Configuring IP to Serial with Auto Answer and Serial to IP

You can configure the AirLink device to:

- Auto answer incoming TCP/IP or UDP/IP connections and send the packet payload out the AirLink device’s serial port to a connected device
- Create and send TCP/IP or UDP/IP packets containing payload data that the AirLink device receives over its serial port from a connected device
- Both receive and send TCP/IP or UDP/IP packets (that is, both of the above functionalities)

If you have a GX Series device with an I/O X-Card installed, you can also configure this feature on the I/O X-Card serial port.

Figure 1: TCP and UDP Auto Answer
To configure the AirLink device for TCP/UDP auto answer, sending IP packets or both:

1. In ACEmanager, go to Serial > Port Configuration. If you are configuring an I/O X-Card, go to Serial > I/O X-Card Serial Port. 

![ACEmanager: Serial > Port Configuration](image)

2. Use Table 3 and the instructions following the table to configure the desired options for this feature.

**Table 3: Quick Guide to Configuring IP to Serial with Auto Answer and Serial to IP**

<table>
<thead>
<tr>
<th>Field</th>
<th>To receive packets and send data payload out over serial</th>
<th>To receive data payloads over serial and send out packets</th>
<th>Both (to receive packets - send out data payload AND receive data payload and send out packets)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Startup Mode Default</td>
<td>N/A</td>
<td>UDP or TCP</td>
<td>UDP or TCP</td>
</tr>
<tr>
<td>Configure Serial Port</td>
<td>115200,8N1</td>
<td>115200,8N1</td>
<td>115200,8N1</td>
</tr>
<tr>
<td><img src="image" alt="Required fields for receiving data payloads over serial, creating IP packets to send" /></td>
<td><img src="image" alt="Required fields for receiving IP packets and sending out data payloads over serial" /></td>
<td><img src="image" alt="Required fields both receiving data payloads over serial, creating IP packets to send and receiving data payloads over serial, creating IP packets to send" /></td>
<td></td>
</tr>
</tbody>
</table>
3. Startup Default Mode—When the Startup Mode is set to UDP or TCP, the AirLink device takes any data sent to its serial port by a connected device and encapsulates it into a TCP/IP or UDP/IP packet.

4. Configure Serial Port—Set the baud rate of the serial port on the AirLink device so that it matches the baud rate of the serial port on the connected device. (The default baud rate is 115200 bps.) You can also use this field to set the framing characteristics for the serial port communication on those rare occasions when the default value of 8N1 does not apply.

5. Flow Control—This field can usually be left at the default value (None) as most serial devices use only a 3-wire connection (Tx, RX, and Gnd). However, if the serial device uses the RTS and CTS pins on the serial connection to control data flow between the two devices, set this field to Hardware.

6. Device Port—Data received on a TCP/IP or UDP/IP connection to the configured Device Port is sent out the serial port. The default value for the port:
   - On the AirLink device is 12345
   - On the I/O X-Card is 54321

7. Destination Port—The AirLink device uses the port value specified in this field to determine which port it sends the IP packet containing the data payload to. The AirLink device enters the value in the Destination Port field in the header of the IP packet it creates.

8. Destination Address—The AirLink device uses the IP address specified in this field to determine the IP address to send the packet it creates to. The AirLink device enters this IP address in the header of the IP packet it creates.

9. If you are configuring the AirLink device to:
   - Create and send packets only, go to step **Step 10**.
   - Receive TCP/UDP packets, complete the following instructions.
For Receiving TCP/IP Packets:

a. Expand the +TCP section of the screen.

![Figure 3-1: ACEmanager: Serial > Port Configuration > TCP](image)

b. Set the TCP Auto Answer field to Enable.

For Receiving UDP/IP Packets:

a. Expand the +UDP section of the screen.

![Figure 3-2: ACEmanager: Serial > Port Configuration > UDP](image)

b. Set the UDP Auto Answer field to Enable.

c. Set the Allow Any Incoming IP field to Allow Any IP. (If this field is left at the default value, the AirLink device only accepts incoming UDP/IP packets from the IP address specified in the Destination Address field in the Port Configuration section of the screen.

10. For information on the other parameters, refer to the ALEOS Software Configurations User Guide.

11. Click Apply.

12. Click Reboot (in the upper right of the screen).

13. Once the reboot is complete, this feature is enabled.

**Troubleshooting**

If the packet contents are not being sent to the connected device:

1. Try polling the device connected to the AirLink device’s serial port.

   If you do not receive a response, confirm that the fields described in Table 3 are set correctly.

2. In ACEmanager, go to Status > Serial and check the Serial bytes sent field to confirm that packets are reaching the AirLink device from the mobile network and the packet contents are being sent out the AirLink device’s serial port.
When you poll the AirLink device/connected device:

- If the Serial bytes sent counter increases, the IP packets have reached the AirLink device from the mobile network, the AirLink device has removed the header and sent the packet contents out its serial port to the connected device.
- If the Serial bytes sent counter does not increase, either:
  - The IP packet has not made it across the mobile network to the AirLink device.
  - The destination port for the TCP/IP or UDP/IP connection does not match the configured Device Port on the ACEmanager Serial tab.

3. Once you have confirmed that the Serial bytes sent counter is increasing, check the Serial bytes received counter (also on the Status > Serial screen).

- If the Serial bytes received counter is increasing, the connected device is responding to the poll request and sending its response back to the AirLink device across the serial connection.
- If the Serial bytes received counter is not increasing, the connected device is not responding to the poll request. Ensure that the serial cable is fully seated and properly connected to the AirLink device and the host. Check that you have the correct type of serial cable connecting the AirLink device to the connected device. The AirLink device is a DCE device. If the connected device is also a DCE device, use a null modem serial cable. If the connected device is a DTE device, use a straight through serial cable.

4. If you have confirmed that both the Serial bytes sent and Serial bytes received counters are increasing when you send a poll to the connected device, but you are still not receiving the response back on your original sending application, the most common reason is that the incoming packets from the AirLink device to your application are being blocked by a firewall on your network. The firewall may be blocking all traffic except packets destined for particular ports or arriving from particular ports.

Check with your firewall administrator. Ask the administrator to monitor the firewall when you poll the AirLink/connected device to see if any return packets from the AirLink device hit the firewall.