



NetworkDevice.exe User Manual

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Author:	R.Baker
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Lumistar Inc.
2270 Camino Vida Roble, Ste. L
Carlsbad, California 92011
(760) 431-2181
www.lumi-star.com

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Harmonix Systems Inc.
2270 Camino Vida Roble, Ste. L
Carlsbad, CA 92011
(760) 431-2181
(760) 431-2665 Fax
www.lumi-star.com

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1. Introduction

1.1 General

This document is the User's Manual for the Lumistar application, NetworkDevice.exe. It is intended as a guide for the end user. The NetworkDevice.exe application is a software tool to communicate with various Lumistar devices over an Ethernet network using TCP/IP IPv4 protocols. It can currently be used to communicate with the LS27B Dual Channel Receiver with Ethernet option. Other Lumistar products may follow in the future. The NetworkDevice.exe program is designed to service all Lumistar products that use the WIZnet W7100A chip to provide Ethernet networking capability.

1.2 Manual Format

This manual is separated into the following sections:

- Chapter 1 provides a brief product overview.
- Chapter 2 provides a description of the WIZ107SR Configuration Tool application.
- Chapter 3 discusses the NetworkDevice.exe program's initialization process.
- Chapter 4 provides information on the Windows Registry and how to establish permission to the hives that the NetworkDevice.exe program will require to function.

1.3 TCP/IP Connectivity

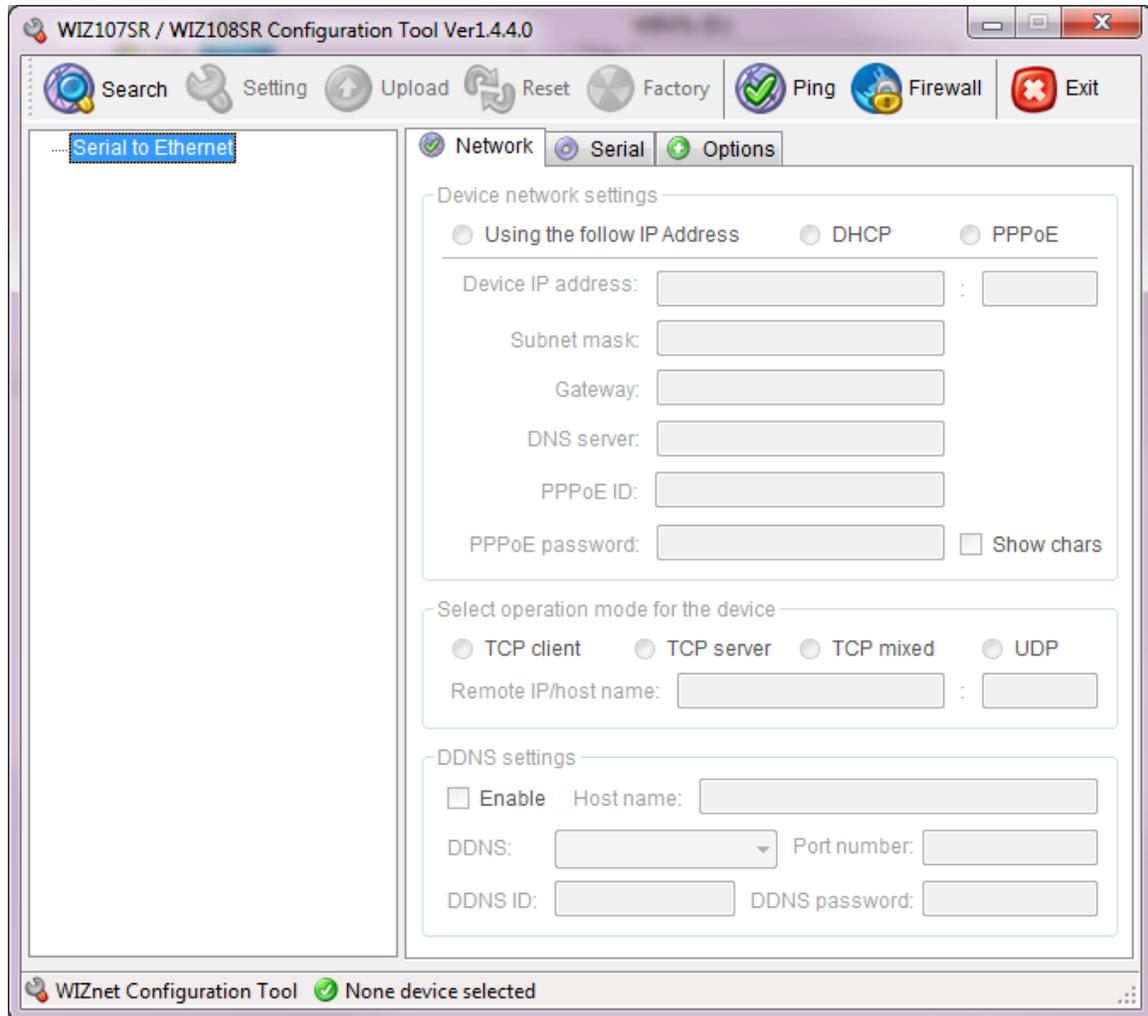
The TCP/IP IPv4 protocol suite requires a 5-tuple of values to establish a connection or reply to a message from a remote host.

- Transport Layer Protocol (UDP or TCP, typically).
- Local IP Address.
- Local Port Number
- Remote IP Address
- Remote Port Number

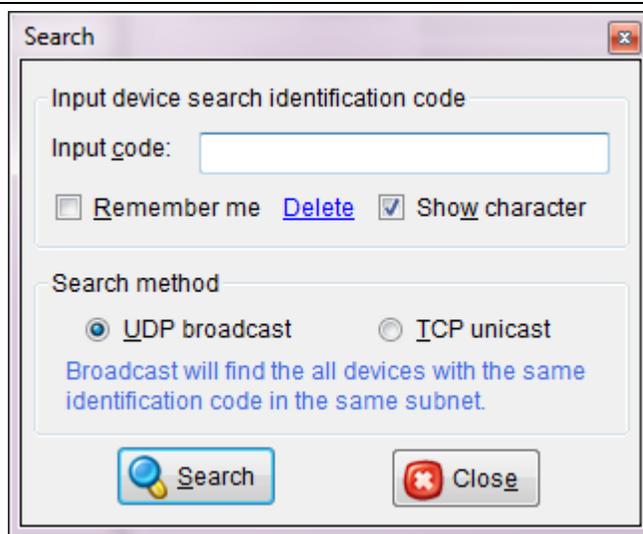
The Ethernet enabled Lumistar devices will all have an IP Address, assigned either manually or dynamically via DHCP, as well as a Port Number which will be the value of 5000. The connection will use the TCP protocol. The NetworkDevice.exe program will run on a Windows computer which will provide both the IP Address and a dynamically determined Port Number. Both the Lumistar device and the computer on which NetworkDevice.exe is running must be in the same IPv4 subnet. Ethernet enabled Lumistar devices follow the Client/Server paradigm, with the Lumistar device filling the Server role and the NetworkDevice.exe program acting as the Client.

2. WIZ107SR Configuration Tool

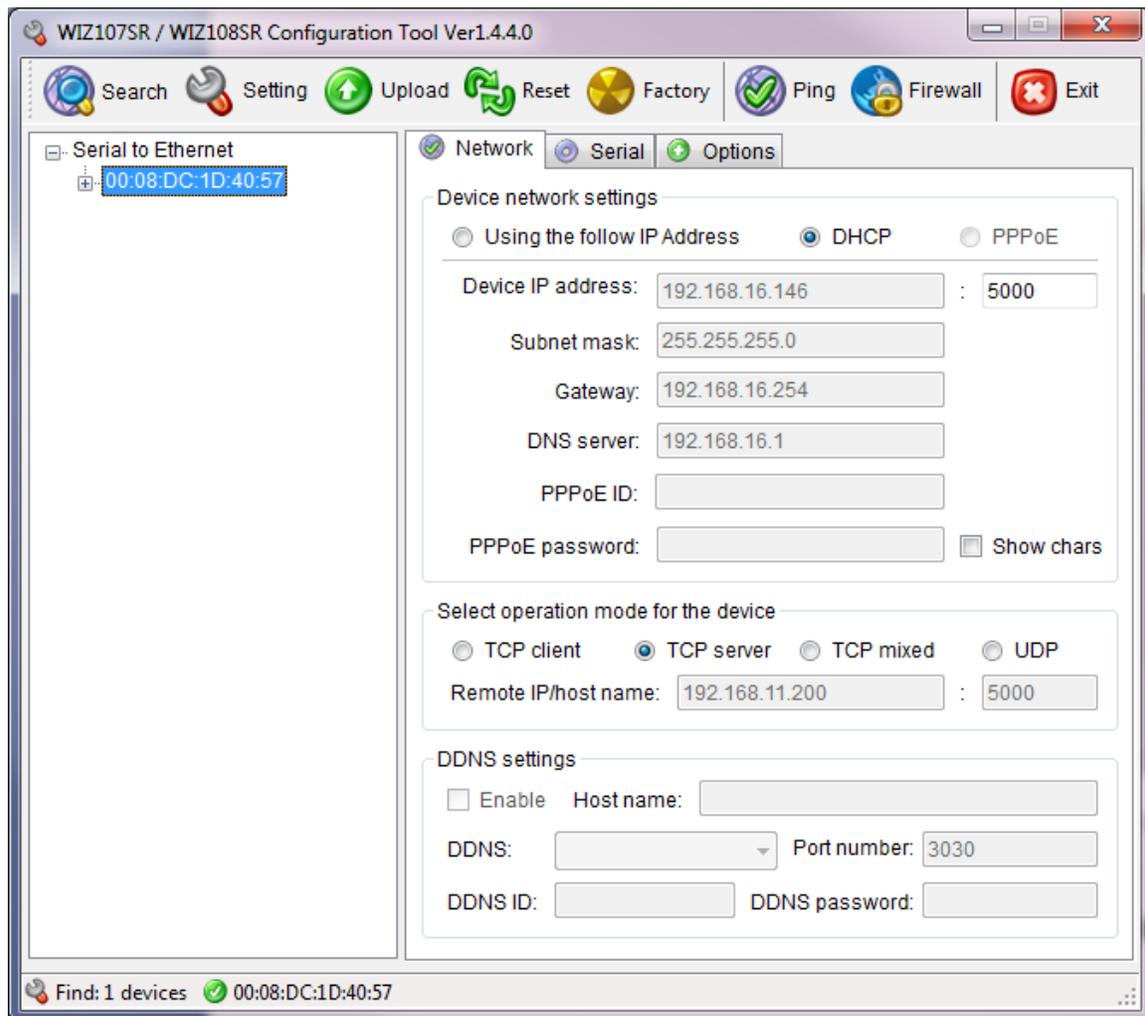
The WIZ107SR Configuration Tool available from WIZnet (<http://www.wiznet.co.kr>) will allow the user to discover configuration information of all Lumistar devices on the local subnet which use the W7100A Internet Offload Co-processor. It can also program the device with a static IP Address, or configure it to use the DHCP protocol and be dynamically assigned an IP Address. Install the WIZ107SR Configuration Tool by executing the “setup.exe” program. After installing, select the “Config Tool” item from the “Start Menu\All Programs\WIZnet\WIZ107_108SR” menu item. It will look like the following.



Press the “Search” button in the upper left hand corner. This will bring up a dialog.



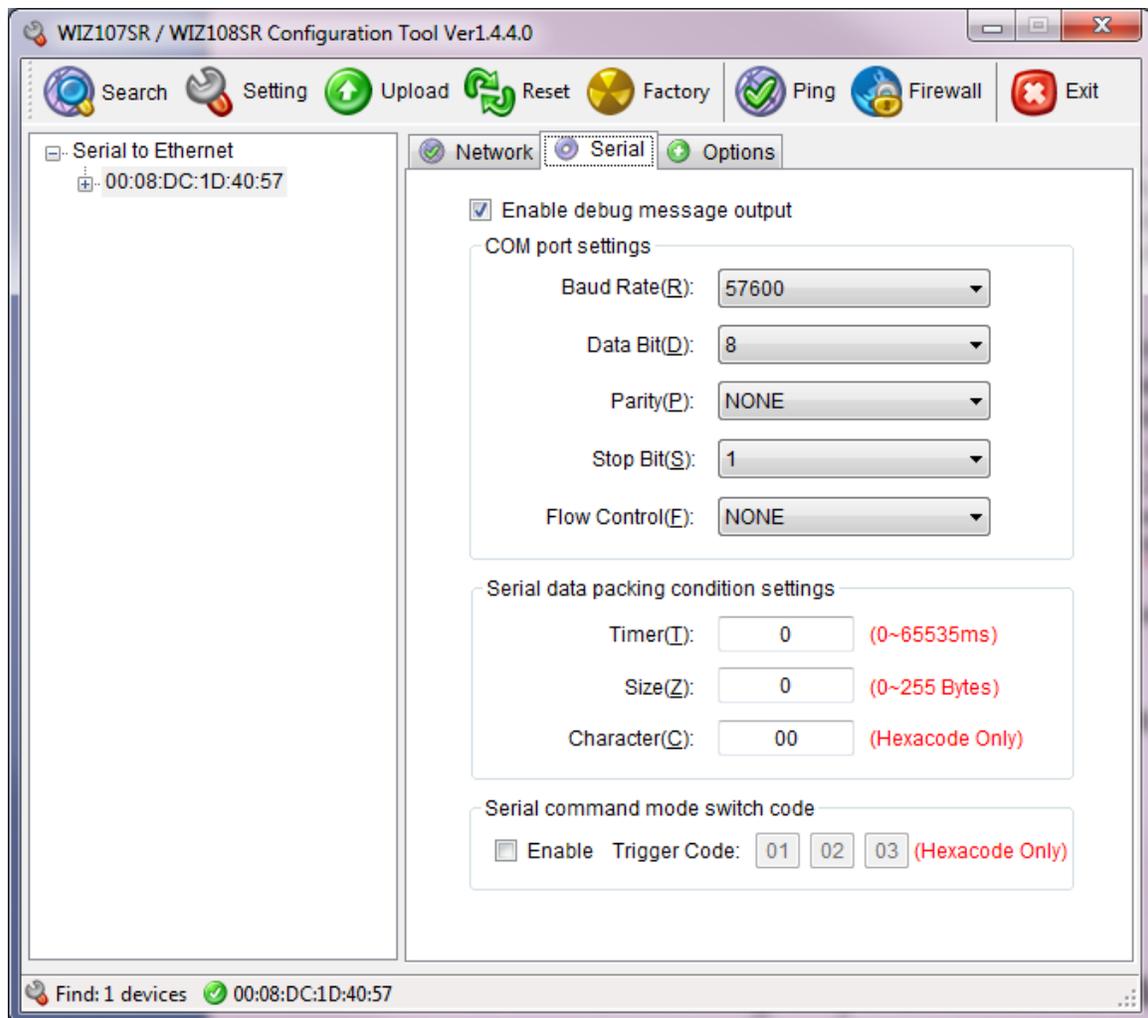
Press "Search" again, there is no need to modify any other values.



If the search finds a Lumistar device with the W7100A chip, there will be at least one entry in left hand list tree control. The items listed in this control will display the device's Ethernet MAC Address. Select the device of interest. Its configuration information will be displayed in the tab control on the right.

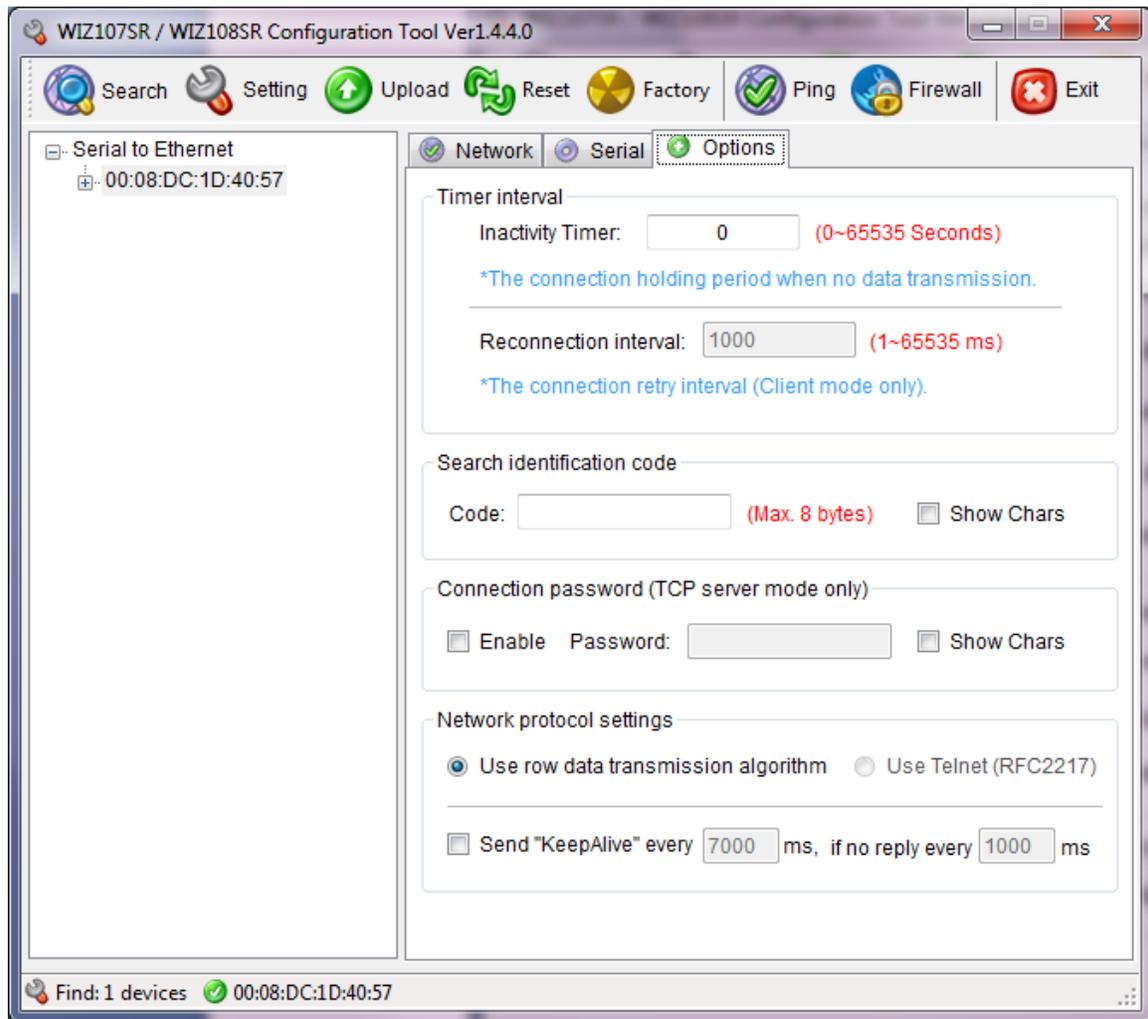
In general, there are two options for setting the TCP/IP network values. The user may select "Using the follow [sic] IP Address" and manually enter the IP Address and other settings. The 5000 entry represents the Port Number that the Lumistar device will listen on and must remain 5000. The second option is to select the "DHCP" radio button. On a network with a DHCP server, the Lumistar device will be able to ask the DHCP server for IP Address and other settings programmatically, without the need for manual intervention. This is the default setting that the Lumistar device will ship from the factory in. The "PPPoE" option is not supported. In the "Select operation mode for the device" group, always select "TCP Server". "DDNS settings" should always have "Enable" unselected.

After selecting the appropriate IP Address and other settings, select the "Serial" tab.



The "COM port settings" should always be set to Baud Rate: 57600, Data Bits: 8, Parity: None, Stop Bits: 1, and Flow Control: None. All other settings should remain in their default state.

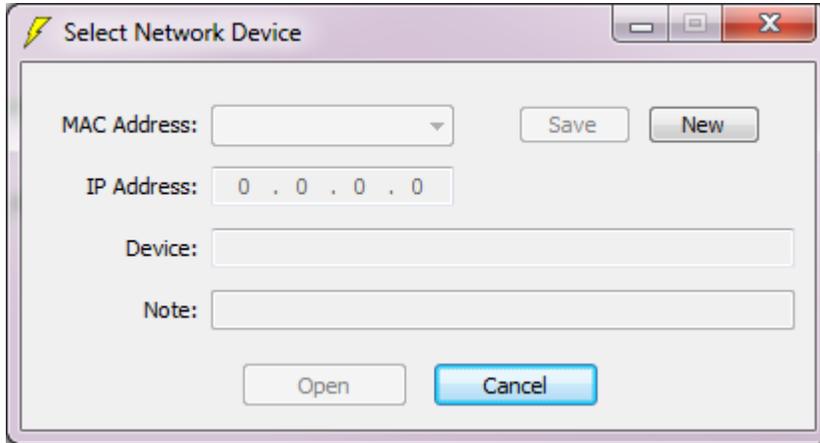
The "Options" tab settings should not be altered from their default states.



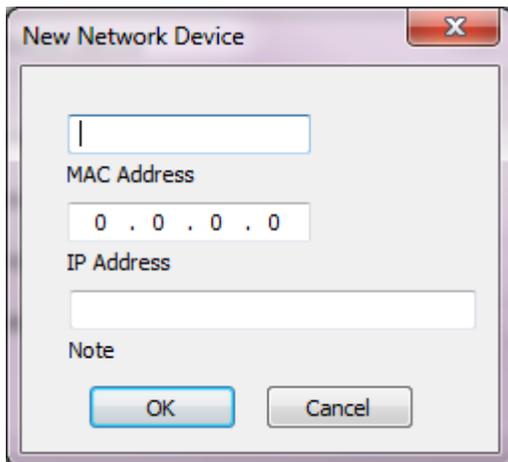
After making all selections, press the "Setting" button in the upper row next to the "Search" button. The modified settings will be saved into the Lumistar device. Power cycle the Lumistar device to allow it to restart using the new settings.

3. NetworkDevice.exe Configuration

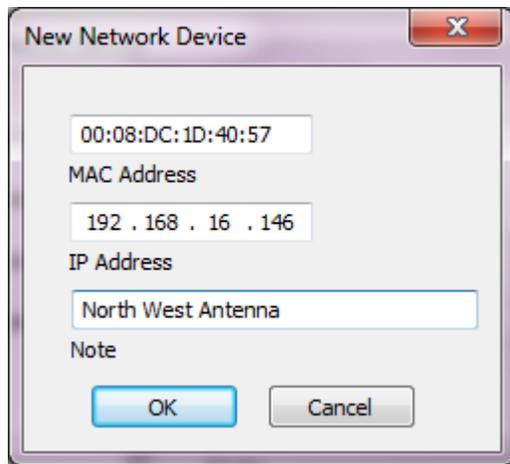
When starting NetworkDevice.exe for the first time, it will display this dialog.



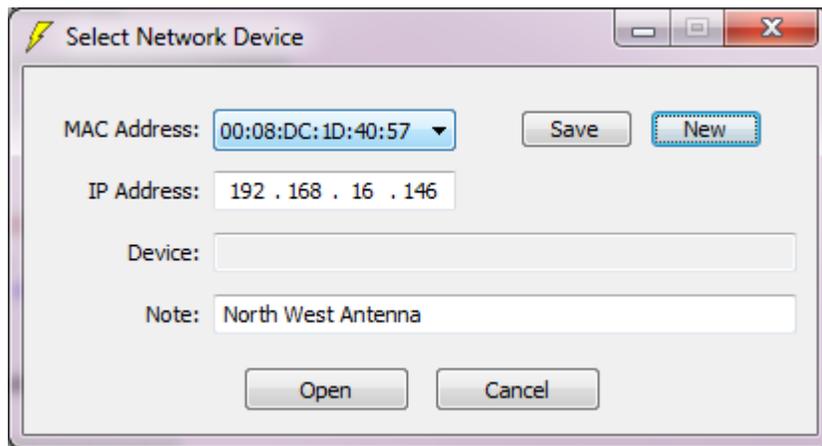
NetworkDevice.exe stores configuration values in the Windows Registry, and there are no values that have yet been saved. Press the "New" button to create the subkey with the appropriate values so that NetworkDevice.exe can open a connection to the device.



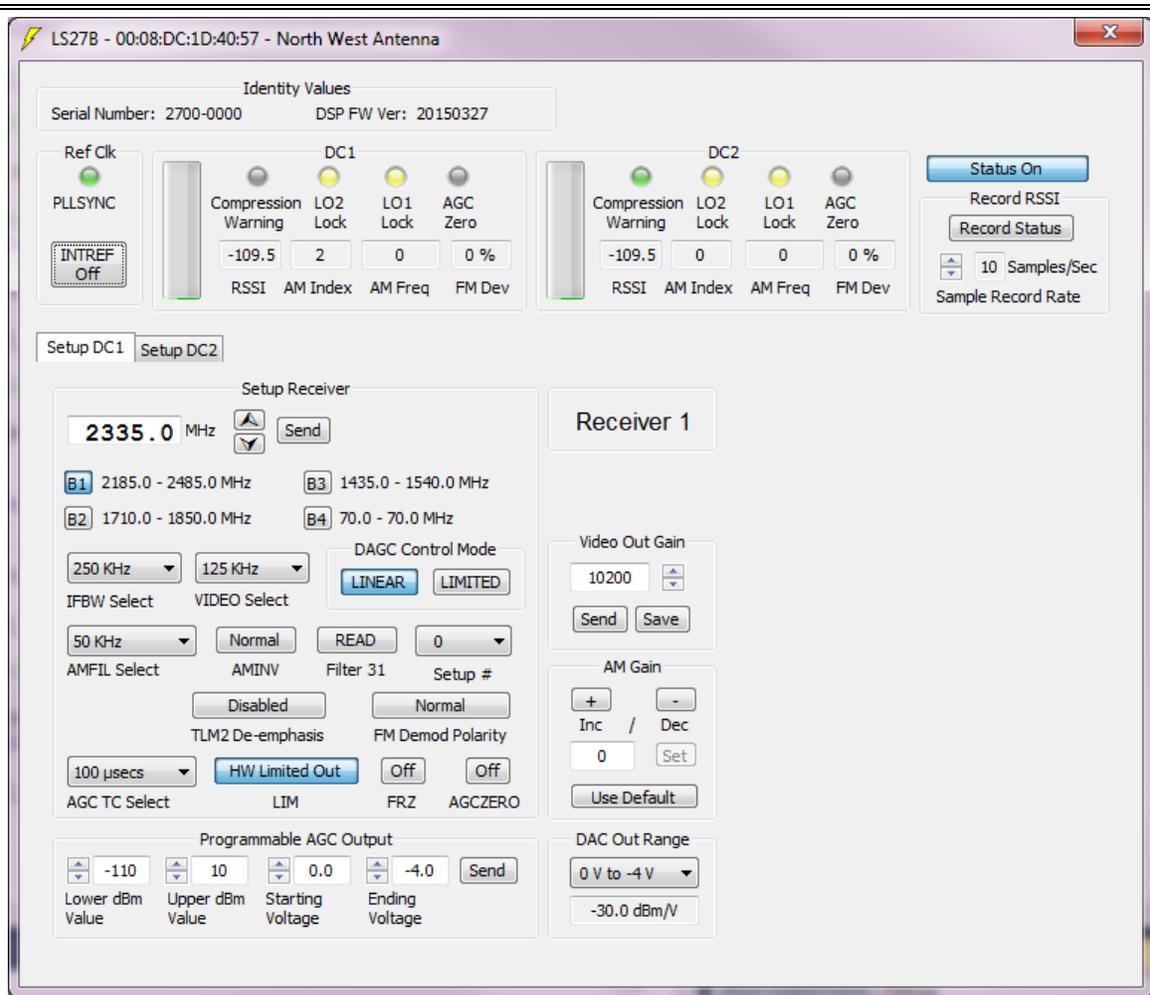
Enter the MAC Address and IP Address values from the WIZnet Config Tool application. The Note entry is available to save user specific information in order to provide a memorable way to distinguish among more than one Lumistar devices.



Press the "OK" button to save the configuration information to the Windows Registry. Now the "Select Network Device" dialog should appear with configuration information in it.



If more than one Lumistar devices have been saved in the Registry, the user may select from among the different MAC Address values to choose a particular one. The IP Address and the Note values can be edited at this point, and saved back to the Registry by pressing the "Save" button. Press the "Open" button to open the Setup dialog of the selected Lumistar device.



The Lumistar device can now be setup and operated normally.

4. Windows Registry Permissions Management

The NetworkDevice.exe application requires the use of the Windows Registry to save configuration data for each Lumistar Ethernet enabled device that it is enabled to communicate with. Proper authorization to read from and write to a particular location in the Windows Registry can be disabled by various versions of Windows and at times by particular security policies on the client computer or the network on which this computer may reside. NetworkDevice.exe requires the permission to read, write, enumerate, create and delete keys and values in the Registry location "HKEY_LOCAL_MACHINE\SOFTWARE\Lumistar". In Windows 7, NetworkDevice.exe may also need the same permissions in "HKEY_CURRENT_USER\Software\Classes\VirtualStore\MACHINE\SOFTWARE\Lumistar". These permissions may be modified manually using the native Windows program Regedit.exe. In the "Start/Run" or "Start/Search programs and files" edit box enter the text Regedit.exe. If the User Account Control dialog box appears, then select "Yes". The logged in user may need to have Administrative privilege to change permissions. Browse to the "HKEY_LOCAL_MACHINE\SOFTWARE\Lumistar" location and right-click on the "Lumistar" key (it will look much like a directory in Windows Explorer). Select "Permissions..." from the context menu. In the resulting dialog, select "Everyone" from "Group or user names:" listbox and then choose "Allow" from the "Full Control" entry in the "Permission for Everyone" listbox. Press "OK". If using Windows 7, do the same for the "HKEY_CURRENT_USER\Software\Classes\VirtualStore\MACHINE\SOFTWARE\Lumistar" key.

An alternate (and simpler) method would be to run the batch file "Permit.bat" from Lumistar. "Permit.bat" will call "Regini.exe" and pass it the name of the file "Permit.txt", also from Lumistar. The file "Permit.txt" contains the full path of the both the keys discussed above as well as a numerical value which corresponds to "World Full Access". This will change the Registry permissions for "Everyone" to "Allow Full Control" like in the instructions above.