



# *VoIP Intercom Operations Guide*

Part #010935D

Document Part #930242I  
for Firmware Version 5.1.2

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**PoE VoIP Intercom Operations Guide 930242I**  
**Part # 010935D**

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## Revision Information

Revision I, released on 5-21-2010, has the following changes:

- Changes the Discovery Utility website address in [Section 2.3.1, "Log in to the Configuration Home Page"](#) to the following:  
[http://www.cyberdata.net/support/voip/discovery\\_utility.html](http://www.cyberdata.net/support/voip/discovery_utility.html)
- Changes the Solarwinds website address in [Section B.1.2, "In a Windows Environment"](#) to the following:  
<http://www.cyberdata.net/support/voip/solarwinds.html>
- Removes Section B.1.3, "In a Solarwinds Server Environment" per redlines which stated "You can remove section B.1.3. There's no solarwinds environment and the link is the same as the windows version."

---

# Important Safety Instructions

1. Read these instructions.
2. Keep these instructions.
3. Heed all warnings.
4. Follow all instructions.
5. Do not use this apparatus near water.
6. Clean only with dry cloth.
7. Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.
8. Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
9. Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wide blade or the third prong are provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
10. Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.
11. Only use attachments/accessories specified by the manufacturer.
12. Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.
13. Prior to installation, consult local building and electrical code requirements.
- 14. WARNING: The VoIP Intercom enclosure is not rated for any AC voltages!**

 <p>GENERAL ALERT</p>	<p><b>Warning</b></p> <p><i>Electrical Hazard:</i> This product should be installed by a licensed electrician according to all local electrical and building codes.</p>
 <p>GENERAL ALERT</p>	<p><b>Warning</b></p> <p><i>Electrical Hazard:</i> To prevent injury, this apparatus must be securely attached to the floor/wall in accordance with the installation instructions.</p>

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## Pictorial Alert Icons

	<p><b>General Alert</b></p> <p><i>This pictorial alert indicates a potentially hazardous situation. This alert will be followed by a hazard level heading and more specific information about the hazard.</i></p>
	<p><b>Ground</b></p> <p><i>This pictorial alert indicates the Earth grounding connection point.</i></p>

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## Hazard Levels

**Danger:** Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury. This is limited to the most extreme situations.

**Warning:** Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

**Caution:** Indicates a potentially hazardous situation which, if not avoided, could result in minor or moderate injury. It may also alert users against unsafe practices.

**Notice:** Indicates a statement of company policy (that is, a safety policy or protection of property).

The safety guidelines for the equipment in this manual do not purport to address all the safety issues of the equipment. It is the responsibility of the user to establish appropriate safety, ergonomic, and health practices and determine the applicability of regulatory limitations prior to use. Potential safety hazards are identified in this manual through the use of words **Danger**, **Warning**, and **Caution**, the specific hazard type, and pictorial alert icons.

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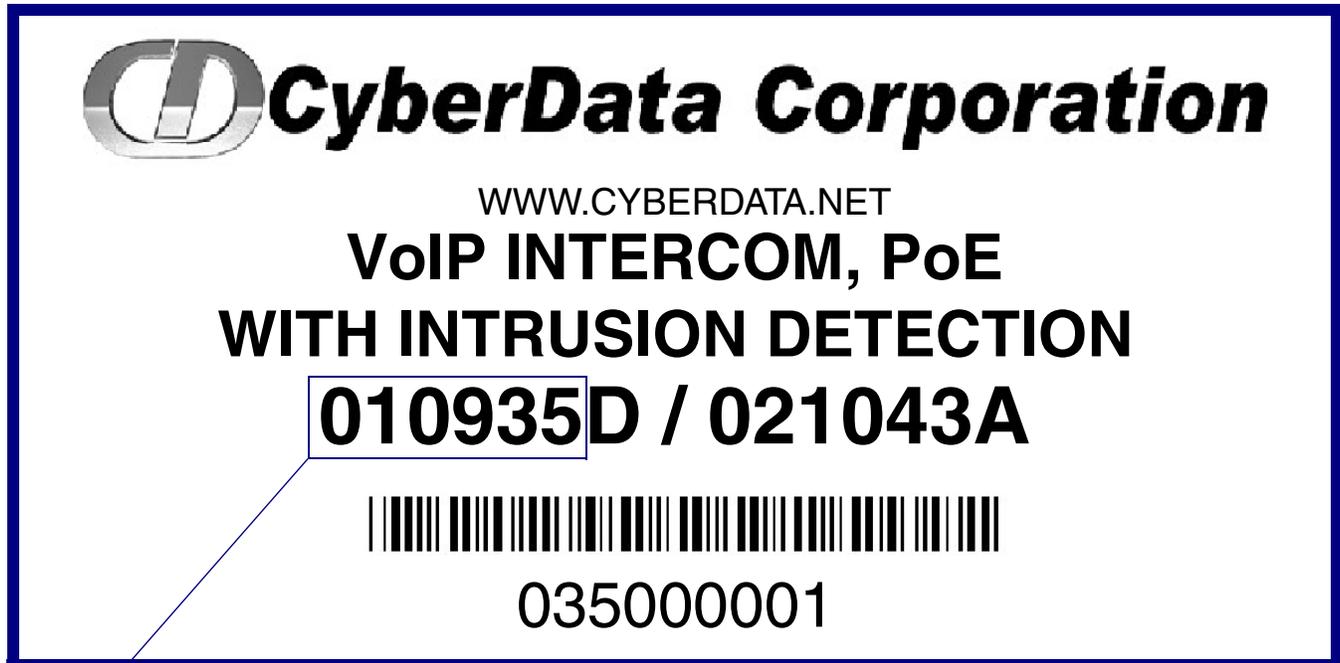
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# 1 Product Overview

## 1.1 How to Identify This Product

To identify the VoIP Intercom, look for a model number label similar to the one shown in [Figure 1-1](#). The model number on the label should be 010935.

Figure 1-1. Model Number Label



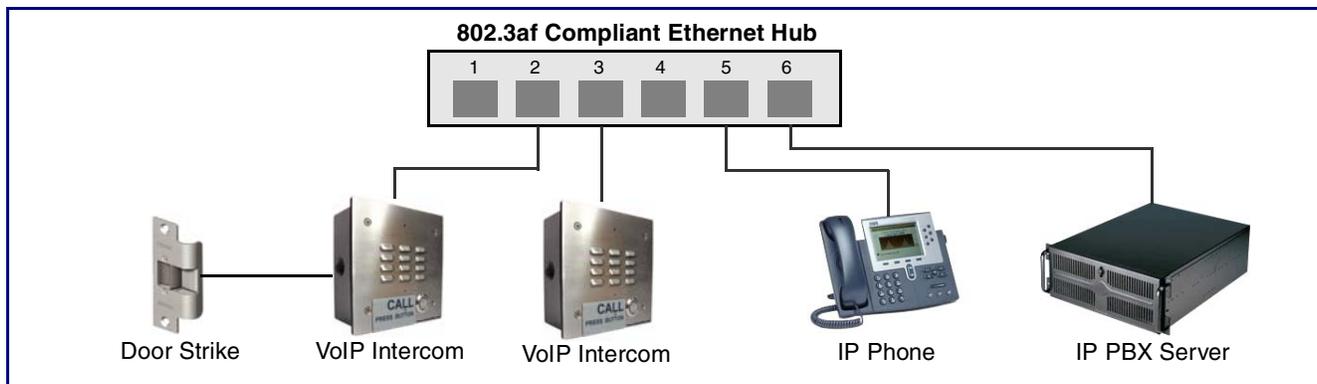
Model number

## 1.2 Typical System Installation

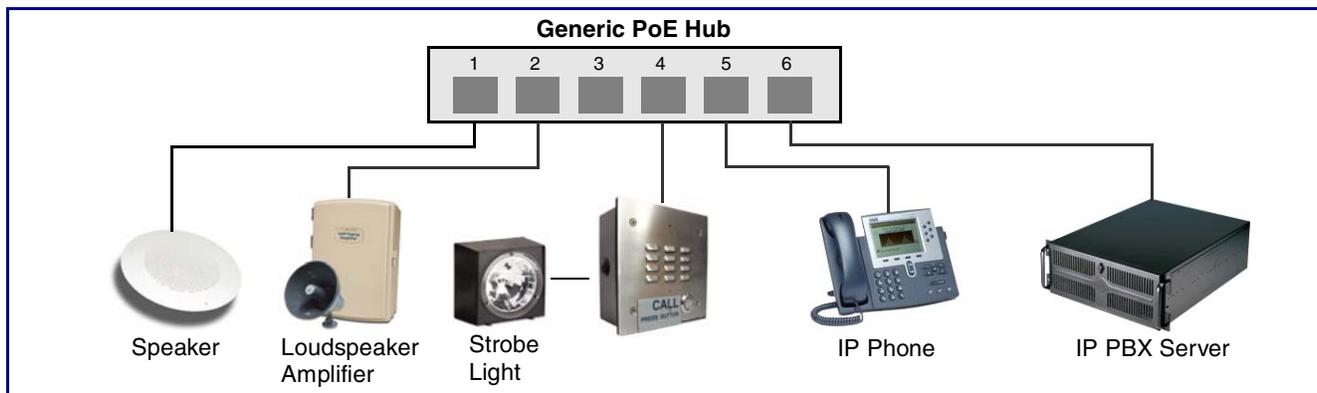
The Voice-over-IP (VoIP) Intercom is a SIP endpoint designed to provide VoIP phone connectivity in a tamper proof and secure package.

Figure 1-2, Figure 1-3, and Figure 1-4 illustrate how the VoIP Intercoms can be installed as part of a VoIP phone system.

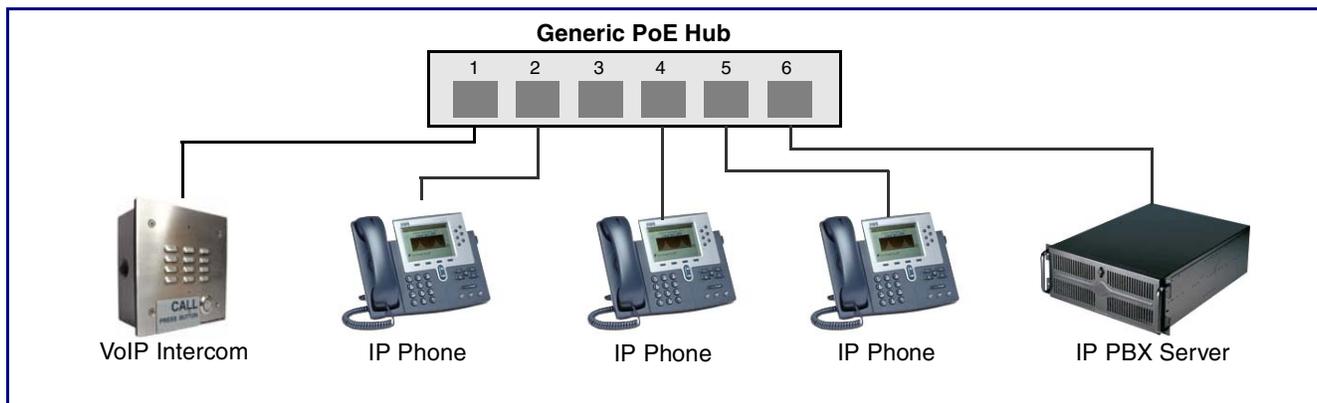
**Figure 1-2. Typical Installation—Door Entry/Access Control**



**Figure 1-3. Typical Installation—Mass Notification**



**Figure 1-4. Typical Installation—Emergency Phone**



 <p>GENERAL ALERT</p>	<p><b>Warning</b> <i>Electrical Hazard:</i> The VoIP Intercom enclosure is not rated for any AC voltages.</p>
 <p>GENERAL ALERT</p>	<p><b>Warning</b> <i>Electrical Hazard:</i> This product should be installed by a licensed electrician according to all local electrical and building codes.</p>
 <p>GENERAL ALERT</p>	<p><b>Warning</b> <i>Electrical Hazard:</i> To prevent injury, this apparatus must be securely attached to the floor/wall in accordance with the installation instructions.</p>

## 1.3 Product Features



- SIP
- Dual speeds of 10 Mbps and 100 Mbps
- 802.3af compliant
- 2 gang outlet box size
- Adaptive full duplex voice operation
- Network/Web management
- Network adjustable speaker volume adjustment
- Network configurable door or intrusion sensor settings
- Network configurable relay activation settings
- Dial Out Extension supports the addition of comma delimited pauses before sending additional DTMF tones
- Network configurable microphone input sensitivity adjustment
- Network downloadable product firmware
- Doubles as a paging speaker
- Call button
- Call activity indicator (light)
- Tamper proof design
- One dry contact relay for auxiliary control
- Autoprovisioning
- Configurable audio files
- Three year warranty

---

## 1.4 Supported Protocols

The Intercom supports:

- SIP
- HTTP Web-based configuration  
Provides an intuitive user interface for easy system configuration and verification of Intercom operations.
- DHCP Client  
Dynamically assigns IP addresses in addition to the option to use static addressing.
- TFTP Client  
Facilitates Web-based firmware upgrades of the latest Intercom capabilities.
- RTP
- RTP/AVP - Audio Video Profile
- Audio Encodings  
PCMU (G.711 mu-law)  
PCMA (G.711 A-law)  
Packet Time 20 ms

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## 1.5 Supported SIP Servers

Go to the following link to find the VoIP Intercom product page which will have information on how to configure the VoIP Intercom for various supported SIP servers:

<http://www.cyberdata.net/support/voip/index.html>

---

## 1.6 Product Specifications

Category	Specification
Speaker Output	1 Watt Peak Power
Network Rate	10/100 Mbps
Power Requirement	802.3af compliant or 5V at 1000 mA
Protocol	SIP
Part Number	010935D
Dimensions	5" x 5" x 2.5"
Weight	1.6 lbs./shipping weight of 2.2 lbs.
Auxiliary Relay	(0.7 kg/shipping weight of 1.0kg) 2 A at 30 VDC

## 1.7 Dimensions

Figure 1-5. Dimensions—Size of Unit With Case

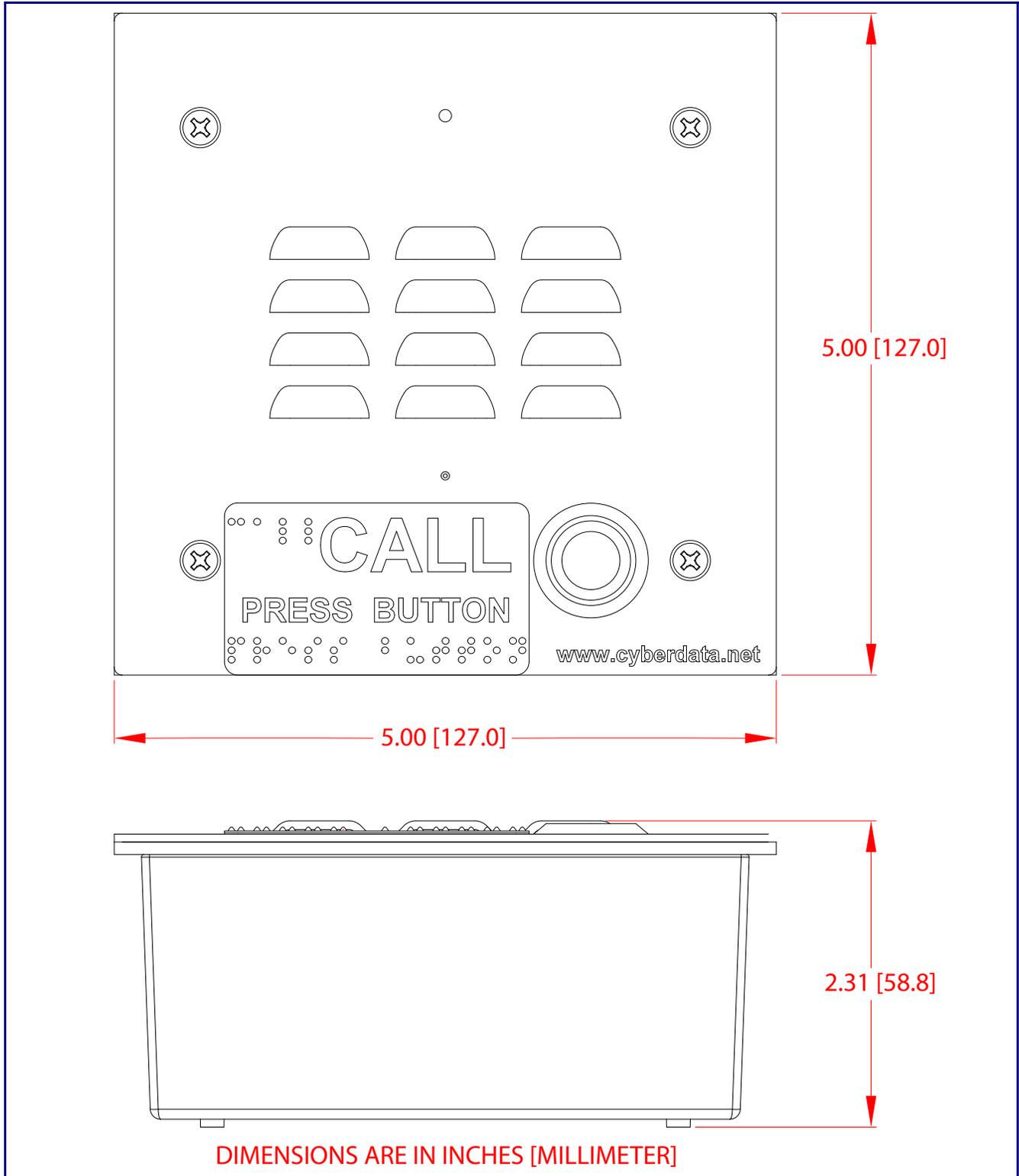
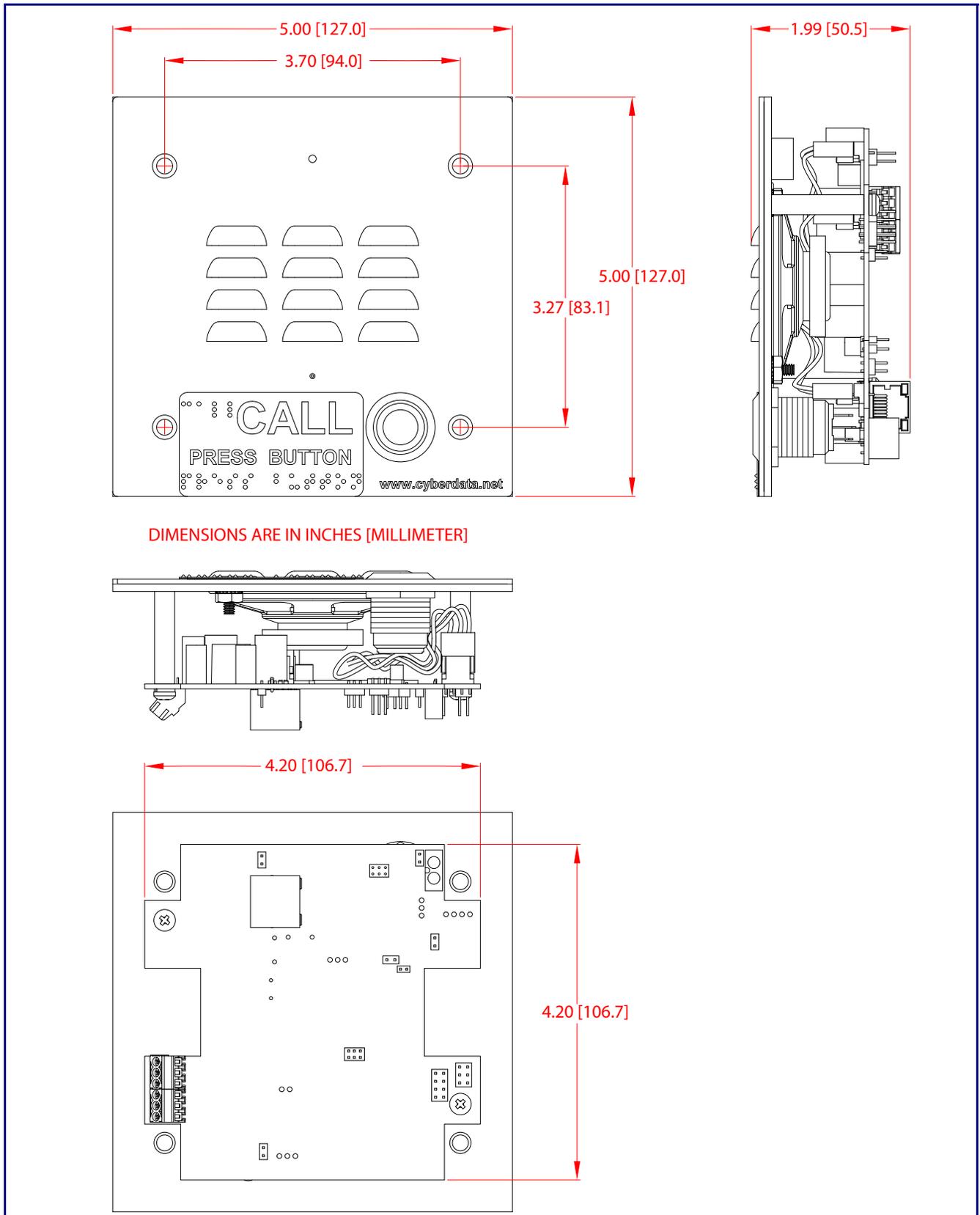


Figure 1-6. Dimensions—Size of Unit Without Gang Box



# 2 Installing the VoIP Intercom

## 2.1 Parts List

Table 2-1 illustrates the SiP VoIP and PoE Speaker parts.

**Table 2-1. Parts List**

Quantity	Part Name	Illustration
1	Intercom Assembly	
1	Installation Quick Reference Guide	
1	Intercom Mounting Accessory Kit	

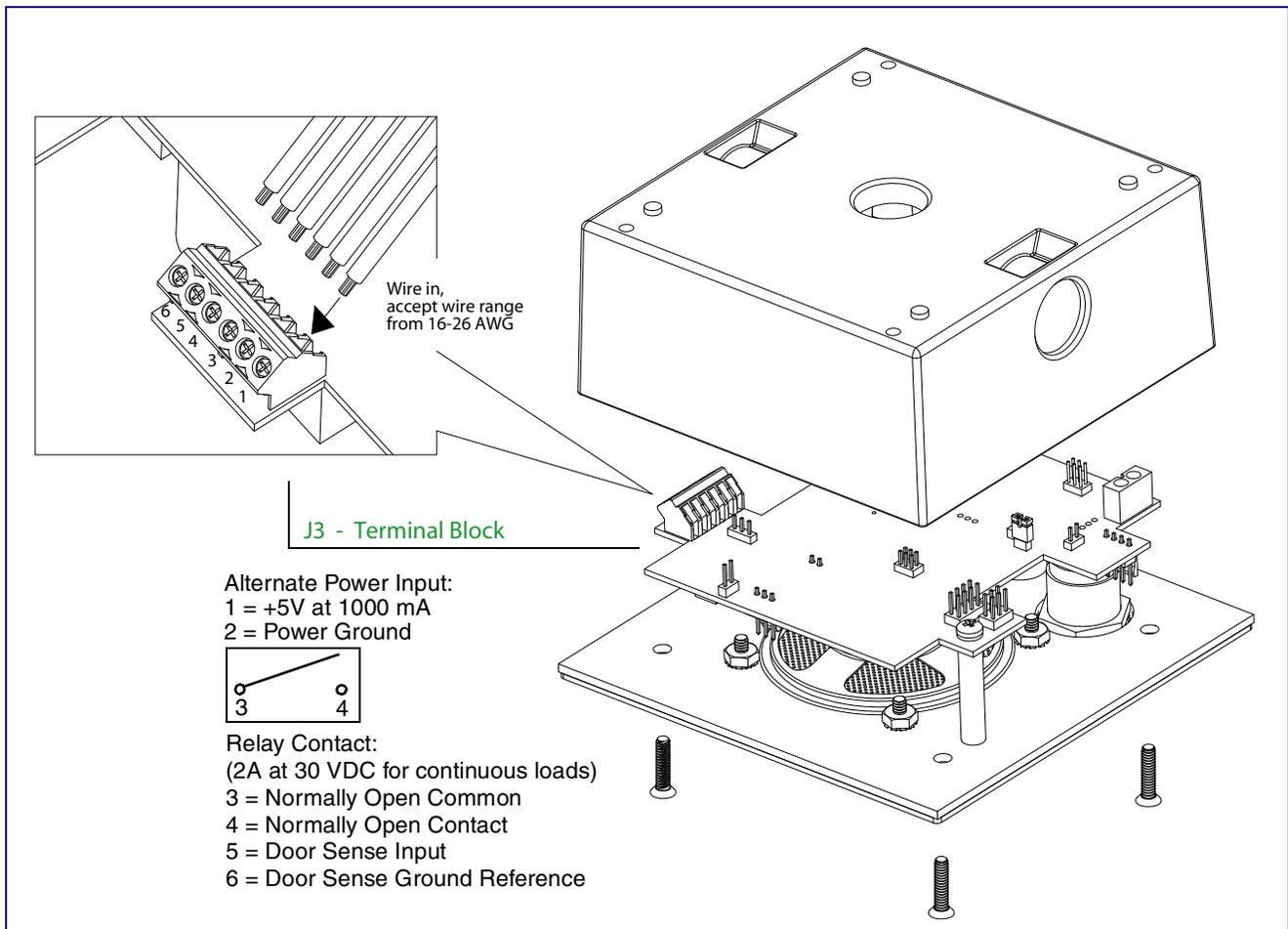
## 2.2 Intercom Setup

### 2.2.1 VoIP Intercom Connections

Figure 2-7 shows the pin connections on the J7 (terminal block). This terminal block can accept a wire range from 16 AWG to 26 AWG.

**Note** As an alternative to using PoE power, you can supply 5 VDC at 1000 mA into the terminal block.

**Figure 2-7. VoIP Intercom Connections**



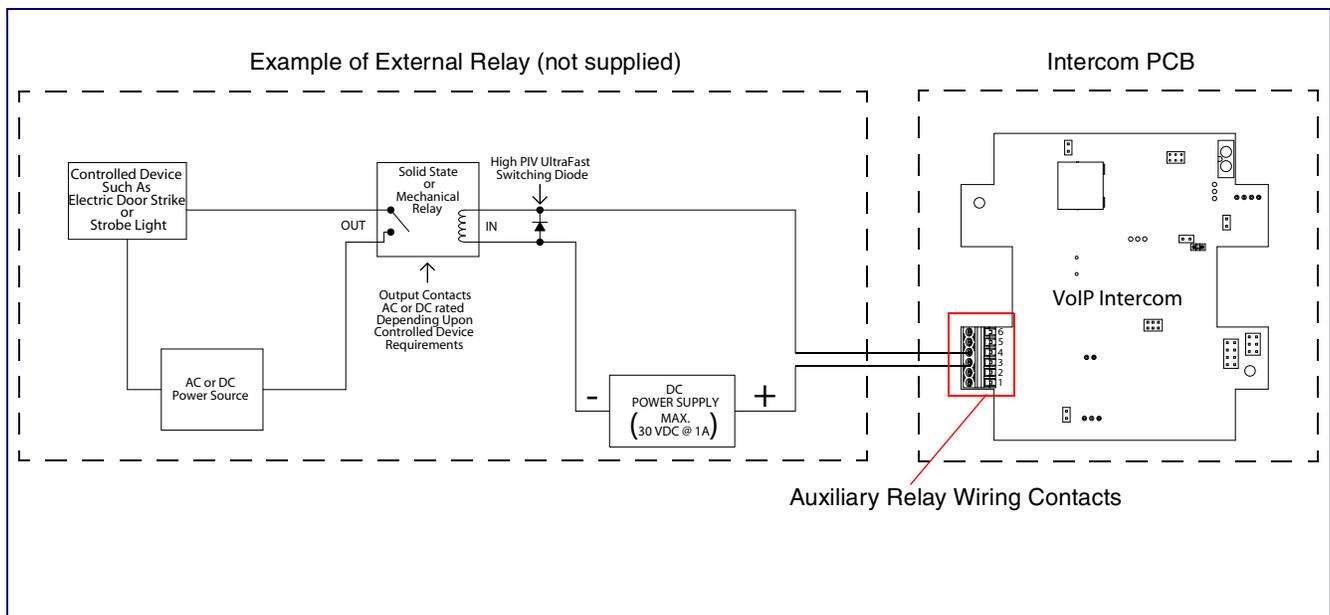
## 2.2.2 Connecting a Device to the Auxiliary Relay

The VoIP Intercom incorporates an on-board relay which enables users to control an external relay for activating an auxiliary device such as an electric door strike (see [Figure 2-7](#)). The Intercom relay contacts are limited to 1 amp at 30VDC. The Intercom relay activation time is selectable through the web interface and is controlled by DTMF tones generated from the phone being called. The DTMF tones are selectable from the web interface as well.

 GENERAL ALERT	<p><b>Warning</b>  <i>Electrical Hazard:</i> The VoIP Intercom enclosure is not rated for any AC voltages.</p>
 GENERAL ALERT	<p><b>Warning</b>  <i>Electrical Hazard:</i> This product should be installed by a licensed electrician according to all local electrical and building codes.</p>
 GENERAL ALERT	<p><b>Warning</b>  <i>Electrical Hazard:</i> To prevent injury, this apparatus must be securely attached to the floor/wall in accordance with the installation instructions.</p>

**Note** The three digit code for the auxiliary relay must be sent in conformance with RFC2833 DTMF generation.

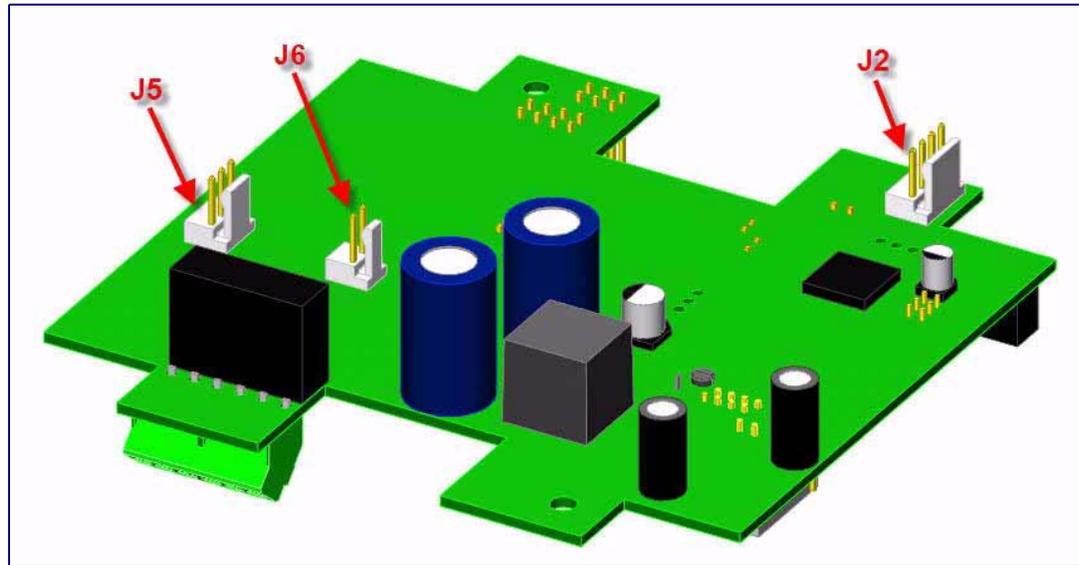
**Figure 2-8. Auxiliary Relay Wiring Diagram**



## 2.2.3 Identifying the VoIP Intercom Connectors

See the following Figures and Tables to identify the connectors and functions.

**Figure 2-9. J2, J5, and J6 Connector Locations**



**Table 2-2. Connector Functions**

Connector	Function
J2	Call Button - LED Interface
J5	Microphone Interface
J6	Speaker Interface

Figure 2-10. Connector Locations

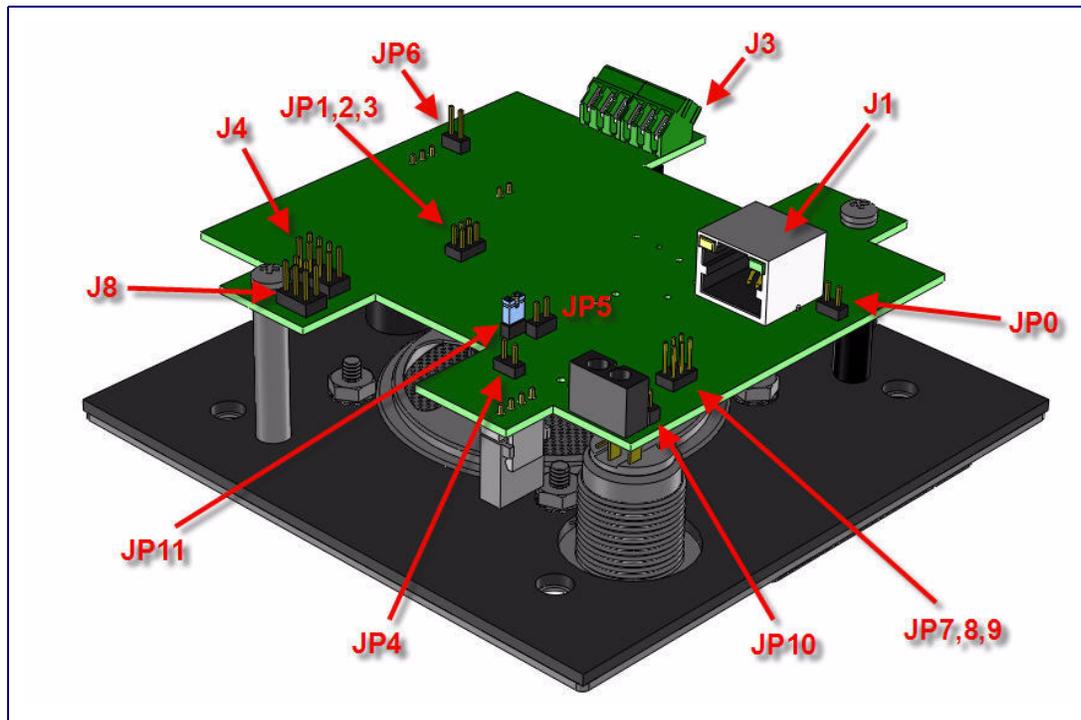


Table 2-3. Connector Functions

Connector	Function
J1	PoE Network Connection (RJ-45 ethernet)
J3	Terminal Block (see <a href="#">Figure 2-7</a> )
J4	J-Tag (Factory only)
J8	Console (Factory only)
JP2	Boot Mode (Factory only)
JP4	Reset (Factory only)
JP5	Watchdog Timer (Factory only)
JP6	Audio Enable (Factory only)
JP7	Network Mode (not installed) (Factory only)
JP8	Network Mode (not installed) (Factory only)
JP9	Network Mode (not installed) (Factory only)
JP11	RTFM (see <a href="#">Section 2.2.6, "RTFM Switch Jumper"</a> )

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## 2.2.4 Call Button and Indicator Light

### 2.2.4.1 Initial Power

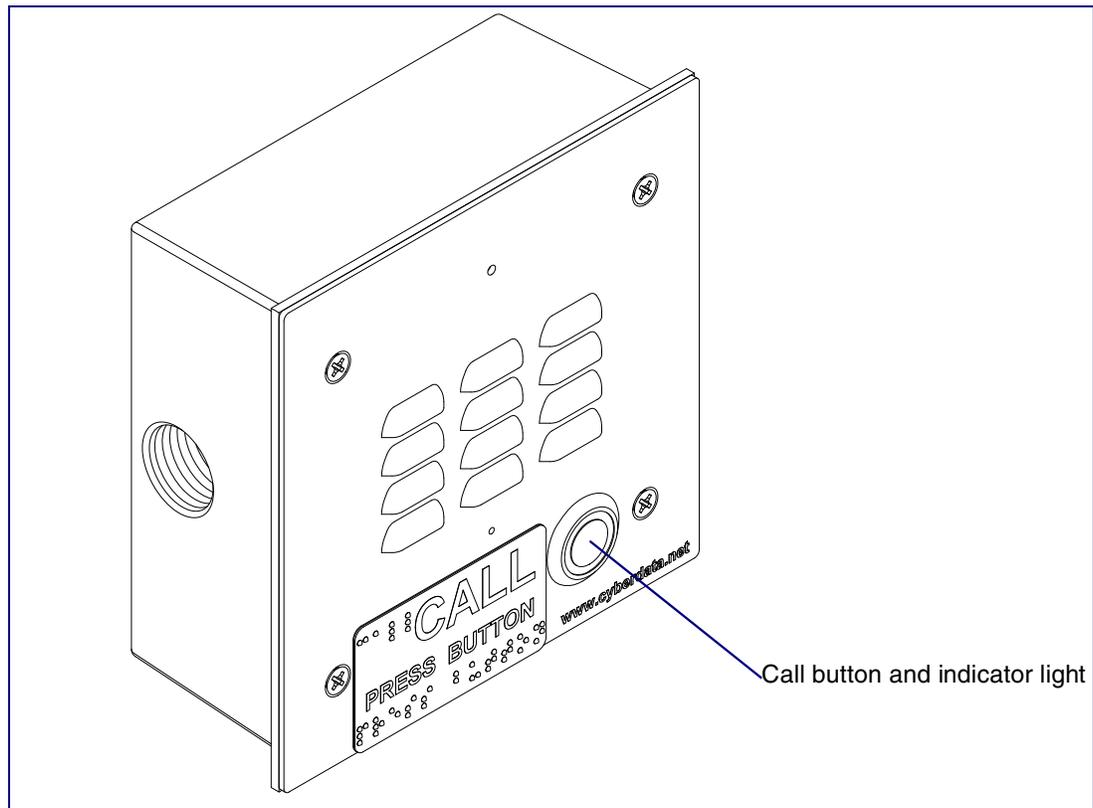
Upon initial power or reset, you will see the following:

- The light is on.
- The light will blink twice to indicate that the Intercom has acquired its network settings and is operational.
- The first blink indicates that the Intercom has acquired its network settings.
- The second blink indicates that the Intercom is operational.

### 2.2.4.2 Calling

- You may initiate a call by pressing the **Call** button.
- An active call is indicated by the light blinking at one second intervals.
- The Intercom will automatically answer an incoming call.
- You can press the **Call** button to terminate an active call whether the call was an incoming call or a call that was initiated by you.

**Figure 2-11. Call Button and Indicator Light**



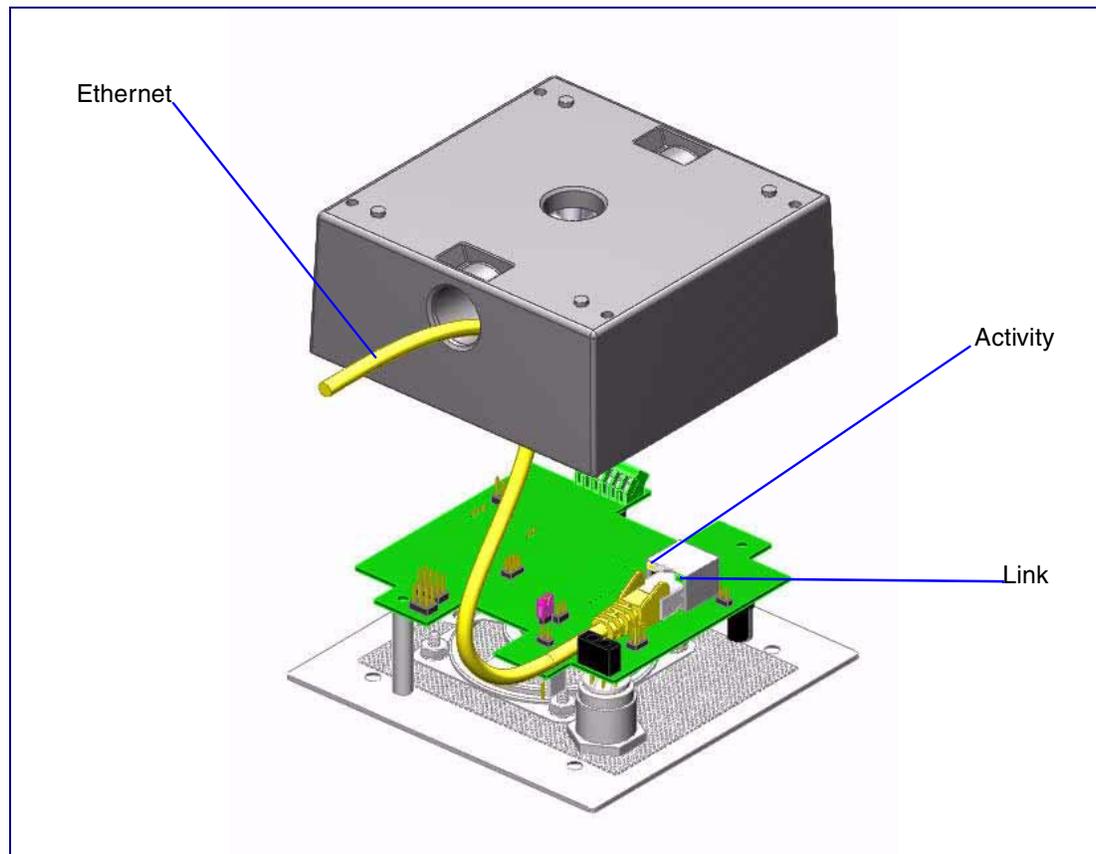
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## 2.2.5 Network Connectivity, and Data Rate

When you plug in the Ethernet cable or power supply:

- The square, green **Link** light above the Ethernet port indicates that the network connection has been established (see [Figure 2-12](#) and [Figure 2-13](#)). The Link light changes color to confirm the auto-negotiated baud rate:
  - This light is yellow at 10 Mbps.
  - It is orange at 100 Mbps.

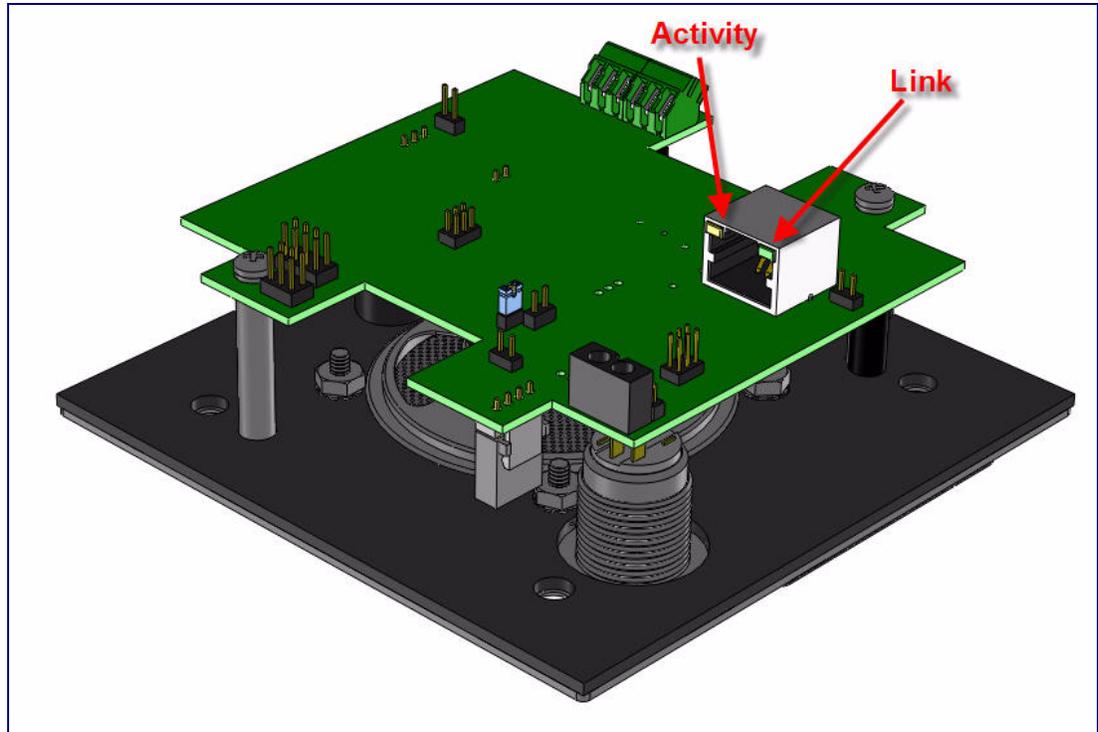
**Figure 2-12. Network Connector Prior to Installation**



### 2.2.5.1 Verify Network Activity

The square, yellow **Activity** light blinks when there is network activity.

**Figure 2-13. Network Connector**



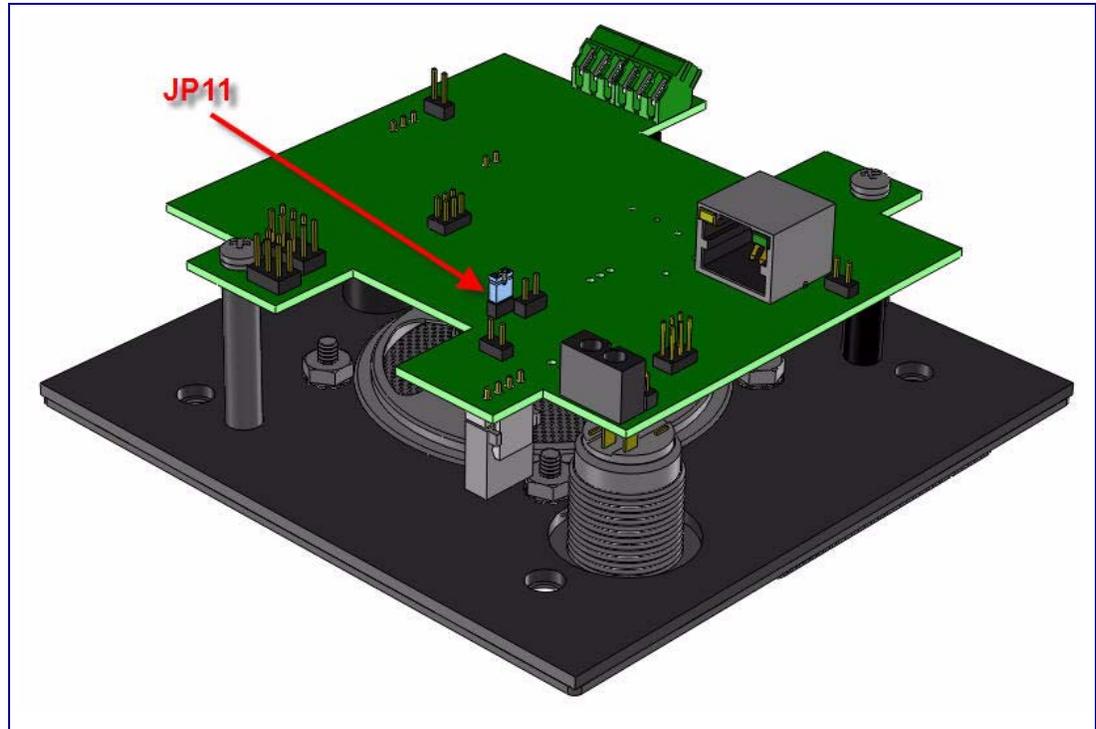
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## 2.2.6 RTFM Switch Jumper

When the Intercom is operational and linked to the network, use the Reset Test Function Management (**RTFM**) switch (see [Figure 2-14](#)) on the Intercom board to announce and confirm the Intercom's IP Address, test that the audio is working, and check the volume.

**Note** You must do this test prior to final assembly. Please remember to remove the RTFM switch jumper prior to final assembly.

**Figure 2-14. RTFM Switch Jumper**



### 2.2.6.1 Announcing the IP Address

To announce an Intercom's current IP address:

1. Unplug the Intercom.
2. Install the RTFM jumper on JP11.
3. Plug the network cable into the Intercom to supply power to the Intercom. The LED will illuminate during initialization, blink once, and then turn off.
4. The Intercom will announce the IP address.
5. After the Intercom has rebooted, remove the jumper from JP11.
6. Cycle power by disconnecting the PoE cable from J1 and plugging the PoE cable back into J1.

## 2.2.6.2 Restore the Factory Default Settings

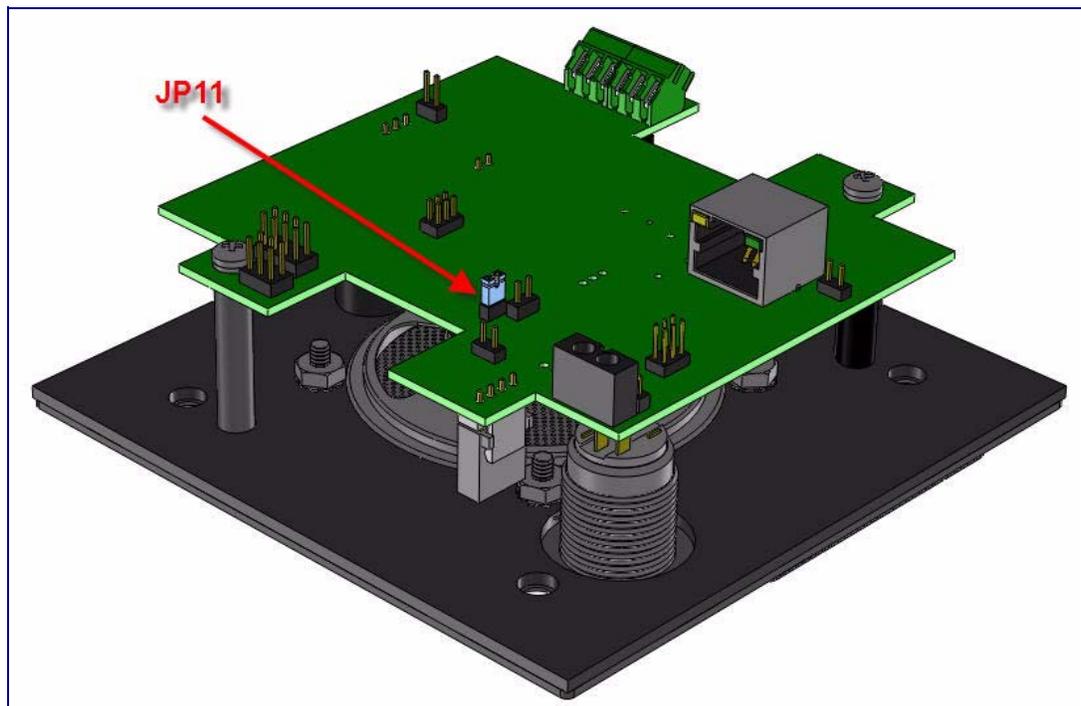
When troubleshooting configuration problems, it is sometimes convenient to restore the device to a known state.

**Note** Each Intercom is delivered with factory set default values.

To restore the factory default settings:

1. Complete steps 1 through 4 in [Section 2.2.6.1, "Announcing the IP Address"](#).
2. Press and hold the **Call** button for **10** seconds.
3. When you hear the announcement, release the **Call** button. The factory default settings are restored, and the Intercom will automatically restart.
4. After the Intercom has rebooted, remove the jumper from JP11.
5. Cycle power by disconnecting the PoE cable from J1 and plugging the PoE cable back into J1.

**Figure 2-15. RTFM Switch Jumper**



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## 2.2.7 Adjust the Volume

You will be only able to adjust the volume through the network configuration page.

---

## 2.3 Configure the Intercom Parameters

To configure the Intercom online, use a standard web browser.

Configure each Intercom and verify its operation *before* you mount it. When you are ready to mount an Intercom, refer to [Appendix A, "Mounting the Intercom"](#) for instructions.

All Intercoms are initially configured with the following default IP settings:

When configuring more than one Intercom, attach the Intercoms to the network and configure one at a time to avoid IP address conflicts.

**Table 2-4. Factory Default Settings**

Parameter	Factory Default Setting
IP Addressing	DHCP
IP Address <sup>a</sup>	10.10.10.10
Web Access Username	admin
Web Access Password	admin
Subnet Mask <sup>a</sup>	255.0.0.0
Default Gateway <sup>a</sup>	10.0.0.1

a. Default if there is not a DHCP server present.

---

## 2.3.1 Log in to the Configuration Home Page

1. Open your browser to the Intercom IP address.

**Note** If the network does not have access to a DHCP server, the device will default to an IP address of 10.10.10.10.

**Note** Make sure that the PC is on the same IP network as the Intercom.

**Note** You may also download CyberData's VoIP Discovery Utility program which allows you to easily find and configure the default web address of the CyberData VoIP products.

CyberData's VoIP Discovery Utility program is available at the following website address:

[http://www.cyberdata.net/support/voip/discovery\\_utility.html](http://www.cyberdata.net/support/voip/discovery_utility.html)

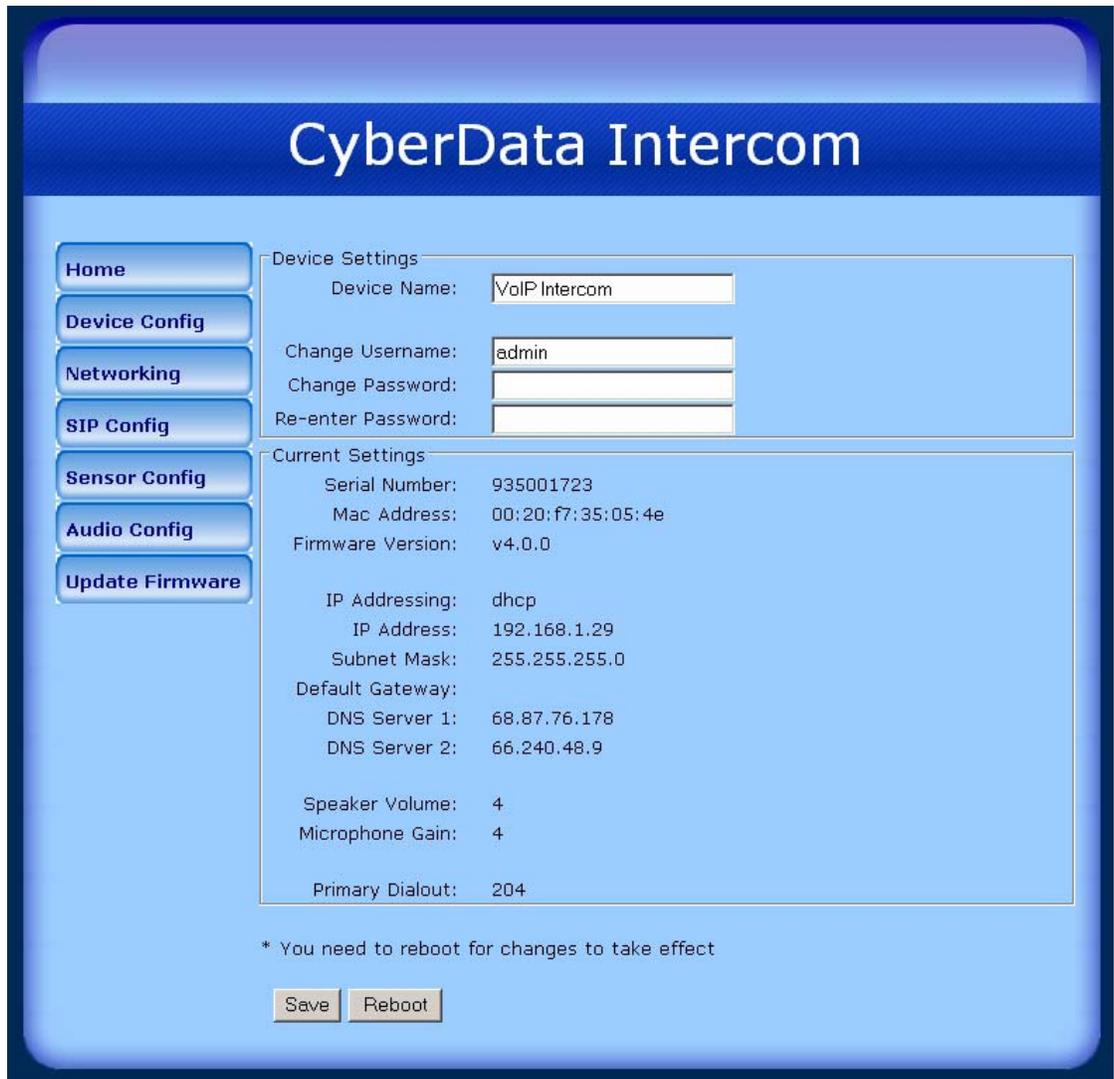
**Note** The Intercom ships in DHCP mode. To get to the **Home** page, use the discovery utility to scan for the device on the network and open your browser from there.

- When prompted, use the following default **Web Access Username** and **Web Access Password** to access the **Home Page** (Figure 2-16):

Web Access Username: **admin**

Web Access Password: **admin**

**Figure 2-16. Home Page**



- On the **Home Page**, review the setup details and navigation buttons described in Table 2-5.

**Table 2-5. Home Page Overview**

Web Page Item	Description
<b>Device Settings</b>	
Device Name	Shows the device name.
Change Username	Type in this field to change the username.
Change Password	Type in this field to change the password.
Re-enter Password	Type the password again in this field to confirm the new password.

Table 2-5. Home Page Overview

Web Page Item	Description
<b>Current Settings</b>	
Serial Number	Shows the device serial number.
Mac Address	Shows the device Mac address.
Firmware Version	Shows the current firmware version.
IP Addressing	Shows the current IP addressing setting ( <b>DHCP</b> or <b>static</b> ).
IP Address	Shows the current IP address.
Subnet Mask	Shows the current subnet mask address.
Default Gateway	Shows the current default gateway address.
DNS Server 1	Shows the current DNS Server 1 address.
DNS Server 2	Shows the current DNS Server 2 address.
Speaker Volume	Shows the current speaker volume level.
Microphone Gain	Shows the current microphone gain level.
Primary Dialout	Shows the current dialout number.
	Link to the <b>Home</b> page.
	Link to the <b>Device Configuration</b> page.
	Link to the <b>Networking</b> page.
	Link to go to the <b>SIP Configuration</b> page.
	Link to the <b>Sensor Configuration</b> page.
	Link to the <b>Audio Configuration</b> page.
	Link to the <b>Update Firmware</b> page.
	Click the <b>Save</b> button to save your configuration settings. <b>Note:</b> You need to reboot for changes to take effect.
	Click on the <b>Reboot</b> button to reboot the system.

## 2.3.2 Configure the Device

1. Click the **Device Configuration** button to open the **Device Configuration** page. See [Figure 2-17](#).

**Figure 2-17. Device Configuration Page**

2. On the **Device Configuration** page, you may enter values for the parameters indicated in [Table 2-6](#).

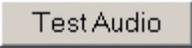
**Table 2-6. Device Configuration Parameters**

Web Page Item	Description
<b>Autoprovisioning</b>	
Enable Autoprovisioning	See <a href="#">Section 2.3.2.1, "Autoprovisioning"</a> .
Get Autoprovisioning from DHCP	See <a href="#">Section 2.3.2.1, "Autoprovisioning"</a> .
Autoprovisioning Server (IP Address)	See <a href="#">Section 2.3.2.1, "Autoprovisioning"</a> .
Autoprovisioning autoupdate (in minutes)	See <a href="#">Section 2.3.2.1, "Autoprovisioning"</a> .

**Table 2-6. Device Configuration Parameters**

Web Page Item	Description
<b>Volume Settings</b>	
Speaker Volume	Type the desired Intercom volume level into this field.
Microphone Gain	Type the desired microphone gain level into this field.
<b>Relay Settings</b>	
Activate Relay with DTMF Code	Check this box to use a DTMF code to activate the relay.
DTMF Activation Code	Type the desired DTMF activation code.
DTMF Activation Duration (in seconds)	Type the desired DTMF activation duration (in seconds). <b>NOTE:</b> A DTMF activation duration of <b>0</b> will toggle the relay indefinitely or until the activation code is sent again
Activate Relay During Ring	Check this box to activate the relay for as long as the phone is ringing. <b>NOTE:</b> When the phone is set to <b>Auto Answer</b> , it will not ring and this option does nothing.
Activate Relay on Button Press	Check this box to activate the relay for a user-selectable amount of time when the button is pressed.
Relay on Button Press Timeout (in seconds)	Type the desired number of seconds for the timeout on the relay after the button is pressed.
<b>Miscellaneous Settings</b>	
Auto-Answer Incoming Calls	Check this box to have the Intercom automatically answer incoming calls.  When <b>Auto Answer</b> is Off, the Intercom will play a ringtone through the speaker until someone presses the button.
Mute Microphone	When selected, the Intercom microphone is muted.
Button Lit When Idle	Check this box to have the Call Button light on when the Intercom is idle.
Play Ringback Tone	Check this box to enable the Intercom to play a ringtone while the remote device is ringing.
	Link to the <b>Home</b> page.
	Link to the <b>Device Configuration</b> page.
	Link to the <b>Networking</b> page.
	Link to go to the <b>SIP Configuration</b> page.
	Link to the <b>Sensor Configuration</b> page.
	Link to the <b>Audio Configuration</b> page.

Table 2-6. Device Configuration Parameters

Web Page Item	Description
	Link to the <b>Update Firmware</b> page.
	Click the <b>Save</b> button to save your configuration settings. <b>Note:</b> You need to reboot for changes to take effect.
	Click on the <b>Test Audio</b> button to do an audio test. Generates a voice message for testing the Intercom audio quality and volume.
	Click on the <b>Test Relay</b> button to do a relay test.
	Click on the <b>Reboot</b> button to reboot the system.

3. After changing the parameters, click the **Save** button.

### 2.3.2.1 Autoprovisioning

Enable Autoprovisioning Option	With autoprovisioning enabled, the board will get it's configuration from a remote TFTP server on startup or periodically on a scheduled delay. These autoprovisioned values will take precedence over values stored in the boards own non-volatile memory. The board gets it's autoprovisioning information from an XML-formatted file hosted from a TFTP server. CyberData will provide a template for this XML file and the user can modify it for their own use.
Get Autoprovisioning from DHCP	On the webpage you can specify an address where the board will look for autoprovisioning information or have it use an address supplied by your DHCPD server through option 66 (tftp-server-name) or 150.
Autoprovisioning Autoupdate	If autoprovisioning is turned on and the autoprovisioning autoupdate value is something other than 0 minutes, a service is started on startup that will wait the configured number of minutes and then try to re-download it's autoprovisioning file. It will compare it's previously autoprovisioned file with this new file and if there are differences, it will reboot the board.

Autoprovisioning Server (IP Address) On boot the device will go to it's autoprovisioning server address and try to read a configuration file. The board will look for a configuration file named <mac address>.config. For example:

```
0020f7350185.config
```

The mac address has to be all lower case.

It's possible to only configure a subset of all configuration options using autoprovisioning. Options not autoprovisioned will default to the values stored in the on board memory.

To set up a Linux DHCPD server to serve autoprovisioning information (in this case using both option 66 and 150), here's an example dhcpd.conf:

```
# dhcpd.conf
#
# Configuration file for ISC dhcpd (see 'man dhcpd.conf')
#
ddns-update-style ad-hoc;

option option-150 code 150 = ip-address;

subnet 10.0.0.0 netmask 255.0.0.0 {
    max-lease-time 120;
    default-lease-time 120;

    option routers                10.0.0.1;
    option subnet-mask            255.0.0.0;

    option domain-name            "voiplab";
    option domain-name-servers    10.0.0.1;

    option time-offset             -8;      # Pacific Standard Time

    option tftp-server-name       "10.0.0.254";

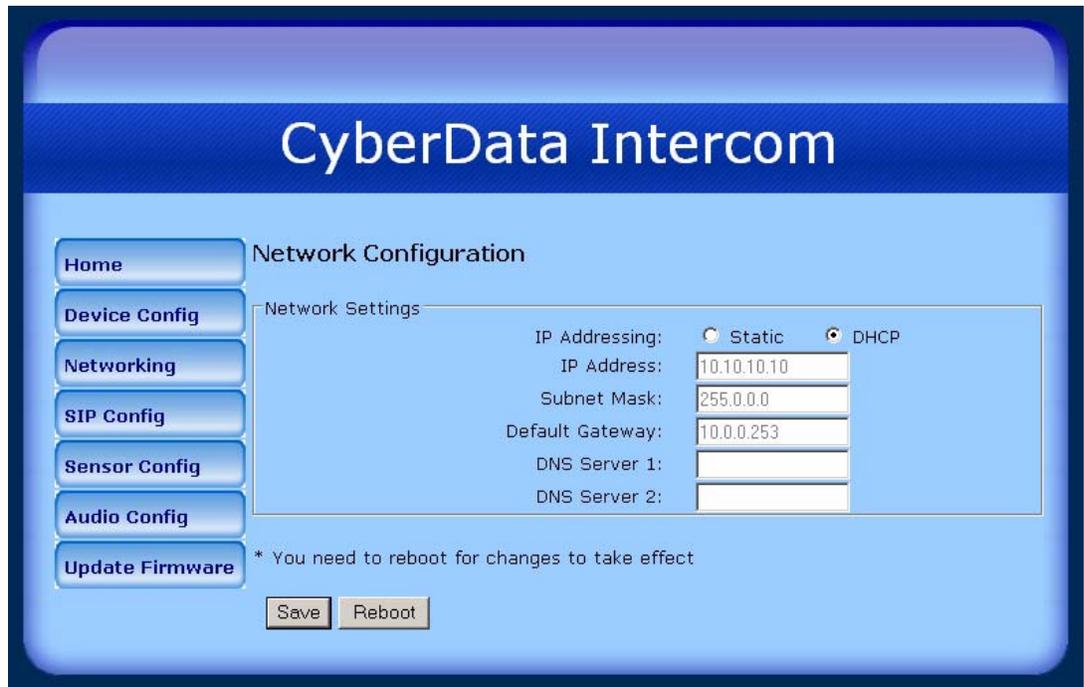
    option option-150              10.0.0.254;

    range 10.10.0.1 10.10.2.1;}
```

## 2.3.3 Configure the Network Parameters

1. Click the **Networking** button to open the **Network Configuration** page (Figure 2-18).

Figure 2-18. Network Configuration Page

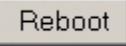


2. On the **Network Configuration** page, enter values for the parameters indicated in Table 2-7.

Table 2-7. Network Configuration Parameters

Web Page Item	Description
IP Addressing	Select either <b>DHCP IP Addressing</b> or <b>Static IP Addressing</b> by marking the appropriate radio button. If you select <b>Static</b> , configure the remaining parameters indicated in Table 2-7. If you select <b>DHCP</b> , go to <a href="#">Step 3</a> .
<b>Network Settings</b>	
IP Address	Enter the Static IP address.
Subnet Mask	Enter the Subnet Mask address.
Default Gateway	Enter the Default Gateway address.
DNS Server 1	Enter the DNS Server 1 address.
DNS Server 2	Enter the DNS Server 2 address.
	Link to the <b>Home</b> page.
	Link to the <b>Device Configuration</b> page.

**Table 2-7. Network Configuration Parameters**

Web Page Item	Description
	Link to the <b>Networking</b> page.
	Link to go to the <b>SIP Configuration</b> page.
	Link to the <b>Sensor Configuration</b> page.
	Link to the <b>Audio Configuration</b> page.
	Link to the <b>Update Firmware</b> page.
	Click the <b>Save</b> button to save your configuration settings. <b>Note:</b> You need to reboot for changes to take effect.
	Click on the <b>Reboot</b> button to reboot the system.

3. After changing the parameters, click **Save Settings**. This updates the changed parameters and reboots the Intercom if appropriate.
4. Connect the Intercom to the target network.
5. From a system on the same network as the Intercom, open a browser with the new IP address of the Intercom.

## 2.3.4 Configure the SIP Parameters

1. Click **SIP Config** to open the **SIP Configuration** page (Figure 2-19).

**Note** For specific server configurations, go to the following website address:

<http://www.cyberdata.net/support/server/index.html>

**Figure 2-19. SIP Configuration Page**

2. On the **SIP Configuration** page, enter values for the parameters indicated in Table 2-8.

**Table 2-8. SIP Configuration Parameters**

Web Page Item	Description
<b>SIP Settings</b>	
SIP Server*	Enter the SIP server represented as either a numeric IP address in dotted decimal notation or the fully qualified host name (FQHN) up to 64 characters.
Outbound Proxy	Enter the Outbound Proxy as either a numeric IP address in dotted decimal notation or the fully qualified host name (FQHN) up to 64 characters.

**Table 2-8. SIP Configuration Parameters**

Web Page Item	Description
Remote SIP Port*	Enter the <b>Remote SIP Port</b> number (default 5060).
Local SIP Port*	Enter the <b>Local SIP Port</b> number (default 5060).
SIP User ID*	Enter the <b>SIP User ID</b> (up to 25 alphanumeric characters).
Authenticate ID*	Enter the <b>Authenticate ID</b> (up to 25 alphanumeric characters).
Authenticate Password*	Enter the <b>Authenticate Password</b> (up to 25 alphanumeric characters).
Register with a SIP Server*	Check this box to enable SIP Registration.  For information about the Point-to-Point Configuration, see <a href="#">Section 2.3.4.1, "Point-to-Point Configuration"</a> .
Re-registration Interval (in seconds)*	Enter the SIP Registration lease time in seconds (default 60 seconds).
Unregister on Reboot	Check this box to disable the SIP registration after a reboot.
Dial Out Settings	
Dial Out Extension	Enter the desired dial-out extension number.  <b>Note:</b> The Dial Out Extension also supports the addition of comma delimited pauses before sending additional DTMF tones (using rfc2833). The first comma will pause three seconds after a call is first established with a remote device. Subsequent commas will pause for two seconds. A pause of one second will be sent after each numerical digit.  Examples of Dial-Out Extension strings:  <b>302:</b> Dial out extension 302 and establish a call.  <b>302,2:</b> Dial out extension 302 and establish a call. Wait three seconds and then send the DTMF tone '2'.  <b>302,25,,4,,1:</b> Dial out extension <b>302</b> and establish a call. Wait 3 seconds and then send the DTMF tone '2'. Send out DTMF tone <b>5</b> . Wait six seconds. Send out DTMF tone <b>4</b> . Wait four seconds. Send out DTMF tone <b>1</b> .  <b>Note:</b> The maximum number of total characters in the dial-out field is 25.
Extension ID	Type the desired ID name for the dial out extension.
	Link to the <b>Home</b> page.
	Link to the <b>Device Configuration</b> page.
	Link to the <b>Networking</b> page.
	Link to go to the <b>SIP Configuration</b> page.

**Table 2-8. SIP Configuration Parameters**

Web Page Item	Description
	Link to the <b>Sensor Configuration</b> page.
	Link to the <b>Audio Configuration</b> page.
	Link to the <b>Update Firmware</b> page.
	Click the <b>Save</b> button to save your configuration settings. <b>Note:</b> You need to reboot for changes to take effect.
	Click on the <b>Reboot</b> button to reboot the system.

3. After changing the parameters, click **Save Settings**.

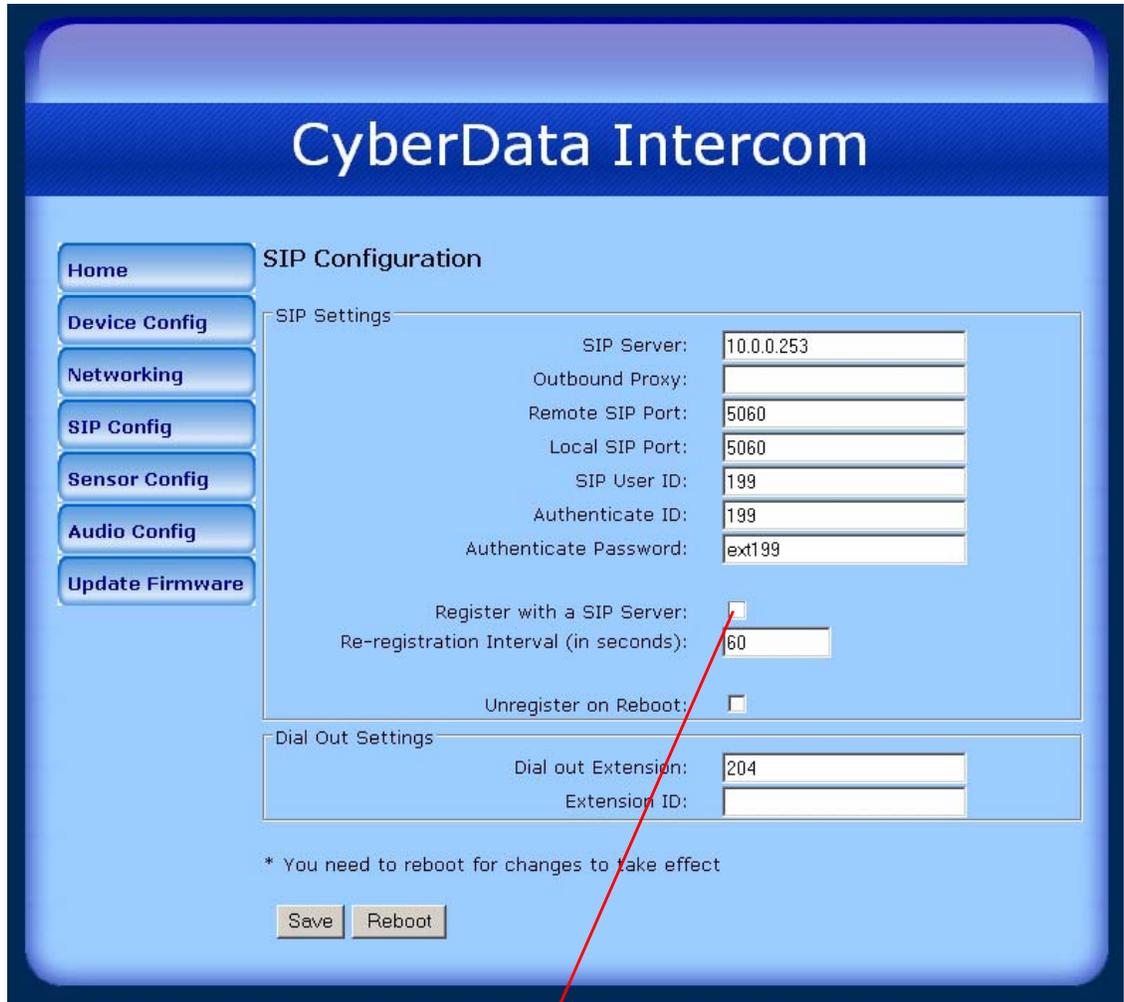
### 2.3.4.1 Point-to-Point Configuration

When the board is set to not register with a SIP server (see [Figure 2-20](#)), it's possible to set the intercom to dial out to a single endpoint.

In this case, the dial-out extension should be the IP address of the remote device. The Intercom can also receive Point-to-Point calls. The delayed DTMF functionality is available in the Point-to-Point Mode.

**Note** Receiving point-to-point SiP calls may not work with all phones.

**Figure 2-20. SIP Configuration Page Set to Point-to-Point Mode**



Intercom is set to NOT register with a SiP server

### 2.3.4.2 Delayed DTMF

On the **SIP Configuration** page the dial out extension now supports the addition of comma delimited pauses and sending additional DTMF tones (using rfc2833). The first comma will pause three seconds after a call is first established with a remote device. Subsequent commas will pause for 2 seconds. A pause of one second will be sent after each numerical digit.

**Table 2-9. Examples of Dial-Out Extension Strings**

Extension String	Resulting Action
302	Dial out extension 302 and establish a call
302,2	Dial out extension 302 and establish a call, wait 3 seconds then send the DTMF tone '2'
302,25,,,4,,1	Dial out extension 302 and establish a call, wait 3 seconds then send the DTMF tone '2', send out DTMF tone 5, wait 6 seconds, send out DTMF tone 4, wait 4 seconds, send out DTMF tone 1

**Note** The maximum number of total characters in the dial-out field is 25.

---

## 2.3.5 Configure the Sensor Configuration Parameters

The door sensor (pins 5 and 6) on the header can be used to monitor a door's open or closed state. There is an option on the **Sensor Configuration** page to trigger on an open or short condition on these pins. The door sensor alarm will be activated when the **Door Open Timeout** parameter has been met.

The intrusion sensor is an optical sensor installed on the Intercom board and will be activated when the Intercom is removed from the case.

For each sensor there are four actions the Intercom can take:

- Flash the LED until the sensor is deactivated (roughly 10 times/second)
- Activate the relay until the sensor is deactivated
- Loop an audio file out of the Intercom speaker until the sensor is deactivated
- Call a preset extension and play a pre-recorded audio file (once)

**Note** Calling a preset extension can be set up as a point-to-point call, but currently can't send delayed DTMF tones.

1. Click **Sensor Config** to open the **Sensor Configuration** page (Figure 2-21).

**Figure 2-21. Sensor Configuration Page**

**CyberData Intercom**

**Sensor Configuration**

Home  
Device Config  
Networking  
SIP Config  
Sensor Config  
Audio Config  
Update Firmware

**Door Sensor Settings**

Door Sensor Normally Closed:  Yes  No  
Door Open Timeout (in seconds):

Flash Button LED:   
Activate Relay:   
Play Audio Locally:   
Play Audio Remotely:   
Dial Out Extension:

Test Door Sensor

**Intrusion Sensor Settings**

Flash Button LED:   
Activate Relay:   
Play Audio Locally:   
Play Audio Remotely:   
Dial Out Extension:

Test Intrusion Sensor

\* You need to reboot for changes to take effect

Save Reboot

2. On the **Sensor Configuration** page, enter values for the parameters indicated in [Table 2-10](#).

**Table 2-10. Sensor Configuration Parameters**

Web Page Item	Description
<b>Door Sensor Settings</b>	
Door Sensor Normally Closed	Select the inactive state of the door sensors.
Door Open Timeout (in seconds)	Select the number of seconds that you want to pass before the door sensor is activated.
Flash Button LED*	Check this box to flash the LED until the sensor is deactivated (roughly 10 times/second).
Activate Relay	Check this box to activate the relay until the sensor is deactivated.
Play Audio Locally	Check this box to loop an audio file out of the Intercom speaker until the sensor is deactivated.
Play Audio Remotely	Check this box to call a preset extension and play a pre-recorded audio file (once).
Dial Out Extension	Enter the button dial-out extension number.
Test Door Sensor	Use this button to test the door sensor.
<b>Intrusion Sensor Settings</b>	
Flash Button LED*	Check this box to flash the LED until the sensor is deactivated (roughly 10 times/second).
Activate Relay	Check this box to activate the relay until the sensor is deactivated.
Play Audio Locally	Check this box to loop an audio file out of the Intercom speaker until the sensor is deactivated.
Play Audio Remotely	Check this box to call a preset extension and play a pre-recorded audio file (once).
Dial Out Extension	Enter the button dial-out extension number.
Test Intrusion Sensor	Use this button to test the Intrusion sensor.
	Link to the <b>Home</b> page.
	Link to the <b>Device Configuration</b> page.
	Link to the <b>Networking</b> page.
	Link to go to the <b>SIP Configuration</b> page.
	Link to the <b>Sensor Configuration</b> page.
	Link to the <b>Audio Configuration</b> page.

**Table 2-10. Sensor Configuration Parameters**

Web Page Item	Description
	Link to the <b>Update Firmware</b> page.
	Click the <b>Save</b> button to save your configuration settings. <b>Note:</b> You need to reboot for changes to take effect.
	Click on the <b>Reboot</b> button to reboot the system.

3. After changing the parameters, click **Save Settings**.

## 2.3.6 Configure the Audio Configuration Parameters

The **Audio Configuration** page is used to add custom audio to the board. User uploaded audio will take precedence over the audio files shipped with the Intercom.

1. Click **Audio Config** to open the **Audio Configuration** page (Figure 2-21).

**Figure 2-22. Audio Configuration Page**

Audio Files		
0:	default	<input type="radio"/>
1:	default	<input type="radio"/>
2:	default	<input type="radio"/>
3:	default	<input type="radio"/>
4:	default	<input type="radio"/>
5:	default	<input type="radio"/>
6:	default	<input type="radio"/>
7:	default	<input type="radio"/>
8:	default	<input type="radio"/>
9:	default	<input type="radio"/>
Dot:	default	<input type="radio"/>
Audiotest:	default	<input type="radio"/>
Pagetone:	default	<input type="radio"/>
Your IP Address is:	default	<input type="radio"/>
Rebooting:	default	<input type="radio"/>
Restoring Default:	default	<input type="radio"/>
Ringback Tone:	default	<input type="radio"/>
Ring Tone:	default	<input type="radio"/>
Intrusion Sensor Triggered:	default	<input type="radio"/>
Door Sensor Triggered:	default	<input type="radio"/>

Downloading files from a tftp server at 10.0.0.254  
Available Space = 14.93MB

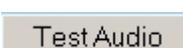
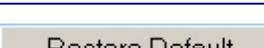
2. On the **Audio Configuration** page, enter values for the parameters indicated in [Table 2-10](#).

**Note** Each entry on the **Audio Configuration** page replaces one of the stock audio files on the board. When the input box displays the word **default**, the Intercom is using the stock audio file. If that file is replaced with a user file, it will display the uploaded filename.

**Table 2-11. Audio Configuration Parameters**

Web Page Item	Description
<b>Audio Files</b>	
Radio button (to the right of each input box)	For each entry, if the user selects the radio button to the right of the input box they have several options:  The <b>Test Audio</b> button will play that audio file.  The <b>Restore Defaults</b> button will delete any user uploaded audio and restore the stock audio file.  The <b>Download</b> button will download a new user audio file to the board. It will delete any pre-existing user uploaded audio files.
0-9	The name of the audio configuration option is the same as the spoken audio that plays on the board.  '0' corresponds to the spoken word "zero." '1' corresponds to the spoken word "one." '2' corresponds to the spoken word "two." '3' corresponds to the spoken word "three." '4' corresponds to the spoken word "four." '5' corresponds to the spoken word "five." '6' corresponds to the spoken word "six." '7' corresponds to the spoken word "seven." '8' corresponds to the spoken word "eight." '9' corresponds to the spoken word "nine."
Dot	Corresponds to the spoken word "dot."
Audiotest	Corresponds to the message "This is the CyberData IP speaker test message..."
Pagetone	Corresponds to a simple tone that is unused by default.
Your IP Address is	Corresponds to the message "Your IP address is..."
Rebooting	Corresponds to the spoken word "Rebooting."
Restoring default	Corresponds to the message "Restoring default."
Ringback Tone	This is the ringback tone that plays when calling a remote extension.
Ring Tone	This is the tone that plays when set to ring when receiving a call.
Intrusion Sensor Triggered	Corresponds to the message "Intrusion sensor triggered."
Door Sensor Triggered	Corresponds to the message "Door ajar."
Downloading files from a tftp server at	Corresponds to the spoken word "dot."

**Table 2-11. Audio Configuration Parameters**

Web Page Item	Description
Available Space =	Indicates how much space is left in the internal non-volatile memory.
	Link to the <b>Home</b> page.
	Link to the <b>Device Configuration</b> page.
	Link to the <b>Networking</b> page.
	Link to go to the <b>SIP Configuration</b> page.
	Link to the <b>Sensor Configuration</b> page.
	Link to the <b>Audio Configuration</b> page.
	Link to the <b>Update Firmware</b> page.
	Click on the <b>Download</b> button to download a file from a TFTP server at the address specified on the <b>Update Firmware</b> page.  <b>Note:</b> Downloading large files can sometimes take a long time. It's not recommended to interrupt the process once it has started.
	Click on the <b>Test Audio</b> button to test the audio.
	Click on the <b>Restore Default</b> button to restore the default settings.

---

## 2.4 Upgrade the Firmware and Reboot the Intercom

**Note** To guard against failed firmware upgrades, speakers shipped from CyberData with firmware version 5.1.2 and later feature a built-in "fail safe" mechanism. Note that field upgrading earlier units with v5.x.x will not allow for this feature.

**Note** The Intercom will store the **TFTP Server IP** and **New Filename** entered on the **Update Firmware** web page. If, during the boot process, the Intercom is unable to boot the firmware, it will attempt to download the stored image from the stored TFTP server.

To upload the Intercom firmware from your PC:

1. Set up a TFTP server.

If you do not already have a TFTP server running on your network, see [Appendix B, "Setting up a TFTP Server"](#).

2. Retrieve the latest Intercom firmware from the VoIP Intercom **Downloads** page at:

<http://www.cyberdata.net/products/voip/digitalanalog/intercom/downloads.html>

3. Unzip the Intercom version file. This file may contain the following:

- Firmware file
- Release notes

4. Copy the firmware files to be upgraded to the appropriate TFTP server directory:

- c:\tftp-root\for Windows
- /tftpboot/for Linux

5. Log in to the Intercom home page as instructed in [Section 2.3.1, "Log in to the Configuration Home Page"](#).

- Click the **Update Firmware** button to open the **Upgrade Firmware** page. See [Figure 2-23](#).

**Figure 2-23. Upgrade Firmware Page**



- Enter the IP address of your TFTP server into the **TFTP Server IP** parameter field.
- Enter the firmware filename of the file to be uploaded into the **New Filename** parameter field. For example, kernel filename **201-image-spk-sip.bin**.
- Click **Upload File**.

**Note** This starts the upload process. Once the Intercom has uploaded the file, the **Uploading Firmware** countdown page appears, indicating that the firmware is being written to flash. The Intercom will automatically reboot when the upload is complete. When the countdown finishes, the **Upgrade Firmware** page will refresh. The uploaded firmware filename should be displayed in the system configuration (indicating successful upload and reboot).

**Note** If you are upgrading an older version of the Intercom firmware to version 3.3.0 or later, several features will be in an unknown or random state. Therefore, in the case of a firmware upgrade to version 3.3.0 or later, CyberData recommends that you go to the **Device Config** page and make sure the following values are set properly.

- Auto Answer
- Activate Relay on Ring
- Activate Relay on Button Press
- Relay on Button Press Timeout
- Button Lit when Idle
- Play Ringback Tone

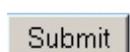
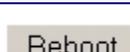
On the **Sensor Configuration** page make sure that all of the settings are set properly.

10. Repeat steps 8 and 9 if you are uploading the **Kernel** and **Application** files.

For example, **Application** filename **201-romdisk-spk-sip.img**.

[Table 2-12](#) shows the web page items on the **Upgrade Firmware** page.

**Table 2-12. Firmware Upgrade Parameters**

Web Page Item	Description
Firmware Version	Shows the current firmware version.
TFTP Server IP	Enter the IP address of your TFTP server into the <b>TFTP Server IP</b> parameter field.
New Filename	Use this field to enter the new file name for the kernel or application firmware file that you are uploading.
	Link to the <b>Home</b> page.
	Link to the <b>Device Configuration</b> page.
	Link to the <b>Networking</b> page.
	Link to go to the <b>SIP Configuration</b> page.
	Link to the <b>Sensor Configuration</b> page.
	Link to the <b>Audio Configuration</b> page.
	Link to the <b>Update Firmware</b> page.
	Click on the <b>Submit</b> button to automatically upload the selected firmware and reboot the system.
	Click on the <b>Reboot</b> button to reboot the system.

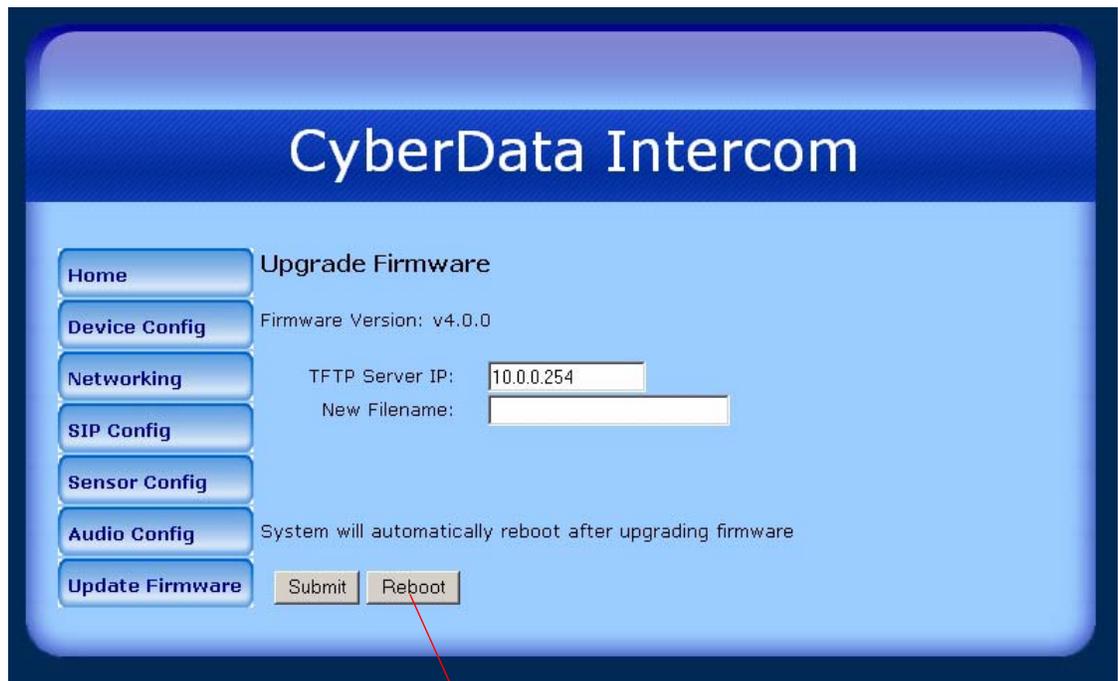
---

## 2.4.1 Reboot the Intercom

To reboot a Intercom, log in to the web page as instructed in [Section 2.3.1, "Log in to the Configuration Home Page"](#).

1. Click **Update Firmware** to open the **Upgrade Firmware** page ([Figure 2-24](#)).

**Figure 2-24. Reboot System Section**



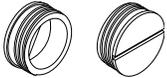
2. Click **Reboot**. A normal restart will occur.

# Appendix A: Mounting the Intercom

## A.1 Mount the Intercom

Before you mount the Intercom, make sure that you have received all the parts for each Intercom. Refer to [Table A-1](#).

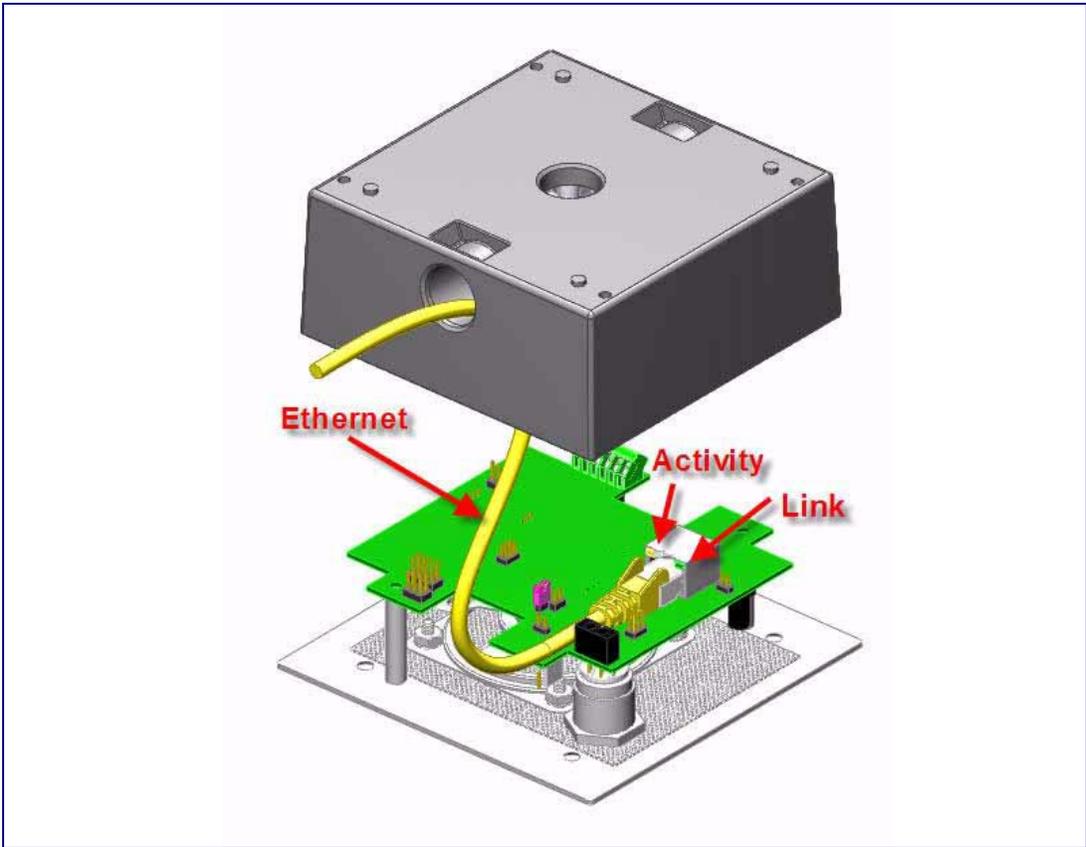
**Table A-1. Drop Ceiling Mounting Components (Part of the Accessory Kit)**

Quantity	Part Name	Illustration
2	Outlet Box Plugs	
2	Flush Mounting Plate	
2	8-32 x 1/4" Flat Head Phillips Machine Screw	
1	10-24 x 5/16" Pan Head Phillips Machine Screw	

To mount the Intercom:

- 1. Plug the Ethernet cable into the Intercom Assembly (see [Figure A-1](#)). [Section 2.2.5, "Network Connectivity, and Data Rate"](#) explains how the **Link** and **Status** LEDs work.

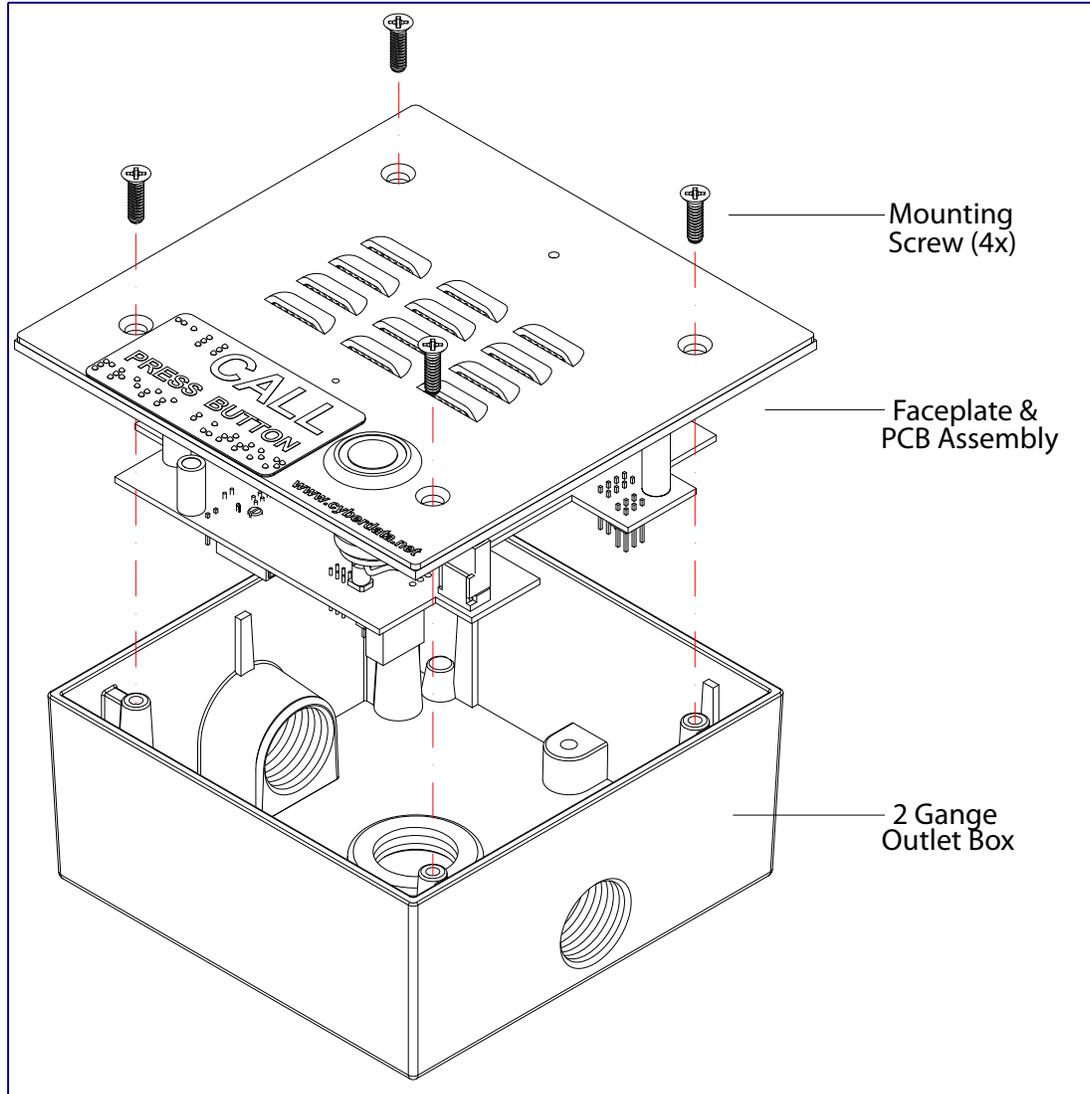
**Figure A-1. Network Connector Prior to Installation**



2. To fasten the Intercom:

- For wall mounting, use the two 8-32 X 1/4" FLAT HEAD PHILLIPS MACHINE SCREW and the one 10-24 X 5/16" PAN HEAD PHILLIPS MACHINE SCREW to secure the Intercom.

Figure A-2. VoIP Intercom Assembly



If the thread on the conduit is longer than 3/8 inch, then a **stop nut** (not supplied) is required. Otherwise, use the **outlet box plug** to plug the exit hole.

**Note** Apply good quality waterproof sealant to all threads.

**Figure A-3. Mounting the VoIP Intercom Assembly**

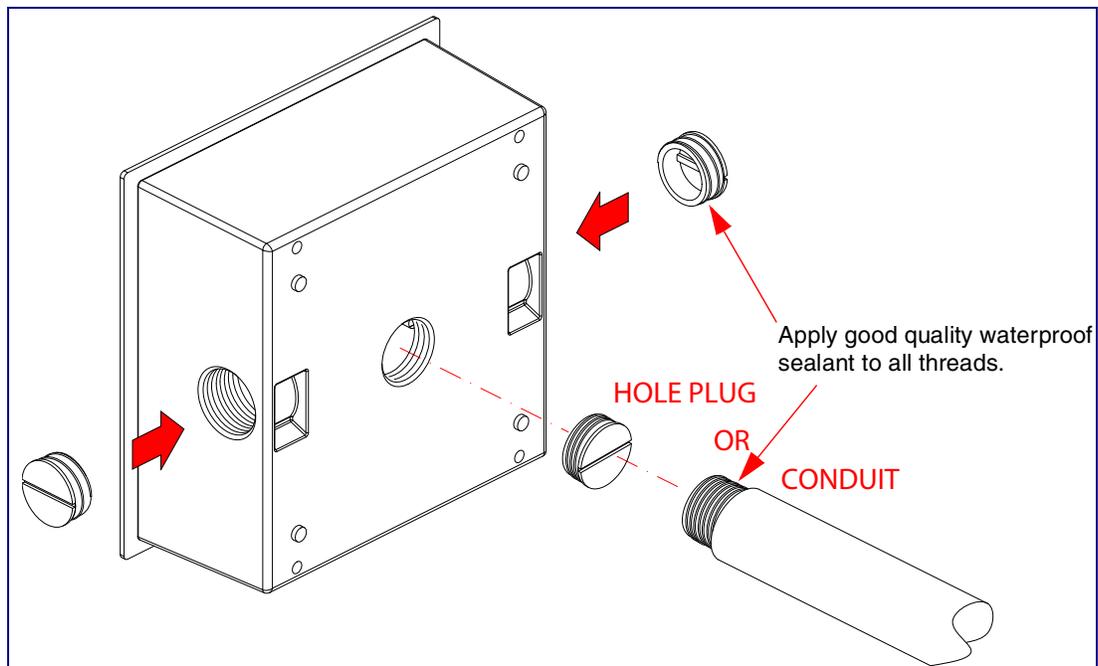


Figure A-4 shows the restrictions of the conduit going into the box.

**Figure A-4. Conduit Restrictions**

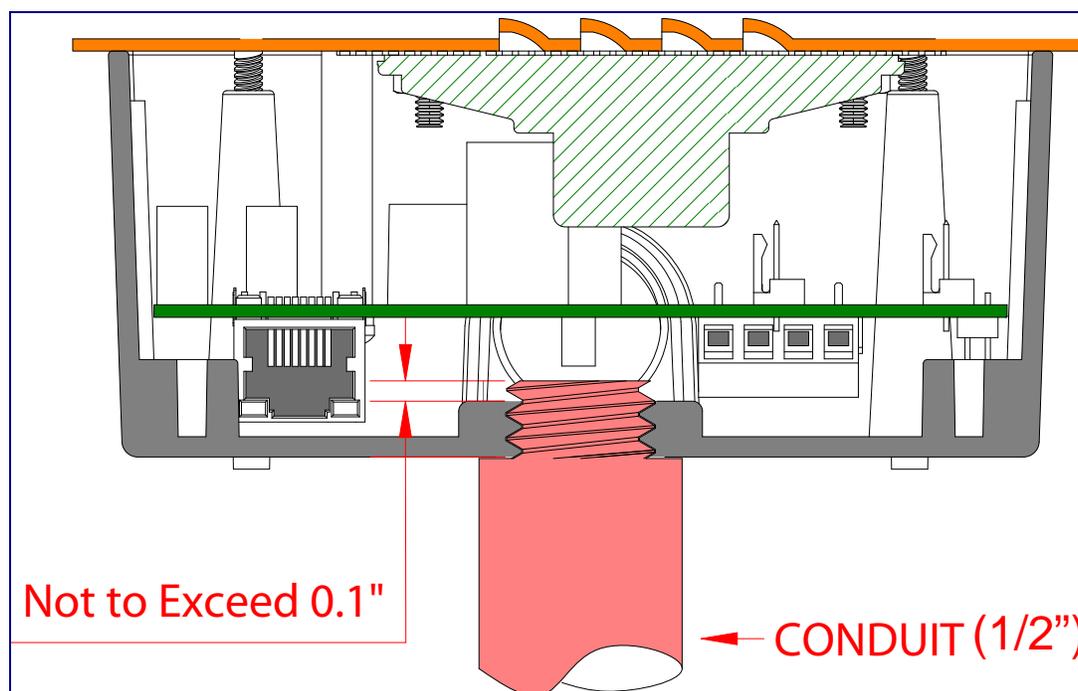
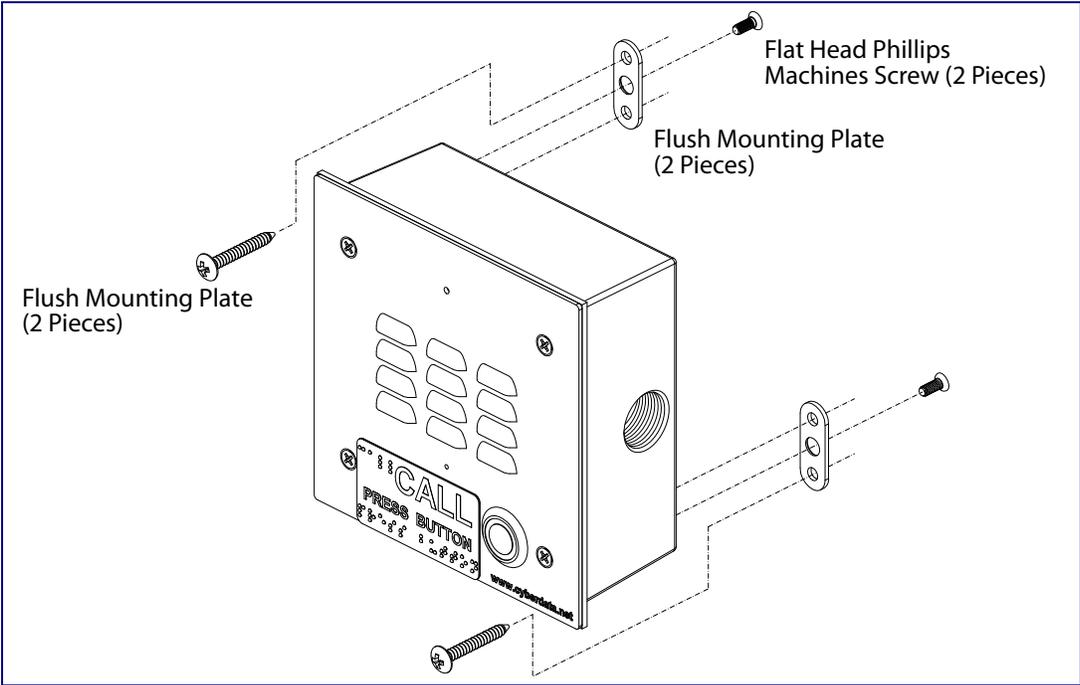


Figure A-5 shows how to properly mount the VoIP Intercom.

**Figure A-5. Mounting**



# Appendix B: Setting up a TFTP Server

---

## B.1 Set up a TFTP Server

Upgrading the VoIP Intercom firmware requires a TFTP server on which you access the Web interface where you can upload the firmware files.

---

### B.1.1 In a LINUX Environment

To set up a TFTP server on LINUX:

1. Create a directory dedicated to the TFTP server, and move the files to be uploaded to that directory.
2. Run the following command where `/tftpboot/` is the path to the directory you created in [Step 1](#): the directory that contains the files to be uploaded. For example:

```
in.tftpd -l -s /tftpboot/your_directory_name
```

---

### B.1.2 In a Windows Environment

You can find several options online for setting up a Windows TFTP server. This example explains how to use the Solarwinds freeware TFTP server, which you can download from the following website address:

<http://www.cyberdata.net/support/voip/solarwinds.html>

To set up a TFTP server on Windows:

1. Install and start the software.
2. Select **File/Configure/Security** tab/**Transmit Only**.
3. Make a note of the default directory name, and then move the firmware files to be uploaded to that directory.

# Appendix C: Troubleshooting/Technical Support

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## C.1 Frequently Asked Questions (FAQ)

A list of frequently asked questions (FAQs) are available on the VoIP Intercom product page at:

<http://www.cyberdata.net/support/voip/index.html>

Select the support page for your product to see a list of frequently asked questions for the CyberData product:

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## C.2 Documentation

The documentation for this product is released in an English language version only. You can download PDF copies of CyberData product documentation from the VoIP Intercom product page at:

<http://www.cyberdata.net/support/voip/index.html>

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## C.3 Contact Information

Contact	CyberData Corporation 2555 Garden Road Monterey, CA 93940 USA <a href="http://www.CyberData.net">www.CyberData.net</a> Phone: 800-CYBERDATA (800-292-3732) Fax: 831-373-4193
Sales	Sales 831-373-2601 Extension 334
Technical Support	Phone: 831-373-2601 Extension 333 Email: <a href="mailto:support@CyberData.net">support@CyberData.net</a>
Returned Materials Authorization	To return the product, contact the CyberData Returned Materials Authorization (RMA) department at:  Phone: 831-373-2601, Extension 136 Email: <a href="mailto:RMA@CyberData.net">RMA@CyberData.net</a>

When returning a product to CyberData, an approved CyberData RMA number must be printed on the outside of the original shipping package. No product will be accepted for return without an approved RMA number. Send the product, in its original package, to the following address:

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CyberData Corporation  
2555 Garden Road  
Monterey, CA 93940  
Attention: RMA "your RMA number"

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## C.4 Warranty

CyberData warrants its product against defects in material or workmanship for a period of two years from the date of purchase. Should the product fail within the warranty period, CyberData will repair or replace the product free of charge. This warranty includes all parts and labor.

If the product is out-of-warranty and fails, a flat rate repair charge of one half the product purchase price will be assessed. Repair costs for products that are in warranty, but damaged by improper modifications or abuse, will be charged at the out-of-warranty rate. Products returned to CyberData, both in and out-of-warranty, are shipped to CyberData at the expense of the customer. Charges for shipping repaired products back to the customer will be paid by CyberData.

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