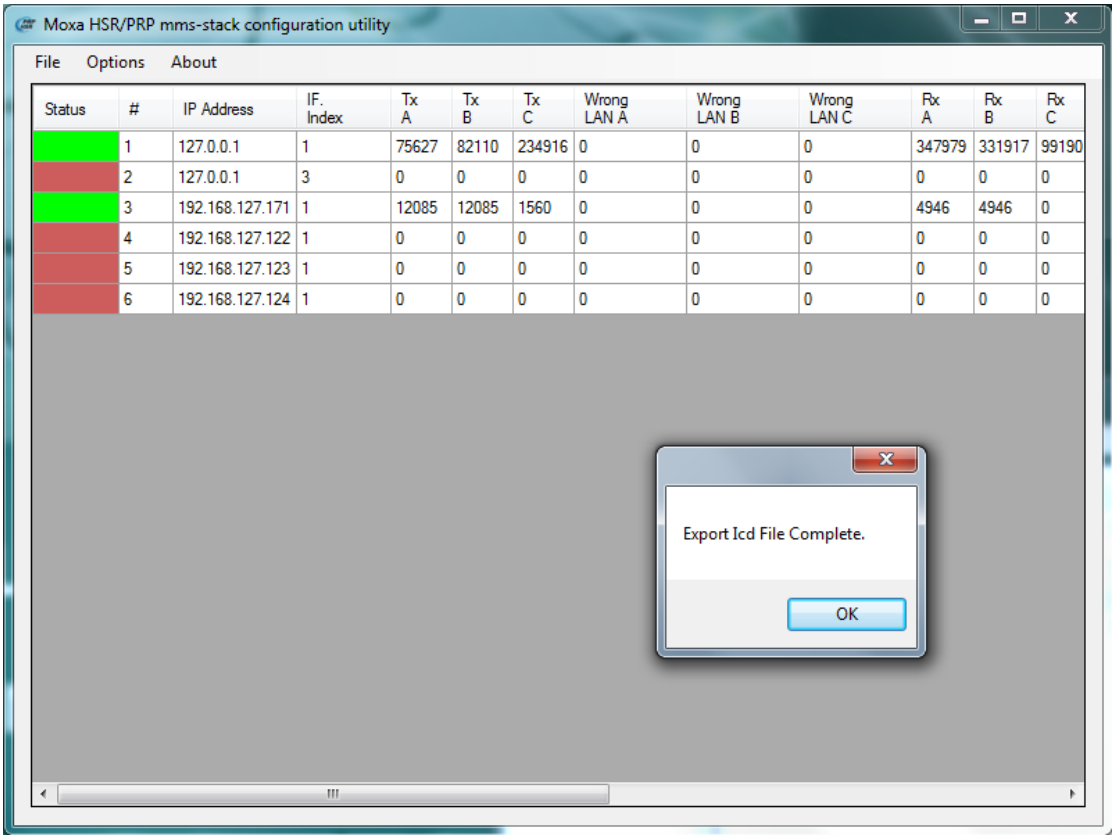
Exporting an ICD File

You can export an ICD file from the MMS Device Manager and import the ICD file to a SCADA system to integrate network management information. The ICD file follows the IEC61850-7 standard.

1. In the MMS Device Manager, click **File > Export ICD File**.
2. In the **Export ICD File** screen, specify the directory and the file name and click **Save**.



3. After the ICD file is exported successfully, a dialog box appears. Click **OK**.



Upgrading Software

This section shows you how to upgrade the DA-PRP-HSR software on the DA-820 computer.

1. Download the latest software file from the Moxa web site at http://www.moxa.com. You can save the file on the DA-820 computer or a USB storage drive.
2. Execute the setup file.

   For information on installing the MMS Device Manager, refer to the **Software Installation** chapter.

   For information on installing the driver and utility, refer to the *DA-PRP-HSR Installation Guide*.