

Algo IP Voice Paging System for Public Address (PA), Bell Scheduling & Emergency Alerting

April 2020

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IP Paging – Introduction & Overview

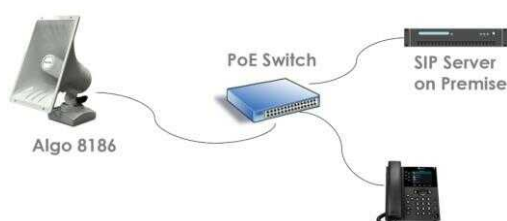


The Algo IP voice paging and notification system for public address (PA), is a network-based solution which integrates into any SIP enabled VoIP telephone system. All Algo IP products are 3rd party SIP compliant endpoints. A variety of speakers (wall / ceiling / horn), paging adapters and strobe lights are available to suit any PA requirement whether it is a single room or large enterprise / campus environment.

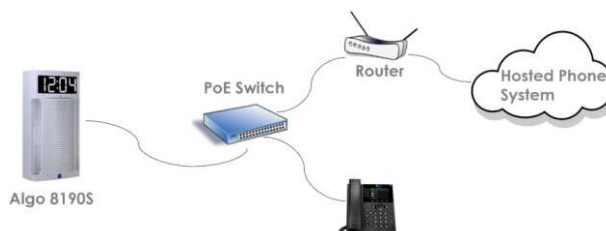
Any combination and number of Algo IP endpoints can be deployed – from one to many. There is no limit to the scale of the solution. The endpoints are PoE and connect to the network via RJ45. No amplifier is required for Algo IP speakers. Only a PoE switch or injector is required to power the endpoints, and network connectivity for SIP registration and/or multicast is all that is needed. No other hardware or software is required to operate an Algo IP paging system. The speakers and paging adapters support G.711 and Wideband (HD Voice) G.722 codecs, and work with most hosted / cloud and premise-based telephone systems.

Algo endpoints support secure SIP using TLS and SRTP. The products are also UL/CSA, FCC and CE certified.

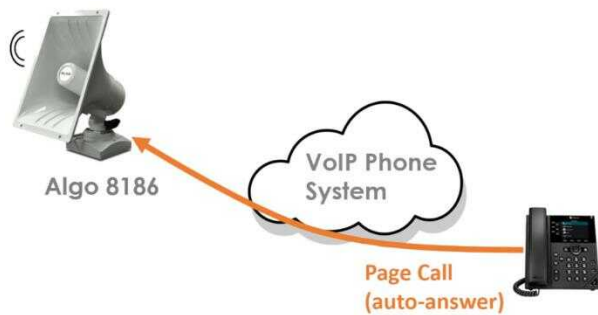
Premise Telephone System Configuration



Hosted / Cloud Telephone System Configuration



How It Works – IP Paging Made Simple



Integrating to a VoIP telephone system or unified communications (UC) platform, the Algo speaker is an endpoint like any other IP telephone. In the simplest configuration, the speaker is activated by calling an extension associated with it on the telephone system. Within the Algo endpoint this is referred to as a *Page extension* which is designed to auto-answer when called. Any device in the UC

environment can call the Algo speaker to make a voice page / public address (PA) announcement. All Algo IP speakers support talkback.

The speaker is registered to the telephone system using a web interface accessible via the speaker's IP address. The Algo Network Device Locator can help to find the speaker's IP address or the device can announce this information itself via the DHCP server once connected to the network. Central provisioning is also supported for registering multiple endpoints in larger enterprise deployments.

Depending on the telephone system, a SIP endpoint license associated with the VoIP platform may be required to register the device. One license will be required per extension registered. If multiple extensions are registered to one Algo endpoint, then a license will be required for each extension registered. On a hosted or cloud platform, the extension/seat required for the speaker will be potentially treated the same as any other extension on the telephone system and incur a monthly cost or similar fee.

Endpoint Web GUI Example

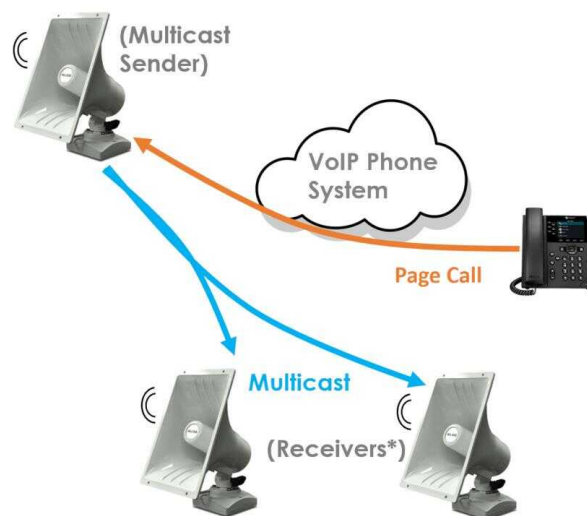
The screenshot shows the "SIP Settings" configuration page. At the top, there are navigation tabs: "Status", "Basic Settings" (selected), "Additional Features", "Advanced Settings", "System", and "Logout". Below the tabs, the "SIP" section is active, showing "Features" and "Multicast" sub-sections. The main content area is titled "SIP Settings" and contains the following fields and options:

- SIP Domain (Proxy Server):** A text input field with a help icon. Below it, a note states: "Default port is 5060. To specify a different port, enter PROXY:PORT, e.g. my_proxy.com:5070, or 192.168.1.10:5080."
- Ring/Alert Mode:** A group of radio buttons with the following options:
 - Monitor "Ring" event on registered SIP extension
 - Use "Subscribe/Notify" dialog event (RFC 4235) to monitor event on different extension
 - Use "Subscribe/Notify" presence event (RFC 3856/3863 PDP) to monitor event on different extension
 - None
- Ring/Alert Extension:** A text input field.
- Authentication ID:** A text input field.
- Authentication Password:** A text input field with a "Show/Hide" icon.
- Help text:** "The device will detect inbound ring events on this extension and play the alerting tone (and multicast if configured) until the inbound call stops ringing. It will not answer the call on this extension."
- Base/Page Extension:** A text input field.
- Authentication ID:** A text input field.
- Authentication Password:** A text input field with a "Show/Hide" icon.
- Help text:** "The device will auto-answer any inbound call received on this extension and provide a voice paging path (and multicast if configured)."

A "Save" button with a green checkmark is located at the bottom right of the form.

Multicast Scalable

Using an RTP multicast, any number and combination of Algo speakers can activate simultaneously to broadcast a voice page announcement. There is no limit to the number and combination of endpoints configured a multicast. The Algo paging system can be easily scaled to cover any size room, building, campus or enterprise environment. All Algo IP speakers, paging adapters and strobe lights can be configured for multicast, where the device is designated as a Sender or Receiver. Only the endpoint designated as the Sender is registered to the telephone system. *Receivers do not require SIP registration*. This minimizes the costs associated with additional endpoint extensions in a hosted / cloud environment, or SIP licensing which may be required in a premise-based telephone system. Note: Network bandwidth is minimal in a multicast configuration as only one copy of the network packets (~64kb) are sent from the Sender, regardless of how many Receiver endpoints are listening to a given IP multicast channel/zone.



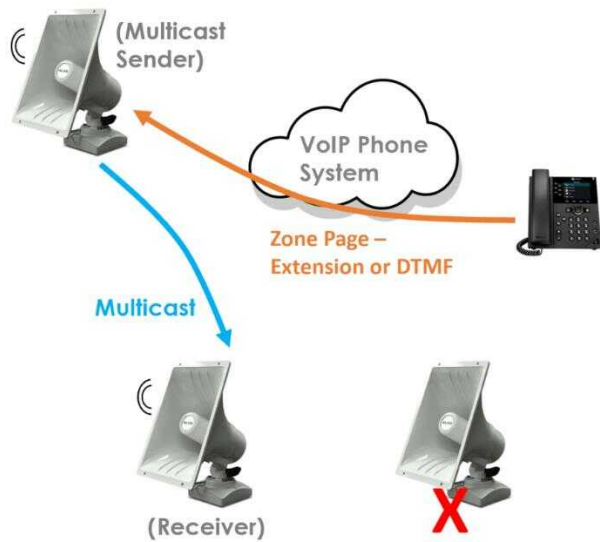
*** No SIP registration required for Receivers in a multicast.**

Speakers configured as Receivers require PoE and network connectivity to receive a multicast, wired as a home run to a networked PoE switch. No additional Algo hardware or software is required. Note: In a multicast configuration all endpoints will require full power from each PoE port connected to a device. The power requirements for Algo devices are generally IEEE802.3af Class 0, 48V 12.95W, however, the 8190 and 8190S speakers require Type 2 PoE+ IEEE 802.3at Class 0, 48V 25.5W.

In the illustration example, the 8186 horn speaker is used as a multicast Sender, however, all Algo paging and alerting endpoints can be configured as a Sender or Receiver for multicast purposes. The 8190 / 8190S speaker is only configurable as a multicast Receiver.

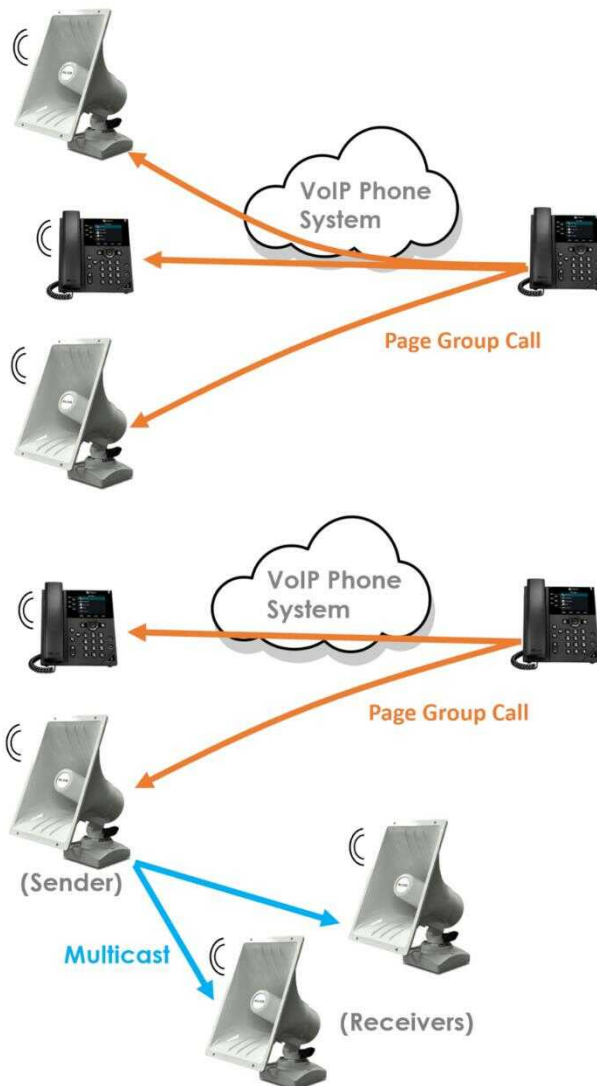
Zone Paging

Zones are generally created in the Algo paging system using a multicast IP address. Each multicast IP address configured in the Sender endpoint, will stream the page audio to the specific group of Receiver devices configured. Receiver devices can be members of any number of multicast zones, including All Call. There is no limit to the number and combination of endpoints to include in a given multicast zone. Zones can also be configured to an individual endpoint (e.g., classroom speaker) using SIP registration, thereby allowing for any zone requirement to be generally met with an Algo paging system.



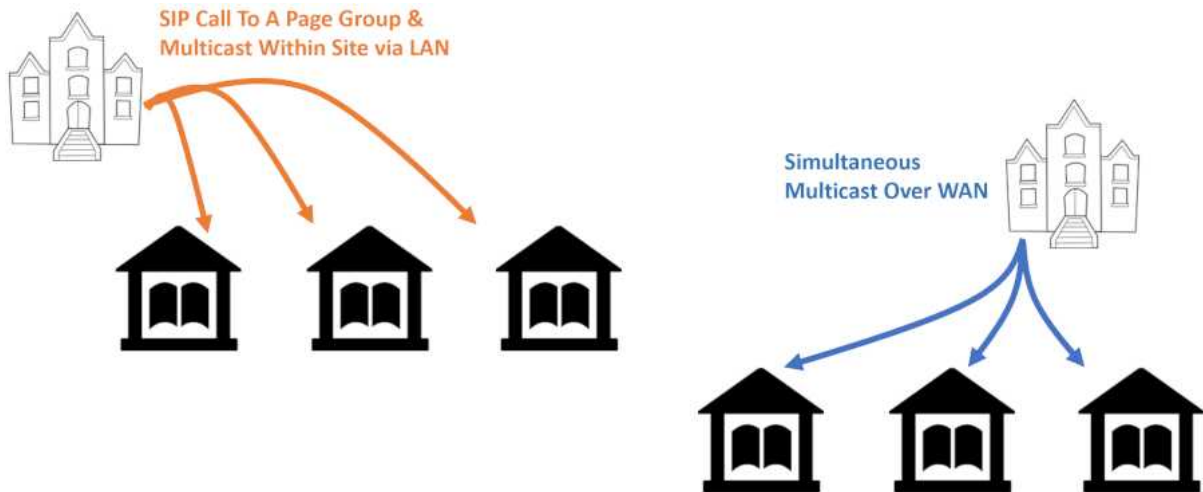
Algo paging endpoints permit up to 50 Page extension registrations per device. This allows for extension-based calling of page zones to be configured (e.g., one button speed dialing of a page zone from a telephone). Zones can also be configured as DTMF selectable, where only one Page extension is registered to the telephone system. In this scenario, zone paging is selected via the telephone keypad after the device answers the page call (e.g. # 3 for office, # 4 for warehouse, etc.). All Call and Priority Call can be configured using the either the extension-based method or DTMF selection.

Page Group & Multicasting



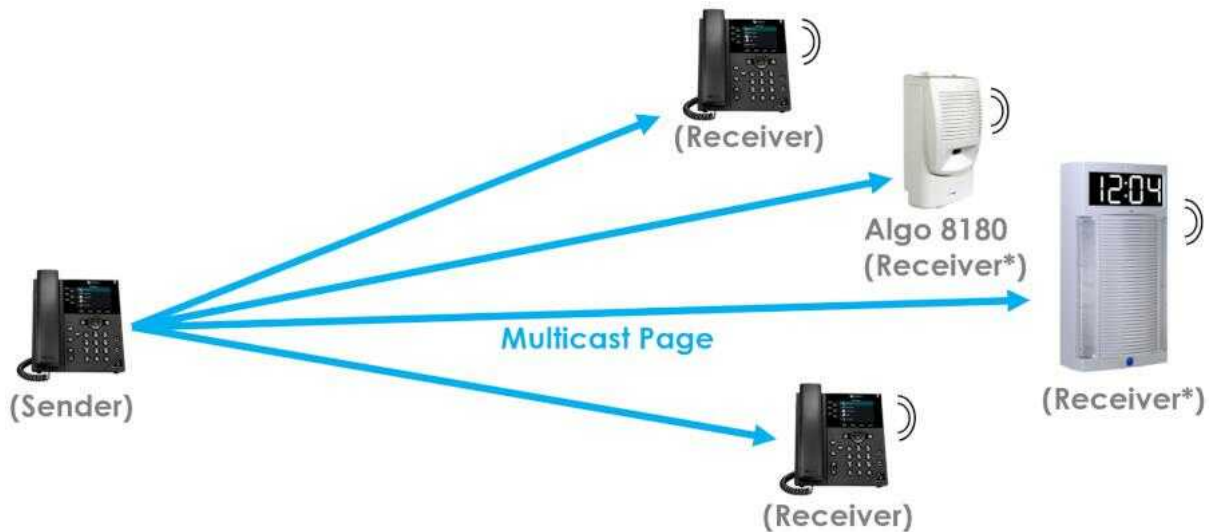
Where the telephone system supports Page Groups and inclusion of a 3rd party SIP endpoint, Algo speakers can be part of this configuration to allow page audio over both telephone and speaker simultaneously.

If desired, the Algo speaker can also be configured to multicast to include more endpoints as part the Page Group call. This is particularly helpful where there is a limit to the number of extensions permitted in a Page Group and additional speakers are required to provide coverage over an area.



Multi-site paging can be easily accommodated using a Page Group or multicast configuration. In the illustration, the scenario to the left uses a Page Group where an endpoint at each site is a member of the group. A SIP call to the Page Group will include one registered Algo endpoint from each site. To extend the reach within a site, this Algo endpoint will be configured to multicast simultaneously over the LAN to any number of other endpoints within the site upon receiving a Page Group call. As an alternative configuration, in the scenario to the right a SIP call to an Algo speaker configured as a multicast Sender in one location, can stream page audio over the WAN to any number of endpoints across all sites. IP phones supporting a multicast can also be included. Any type of zoning requirement can also be accommodated.

Besides an RTP multicast, Algo speakers also support Polycom Group Page, Singlewire InformaCast and Syn-Apps Revolution.



*** No SIP registration required for Receivers in a multicast.**

Legacy Analog Amplifier Integration

Algo paging adapters are designed to IP enable a legacy analog amplifier and speaker infrastructure. These adapters offer a seamless bridge from a VoIP / UC platform to a legacy analog amplifier. Like Algo speakers, the paging adapters register to the telephone system as a 3rd party SIP endpoint. A Page extension on the adapter will auto-answer when called.



An isolated and balanced Line Out on the paging adapters will interface with most traditional amplifiers without any hum or noise. XLR and terminal block Line Out connection options are available to suit most amplifiers.

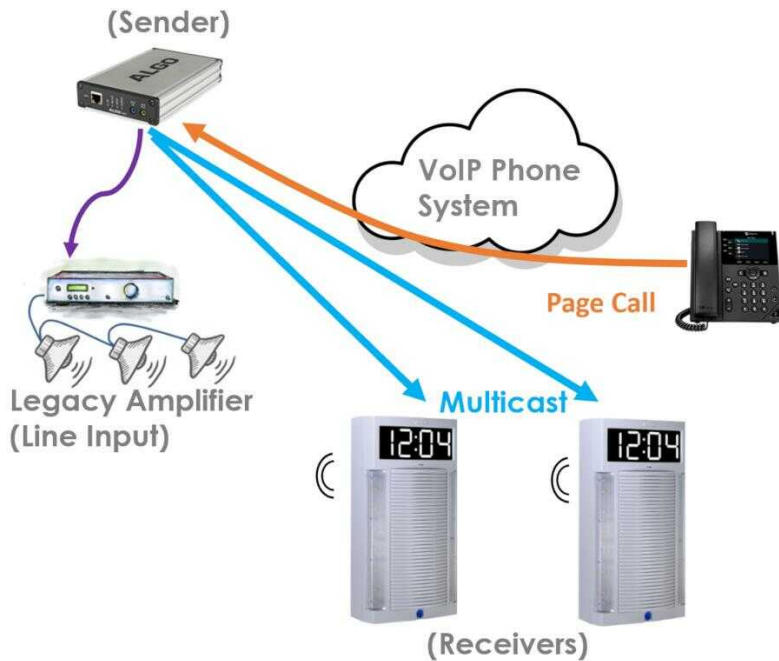
The 8301 paging adapter is typically designed for a single amplifier / single zone application, although the 8301 will pass DTMF for zoned amplifiers. Where multiple amplifiers are involved, a separate 8301 will be required for each. Using multicast, separately zoned amplifiers can be easily accommodated to stream page audio to the appropriate zone or All Call.

IP Enabled Amplifier

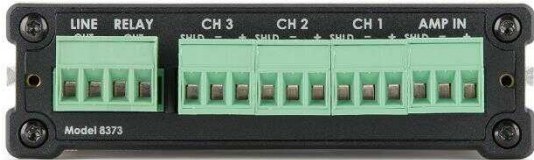


The paging adapters also feature multicast capability to allow for simultaneous audio streaming to Algo IP speakers and to a legacy analog amplifier / speakers as a hybrid paging system.

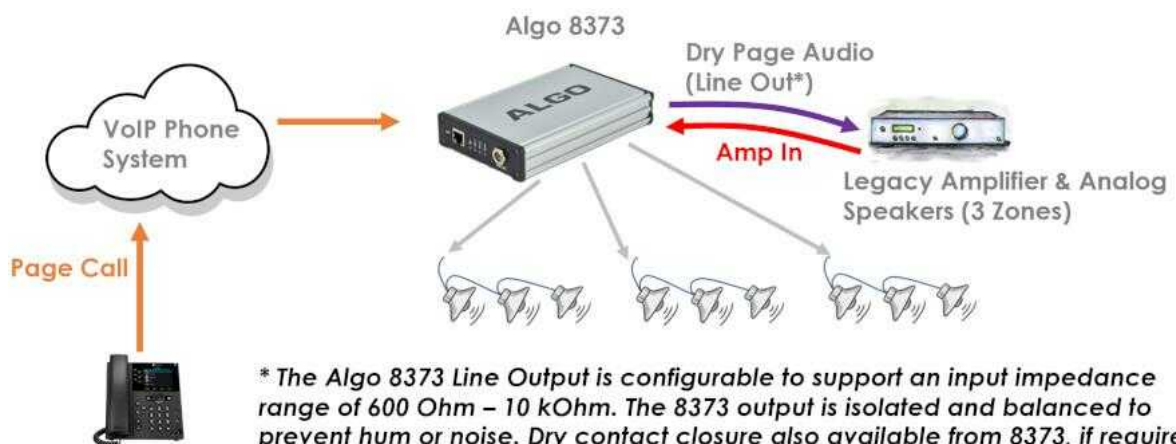
Hybrid Paging System – IP & Analog



Zone Paging Adapter

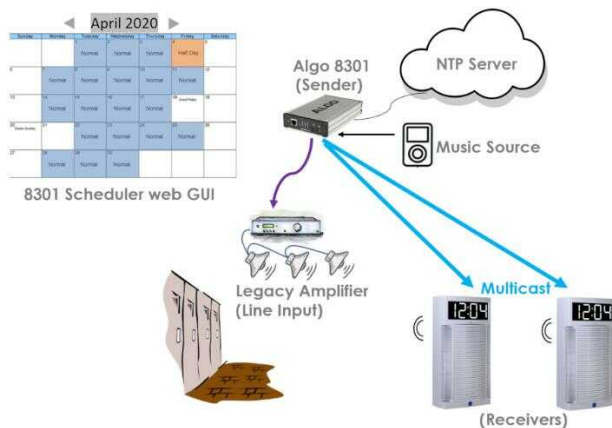


For zone paging, the [8373 paging adapter](#) supports three separate speaker channels using high current internal zone control relays. The 8373 eliminates the need for an external zone control module. For applications with more than three zones on a single amplifier, additional 8373 adapters can be deployed using multicast. Zones can be configured as separate Page extensions or DTMF selectable.



What is the difference between the Algo 8373 and 8301 Paging Adapters?

Scheduled Bells, Tones, Announcements & Music



A Scheduler for automating the playing WAV files (e.g., bells, tones, announcements, music, etc.), can be easily integrated into the Algo voice paging system using the 8301 adapter. This device uses the NTP server to synchronize with IP clocks, such as the 8190 / 8190S speaker – clock, and is ideal for schools (i.e., class changes, recess, playing an anthem, etc.), retail and healthcare (e.g., store closing, visiting hours, etc.), workplace shift changes, breaks, and transport terminals (e.g., airports, bus, and train stations), etc. Any combination and

number of Algo endpoints are compatible with the 8301 to receive a multicast. The audio available from the 8301 can also be simultaneously played via its Line Out to integrate a legacy analog amplifier / speakers and IP endpoints, if desired.

Note: The 8301 also offers a 3.5mm Aux In for playing and/or multicasting music from an iPod or similar digital device.

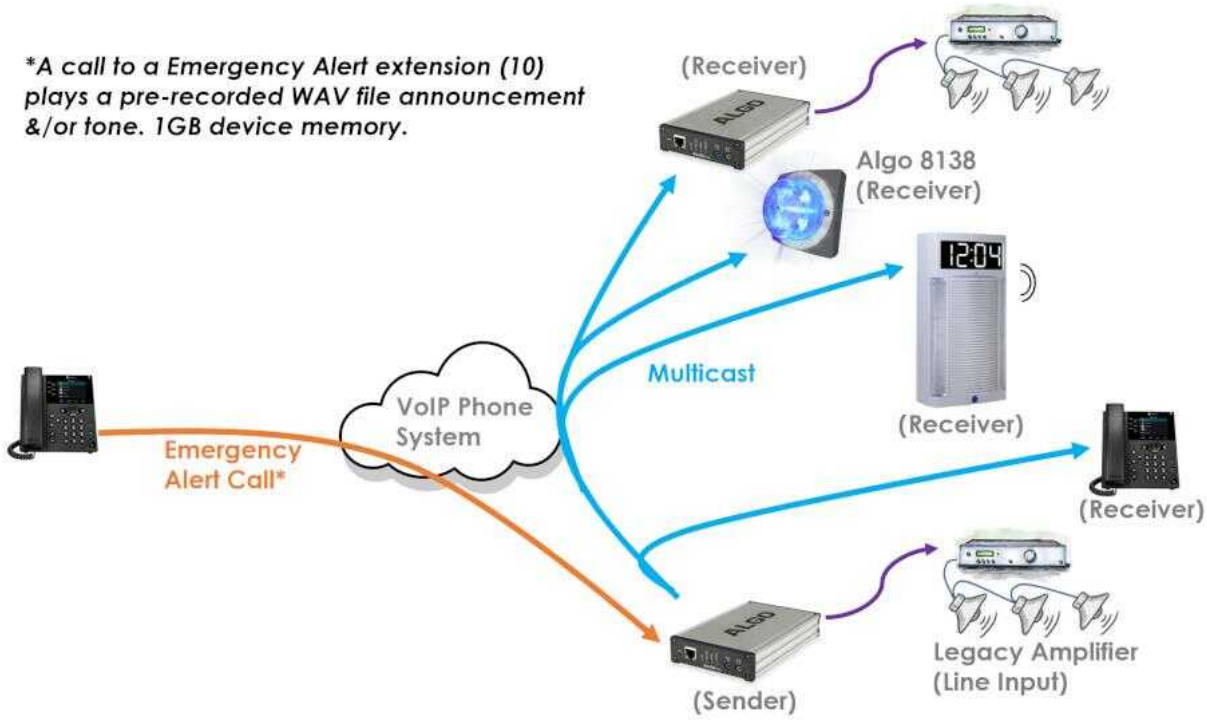
Emergency Notification Alerting

The Algo IP endpoints support alerting of safety, security and emergency events. There are two activation options available using any Algo IP speaker, strobe light and/or the 8301 paging adapter:

- Dial an Emergency Alert extension registered on the Algo SIP endpoint.
- Connect a button or similar switch to the Algo device via a relay input.

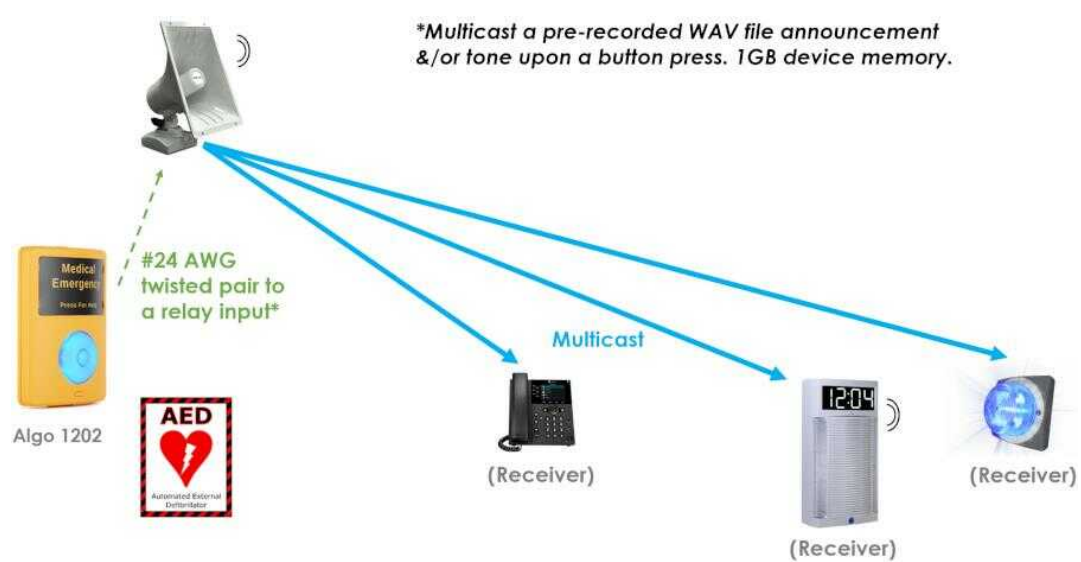
Up to 10 *Emergency Alert extensions* are available to register on an Algo IP endpoint. This alerting extension allows for a pre-recorded WAV file announcement and/or tone to be broadcast when the extension is called (e.g., lockdown, evacuation, shelter, all clear, weather or safety event, security alert, etc.). WAV files can be uploaded to 1GB of device memory.

A Call To Cancel feature is available to allow the emergency alert to play continuously for as long as desired until cancelled. Alternatively, the WAV file alert can be configured to play for a pre-set duration. The user does not have to remain on the telephone when calling the Emergency Alert extension. As soon as the call is made the Algo endpoint will play the WAV file as configured, making emergency alerting simple and efficient from any telephone or device in the UC environment. Once the Call to Cancel extension is configured, the same cancelling extension will apply to any of the Emergency Alert extensions registered.



As an alternative option for emergency alerting, any button or accessory providing a contact closure, including the Algo 1202 and 1203 buttons, can interface to the relay input of an Algo IP speaker, strobe light or 8301 paging adapter. Single twisted pair 24 AWG wiring is used to connect a button. Three configuration options are available via endpoint's relay input upon activation:

- Play and/or multicast an alert.



- Call a target extension and play a discrete WAV.
- Call a target extension and have a two-way call via the speaker's microphone.

Power for the Algo 1202 and 1203 buttons is provided by the available PoE from the Algo IP endpoint.

Any combination and number of Algo IP endpoints can be configured as a multicast for emergency alerting to cover any size room, building, campus or enterprise.

IP Visual Alerting for Enhanced Situational Awareness



The 8190S IP speaker – clock and 8138 multi-color strobe light are four color LED visual alerting devices. These endpoints offer color options including: amber, blue, green and red (+ white using RGB).

Together with Algo IP speakers and/or the 8301 paging adapter, visual alerting compliments notification of safety, security and emergency events. Device configuration allows a visual alert color to be aligned with the broadcast of an alert tone / announcement to enhance situational awareness. For example, Amber – Shelter, Blue – Medical, Green – Evacuate, Red – Lockdown, White – All Clear. The LEDs can be configured to light independently or in combination to meet color choice requirements. In addition, a variety of flash patterns are also available to choose from including three brightness levels to suite the application environment.

Endpoint Supervision

The 8300 Controller provides centralized device monitoring and supervision of Algo IP endpoints, particularly where higher system reliability for mission critical voice paging / public address (PA) and emergency notification systems is required. The 8300 can help to minimize down time as an efficient time-saving tool for management and problem resolution of Algo IP endpoints.

Additional Resources

- Links to this document: [Online](#)
- [Algo IP Paging vs. Analog](#)
- [Algo SIP Endpoint Brochure](#)
- [Algo Use Cases](#)
- [Algo 8373 vs. 8301 Paging Adapters](#)
- [Compatible VoIP Phone Systems](#)
- [IP Speaker Ambient Noise Compensation](#)
- [IP Speaker Coverage Guideline](#)
- [Multicast Guide](#)
- [Network Device Locator](#)
- [Paging Adapter Amplifier Integration Guide](#)
- [Provisioning Guide](#)
- [SIP Registration Guide](#)
- [TLS Certificates & Mutual Authentication](#)
- [Tone Conversion and Upload Guide](#)
- [YouTube Channel](#)

Ordering Guide

Description	Product Code
<u>SIP Audio Alerter</u>	8180
<u>SIP Horn Speaker</u>	8186
<u>SIP Ceiling Speaker</u>	8188
<u>Ceiling Speaker T-Bar Bracket</u>	8188TBR
<u>Ceiling Speaker T-Bar 2'x2' Panel – White</u>	8188T2X2
<u>Hydrophobic Membrane Screen for 8188 & 8189 Speakers</u>	8188MEM
<u>SIP Surface Mount Speaker</u>	8189
<u>SIP Speaker-Clock</u>	8190
<u>SIP Speaker-Clock & Visual Alerter</u>	8190S
<u>SIP Strobe Light (clear)</u>	8128
<u>Strobe Light Lens Cover (amber)</u>	X128A
<u>Strobe Light Lens Cover (blue)</u>	X128B
<u>Strobe Light Lens Cover (red)</u>	X128R
<u>SIP Multi-Color Strobe Light</u>	8138
<u>Controller</u>	8300
<u>Paging Adapter & Scheduler</u>	8301
<u>Zone Paging Adapter</u>	8373
<u>Audio Cable for 8301/8373: Output XLR-Mini Female to XLR Male (optional)</u>	2504
<u>Audio Cable for 8301: Input XLR-Mini Male to XLR Female (optional)</u>	2505
<u>Call Button</u>	1202
<u>Call Switch</u>	1203

Description	Product Code
<u>Volume Control</u>	1204
<u>Audio Interface</u>	1205
Algo InformaCast IP Endpoints	Product Code
<u>IP Wall Speaker</u>	8180-IC
<u>IP Horn Speaker</u>	8186-IC
<u>IP Ceiling Speaker</u>	8188-IC
<u>IP Surface Mount Speaker</u>	8189-IC
<u>IP Speaker-Clock</u>	8190-IC
<u>IP Speaker-Clock & Visual Alerter</u>	8190S-IC
<u>IP Strobe Light (clear)</u>	8128-IC
<u>IP Multi-Color Strobe Light</u>	8138-IC
<u>IP Paging Adapter</u>	8301-IC