



DIGITAL
ACOUSTICS

S3 IP Endpoint Getting Started Guide

For Digital Acoustics IP Audio Endpoints

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S3 IP Endpoint Getting Started Guide

Introduction

S3 - SIP, Singlewire, Simple!

Digital Acoustics IP Intercoms, IP Speakers and IP Amplifiers are now available with our S3 Firmware features set. The S3 Firmware feature set provides our IP Endpoints with the ability to integrate with SIP based phone systems, and/or Singlewire's **InformaCast** software. SIP is a standard feature on the product and the InformaCast client is an additional firmware feature that can be purchased when ordering an S3 enabled IP Endpoint.

S3 IP Endpoints operate in one of the following modes:

- SIP client connected to a SIP Phone System or SIP Peer-to-Peer
- InformaCast Client (InformaCast License required)
- Combined SIP client/InformaCast Client

All S3 endpoints can be configured using a standard web browser. Browser based configuration includes the following capabilities:

- DHCP (default) or Static IP Address assignment
- UserID and Password specification
- Programmable on board Relay mode (if so equipped)
- SIP configuration
- Audio configuration
- Firmware Upgrade

In addition to supporting both SIP and InformaCast, the S3 IP Endpoint also supports playing background music using a Digital Acoustics IP7 configured as a Music Injector.

S3 IP Endpoint Installation:

1. On the back of the endpoint, make sure the Model Number ends with -S3 (SIP) or -S3-IC (SIP and InformaCast)
2. Attach one of the included ID# labels (Last six digits of the MAC Address. The first six digits are always 001b61) to the endpoint's enclosure for visual identification
3. Record the ID#, endpoint location and endpoint model number for use during configuration
4. Connect the endpoint to the network and provide power as indicated in the endpoint's **Getting Started Guide**

Using a Web Browser for Configuration

To logon to the S3 IP Endpoint's Web Page, enter `http://xxx.xxx.xxx.xxx` (where `xxx.xxx.xxx.xxx` is the IP Address of the device) into a web browser.. When the "Sign in" dialog appears, enter the default of **admin** for both the username and password. (If the IP Endpoint's IP Address is not known, download and run the [Digital Acoustics Device Discovery](#) utility to determine the endpoint's IP address)

Please note the following:

- If changes are made on a tab, that tab must be submitted before changes to any other tabs are made
- Pressing the **Submit** button will only submit the information for the current tab. Any changes on other tabs will be ignored
- The **Submit** button at the bottom of page will turn red if changes are not complete or any field is invalid
- The **Submit** button at the bottom of the page will turn green when all mandatory fields have been entered and are valid
- Pressing the **Reboot** button will ignore any changes and cause the S3 IP Endpoint to reboot
- Pressing the F5 key or the browser's refresh icon will remove any changes that have been made but not submitted and redisplay the **General** tab

The device's web page enables configuration of the following:

- DHCP (default) or Static IP Address assignment
- Username and Password specification
- On Board Relay mode (if so equipped)
- [SIP configuration](#)
- [InformaCast configuration](#)
- Audio profile configuration
- Firmware Upgrade

Digital Acoustics recommends that the default username and password be changed and recorded. If the username and/or password is lost, the device's configuration may have to be reset to factory defaults in order to access its web configuration page.

Using SIP

SIP is a network protocol used by the majority of VoIP based phone systems. The S3 IP Endpoint supports the following SIP features:

- G.711 uLaw or aLaw standard voice codec
- G.722 voice codec for enhanced audio
- The ability to call an extension, group extension or external phone number (dependant on the Phone systems capabilities) by activating the endpoint's TALK switch
- Operate S3 IP Endpoint in full or half duplex audio mode
- Default an endpoint to listen mode on call initiation (half duplex mode only)
- Activate the endpoint's on board relay (if so equipped) from a SIP phone
- Change the endpoint's speaker volume from a SIP phone
- Register with a secondary SIP Server if the connection to the primary SIP server is lost. Register back to the primary SIP Server when it becomes available
- Operate in SIP Peer-to-Peer mode instead of registering with a phone system

Configuring SIP

Please note that if the InformaCast feature is enabled, the SIP options can be configured using the InformaCastSpeaker cfg files and those options can not be overridden on the endpoint's web page.

Once the web page appears, verify the S3 IP Endpoint's previously recorded ID# matches the displayed **MAC Address** and then select the **SIP** tab



The screenshot shows the web interface for the S3 IP Endpoint. At the top, it says "Digital Acoustics" and "S3 for SIP/SingleWire". Below this are several tabs: "General", "Security", "Relays", "Updates", "InformaCast", "SIP", "Audio", and "Zones". The "SIP" tab is selected. Below the tabs, there are two input fields: "MAC Address" with the value "00:1b:61:04:a2:79" and "Version" with the value "v1.2.0.68".

The SIP tab will be displayed:

The screenshot shows the 'SIP' configuration tab for the 'Digital Acoustics S3 for SIP/SingleWire' device. The interface includes a navigation bar with tabs for General, Security, Relays, Updates, InformaCast, SIP (selected), Audio, and Zones. The SIP configuration area contains several settings:

- Enable SIP: (being clicked by a mouse cursor)
- Full Duplex:
- Default to Listen:
- Registrar is Proxy:
- Re-REGISTER with Fresh Credentials:
- Peer-to-peer:
- Enable G722:
- SIP Status: Not Enabled
- Primary Registrar: [] : 0
- Primary Server: [] : 0
- Secondary Registrar: [] : 0
- Secondary Server: [] : 0
- SIP Local Port: 0
- RTP Local Port: 0
- Extension: []
- Password: []
- Authentication: []
- Outdial on PTT:
- Out dial Extension: []
- Call Timeout: 10
- Door Code: 5
- REGISTER retry (0-255s): 0
- Keep alive (0-255s): 0
- Disconnect Key: None
- Volume: 5

A 'Submit' button is located at the bottom of the configuration area.

- Check the **Enable SIP** check box
- Check **Full Duplex** if the S3 IP Endpoint includes a headset, handset or has the acoustics echo cancellation (AEC) feature
- Check the **Enable G722** if your Phone system supports HD audio

- Under the **Primary Registrar**, enter the IP address or DNS of the primary SIP Registrar. Typically, the SIP Server and the SIP Registrar are the same. The Registrar is sometimes referred to as the Domain
- Enter the Port used to connect to the Primary SIP Registrar (typically 5060)
- Under **Primary Server**, enter the IP address or DNS of the primary SIP Server. The Server is sometimes referred to as the Proxy Address. If the Server is different from the Registrar, check the **Registrar is Proxy** checkbox above
- If a Secondary SIP system is available, fill in the **Secondary SIP Registrar**, Registrar Port, **Secondary SIP Server** and Server Port
- Under **SIP Local Port**, enter the default port of 5060
- Under **RTP Port**, enter the default port of 46000
- Under **Extension**, enter the extension number that was created on the SIP Server
- Under **Password**, enter the password that was created for the SIP extension. The SIP Password is sometimes referred to as the Secret
- Under **Authentication**, enter the User that has been associated with this extension in the SIP based phone system. If no User has been setup, use the same value as the Extension. The SIP authentication is sometimes referred to as the SIP Authorization Name or User Name
- Check the **Outdial on PTT** (Push To Talk) check box if the S3 IP Endpoint should place a call when its TALK switch is pressed
- If the **Outdial on PTT** option has been checked, enter the **Extension** or phone number the S3 IP Endpoint should call when its TALK button is pressed
- If the S3 IP Endpoint's integrated relay will be used to open a door during a call, specify a 1 – 4 digit code in the **Door Code** to be entered on the phone's keypad. If the specified code has multiple digits, the phone operator will need to enter a # after the code (ie if 65 is entered, the phone operator would need to enter the digits 65# during the call to activate the relay). If only a single digit is specified, the phone operator only needs to enter that digit. The **Relay Type** on the **Relay** tab must also be set to **Door/Relay**
- Enter the **Volume** level (1 - 10) for the S3 ip Endpoint's speaker. The speaker Volume can also be set while a call is in progress
- Press the **Submit** button
- The changes will be sent to the S3 IP Endpoint. After rebooting (~20 seconds), the web page will refresh
- The **SIP Status** under the **General** tab should display "Registered"
- The red READY LED will turn solid
- If more detailed information is needed for SIP configuration, refer to the **S3 IP Endpoint Configuration Guide**

Using Singlewire InformaCast

For Singlewire InformaCast, the Digital Acoustics S3 IP Endpoints support G711 voice quality audio for pre-recorded and live streams. S3 IP Endpoint products are available in the following configurations:

- **IP Enabled Speakers** providing 8 watts of audio, connected to the network by a PoE RJ-45 cable (802.3af compatible - requires 15.4W)
- **IP Amplifiers** capable of driving a single zone consisting of one or more speakers. IP Amplifiers provide up to 40 watts
- **IP Modules** designed to drive traditional analog amplifiers (hundreds of watts) capable of driving a single zone consisting of many speakers

Additionally, Singlewire's V1.2 IP Speaker Protocol describes how IP speakers configured for both InformaCast and SIP should handle conflicts between the two protocols. It also describes how the InformaCast configuration files can be used to provision IP speakers as SIP devices. Digital Acoustics S3 IP Endpoints adhere to the V1.2 specification.

Configuring InformaCast

- Connect the S3 IP Endpoint to the network and power up the device
- S3 IP Endpoints that are licensed for Informacast will automatically determine the address of the InformaCast Server through Multicast or DNS SRV records and will then connect to the InformaCast Server
- The S3 IP Endpoint's READY LED will turn solid red
- Open the InformaCast web interface (refer to Singlewire's documentation)
- Select menu option **Speakers** menu to view the list of S3 IP Endpoints that have connected to InformaCast
- Select new speaker by matching the MAC address displayed on the screen to the ID# label on the Speaker
- Press the **Edit** button to change the Name, Description and to adjust the volume to the desired level (levels are 1 - 10 with a max of 9 recommended). Press the **Update** button to save the changes
- Use the **Test** button to test the volume of the speaker

Configure additional S3 IP Endpoint options

S3 IP Endpoint options can be configured using the device's web page or with a InformaCast cfg file. Options set in the InformaCast cfg file cannot be overridden via the S3 IP Endpoint's web page. For detailed information on using device specific InformaCast configuration files, refer to the ***S3 IP Endpoint Configuration Guide***.