

Sierra Wireless AirLink LS300

Description

The target of the Airlink LS300 is the Alarming Module. Its purpose is to Send and Receive SMS messages. Essentially, it is going to be utilized as an SMS gateway. As an example, Ignition picks up information from a PLC that the water temperature is too hot. Ignition sends an SMS message via the AirLink LS300 to contacts assigned to that alarm. It is received by a contact, which is then acknowledged via SMS by the contact. This SMS message is sent back and received by Ignition via the AirLink.

LS300 and Network Security

The security settings covered here are basic steps to secure the LS300. Inductive Automation is not responsible for the security of your LS300. You should take the time to configure and test the current and other security measures as appropriate to your network.

Inductive Automation tested this router as a device that sits inside a network. Therefore, it needs to be configured to act simply as another device on the network, not as a router or DHCP Server etc. Its sole purpose is to handle SMS traffic.

Configuration and ACEManager

To access the modem's configuration information and be able to change it, you will be accessing what is called the ACEManager. This can be accessed via Ethernet, USB or Serial. This document will only cover Ethernet access. The recommended browser to use is IE or Firefox. There are problems when using the Chrome browser.

Setup Steps

The sections below should be followed in the order given to setup the AirLink LS300. Note that any change that is made usually requires a reboot of the router/modem, which can be done through the ACEManager. Follow these instructions and reboot at the end.

Default Ethernet Connection

First connect the LS300 directly to your computer and follow the manual's instructions to connect to it. Default Ethernet settings for access is the following:

Device IP Address: 192.168.13.31

Port: 9191

Username: user

Password: 12345

It should be as simple as changing your computer's LAN settings to DHCP. Then connect to it via a browser with the URL of <http://192.168.13.31:9191>.

Firmware

The first thing to check is if the router's firmware is up-to-date. Go to the Status Tab. If the router's ALEOS Software Version is not 4.3.3a.014 (the latest firmware version as of this writing), it should be updated. This can be found on the Sierra Wireless website at

http://www.sierrawireless.com/en/Support/Downloads/AirLink/Configurable_Intelligent_Gateways/AirLink_LS300.aspx

With the firmware downloaded, follow these instructions to install it:

- 1) In the top right hand corner of the AceManager page, hit the Firmware link. This opens up a window.
- 2) Browse to where the file is located, and hit update firmware. The update runs automatically.

The LS300's manual also covers how to upgrade the firmware easily.

Setting up the AirLink to be on a network

The AceManager will be accessed to change the LAN and other setting to enable it to be accessed via an existing network. After the firmware upgrade, you should still be able to access it via the default Ethernet settings.

Go to the LAN – Ethernet Tab and change the following:

Device IP: <your IP Addr>

Starting IP: <your IP Addr> + 1 on last octet.

The last octet must be set to a number greater than what the Device IP is set to.

Ending IP: <you IP Addr> + X on last octet.

If DHCP Server Mode is disabled, setting this should not matter; however, set it to the Device IP or higher.

DHCP network mask: 255.255.0.0 or 255.255.255.0 depending on your network.

DHCP Server Mode: Disable

The LS300 has a built-in DHCP Server. This must be disabled. If it is not, it may cause network issues, creating conflicts on existing IP addresses already assigned.

The following is a screen shot example of the default LAN settings Inductive Automation is using – you should adjust these as appropriate to you network:

Firmware | Upload | Download | Reboot | Refresh All

Status	WAN/Cellular	LAN	VPN	Security	Services	GPS	Events Reporting	Serial	Applications	I/O	Admin																								
Last updated time : 07-09-2013 09:35:40																																			
<input type="button" value="Expand All"/> <input type="button" value="Apply"/> <input type="button" value="Refresh"/> <input type="button" value="Cancel"/>																																			
DHCP/Addressing Ethernet USB Host Port Routing Global DNS PPPoE VLAN VRRP Host Interface Watchdog		<div style="border: 1px solid #ccc; padding: 5px;"> <p>[+] General</p> <table border="0"> <tr> <td><input checked="" type="checkbox"/> Ethernet Port</td> <td><input type="button" value="Enable"/></td> </tr> <tr> <td><input type="checkbox"/> AT Device IP</td> <td>192.168.13.31</td> </tr> <tr> <td><input type="checkbox"/> AT Starting IP</td> <td>192.168.13.100</td> </tr> <tr> <td><input type="checkbox"/> Ending IP</td> <td>192.168.13.150</td> </tr> <tr> <td><input type="checkbox"/> DHCP network mask</td> <td>255.255.255.0</td> </tr> <tr> <td><input checked="" type="checkbox"/> AT DHCP Server Mode</td> <td><input type="button" value="Disable"/></td> </tr> </table> <p>[+] Advanced</p> <table border="0"> <tr> <td><input checked="" type="checkbox"/> Link Radio Coverage to Interface</td> <td><input type="button" value="Disable"/></td> </tr> <tr> <td><input checked="" type="checkbox"/> Radio Link Delay (Secs)</td> <td>10</td> </tr> <tr> <td><input checked="" type="checkbox"/> Interface Disabled Duration</td> <td>Interface Disabled when Radio is disconnected</td> </tr> <tr> <td><input checked="" type="checkbox"/> Turn Off NAT</td> <td><input type="button" value="Disabled"/></td> </tr> <tr> <td><input checked="" type="checkbox"/> Starting Ephemeral Port</td> <td>1024</td> </tr> <tr> <td><input checked="" type="checkbox"/> Ethernet 1 Link Setting</td> <td><input type="button" value="Auto 100/10"/></td> </tr> </table> </div>										<input checked="" type="checkbox"/> Ethernet Port	<input type="button" value="Enable"/>	<input type="checkbox"/> AT Device IP	192.168.13.31	<input type="checkbox"/> AT Starting IP	192.168.13.100	<input type="checkbox"/> Ending IP	192.168.13.150	<input type="checkbox"/> DHCP network mask	255.255.255.0	<input checked="" type="checkbox"/> AT DHCP Server Mode	<input type="button" value="Disable"/>	<input checked="" type="checkbox"/> Link Radio Coverage to Interface	<input type="button" value="Disable"/>	<input checked="" type="checkbox"/> Radio Link Delay (Secs)	10	<input checked="" type="checkbox"/> Interface Disabled Duration	Interface Disabled when Radio is disconnected	<input checked="" type="checkbox"/> Turn Off NAT	<input type="button" value="Disabled"/>	<input checked="" type="checkbox"/> Starting Ephemeral Port	1024	<input checked="" type="checkbox"/> Ethernet 1 Link Setting	<input type="button" value="Auto 100/10"/>
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<input checked="" type="checkbox"/> Ethernet 1 Link Setting	<input type="button" value="Auto 100/10"/>																																		

After the above has been done, go to the LAN – Host Port Routing Tab. The router must be set to NOT act as the gateway on the network.

Primary Gateway: Disabled

Failure to make the above setting may cause devices on the network to cease functioning.

Host network subnet mask 2: 255.255.255.0

Host network subnet mask 3: 255.255.255.0

Below is a screen shot of the changes:

Firmware | Upload | Download | Reboot | Refresh All

Status	WAN/Cellular	LAN	VPN	Security	Services	GPS	Events Reporting	Serial	Applications	I/O	Admin																		
Last updated time : 07-09-2013 09:35:57																													
<input type="button" value="Apply"/> <input type="button" value="Refresh"/> <input type="button" value="Cancel"/>																													
DHCP/Addressing Ethernet USB Host Port Routing Global DNS PPPoE VLAN VRRP Host Interface Watchdog		<div style="border: 1px solid #ccc; padding: 5px;"> <table border="0"> <tr> <td><input checked="" type="checkbox"/> Primary Gateway</td> <td><input type="button" value="Disable"/></td> </tr> <tr> <td><input checked="" type="checkbox"/> Host Network 2</td> <td>0.0.0.0</td> </tr> <tr> <td><input checked="" type="checkbox"/> Host Network Subnet Mask 2</td> <td>255.255.255.0</td> </tr> <tr> <td><input checked="" type="checkbox"/> Host Network 2 Route</td> <td><input type="button" value="Ethernet Port"/></td> </tr> <tr> <td><input checked="" type="checkbox"/> Host Network 2 Gateway</td> <td>0.0.0.0</td> </tr> <tr> <td><input checked="" type="checkbox"/> Host Network 3</td> <td>0.0.0.0</td> </tr> <tr> <td><input checked="" type="checkbox"/> Host Network Subnet Mask 3</td> <td>255.255.255.0</td> </tr> <tr> <td><input checked="" type="checkbox"/> Host Network 3 Route</td> <td><input type="button" value="Ethernet port"/></td> </tr> <tr> <td><input checked="" type="checkbox"/> Host Network 3 Gateway</td> <td>0.0.0.0</td> </tr> </table> </div>										<input checked="" type="checkbox"/> Primary Gateway	<input type="button" value="Disable"/>	<input checked="" type="checkbox"/> Host Network 2	0.0.0.0	<input checked="" type="checkbox"/> Host Network Subnet Mask 2	255.255.255.0	<input checked="" type="checkbox"/> Host Network 2 Route	<input type="button" value="Ethernet Port"/>	<input checked="" type="checkbox"/> Host Network 2 Gateway	0.0.0.0	<input checked="" type="checkbox"/> Host Network 3	0.0.0.0	<input checked="" type="checkbox"/> Host Network Subnet Mask 3	255.255.255.0	<input checked="" type="checkbox"/> Host Network 3 Route	<input type="button" value="Ethernet port"/>	<input checked="" type="checkbox"/> Host Network 3 Gateway	0.0.0.0
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<input checked="" type="checkbox"/> Host Network 3	0.0.0.0																												
<input checked="" type="checkbox"/> Host Network Subnet Mask 3	255.255.255.0																												
<input checked="" type="checkbox"/> Host Network 3 Route	<input type="button" value="Ethernet port"/>																												
<input checked="" type="checkbox"/> Host Network 3 Gateway	0.0.0.0																												

ACEManager “Over-The-Air”

By default the ACE Manager can be accessed “over-the-air”. If you load the Inductive Automation default configuration, it is disabled. This will add security to the device to prevent access from outside the network via the cellular network.

AVMS	
<input type="checkbox"/> OTA ACEmanager Access	OFF
<input type="checkbox"/> Tethered Host ACEmanager Access	Both HTTP and SSL
<input type="checkbox"/> ACEmanager Port	9191
<input type="checkbox"/> ACEmanager SSL Port	9443

SSH Interface to the Modem

If you load the Inductive Automation default configuration, SSH is used in preference to Telnet. To SSH into the router, use Putty or some other SSH Client. See Ethernet section for IP and login credentials. Make the following changes in the Telnet/SSH section of the Services tab:

Remote Login Server Mode: SSH

<input type="checkbox"/> AT Remote Login Server Mode	SSH
<input type="checkbox"/> AT Remote Login Server Telnet/SSH Port	2332
<input type="checkbox"/> AT Remote Login Server Telnet/SSH Port Timeout (minutes)	10
<input type="checkbox"/> Max Login Attempts	6
<input type="checkbox"/> AT Telnet/SSH Echo	Enable
Make SSH Keys	Make SSH Keys
SSH Status	SSH user not connected

Configuring SMS

In order to send SMS it must be enabled. Go to the Services – SMS tab.

SMS Mode: Control and Gateway

ALEOS Command Password: 12345

Local Host IP: this should be set to the IP of the Ignition Server.

Local Host Port: 17342

ALEOS Port: 17341

The screenshot shows the LS300 configuration interface with the following details:

- SMS Mode:**
 - ALEOS Command Password: 12345
 - ALEOS Command Prefix: &&
 - SMS Destination: IP
 - Include Phone Number On Serial: Yes
- Local Host Interface Configuration:**
 - Local Host IP: 17342
 - Local Host Port: 17342
 - ALEOS Port: 17341
- Message Format Configuration:**
 - Start Field: <<<
 - Field Delimiter: ,
 - End Field: >>>
 - ACK Field: ACK
 - Message Body Format: ASCII Hex
- Advanced:**
 - SMS Address Type: Unknown
 - SMS Address Numbering Plan: ISDN/Telephone
 - AT+CGSMS Quick Test: Quick Test
 - Quick Test Destination: (empty)

Port Filtering and Outbound Ports

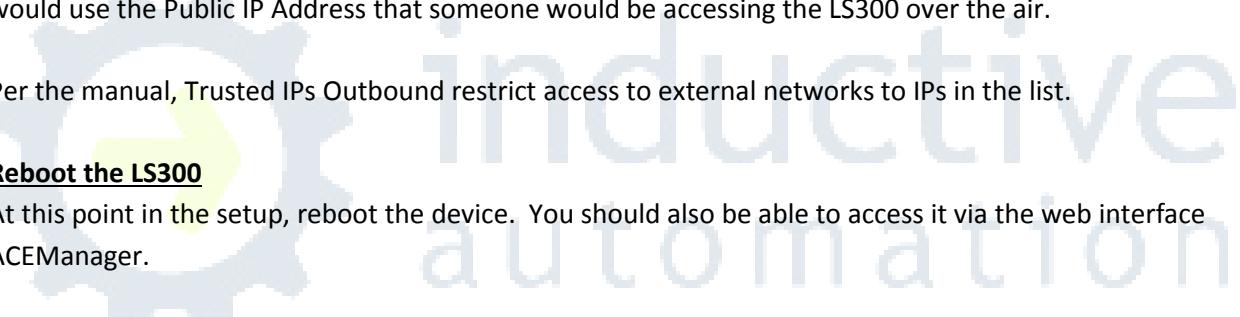
To prevent outbound http and https traffic over the air from the LS300, port filtering is utilized. Under Security – Port Filtering Outbound:

Outbound Port Filtering Mode: Blocked Ports

Filtered Ports:

Start Port 80 and End Port 0

Start Port 443 and End Port 0.



Firmware | Upload | Download | Reboot | Refresh All

Status	WAN/Cellular	LAN	VPN	Security	Services	GPS	Events Reporting	Serial	Applications	I/O	Admin
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Last updated time : 07-09-2013 11:17:44

Outbound Port Filtering Mode

Filtered Ports		
	Start Port	End Port
X	80	0
X	443	0

Port Forwarding

Port Filtering - Inbound

Port Filtering - Outbound

Trusted IPs - Inbound (Friends)

Trusted IPs - Outbound

MAC Filtering

Packet Inspection

Trusted Inbound/Outbound IP Address

Using the ACEManager, you can set certain Static IP addresses as trusted for both Inbound and outbound traffic for the modem. If this router will be put inside a network, this option should be looked at.

Per the manual, Trusted IPs Inbound restricts access to the modem and all LAN connected devices. You would use the Public IP Address that someone would be accessing the LS300 over the air.

Per the manual, Trusted IPs Outbound restrict access to external networks to IPs in the list.

Reboot the LS300

At this point in the setup, reboot the device. You should also be able to access it via the web interface ACEManager.

Using the AirLink and Additional Information

Sending & Receiving SMS Messages

To send SMS messages, login to the LS300 via SSH. The following is the basic command to send the message:

```
at*smsm2m="1XXXXXXXXXX This is SMS test message."
```

To see if the LS300 is receiving text messages, send one to it. Then from the ACEManager, go to Services – SMS, and under the SMS Security–Inbound SMS Messages heading, there are 2 fields called Last Incoming Phone Number and Last Incoming Message. Check if the number and message are there. Press **Refresh** if you do not see it immediately.

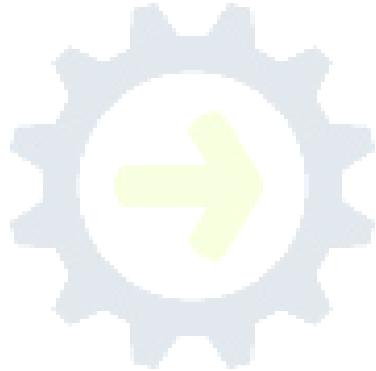
[+] SMS Security - Inbound SMS Messages	
<input type="checkbox"/> Trusted Phone Number	Disable <input type="button" value="▼"/>
Last Incoming Phone Number	
Last Incoming Message	

Troubleshooting Notes:

To reset your device back to factory defaults in IE (this does not work using Firefox or Chrome), go to the Admin - Advanced tab and hit the Reset to Factory Default button.

If the above doesn't work:

- Hold down the reset button between 45 and 60 seconds. You will see the 4 lights flash sequentially.
- When the device's is resetting when all four lights flash yellow then red and then turn green for about a minute before it boots up again.



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