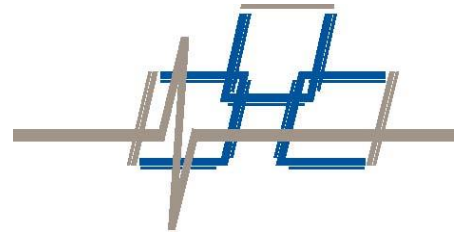


# APU Networking

## Application Note



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**Fiber SenSys, Inc.**  
2925 NE Aloclek Dr.  
Suite 120  
Hillsboro, OR 97124  
USA

Tel: 1-503-692-4430  
Fax: 1-503-692-4410  
*info@fibersensys.com*  
www.fibersensys.com

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# 1. Introduction

Fiber SenSys Alarm Processing Units (APUs) have integrated networking capabilities (may be offered optionally on some models). This feature allows many APUs connected into a local-area network (LAN) to integrate with an existing head end, or other annunciator/monitoring equipment. The physical network supported by Fiber SenSys APUs is 10/100 wired Ethernet and the networking protocol supported is TCP/IP.

This application note is intended for information-technology (IT) personnel or a network administrator who has an operating knowledge of the network administration and the network where the APU is being installed. After reading this document, you should be able to:

1. Determine if a particular APU supports networking
2. Physically connect an APU to a network
3. Configure the network settings on an APU

Please read through this document *before* installing the APUs, as some steps may require physical access to the APUs.

Detailed information regarding the network protocols used by the APUs are provided in appendices.



**CAUTION:** Network design, installation, and management can be complex and are outside the scope of this document. Please consult with IT or networking professionals to discuss the needs for your particular application.

## 2. Physically connecting an APU to the network

This section describes how to locate the network port on your APU and connect it to your existing network.

### Networking Enabled APUs Overview

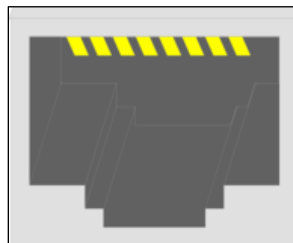
As of 2015, the entire 500 Series, FD322, and FD348R APUs have networking capability by default. The FD33X and FD34X series products are available with networking optionally and are identified by having “IP” in the model name. If you cannot locate the network port on your FD33X or FD34X series APU, it may be that your APU does not support networking.

APUs that support networking do so through a standard wired Ethernet (10BASE-T/100BASE-TX) cable plugged into an RJ-45 jack on the APU.

The location of the Ethernet RJ-45 jack varies by APU model. The jack may be labeled *TCP/IP* or *Ethernet Port*.

**CAUTION:** Some APU models support accessories that are also connected using RJ-45 jacks. If the incorrect jack is used it could result in improper operation of the APU. Please observe the connection type when connecting the APU to the network. Appendix A provides assistance with locating the proper connection, but it is best to refer to the manual specific to your APU to identify the exact location of the jack.

To physically connect the APU to the network, a standard Category 5 (or above) cable should be run from the networking equipment into the RJ-45 jack on the APU. It is generally a good idea to first test that the network connection to be used for the APU is live and working properly by using another device, such as a laptop computer.



**Figure 1:** Typical RJ-45 jack

## Logging the Hardware (MAC) Address

An important step of configuring an APU's networking options is assigning an IP address to it. To do this, we will need to identify each APU using its unique hardware address, also known as a MAC address. For this reason it is helpful to note the MAC address of the APU during physical installation and before beginning the network configuration process. The MAC address for an APU is located on its barcode ID label on the APU's exterior. In the case of the FD348R, the MAC address is also more conveniently located on a small label on the front panel.



Figure 2: Hardware (MAC) address on the APU's barcode ID label.

## 3. Configuring the network settings on the APU

This section describes how to configure the settings on your APU so that it can communicate on the network.

Once your APU is physically connected to the network, you must configure the APU's network settings. To do this, you will need the following:

- A PC connected to the same physical network as the APU.
- The setup program for the Lantronix® DeviceInstaller software. The setup program should have been included with the software for the APU, but you can also download it from lantronix.com by searching for "DeviceInstaller."
- Answers, if possible, to the following questions:
  - a. What is the MAC address for the APU to be configured?
  - b. Do you have a static IP address to assign to the APU?

If you do not know the answers to the questions, this document will provide some suggestions.

### Lantronix® DeviceInstaller Overview

Fiber SenSys APUs use Lantronix XPort® embedded Ethernet device servers for network communication. To configure the XPort device, you must use Lantronix' DeviceInstaller software. Install and run the software on a PC connected to the same physical network as the APU. This document will walk you through simple use of DeviceInstaller, but you should read the DeviceInstaller User Guide from Lantronix for additional information.



**NOTE:** The system requirements for DeviceInstaller as of version 4.4.0.2RC3 are as follows:

1. x86: XP/2003 Server/Vista/Windows 7/Windows 8/2008 Server  
x64: Vista/Windows 7/Windows 8/2008 Server
2. Microsoft .NET Framework v4.0.
3. Microsoft Internet Explorer 5.1, or later.
4. 30MB free hard drive space.

The "Internet Connection Firewall" must be disabled, or else UDP Port 30718 must be available. Otherwise, you will not be able to detect or communicate with any devices on the network. To configure, go to the Control Panel, go to Network Settings, select the corresponding network adapter, choose Properties, and go to the Advanced tab.

### Locating an APU using DeviceInstaller

1. Launch DeviceInstaller on the PC on which it was installed
2. Once the DeviceInstaller software is running, press the **Search** button
3. Wait briefly for the program to search out devices and observe the list of discovered devices. DeviceInstaller will display the current IP address, hardware address, and status for each XPort.



**NOTE:** This will locate all XPort devices on your network, regardless of whether they are APUs or other non-Fiber SenSys devices. If the MAC address for an APU is not shown in DeviceInstaller, then the APU is not reachable on the physical network. This typically means that it is not physically connected to the network.

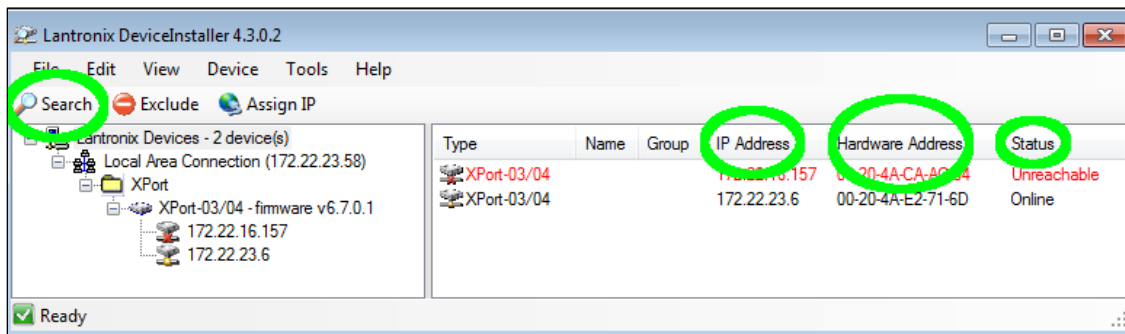


Figure 3: Discovering devices on the network

### Setting the APU IP address

With the APU identified by its MAC address:

1. In the window on the right click on the corresponding row.
2. Press the *Assign IP* button as shown below.

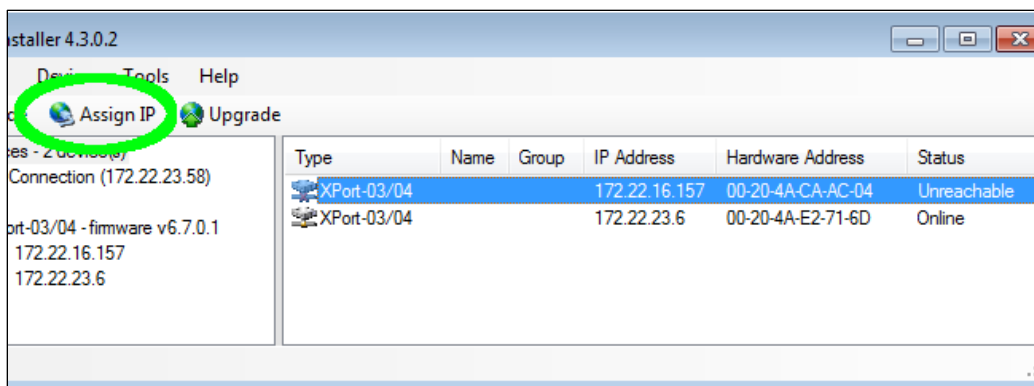


Figure 4: Launching the assign IP wizard

- Observe that the IP Assignment wizard window appears as shown below. The rest of this section will describe how to use the wizard to assign an address.

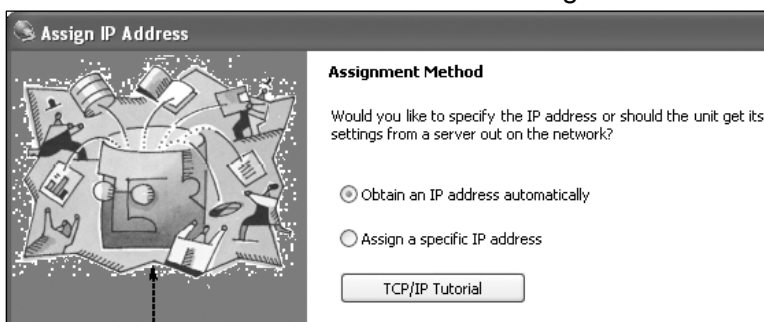


Figure 5: IP Assignment Wizard

**If you do not know the IP address that you want to assign or you prefer to use a dynamically assigned IP address (DHCP):**

- Leave the *Obtain an IP address automatically* radio button selected
- press *Next >*
- If this step succeeds then you may skip below to the “Configuring the Network Settings” section. The automatically assigned IP address should be visible the next time that you press *Search* on the main DeviceInstaller window.



**NOTE:** Some monitoring software expects manual (static) assignment of IP addresses. If this is the case for monitoring equipment/software being used with this APU then you will need to revisit the IP address assignment later.

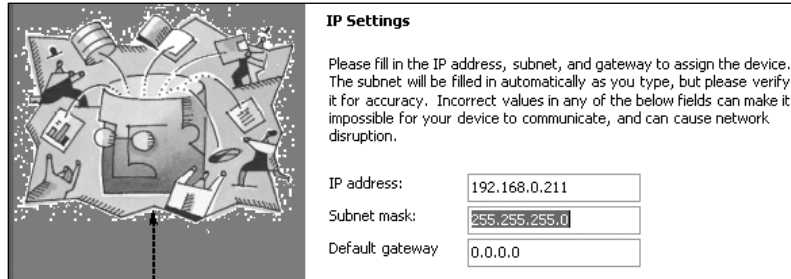
**If you know the IP address that you want to assign:**

- Click the *Assign a specific IP address* radio button
- press *Next >*
- When the IP Settings screen appears enter the IP address
- Enter the subnet mask and default gateway if the default values are not sufficient
- Once you have entered the values, press *Next >*.



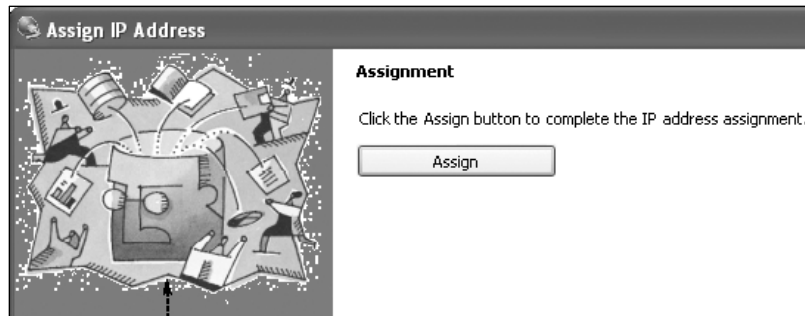


**Note:** These values are specific to your network. If the default values of these fields are not sufficient consult your network administrator to determine the correct values.



**Figure 6:** IP Settings screen

9. Click the *Assign* button to apply the entered setting to the APU. This may take some time to complete.



**Figure 7:** Assignment screen of the DeviceInstaller IP address assignment wizard.

10. Once it has completed, press *Finish* button to exit the wizard.



**Note:** If you encounter a problem during the assignment, the APU may have become disconnected from the physical network. In this situation, you should:

1. Press *Cancel*
2. Press the *Search* button on the main DeviceInstaller screen.
3. If the APU's hardware address is no longer present, then it has become physically disconnected and you will need to reconnect it.

## Configuring the Network Settings

After assigning an IP address to the APU, use the following procedures to configure the rest of the network settings.

1. Start a web browser of your choice

2. In the address box of the browser, enter the IP address that was previously assigned to the APU:

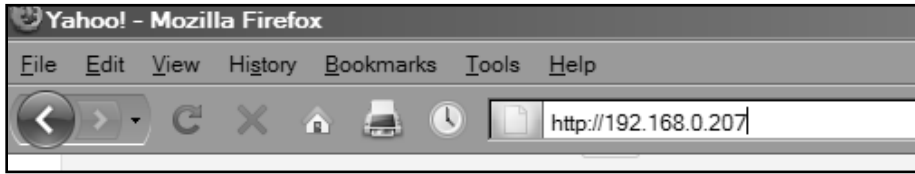


Figure 8: Entering the APUs IP address into the browser

3. Press the Enter key. A login screen will appear as shown on the following page.



Figure 9: XPort device login screen

4. Leave the **User name** and **Password** fields blank, and click on the **OK** button. The network settings page will display.

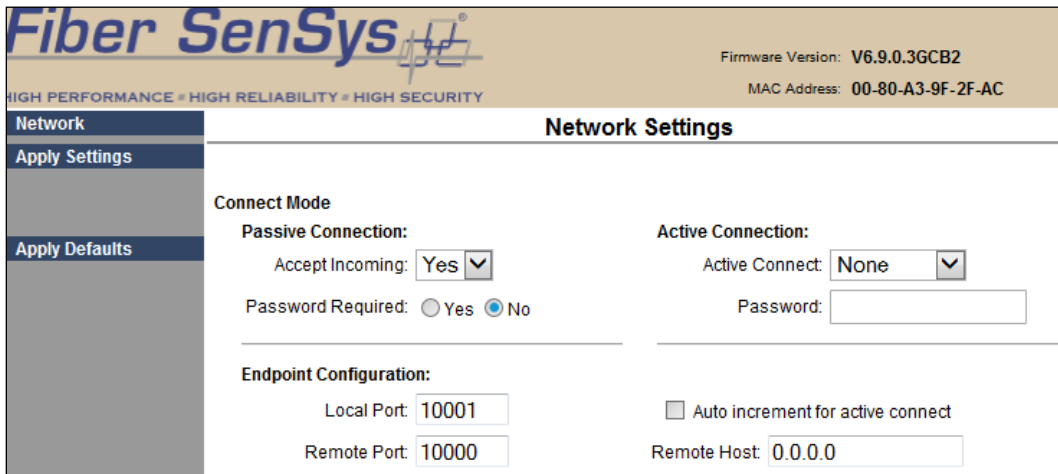


Figure 10: Network settings home screen.



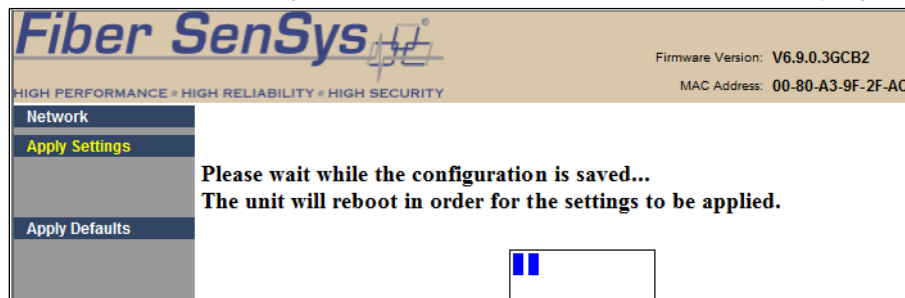
**Note:** If the home screen does not look like this, the APU may be using an older version of the XPort firmware. See the Appendix *Configuring APUs with older XPorts* for information on how to configure such APUs.

5. Determine whether the connection to the APU will be *incoming* or *outgoing*.
  - a. *Incoming* connections are made by the monitoring equipment to the APU. This is used with for integration with the Fiber SenSys Integrator software for Lenel OnGuard or Milestone XProtect.
  - b. *Outgoing* connections are made by the APU to external monitoring equipment. This is used for integration with Fiber SenSys FiberCommander.
  - c. Other monitoring equipment can be designed for either incoming or outgoing connections. You must contact the vendor of the monitoring equipment for details.
6. For *incoming* connections, set the values as follows:
  - a. **Accept Incoming** menu to **Yes**
  - b. **Active Connect** menu to **None**
  - c. **Password Required** to **No**
  - d. **Local Port** to **10001**
7. For *outgoing* connections to Fiber Commander, set the values as follows:
  - a. **Active Connect** menu to **Auto Start**
  - b. **Remote Port** to **10000**
  - c. **Remote Host** to the IP address of the PC running Fiber Commander.



**Note:** For monitoring systems other than Fiber Commander, set Remote Port to the port number of the monitoring system.

8. To apply the entered settings to the APU click on the **Apply Settings** located in the left-hand panel of the screen. It may take a moment, but a status bar will display.



**Figure 11:** Progress display while settings are being saved.

9. When the save is complete, the settings page is displayed again.
10. Serial and network settings are complete. Close the browser window. The APU is now ready for network operation. If you have any problems or questions with the process of setting the APU up in your network, contact **Fiber SenSys** Customer Service.

# Appendix A Identifying the Network Port

The following images should assist with the identification of the proper RJ-45 jack on APU models that also support accessory modules. Refer to your APU model's manual to identify the exact location of the jack.

**CAUTION:** For APU models that provide support for accessory modules, it is important to use the proper jack for the network port, because the APU may not operate correctly (even for other functions) if the improper jack is used.

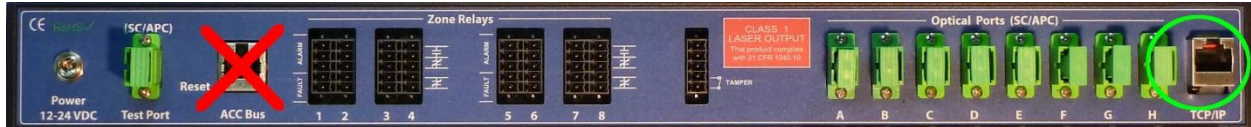


Figure 12: Ethernet Port on the back of the 508 and 504 models

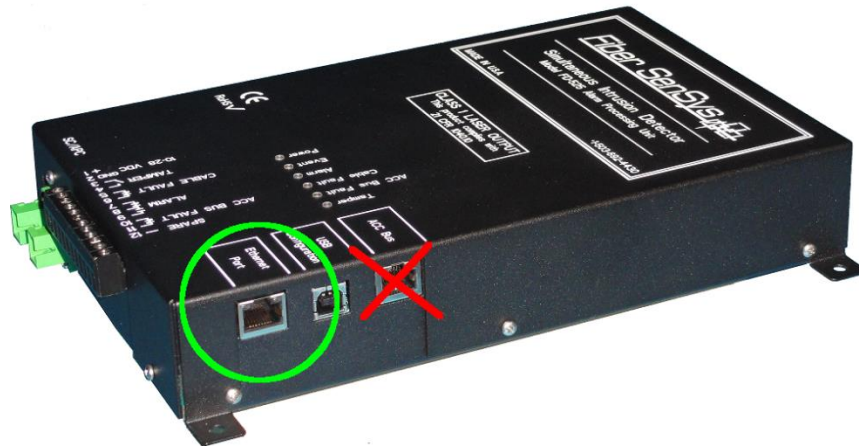


Figure 13: Ethernet port on the side of the FD525



Figure 14: Ethernet Port on the back of the FD525R

## Appendix B Configuring APUs with older XPorts

Fiber SenSys APUs manufactured during 2014 or earlier have an older version of the XPort firmware that requires additional effort to set up. The web page for such devices looks like this:



Figure 15: XPort Device Server Configuration Manager home screen.

The following steps describe how to configure the settings on devices with the older XPort firmware.

### Serial Settings Page

1. From the home screen, click on **Channel 1, Serial Settings** to display the **Serial Settings** page:



Figure 16: Serial Settings screen with correct settings

2. Verify that the baud rate is set to **230400**. Change the baud rate to 230400 if necessary, but do not change any other parameters.
3. Verify that the Flush Mode Input and Output Buffers are both set to **With Passive Connect : Yes**
4. Verify that the Flush Mode Input and Output Buffers are both set to **With Active Connect : Yes**
5. Click on the **OK** button to confirm the changes. The **Done!** notation appears next to the **OK** button to indicate that changes were applied.

## Connection Settings

1. From the main menu in the left-hand panel, select **Channel 1, Connection**. The **Connection Settings** screen displays. The details of what is displayed depends on whether the connection to the APU will be *incoming* or *outgoing*, so please refer to the appropriate figure.
  - a. *Incoming* connections are made from external equipment to the APU. This is used for integration with the Fiber SenSys Integrator software for Lenel OnGuard or Milestone XProtect.
    - i. set the **Accept Incoming** menu to **Yes**
    - ii. set the **Active Connect** menu to **None**.
    - iii. Verify that the **Local Port** is set to **10001**.

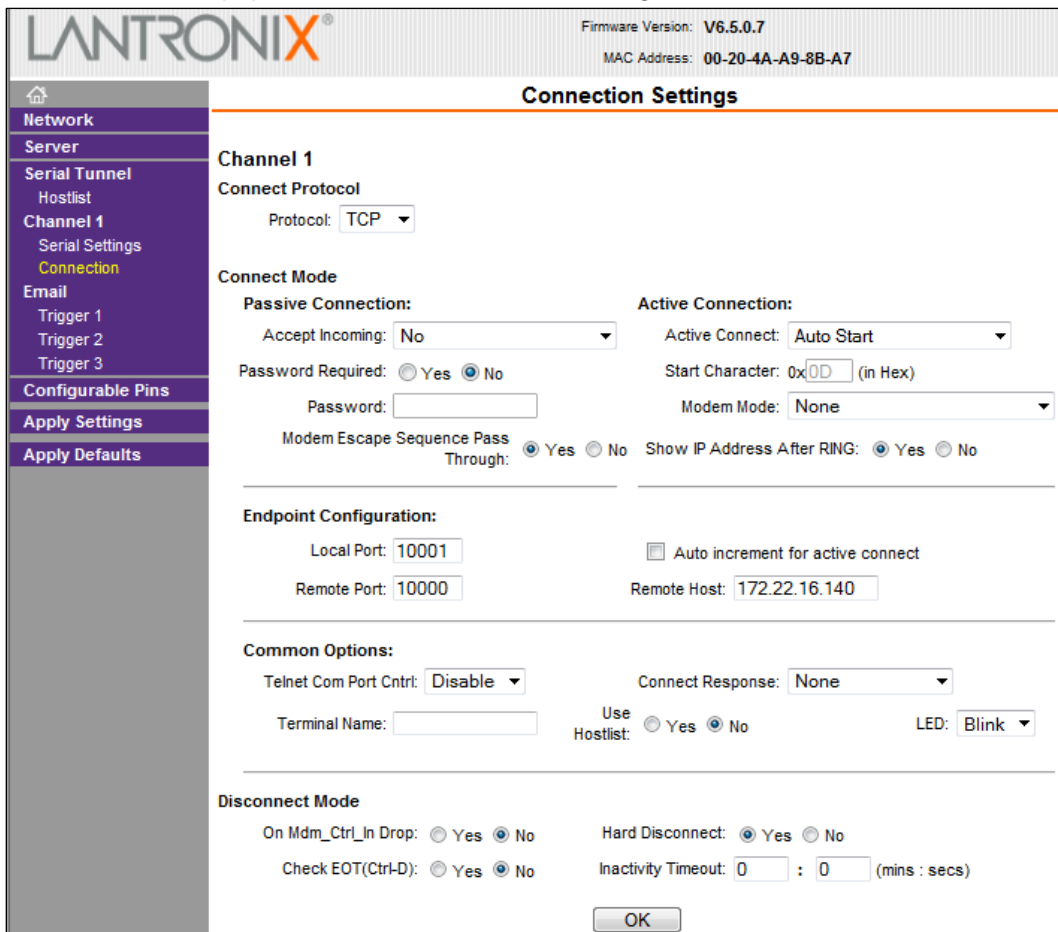
The screenshot shows the LANTRONIX web interface for 'Connection Settings' on 'Channel 1'. The interface includes a left-hand navigation menu with options like Network, Server, Serial Tunnel, Channel 1, Email, and Configurable Pins. The main content area is titled 'Connection Settings' and displays various configuration options for an incoming connection. The 'Connect Protocol' is set to 'TCP'. Under 'Connect Mode', 'Passive Connection' has 'Accept Incoming' set to 'Yes' and 'Password Required' set to 'No'. 'Active Connection' has 'Active Connect' set to 'None' and 'Start Character' set to '0x0D'. The 'Endpoint Configuration' section shows 'Local Port' set to '10001' and 'Remote Port' as an empty field. 'Common Options' includes 'Telnet Com Port Cntrl' set to 'Disable' and 'Connect Response' set to 'None'. The 'Disconnect Mode' section has 'On Mdm\_Ctrl\_In Drop' and 'Check EOT(Ctrl-D)' both set to 'No', and 'Hard Disconnect' set to 'Yes'. An 'OK' button is visible at the bottom of the settings area.

Figure 17: Settings for an *Incoming* Connection

- b. *Outgoing* connections are made from the APU to external monitoring equipment. This is used for integration with Fiber SenSys FiberCommander.
  - i. set the **Active Connect** menu is set to **Auto Start**
  - ii. In the **Endpoint Configuration** section of the **Connection Settings** screen, verify or enter the correct information, according to the following formats and uses:

Local Port	10001	<i>incoming or outgoing</i>
Remote Host	XXX.XXX.X.XXX	<i>outgoing</i>
Remote Port	10000	<i>outgoing to FiberCommander</i>

The Remote Host entry should contain the IP address for the monitoring equipment, such as the PC running FiberCommander.



**Figure 18:** Settings for an *Outgoing* Connection

- 2. Click on the **OK** button to enter the changes. The **“Done!”** notation again appears next to the **OK** button to indicate that the changes have been accepted.



1. **Configurable Pin Settings** The final step is to set configurable pins. Select the **Configurable Pins** option from the main menu. The **Configurable Pin Settings** screen displays.

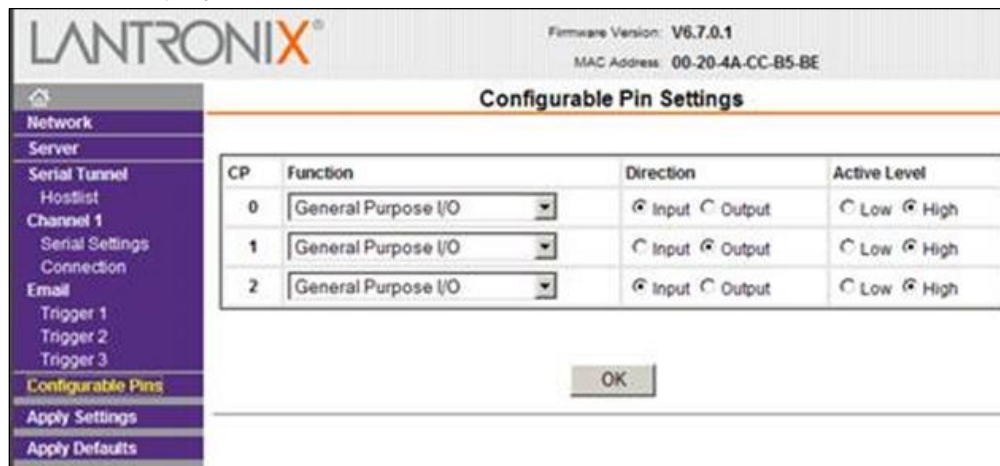



Figure 19: The Configurable Pins Settings screen

2. Make sure all radio buttons for **Direction** and **Active Level** are set as shown above, to ensure proper communication with the APU.
  - a. **CP 1** direction is set to **Output**
  - b. **CP 1** Active Level is set to **High**

## Apply the New Settings

1. In order to apply and save all changes, click on the **Apply Settings** option in the main menu located in the left-hand panel of the screen.

 **NOTE:** New settings are not applied until you complete this step.

2. A status bar displays while the save is performed.

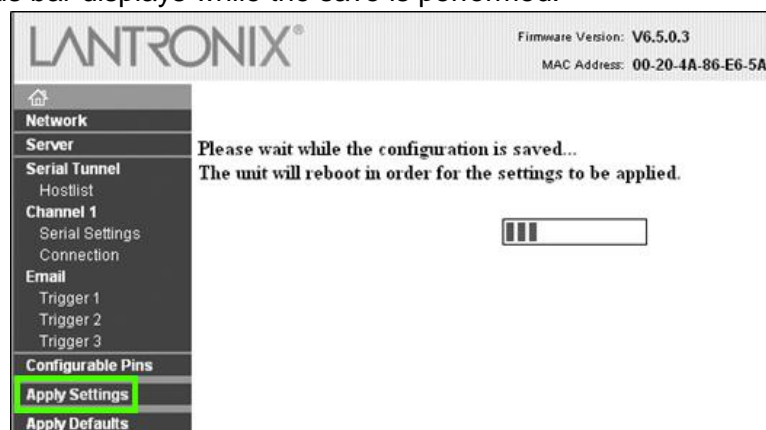


Figure 20: Status display while settings are being applied.

3. When the save is complete, the home page is displayed again.
4. Serial and network settings are complete. Close the browser window. The APU is now named and ready for network operation.
5. Configure the monitoring equipment/software using the instructions provided by the manufacturer.

If you have any problems or questions with the process of setting the APU up in your network, contact **Fiber SenSys** Customer Service.

## Appendix C Software Integration of APUs

To assist with the integration of APUs with other systems, Fiber SenSys provides a Software Development Kit (Device SDK) for the Windows® platform that hides the details of the APU communications protocol behind easy-to-use interfaces. The Device SDK comes with a nearly-complete middleware application that, in many cases, requires only the code necessary to output the messages required by the existing system. The Device SDK can be downloaded from <https://www.fibersensys.com/>.

Software developers using the Device SDK *do not* need to understand the communications protocol used by the APU. Moreover, Fiber SenSys reserves the right to modify and adjust the protocol itself over time. However, the rest of this section provides information that can be useful in constructing software that attempts to communicate with APUs using the protocol. Information given in this section requires the reader to be familiar with XML encoding.

The APU communicates via XML (extensible markup language); specifically, a standard XML language known as SEIWG ICD-100. This standard is defined by the Security Equipment Integration Working Group of the United States Department of Defense for interoperability between Command and Control Display Equipment (CCDE) and related devices such as Fiber SenSys APUs. Using ICD-100, the APU sends status messages to the network such as alarm, tamper, and fault conditions, and can receive device configuration settings.

## APU Communication Behavior

Fiber SenSys APUs implement a specific behavioral state machine for communication. A flowchart roughly describing the state machine is displayed below. Later subsections will describe the communication states in more detail.

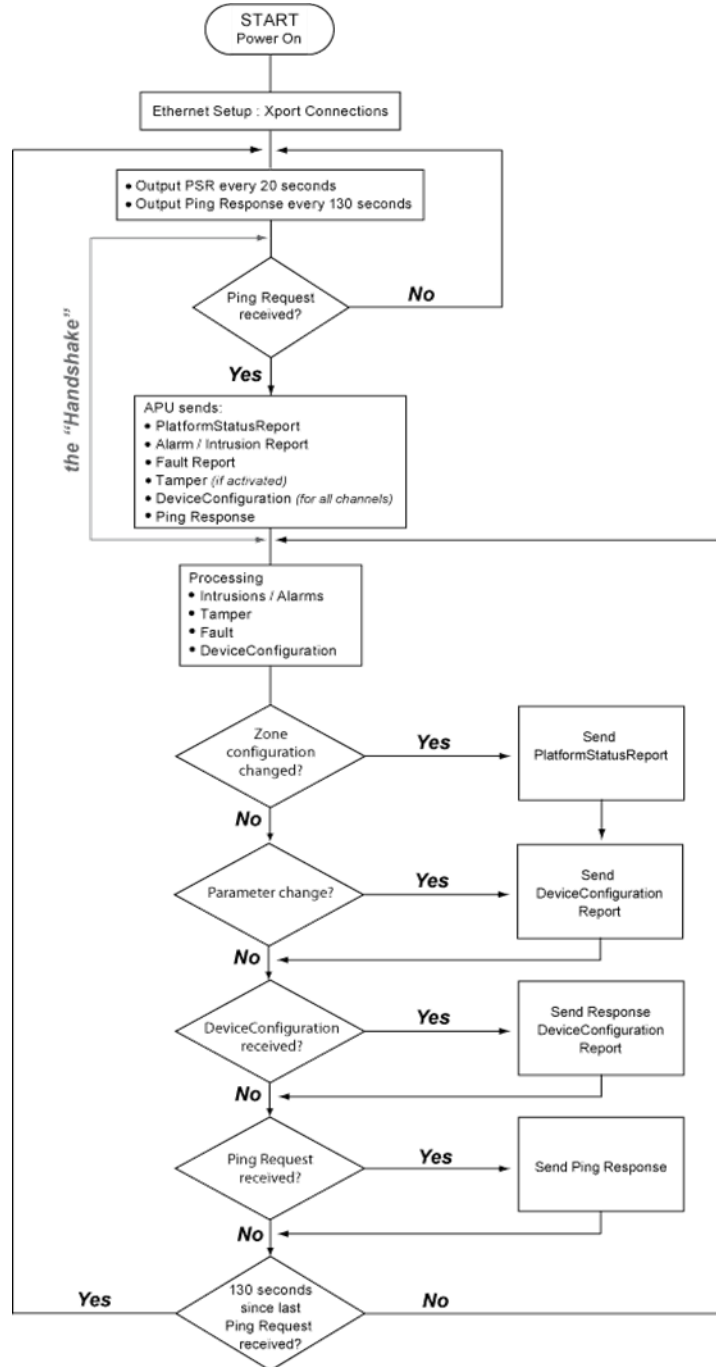


Figure 21: APU network communication flowchart

## Establishing Communication

As noted in the communication flowchart, the APU sends a platform status report (PSR) every 20 seconds and a ping response every 130 seconds in order for the system to identify the APU and to determine whether to communicate with it. When a ping request is received, the APU sends the handshake messages shown below.

### Handshake.xml

```
<?xml version="1.0" encoding="UTF-8"?>
<PlatformStatusReport>
  <PlatformIdentification>
    <DeviceName>CUSTOMNAME</DeviceName>
    <DeviceCategory>Sensor</DeviceCategory>
    <DeviceType>SPIDR APU</DeviceType>
  </PlatformIdentification>
  <PlatformStatusReport>
    <PlatformIdentification>
      <DeviceName>CUSTOMNAME.HZONE-1</DeviceName>
      <DeviceCategory>Sensor</DeviceCategory>
      <DeviceType>SPIDR Hyperzone</DeviceType>
    </PlatformIdentification>
    <Status>
      <DeviceState>Secure</DeviceState>
      <CommunicationState>OK</CommunicationState>
      <UpdateTime Zone="GMT">2007-10-08T15:12:24.000</UpdateTime>
    </Status>
    <DeviceStatusReport>
      <DeviceIdentification>
        <DeviceName>CUSTOMNAME.HZONE-1.ZONE-1</DeviceName>
        <DeviceCategory>Sensor</DeviceCategory>
        <DeviceType>SPIDR Zone</DeviceType>
      </DeviceIdentification>
      <Status>
        <DeviceState>Secure</DeviceState>
        <CommunicationState>OK</CommunicationState>
        <UpdateTime Zone="GMT">2007-10-08T15:12:24.000</UpdateTime>
      </Status>
    </DeviceStatusReport>
    <DeviceStatusReport>
      <DeviceIdentification>
        <DeviceName>CUSTOMNAME.HZONE-1.ZONE-2</DeviceName>
        <DeviceCategory>Sensor</DeviceCategory>
        <DeviceType>SPIDR Zone</DeviceType>
      </DeviceIdentification>
      <Status>
        <DeviceState>Secure</DeviceState>
        <CommunicationState>OK</CommunicationState>
        <UpdateTime Zone="GMT">2007-10-08T15:12:24.000</UpdateTime>
      </Status>
    </DeviceStatusReport>
  </PlatformStatusReport>
</PlatformStatusReport>

<?xml version="1.0" encoding="UTF-8"?>
<DeviceConfiguration Message Type="Report">
  <DeviceIdentification>
    <DeviceName>CUSTOMNAME.HZONE-1</DeviceName>
    <DeviceCategory>Sensor</DeviceCategory>
    <DeviceType>SPIDR Hyperzone</DeviceType>
  </DeviceIdentification>
  <ConfigurationSetting Name="Gain" Units="None" MinimumValue="1" MaximumValue="50" CurrentValue="20"/>
  <ConfigurationSetting Name="Wind Reject Factor" Units="MilesPerHour" MinimumValue="20" MaximumValue="80" CurrentValue="50"/>
  <ConfigurationOptionBlock Name="Wind Processing" Units="None">
    <ConfigurationOption Option="Enabled" Selected="false"/>
    <ConfigurationOption Option="Disabled" Selected="true"/>
  </ConfigurationOptionBlock>
</DeviceConfiguration>

<?xml version="1.0" encoding="UTF-8"?>
<CommandMessage MessageType="Response" Status="OK">
  <DeviceIdentification>
    <DeviceName>CUSTOMNAME</DeviceName>
  </DeviceIdentification>
  <Command>
    <SimpleCommand>Ping</SimpleCommand>
  </Command>
</CommandMessage>
```

Figure 22: Handshake messages

### CUSTOMNAME.H1.Ping in.xml

```
<?xml version="1.0" encoding="UTF-8"?>
<CommandMessage MessageType="Request">
  <DeviceIdentification>
    <DeviceName>CUSTOMNAME</DeviceName>
  </DeviceIdentification>
  <RequestorIdentification>
    <DeviceName>eTASS-001</DeviceName>
    <DeviceCategory>C2 Node</DeviceCategory>
    <DeviceType>Annunciator</DeviceType>
  </RequestorIdentification>
  <Command>
    <SimpleCommand>Ping</SimpleCommand>
  </Command>
</CommandMessage>
```

Figure 23: Ping request

### PingResponse.xml

```
<?xml version="1.0" encoding="UTF-8"?>
<CommandMessage MessageType="Response" Status="OK">
  <DeviceIdentification>
    <DeviceName>CUSTOMNAME</DeviceName>
  </DeviceIdentification>
  <Command>
    <SimpleCommand>Ping</SimpleCommand>
  </Command>
</CommandMessage>
```

Figure 24: Ping Response

The **<DeviceName>** field in the **<DeviceIdentification>** blocks is shown in the above illustrations as **CUSTOMNAME**. The actual value should correspond with the name of the APU with a maximum length of 15 characters. The maximum channel name length is also 15 characters, while the **<RequestorIdentification>** is set to a maximum of 31 characters.

The ping in should be received by the APU within every 130 seconds, or the handshake process is diverted back to the beginning, where the system waits for the initial PSR and responding ping response messages. Once the ping in is received, the APU sends the PSR, intrusion/alarm, fault, tamper, device configuration, and ping response messages. This successful round of communication is the “handshake,” and normal processing operations can follow uninterrupted.

## Events

There are three types of events recognized by the APU:

- Intrusion or alarm
- Fault (a bent or broken fiber or a hardware malfunction)
- Tamper (indicating that the device enclosure has been opened)

When any type of event occurs, an ID field index, **<ID>SZ0001</ID>**, is updated. This ID field acts as an event counter.

### Intrusion.xml

```
<?xml version="1.0" encoding="UTF-8"?>
<DeviceDetectionReport>
  <DeviceDetectionRecord>
    <DeviceIdentification>
      <DeviceName>CUSTOMNAME.HZONE-1.ZONE-2</DeviceName>
      <DeviceCategory>Sensor</DeviceCategory>
      <DeviceType>SPIDR Zone</DeviceType>
    </DeviceIdentification>
    <Detection>
      <ID>SZ0002</ID>
      <DetectionEvent>Intrusion</DetectionEvent>
      <UpdateTime Zone="GMT">2007-10-08T15:12:34.000</UpdateTime>
    </Detection>
  </DeviceDetectionRecord>
</DeviceDetectionReport>
```

Figure 25: Intrusion message

The **<DetectionEvent>** field displays the value **Intrusion**, indicating that the sensor cable has been sufficiently disturbed to qualify as an intrusion attempt. Lines appearing in the document with the notation **HZONE-X** and **ZONE-X** indicate the affected hyperzone and zone.

## Fault\_A.xml

```
<?xml version="1.0" encoding="UTF-8"?>
<DeviceDetectionReport>
  <DeviceDetectionRecord>
    <DeviceIdentification>
      <DeviceName>CUSTOMNAME.HZONE-1_ZONE-1</DeviceName>
      <DeviceCategory>Sensor</DeviceCategory>
      <DeviceType>SPIDR Zone</DeviceType>
    </DeviceIdentification>
    <Detection>
      <ID>SZ003</ID>
      <DetectionEvent>Fault</DetectionEvent>
      <UpdateTime Zone="GMT">2007-10-08T15:12:44.000</UpdateTime>
    </Detection>
  </DeviceDetectionRecord>
  <DeviceDetectionRecord>
    <DeviceIdentification>
      <DeviceName>CUSTOMNAME.HZONE-1_ZONE-2</DeviceName>
      <DeviceCategory>Sensor</DeviceCategory>
      <DeviceType>SPIDR Zone</DeviceType>
    </DeviceIdentification>
    <Detection>
      <ID>SZ004</ID>
      <DetectionEvent>Fault</DetectionEvent>
      <UpdateTime Zone="GMT">2007-10-08T15:12:44.000</UpdateTime>
    </Detection>
  </DeviceDetectionRecord>
</DeviceDetectionReport>

<?xml version="1.0" encoding="UTF-8"?>
<DeviceStatusReport>
  <DeviceIdentification>
    <DeviceName>CUSTOMNAME.HZONE-1_ZONE-1</DeviceName>
    <DeviceCategory>Sensor</DeviceCategory>
    <DeviceType>SPIDR Zone</DeviceType>
  </DeviceIdentification>
  <Status>
    <DeviceState>Fault</DeviceState>
    <CommunicationState>Fail</CommunicationState>
    <UpdateTime Zone="GMT">2007-10-08T15:12:44.000</UpdateTime>
  </Status>
</DeviceStatusReport>

<?xml version="1.0" encoding="UTF-8"?>
<DeviceStatusReport>
  <DeviceIdentification>
    <DeviceName>CUSTOMNAME.HZONE-1_ZONE-2</DeviceName>
    <DeviceCategory>Sensor</DeviceCategory>
    <DeviceType>SPIDR Zone</DeviceType>
  </DeviceIdentification>
  <Status>
    <DeviceState>Fault</DeviceState>
    <CommunicationState>Fail</CommunicationState>
    <UpdateTime Zone="GMT">2007-10-08T15:12:44.000</UpdateTime>
  </Status>
</DeviceStatusReport>
```

Figure 26: Fault message



The **<DetectionEvent>** field displays the value **Fault**. A **<Device Status Report>** always follows this message indicating that since the fault has occurred an intrusion can no longer be detected by the device. The **<DeviceState>** field indicates **Fault**, and the **<CommunicationState>** field shows the communication status as **Fail**.

When the fault condition is repaired, the following message indicates that the internal fault condition has ended, and communication is restored.

#### Fault\_B\_Restore.xml

```
<?xml version="1.0" encoding="UTF-8"?>
<DeviceStatusReport>
  <DeviceIdentification>
    <DeviceName>CUSTOMNAME.HZONE-1.ZONE-1</DeviceName>
    <DeviceCategory>Sensor</DeviceCategory>
    <DeviceType>SPIDR Zone</DeviceType>
  </DeviceIdentification>
  <Status>
    <DeviceState>Secure</DeviceState>
    <CommunicationState>OK</CommunicationState>
    <UpdateTime Zone="GMT">2007-10-08T15:12:44.000</UpdateTime>
  </Status>
  <Detection>
    <DetectionEvent>Other</DetectionEvent>
    <Details>Internal line fault</Details>
    <UpdateTime Zone="GMT">2007-10-08T15:12:44.000</UpdateTime>
  </Detection>
</DeviceStatusReport>

<?xml version="1.0" encoding="UTF-8"?>
<DeviceStatusReport>
  <DeviceIdentification>
    <DeviceName>CUSTOMNAME.HZONE-1.ZONE-2</DeviceName>
    <DeviceCategory>Sensor</DeviceCategory>
    <DeviceType>SPIDR Zone</DeviceType>
  </DeviceIdentification>
  <Status>
    <DeviceState>Secure</DeviceState>
    <CommunicationState>OK</CommunicationState>
    <UpdateTime Zone="GMT">2007-10-08T15:12:44.000</UpdateTime>
  </Status>
  <Detection>
    <DetectionEvent>Other</DetectionEvent>
    <Details>Internal line fault</Details>
    <UpdateTime Zone="GMT">2007-10-08T15:12:44.000</UpdateTime>
  </Detection>
</DeviceStatusReport>
```

Figure 27: Fault restore message

## Tamper.xml

```
<?xml version="1.0" encoding="UTF-8"?>
<DeviceStatusReport>
  <DeviceIdentification>
    <DeviceName>CUSTOMNAME</DeviceName>
    <DeviceCategory>Sensor</DeviceCategory>
    <DeviceType>SPIDR APU</DeviceType>
  </DeviceIdentification>
  <Status>
    <DeviceState>Tamper</DeviceState>
    <CommunicationState>OK</CommunicationState>
    <UpdateTime Zone="GMT">2007-10-08T15:13:04.000</UpdateTime>
  </Status>
  <Detection>
    <DetectionEvent>Tamper</DetectionEvent>
    <UpdateTime Zone="GMT">2007-10-08T15:13:04.000</UpdateTime>
  </Detection>
</DeviceStatusReport>
```

Figure 28: Tamper message

If an APU is connected to a tamper switch (either directly or through a Fiber SenSys accessory device such as the **OM525**), a tamper alarm is signaled when the switch opens. This condition is indicated by **<DeviceState>** and **<DetectionEvent>** field values of **Tamper**.

## Platform status report

Events, alarms, and faults affect the status of the APU. Whenever the device state changes, a platform status report, or PSR, is immediately sent to notify the system and users.

### Platform\_Status\_Report\_Update.xml

```
<?xml version="1.0" encoding="UTF-8"?>
<PlatformStatusReport>
  <PlatformIdentification>
    <DeviceName>CUSTOMNAME</DeviceName>
    <DeviceCategory>Sensor</DeviceCategory>
    <DeviceType>SPIDR APU</DeviceType>
  </PlatformIdentification>
</PlatformStatusReport>
<PlatformIdentification>
  <DeviceName>CUSTOMNAME.HZONE-1</DeviceName>
  <DeviceCategory>Sensor</DeviceCategory>
  <DeviceType>SPIDR Hyperzone</DeviceType>
</PlatformIdentification>
<Status>
  <DeviceState>Secure</DeviceState>
  <CommunicationState>OK</CommunicationState>
  <UpdateTime Zone="GMT">2007-10-08T15:12:24.000</UpdateTime>
</Status>
<DeviceStatusReport>
  <DeviceIdentification>
    <DeviceName>CUSTOMNAME.HZONE-1.ZONE-1</DeviceName>
    <DeviceCategory>Sensor</DeviceCategory>
    <DeviceType>SPIDR Zone</DeviceType>
  </DeviceIdentification>
  <Status>
    <DeviceState>Secure</DeviceState>
    <CommunicationState>OK</CommunicationState>
    <UpdateTime Zone="GMT">2007-10-08T15:12:24.000</UpdateTime>
  </Status>
</DeviceStatusReport>
<DeviceStatusReport>
  <DeviceIdentification>
    <DeviceName>CUSTOMNAME.HZONE-1.ZONE-2</DeviceName>
    <DeviceCategory>Sensor</DeviceCategory>
    <DeviceType>SPIDR Zone</DeviceType>
  </DeviceIdentification>
  <Status>
    <DeviceState>Secure</DeviceState>
    <CommunicationState>OK</CommunicationState>
    <UpdateTime Zone="GMT">2007-10-08T15:12:24.000</UpdateTime>
  </Status>
</DeviceStatusReport>
</PlatformStatusReport>
</PlatformStatusReport>
```

Figure 29: Platform status report

Each status report includes the same basic information as shown in this sample:

**<DeviceName>CUSTOMNAME</DeviceName>** - this tag indicates the name of the APU and must correspond with the actual device name. The notation **HZONE-X** and **ZONE-X** indicate the affected hyperzone and zone.

**<DeviceState>Secure</DeviceState>** - the status of the APU

**<Update Time Zone="GMT">2007-10-08T15:12:24.000</UpdateTime>** - the time (with time zone) that the change of state occurred.

### APU configuration parameters

Some APU configuration parameters can be changed via XML communication. For example, these may include the gain, the wind reject factor, and turning wind processing on and off. Refer to the APU manual for full descriptions of the adjustable parameters.

<b>Gain</b>			
"Gain"			
<b>Units</b>	<b>Low Limit</b>	<b>High Limit</b>	<b>Default Value</b>
"None"	"1"	"50"	"32"
<b>Syntax</b>			
<ConfigurationSettingName="Gain" Units="None" MinimumValue="1" MaximumValue="50" CurrentValue="20"/>			

<b>Wind Reject Factor</b>			
"Wind Reject Factor"			
<b>Units</b>	<b>Low Limit</b>	<b>High Limit</b>	<b>Default Value</b>
"MilesPerHour"	"20"	"80"	"50"
<b>Syntax</b>			
<ConfigurationSettingName="Wind Reject Factor" Units="MilesPerHour" MinimumValue="20" MaximumValue="80" CurrentValue="50"/>			

<b>Wind Processing</b>			
"Wind Processing"			
<b>Units</b>			
"None"			
<b>Syntax</b>			
<ConfigurationOptionBlock Name="Wind Processing" Units="None" <ConfigurationOption Option="Enabled" Selected="true"/> <ConfigurationOption Option="Disabled" Selected="false"/>			

Device configuration documents, shown on the following page, are generated by the user and sent to the APU via the network. In this sample, the three calibration parameters are being set.

## Device\_Configuration\_Report\_Simple.xml

```
<?xml version="1.0" encoding="UTF-8"?>
<DeviceConfiguration MessageType="Report">
  <DeviceIdentification>
    <DeviceName>CUSTOMNAME.HZONE-1</DeviceName>
    <DeviceCategory>Sensor</DeviceCategory>
    <DeviceType>SPIDR Hyperzone</DeviceType>
  </DeviceIdentification>
  <ConfigurationSetting Name="Gain" Units="None" MinimumValue="1" MaximumValue="50" CurrentValue="20"/>
  <ConfigurationSetting Name="Wind Reject Factor" Units="MilesPerHour" MinimumValue="20" MaximumValue="80" CurrentValue="50"/>
  <ConfigurationOptionBlock Name="Wind Processing" Units="None">
    <ConfigurationOption Option="Enabled" Selected="false"/>
    <ConfigurationOption Option="Disabled" Selected="true"/>
  </ConfigurationOptionBlock>
</DeviceConfiguration>

<?xml version="1.0" encoding="UTF-8"?>
<DeviceConfiguration MessageType="Report">
  <DeviceIdentification>
    <DeviceName>CUSTOMNAME.HZONE-1</DeviceName>
    <DeviceCategory>Sensor</DeviceCategory>
    <DeviceType>SPIDR Hyperzone</DeviceType>
  </DeviceIdentification>
  <ConfigurationSetting Name="Gain" Units="None" MinimumValue="1" MaximumValue="50" CurrentValue="20"/>
  <ConfigurationSetting Name="Wind Reject Factor" Units="MilesPerHour" MinimumValue="20" MaximumValue="80" CurrentValue="50"/>
  <ConfigurationOptionBlock Name="Wind Processing" Units="None">
    <ConfigurationOption Option="Enabled" Selected="false"/>
    <ConfigurationOption Option="Disabled" Selected="true"/>
  </ConfigurationOptionBlock>
</DeviceConfiguration>
```

Figure 30: Device configuration document

This document includes, as a minimum, the following tags:

**<DeviceIdentification>** - this parameter must be the actual name of the unit being addressed, or the unit will not respond. The notation **HZONE-X** indicates the affected hyperzone.

**<ConfigurationSettingName>** - the configuration parameters being changed are added to this line of text. If one of the settings is out of range, or a parameter name is invalid, the APU responds with a **<Device Configuration>** message that includes the heading:

**<DeviceConfiguration MessageType="Response" RequestID="X" Status="Failed">**

**X** denotes the incoming **RequestID**. The current settings of the APU are included in this response message, but only the settings before the error line are changed.

Upon successful configuration adjustment, an identical message is returned with all actual parameters, and the following message heading:

**<DeviceConfiguration MessageType="Response" RequestID="X" Status="OK">**

## Moving zones (specific to 500 Series APUs)

When you move a zone from one hyperzone to another, using the **500 Series Suite** software, an XML report is sent to notify the remote system of the change. For example, suppose a system has one hyperzone, HZONE-1, which contains two zones, ZONE-1 and ZONE-2, and ZONE-1 is moved to a newly created hyperzone, HZONE-2. A PSR is sent to notify the system of the change. ZONE-1 in HZONE-1 is deleted, and HZONE-2 is created containing ZONE-1. Notice that all configuration parameters are copied to the new hyperzone.

### ZoneMoving.xml

```
<?xml version="1.0" encoding="UTF-8"?>
<PlatformStatusReport>
  <PlatformIdentification>
    <DeviceName>CUSTOMNAME</DeviceName>
    <DeviceCategory>Sensor</DeviceCategory>
    <DeviceType>SPIDR APU</DeviceType>
  </PlatformIdentification>
  <PlatformStatusReport>
    <PlatformIdentification>
      <DeviceName>CUSTOMNAME.HZONE-1</DeviceName>
      <DeviceCategory>Sensor</DeviceCategory>
      <DeviceType>SPIDR Hyperzone</DeviceType>
    </PlatformIdentification>
    <Status>
      <DeviceState>Secure</DeviceState>
      <CommunicationState>OK</CommunicationState>
      <UpdateTime Zone="GMT">2007-10-08T15:13:54.000</UpdateTime>
    </Status>
    <DeviceStatusReport>
      <DeviceIdentification>
        <DeviceName>CUSTOMNAME.HZONE-1.ZONE-1</DeviceName>
        <DeviceCategory>Sensor</DeviceCategory>
        <DeviceType>SPIDR Zone</DeviceType>
      </DeviceIdentification>
      <Status>
        <DeviceState>Deleted</DeviceState>
        <UpdateTime Zone="GMT">2007-10-08T15:13:54.000</UpdateTime>
      </Status>
    </DeviceStatusReport>
    <DeviceStatusReport>
      <DeviceIdentification>
        <DeviceName>CUSTOMNAME.HZONE-1.ZONE-2</DeviceName>
        <DeviceCategory>Sensor</DeviceCategory>
        <DeviceType>SPIDR Zone</DeviceType>
      </DeviceIdentification>
      <Status>
        <DeviceState>Secure</DeviceState>
        <CommunicationState>OK</CommunicationState>
        <UpdateTime Zone="GMT">2007-10-08T15:13:54.000</UpdateTime>
      </Status>
    </DeviceStatusReport>
  </PlatformStatusReport>
```

Figure 31: PSR indicating a zone move, part 1

## ZoneMoving.xml

```
<PlatformStatusReport>
  <PlatformIdentification>
    <DeviceName>CUSTOMNAME.HZONE-2</DeviceName>
    <DeviceCategory>Sensor</DeviceCategory>
    <DeviceType>SPIDR Hyperzone</DeviceType>
  </PlatformIdentification>
  <Status>
    <DeviceState>Secure</DeviceState>
    <CommunicationState>OK</CommunicationState>
    <UpdateTime Zone="GMT">2007-10-08T15:13:54.000</UpdateTime>
  </Status>
  <DeviceStatusReport>
    <DeviceIdentification>
      <DeviceName>CUSTOMNAME.HZONE-2.ZONE-1</DeviceName>
      <DeviceCategory>Sensor</DeviceCategory>
      <DeviceType>SPIDR Zone</DeviceType>
    </DeviceIdentification>
    <Status>
      <DeviceState>Secure</DeviceState>
      <CommunicationState>OK</CommunicationState>
      <UpdateTime Zone="GMT">2007-10-08T15:13:54.000</UpdateTime>
    </Status>
  </DeviceStatusReport>
</PlatformStatusReport>
</PlatformStatusReport>
```

Figure 32: PSR indicating a zone move, part 2

## ZoneMoving.xml

```
<?xml version="1.0" encoding="UTF-8"?>
<DeviceConfiguration MessageType="Report">
  <DeviceIdentification>
    <DeviceName>CUSTOMNAME.HZONE-1</DeviceName>
    <DeviceCategory>Sensor</DeviceCategory>
    <DeviceType>SPIDR Hyperzone</DeviceType>
  </DeviceIdentification>
  <ConfigurationSetting Name="Gain" Units="None" MinimumValue="1" MaximumValue="50" CurrentValue="20"/>
  <ConfigurationSetting Name="Wind Reject Factor" Units="MilesPerHour" MinimumValue="20" MaximumValue="80" CurrentValue="50"/>
  <ConfigurationOptionBlock Name="Wind Processing" Units="None">
    <ConfigurationOption Option="Enabled" Selected="false"/>
    <ConfigurationOption Option="Disabled" Selected="true"/>
  </ConfigurationOptionBlock>
</DeviceConfiguration>

<?xml version="1.0" encoding="UTF-8"?>
<DeviceConfiguration MessageType="Report">
  <DeviceIdentification>
    <DeviceName>CUSTOMNAME.HZONE-2</DeviceName>
    <DeviceCategory>Sensor</DeviceCategory>
    <DeviceType>SPIDR Hyperzone</DeviceType>
  </DeviceIdentification>
  <ConfigurationSetting Name="Gain" Units="None" MinimumValue="1" MaximumValue="50" CurrentValue="20"/>
  <ConfigurationSetting Name="Wind Reject Factor" Units="MilesPerHour" MinimumValue="20" MaximumValue="80" CurrentValue="50"/>
  <ConfigurationOptionBlock Name="Wind Processing" Units="None">
    <ConfigurationOption Option="Enabled" Selected="false"/>
    <ConfigurationOption Option="Disabled" Selected="true"/>
  </ConfigurationOptionBlock>
</DeviceConfiguration>
```

Figure 33: PSR indicating a zone move, part 3