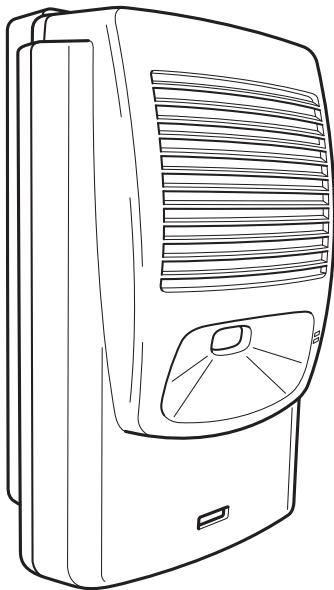


ALGO



8180 SIP Audio Alerter

User Guide

FW Version 2.7.4

Algo Communication Products Ltd.
www.algosolutions.com

90-00041M

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Overview

Introduction

The 8180 SIP Audio Alerter is a SIP compliant & multicast IP speaker for loud ringing, alerting, and voice paging. The 8180 can be integrated with any Communication Server (hosted or enterprise) that supports 3rd party SIP Endpoints or multicast paging.

For loud ringing, the 8180 is assigned a Ring extension. When this SIP extension is called the 8180 will play a WAV file (tone, announcement, etc.) over the speaker. Several ring tones are included in the 8180 and custom WAV files may also be uploaded (e.g. safety, security, emergency alerts). For extra volume, noisy, or wet locations, the optional 1186 horn speaker can be used and connected to the 8180 Speaker Output. More features are available under advanced settings for multiple ring extensions (up to 5) and rules-based ringing based on CLID.

For voice paging a separate Page extension can be assigned. When this SIP extension is called, the 8180 will auto-answer and play the callers voice announcement over the speaker. The 8180 supports G.722 wideband HD Voice for enhanced intelligibility and clarity.

A multicast feature allows one 8180 to broadcast page or ring audio to multiple Slave 8180 endpoints. Multicasting allows for a scalable and cost effective means of building large scale paging and alerting solutions, with minimal network traffic and as few as one SIP extension for the registered Master endpoint sending the multicast. Any number and combination of Algo IP speakers, paging adapters and strobes can be part of an RTP multicast. Polycom Group Page and SA Announce are other multicast formats supported in the 8180 and related Algo endpoints.

Key Features & Capabilities

Loudness

Equipped with a high efficiency integrated amplifier and tuned high quality loud speaker, the 8180 is typically eight times louder than a telephone speaker. If the optional Algo Horn Speaker is used, then the 8180 can be 20 times louder.

Multicasting

Allows multiple units to simultaneously play Ring or Page audio. One 8180 may be configured to broadcast an audio stream (Master) to any number and combination of Algo IP speaker, paging adapter, or strobe endpoint configured as multicast Slaves. This feature provides scalability without requiring each endpoint Slave to be registered as a SIP extension.

Ambient Noise Compensation

The 8180's SoundSure™ technology automatically adjusts loud ring and paging volume to compensate for background ambient noise. If SoundSure™ is enabled, the alert volume will get louder or quieter by the same dB level as the ambient noise measured just prior to the alert.

Outputs for External Equipment and Devices

Outputs for external speaker, slave amplifier, or visual alerter plus multicasting capability enable many more options to enhance notification and alert capabilities.

Configuration & Provisioning

Configure the 8180 through a web interface control panel or by using the program buttons on the back of the unit. Central provisioning may also be used to allow units to be preconfigured for a specific server prior to deployment in the field. Configuration files are automatically downloaded from a server (via TFTP, FTP, or HTTP) using DHCP.

Paging Talkback

Allows bidirectional communication between the 8180 and the phone. Talkback is ideal for confirmation that page announcements have been received.

Ring Tones

Several audio files are pre-loaded into the 8180 internal memory for ring sounds. Users may also record or upload custom audio files, music, sound effects, or voice announcements for other types of notification (e.g. safety, security, emergency, customer assistance, shift changes, etc.)

Blue Indicator Light

This LED light is on during initialization, boot, message waiting or while active. Ring and Page modes, when active, will turn the LED on steady. If the optional Talkback mode is enabled, the LED will flash instead (during a page event) to provide a clear indication that the microphone is active. If Message Waiting is supported and active, the light will flash, or be on steady (depending on its setting). The LED heartbeat option, when enabled, will flash the LED every 30 seconds as visual confirmation of PoE power and SIP server registration.

SIP Extensions

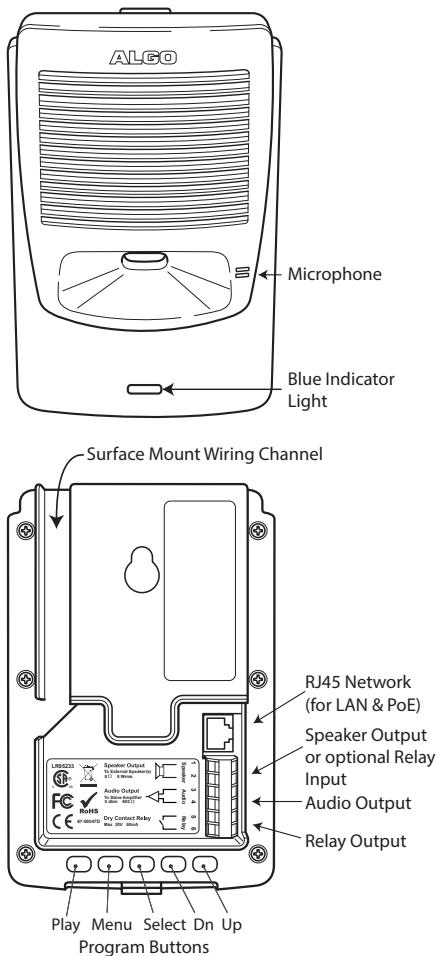
The 8180 connects to an on-premise or hosted communication server in the same way as a SIP telephone. To register the 8180 with the server requires the following information:

1. IP address (eg 192.168.1.1) or domain name (eg myserver.com) of the SIP Server
2. SIP extension (eg 3790)
3. Password

The 8180 supports two SIP extensions which behave differently – RING and PAGE. One or both may be used depending on the application. If the RING extension is called the 8180 will not answer. Instead it will play the selected WAV file until the ringing stops. Typically the RING extension is programmed as part of a hunt group so that it receives ring signal simultaneously with one or more phones to function as a loud ringer in noisy or large areas.

If the PAGE extension is called, the 8180 will answer and allow paging over its internal speaker. When the 8180 answers it will play a configurable tone to the caller so they know when they can begin speaking. A pre-announce tone is also sent over the speaker. If Paging to a single 8180, talkback may be enabled using the integrated microphone. The audio direction is determined by the speech activity of the caller.

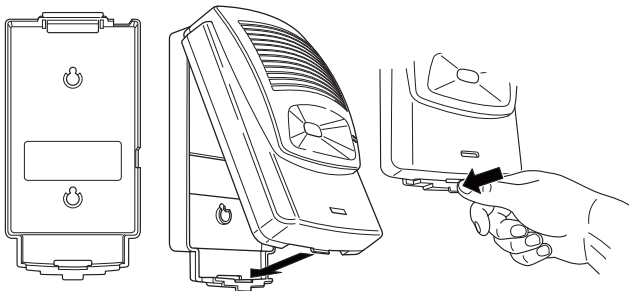
Front and Back Views



Setup and Installation

Wall Mounting

Mount the wall bracket securely and snap the 8180 into the bracket by engaging the top and then pushing the bottom firmly into place. To remove the 8180 from the bracket, press firmly on the tab of the bottom catch, then lift the cover.



Outputs

Relay

May be enabled for ring, paging or both to activate a visual alerter, mute background music, or enable a slave amplifier.

Auxiliary Speaker

For connection to the optional Algo horn speaker (e.g. for outdoor/wet locations) or to ceiling speakers wired in a series-parallel configuration to maintain minimum 8 Ω . The presence of an external speaker(s) will automatically disable the internal speaker to preserve power.

Audio

High impedance output for driving 600 Ω load up to 0 dBm. Internal speaker may be active simultaneously, but levels cannot be adjusted separately.

Programming and Configuration

Primary configuration of the 8180 is through the web interface control panel. In addition, there are program buttons on the unit itself for basic setup options.

Connection to Network and Obtaining IP Address

After connecting the 8180 to a network PoE port, the blue indicator light will turn on during initialization. The 8180 will then attempt to obtain an IP address from the DHCP server. If unsuccessful, the 8180 will default to the fixed IP address 192.168.1.111. When the IP address is selected, the 8180 will chime and turn off the blue light.



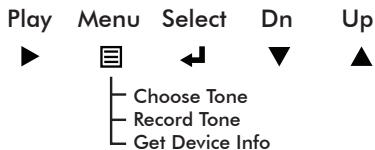
If you don't have a PoE switch, you'll need a PoE injector that installs between the 8180 and network switch. The PoE injector will supply 48 Vdc to the 8180. Most PoE injectors are capable of providing more power than the 8180 requires (12.95 W). Ensure that the PoE injector is fully compliant to the IEEE 802.3af standard.

Web Interface Control Panel

The 8180 is configured using a web interface tool accessed by entering the 8180 IP address into a browser.

To find this IP address, press the Menu button until the option for "IP Address" is reached. Then press Select to hear the address. Alternatively, search the network using the Algo Network Device Locator Tool available for download from www.algosolutions.com/locator.

Program Buttons



The Program buttons on the back of the 8180 allow local adjustment of alert tones and alert volume. The buttons are intentionally hidden from view after installation and can be disabled using the web interface.

The ► button plays the current ring tone and allows volume adjustment using the ▼ and ▲ buttons. Press ► to exit.

The ☰ button steps through the following three options:

1. Choose ring tone
2. Record ring tone using microphone
3. Get device information (IP address and MAC address)

Press the ◀ button to choose option or ► to exit.

Soft Reset

A soft reset will restore all device settings back to the original factory default conditions. To do this, disconnect the network cable from the 8180. Push and hold the Volume Down button and reconnect the network cable. Hold the button until the front light flashes three times.

Web Interface Control Panel

Using the SIP Audio Alerter web interface control panel, configure the 8180 network settings and select the desired options. These settings survive power cycling and may be programmed in advance prior to site installation.



After changing settings, click Save (in the bottom right corner of the window). Note that this may end any active call.

Basic Settings

SIP

Monitor “Ring” Event (default)

In this mode the bottom of the page will request credentials for a SIP Ring extension. When this SIP extension is called the 8180 will play the audio file selected under the Basic Settings → Ring tab.

Subscribe/Notify (dialog)

In this mode the 8180 will communicate with the SIP server to receive status information for another phone/device/extension connected to the system. The server must support Subscribe/Notify per RFC 4235.

The Ring/Alert Extension is the extension to be monitored for events, and the event of interest (ring or in-use or both) can be selected under Ring/Alert Events. While the event is active, the 8180 will play the audio file selected under the Basic Settings → Ring tab continuously. Custom WAV files may be padded with silence to achieve the desired notification frequency.

Note that for Subscribe/Notify to work a SIP extension is required for the 8180 itself. If the Page Function is enabled then the Page Extension will provide the necessary access. If Page Function is disabled, then the web page will request a SIP Extension to support Subscribe Notify.

Subscribe/Notify RFC (presence)

As above, but supporting Subscribe/Notify per RFC 3856/3863. The only event supported is “On the Phone” so there is no Ring/Alert Event to select.

Call to Cancel

This mode provides a method to trigger the 8180 with a ring or relay input. The 8180 will play the audio file selected under the Basic Settings → Ring tab continuously until a cancel event is received by dialling the Ring Extension.

The SIP extension used to trigger the 8180 can be configured using the Advanced Settings → Advanced Ring/Alert. A ring event on extension 2-5 will trigger the 8180 when in this mode.

Typical applications for this mode are for safety , security, and emergency notification, or latched alarms for door openings and other relay events.

None

Select this mode if the 8180 will not be used for ring or event notification.

Status **Basic Settings** Advanced Settings System Logout

SIP Ring Page Multicast

SIP Settings

SIP

SIP Domain (Proxy Server)
 ⓘ 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

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 PIDF) to monitor event on different extension
 Call to Cancel (start activation upon Ring event on Ring Extensions 2-5 [or relay input], and latch until main Ring Extension is called)
 None
 ⓘ Server support required on "Subscribe/Notify" events

Page Function Enabled Disabled

Allow SIP REGISTER Enabled Disabled
 ⓘ Disable it when connected in trunk mode

Ring Extension

Authentication ID

Authentication Password ⓘ

Page Extension

Authentication ID

Authentication Password ⓘ

Save

With Subscribe / Notify Activated

Ring/Alert Extension	<input type="text" value="1001"/>
Ring/Alert Events	<input type="text" value="Ring"/> <ul style="list-style-type: none"> Ring <li style="background-color: #000080; color: white;">In-Use Both Ring & In-Use
Page Extension	<input type="text"/>
Authentication ID	<input type="text" value="3001"/>
Authentication Password	<input type="password" value="----"/> ⓘ

SIP Domain (proxy Server)	SIP Server Name or IP address
Ring Alert Mode	Choose between basic SIP ring, Subscribe/Notify for monitoring phone events, or call to cancel. See Basic Settings SIP
Page Function	Enable or disable PAGE extension for SIP voice paging.
Allow SIP REGISTER	Normally enabled. Can be disabled for operation as a SIP trunk.
Ring Extension	Extension name that will be monitored to activate the 8180 ring.
Ring Authentication ID	Authentication ID; Used to register the device on the SIP Server. May also be called Username for some SIP servers, and in some cases may be the same as the Ring Extension.
Ring Authentication Password	SIP password used to register the device on the SIP Server.
Ring/Alert Event (If Subscribe/Notify selected)	The Ring/Alert Extension is the extension to be monitored for events, and the event of interest (ring or in-use or both) can be selected under Ring/Alert Events. While the event is active, the 8180 will play the audio file selected under the Basic Settings – Ring tab continuously. Custom WAV files may be padded with silence to achieve the desired notification frequency.
Page Extension	Extension name that will be monitored to activate the 8180 page auto-answer.
Page Authentication ID	Authentication ID; Used to register the device on the SIP Server. May also be called Username for some SIP server, and in some cases may be the same as the Page Extension.
Page Authentication Password	SIP password used to register the device on the SIP Server.

Ring

Status Basic Settings Advanced Settings System Logout

SIP Ring Page Multicast

Ring Tone Settings

Here you can configure ring tone settings.

Basic Settings

Ring Tone warble4-trill.wav Play

Ring Volume 1 Apply

Ring Limit No limit
1 ring = 6 seconds

Ambient Noise Compensation Enabled Disabled


Save

Ring Tone	Select ring tone to play when SIP ring extension is called. This tone can be previewed by pressing the “Play” button.
Ring Volume	Ring volume can be selected and saved, or it can be adjusted live by clicking on “Apply”.
Ring Limit	Set the maximum amount of times the 8180 will ring when activated.
Ambient Noise Compensation	To configure, set the volume to an appropriate level for a quiet environment and enable Ambient Noise Compensation. The integrated microphone measures ambient noise during idle periods and automatically increments speaker volume, if any increase in background noise is detected. Ambient noise level is averaged over 10 seconds. The noise compensation will not be functional when playing background music.



More ring settings can be configured under the Advanced Ring tab, see page 34 for more information. A list of compatible SIP servers can be found at www.algosolutions.com/8180

Page

Status	Basic Settings	Advanced Settings	System	Logout
SIP	Ring	Page	Multicast	
Page Settings				
Here you can configure page settings.				
Page Settings				
Page Volume	4		Apply	
Page Mode	<input checked="" type="radio"/> One-way <input type="radio"/> Talkback <small>ⓘ Talkback mode allows bidirectional half-duplex communication. G.722 support should be disabled if using talkback mode.</small>			
Page Timeout	None			
Page Tone	page-notif.wav			
G.722 Support	<input checked="" type="radio"/> Enabled <input type="radio"/> Disabled <small>ⓘ Only for playback.</small>			
Automatic Gain Control (AGC)	<input type="radio"/> Enabled <input checked="" type="radio"/> Disabled			
Audio Delay (milliseconds)	0			
				 Save

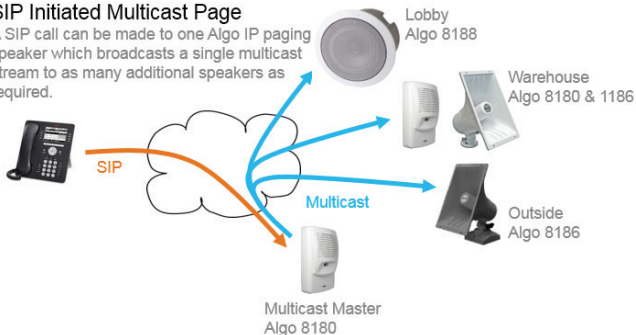
Page Volume	Page volume can be selected and saved, or it can be adjusted live by clicking on “Apply”.
Page Mode	<p>One-way audio: Transmission only; from the phone to the 8180.</p> <p>Talkback: Allow half-duplex communication through the 8180 (direction based on voice detection). The communication can only be initiated from a phone.</p>
Page Timeout	Hang up call after preselected period of time.
Page Tone	Selection of different page tones. Page tones are played before starting the paging. Select “None” to skip playing a page tone. Note: use of the pre-installed Ring Tones as Page Tones is not recommended. Custom files may be uploaded via the Advanced Tones tab, see page 30 for more details.
G.722 Support	Enable G.722 Codec option for wideband paging.
Automatic Gain Control	When activated, applies as much as 12 dB gain to bring speech level to full amplitude with some compression. Recommended for maximum page volume.
Auto Delay	Enter 0-1,000 for page audio delay in milliseconds. Can be used to synchronize audio with other third party audio sources or avoid smearing from other 8180 devices at further distances from a listening location.

Multicast Overview

In addition to the ring and page features, the 8180 is able to send and receive IP audio multicast messages over the network to support larger deployment for both paging and ring/notification. This provides a scalable and efficient method of building large scale notification solutions.

SIP Initiated Multicast Page

A SIP call can be made to one Algo IP paging speaker which broadcasts a single multicast stream to as many additional speakers as required.



In the diagram above, the bottom 8180 is configured with a SIP Page Extension. When called from a phone, the SIP registered 8180 auto-answers and plays the page audio over its speaker. Simultaneously, the registered 8180 endpoint broadcasts the audio over the network using RTP multicast to any number and combination of Algo IP speakers, paging adapters, and strobes as required.

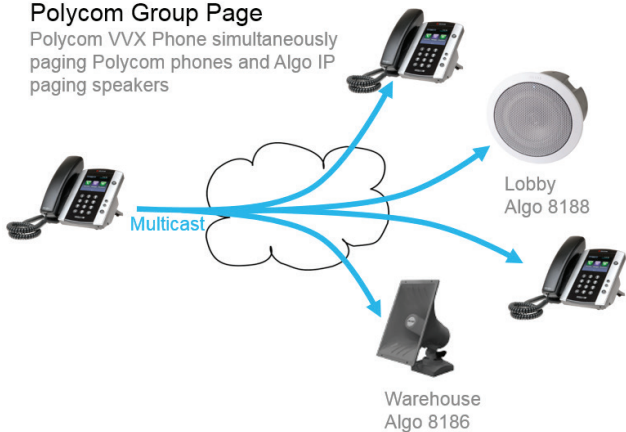
The registered 8180 (i.e. bottom of illustration) is the multicast MASTER and the top 3 endpoints are multicast SLAVES. The Slave endpoints require a PoE network connection, but do not require registration to the communication server.

Multicasting can also be used to distribute loud ring or other alerting (e.g. safety, security, or emergency events) over multiple Algo endpoints (e.g. 8180, 8186, 8188, 8128, 8201, 8301, and 8373).

In the diagram below, Algo speakers are configured as multicast slaves supporting Polycom Group Paging and G.722 HD Voice for optimum intelligibility.

Polycom Group Page

Polycom VVX Phone simultaneously paging Polycom phones and Algo IP paging speakers



Multicast Technical Information

Each 8180, or any Algo IP endpoint involved, has its own IP address, and shares a common multicast IP and port number (multicast zone) for multicast packets.

The Master unit transmits to a configurable multicast zone, and all the Slave units listen to the multicast zones assigned to them. When a Master unit receives a valid SIP ring event, it will ring locally and also send out a special packet to the multicast zone. The network switches and router see the packet and deliver it to all the members of the group. When a page audio call occurs, the Master unit will transmit all the RTP audio packets to the multicast zone and all the Slave units will receive them.

The multicast IP and port number must be the same on all the Master and Slave units of one group. The user may define multiple zones by picking different multicast IP addresses and/or port numbers.

1. Multicast IP addresses range: 224.0.0.0/4
(from 224.0.0.0 to 239.255.255.255)
2. Port numbers range: 1 to 65535
3. By default, the 8180 is set to use the multicast IP address 224.0.2.60 and the port numbers 50000-50008



Make sure that the multicast IP address and port number do not conflict with other services and devices on the same network.

Multicast Master

Status Basic Settings Advanced Settings System Logout

SIP Ring Page **Multicast**

Multicast Settings

Multicast Mode

Multicast Mode None Master/Sender Slave/Receiver
i Multicast Zone Definitions can be found in "Advanced Settings > Advanced Multicast".

Master/Sender Zone Settings


Zone Selection Mode DTMF Selectable Zone Single Zone

Master Single Zone

Master Ring Mode Send Control Signal Send Audio Stream

Polycom Group Paging/ Push-to-Talk

Paging/PTT Mode Disabled Group Paging Push-to-Talk

 Save

Multicast Mode (Master Selected)	If master is enabled the 8180 will broadcast an IP stream when activated in addition to playing over its own speaker.
Zone Selection Mode	Single Zone always broadcasts on one IP address. In DTMF mode the IP address is determined by the zone selected. The DTMF zones definitions can be found in the "Advanced Settings > Advanced Multicast" tab.
Master Single Zone	IP address for multicast broadcast.
Master Ring Mode	If control signal is selected the master 8180 will broadcast a message activating locally selected WAV files in slave 8180s. If audio stream is selected, the master 8180 will broadcast an audio stream using the master's selected ring tone.

Note: Expanded Zones are only available in Slave mode. The Algo 8301 Paging Adapter & Scheduler, 8186 SIP Horn Speaker, and 8188 SIP Ceiling Speaker can be used as Master device for Expanded Zones.

Polycom Group Paging/Push-to-Talk

Paging/PTT Mode Disabled Group Paging Push-to-Talk

Zone
Enter the same Multicast IP Address & Port number as configured on the Polycom phones.

Default Channel

Save

Paging/PTT Mode	<p>The 8180 may receive or broadcast multicast paging compatible with Polycom* phones on premise group paging protocol.</p> <p>The 8180 may be configured as a slave to play Polycom page announcements, or as a master to generate page announcements to Polycom phones.</p> <p>When using a Polycom phone as the paging source, the Polycom phone must be set to use the G.711 or G.722 audio codec. Note that the Polycom phone must be configured with the “Compatibility” setting (“ptt.compatibilityMode”) disabled in order for this codec setting to be applied.</p>
Zone	Enter the same Multicast IP Address & Port number as configured on the Polycom phones.
Default Channel	This is the target group in a Polycom paging environment. Note that you must also use the zone definitions above to select a multicast address, and that this address must match with the one configured on the Polycom phone.

*Polycom is a trademark of Polycom Inc.

Multicast Slave

Status Basic Settings Advanced Settings System Logout

SIP Ring Page **Multicast**

Multicast Settings

Multicast Mode

Multicast Mode None Master/Sender Slave/Receiver
! Multicast Zone Definitions can be found in "Advanced Settings > Advanced Multicast".

Number of Zones Basic Zones Only Basic and Expanded Zones
! Expanded Zones are only available in Slave mode. The Algo 8301 Paging Adapter can be used as a Master (source) device for Expanded Zones.

Slave/Receiver Zone Settings

Slave Zones Priority Call All Call Music
 Zone 1 Zone 2 Zone 3
 Zone 4 Zone 5 Zone 6

Expanded Slave Zones
 Zone 10 Zone 11 Zone 12 Zone 13 Zone 14
 Zone 15 Zone 16 Zone 17 Zone 18 Zone 19
 Zone 20 Zone 21 Zone 22 Zone 23 Zone 24
 Zone 25 Zone 26 Zone 27 Zone 28 Zone 29
 Zone 30 Zone 31 Zone 32 Zone 33 Zone 34
 Zone 35 Zone 36 Zone 37 Zone 38 Zone 39
 Zone 40 Zone 41 Zone 42 Zone 43 Zone 44
 Zone 45 Zone 46 Zone 47 Zone 48 Zone 49
 Zone 50

Select All Clear All

Polycom Group Paging/Push-to-Talk

Paging/PTT Mode Disabled Group Paging Push-to-Talk

Multicast Mode (Slave Selected)	If slave is enabled the 8180 will receive and play an IP audio stream or activate the selected ringtone WAV file if receiving a control signal from the master.
Number of Zones	Select "basic" zones if configuring nine or fewer multicast zones or "expanded" to configure up to 50 zones. The expanded zones have the same behaviour as the slave zones, but are hidden by default to simplify the interface.
Slave Zones	Select one or more multicast zones for the 8180 to listen to. Note that multicast zone priority is based on the zone definition list order (top to bottom).

Polycom Group Paging/Push-to-Talk


Paging/PTT Mode Disabled Group Paging Push-to-Talk

Zone
ⓘ Enter the same Multicast IP Address & Port number as configured on the Polycom phones.

Default Channel

Priority Channel

Emergency Channel

 Save

Paging/PTT Mode	See definition on page 21.
Default Channel	
Priority Channel	Polycom channel for Priority broadcasts that interrupt Normal broadcasts/calls (Default: Group 24).
Emergency Channel	Polycom channel for Emergency broadcasts that interrupt all broadcasts/calls (Default: Group 25).

Priority

Higher priority events will interrupt lower priority events. The priority levels are as follows, from highest to lowest:

Multicast "Priority Call"

SIP Page

SIP Ring (all accounts)

Multicast "All Call"

Multicast "Zone 1"... "Zone 6"

Multicast "Music"

Lower priority events will be restored after higher priority events are completed, with the exception that there is only a single "SIP" state so lower priority SIP events will be ignored and are thus non-restorable. The specific exceptions are as follows:

- SIP Page will interrupt SIP Ring and clear the ring state (thus the Ring will not be restored).
- SIP Ring during SIP Page will be ignored (and thus cannot be restored).
- Subsequent SIP Rings on different accounts while one SIP Ring is active will be ignored (and thus cannot be restored).

Advanced Settings

Network

Status Basic Settings **Advanced Settings** System Logout

Network Admin Time Provisioning Tones Advanced Ring/Alert Input/Output Advanced SIP Advanced Multicast

Network Settings

Network Interface

Protocol Static IP DHCP

IP Address

Netmask

Gateway

DNS Server

802.1Q Virtual LAN

VLAN Mode Enabled Disabled

VLAN ID
Value range: 0 to 4094

VLAN Priority
Value range: 0 to 7

Differentiated Services

SIP (6-bit DSCP value)

RTP (6-bit DSCP value)

Advanced

Save

Protocol	DHCP is an IP standard designed to make administration of IP addresses simpler. When selected, DHCP will automatically configure IP addresses for each 8180 on the network. Alternatively the 8180 can be set to a static IP address.
VLAN Mode	Enables or Disables VLAN Tagging. VLAN Tagging is the networking standard that supports Virtual LANs (VLANs) on an Ethernet network. The standard defines a system of VLAN tagging for Ethernet frames and the accompanying procedures to be used by bridges and switches in handling such frames.

	<p>The standard also provides provisions for a quality of service prioritization scheme commonly known as IEEE 802.1p and defines the Generic Attribute Registration Protocol.</p>
VLAN ID	<p>Specifies the VLAN to which the Ethernet frame belongs. A 12-bit field specifying the VLAN to which the Ethernet frame belongs. The hexadecimal values of 0x000 and 0xFFFF are reserved. All other values may be used as VLAN identifiers, allowing up to 4094 VLANs. The reserved value 0x000 indicates that the frame does not belong to any VLAN; in this case, the 802.1Q tag specifies only a priority and is referred to as a priority tag. On bridges, VLAN 1 (the default VLAN ID) is often reserved for a management VLAN; this is vendor specific.</p>
VLAN Priority	<p>Sets the frame priority level. Otherwise known as Priority Code Point (PCP), VLAN Priority is a 3-bit field which refers to the IEEE 802.1p priority. It indicates the frame priority level. Values are from 0 (lowest) to 7 (highest). These values can be used to prioritize different classes of traffic (voice, video, data, etc).</p>
SIP (6-bit DSCP value)	<p>Can provide quality of service if the DSCP protocol is supported on your network. Can be specified independently for SIP control packets versus RTP audio packets.</p>
RTP (6-bit DSCP value)	
DHCP Timeout (seconds)	<p>This setting is only visible when the DHCP Protocol is selected.</p> <p>The DHCP timeout is the length of time following a request from an 8180 to the DHCP server that the 8180 will wait before assuming the server is not available. After such time, the 8180 will use its default address of 192.168.1.111</p> <p>Default is 60 seconds.</p>

Admin

Status Basic Settings **Advanced Settings** System Logout

Network **Admin** Time Provisioning Tones Advanced Ring/Alert Input/Output Advanced SIP Advanced Multicast

Admin Settings

Admin Password

Password

Confirmation

General

Device Name (Hostname)

Introduction Section on Status Page On Off

Web Interface Session Timeout Web interface can log out after period of inactivity.

Log Settings

Log Level Error (Lowest) Notice ("Event") Info ("SIP") Debug (Highest)

Log Size (1 ~ 1000 kB)

Log Method Local Network Both

High Availability

Hardware Watchdog Enabled Disabled

Management

SNMP Support (v1 get only) Enabled Disabled

Syn-Apps

SA-Announce Support Enabled Disabled

SA-Announce Server Leave this field blank to use the server provided by DHCP Option 72.

Local Management Port

Save

Password	Password to log into the 8180 web interface. You should change the default password (<i>algo</i>) in order to secure the device on the network. If you have forgotten your password, you will need to perform a soft reset in order to restore the password (as well as all other settings) back to the original factory default conditions. For information on how to perform a soft reset, see page 9.
Confirmation	Re-enter network admin password

Device Name	Name to identify the device in the Algo Network Device Locator Tool.
Introduction Section on Status Page	Allows the introduction text to be hidden from the login screen.
Web Interface Session Timeout	Set the maximum period of inactivity after which the web interface will log out automatically.
Log Level	Use on the advice of Algo technical support only.
Log Size	
Log Method	Allows the 8180 to write to external Syslog server if the option for external (or both) is selected.
Log Server	If external (or both) is selected this is the address of the Syslog server on the network.
Hardware Watchdog	Use on the advice of Algo technical support only.
SNMP Support (v1 get only)	Additional SNMP support is anticipated for future, but the 8180 now responds to a simple status query for automated supervision. Contact Algo technical support for more information.
SA-Announce Support	Syn-Apps' SA-Announce paging application converts unicast streams to multicast and delivers them to the target endpoints. The feature can only be used on the 8180 when Multicast Master Mode is disabled (set to 'None') in the "Basic Settings > Multicast" tab.
SA-Announce Server	Enter the SA-Announce Server to use the Syn-Apps paging feature. To use the server provided by the DHCP Option 72, leave the field blank.
Local Management Port	Enter the local management port.

Time

The screenshot shows a web-based configuration interface for a network device. At the top, there are tabs for 'Status', 'Basic Settings', 'Advanced Settings', 'System', and 'Logout'. Below these is a navigation bar with 'Network', 'Admin', 'Time', 'Provisioning', 'Tones', 'Advanced Ring/Alert', 'Input/Output', 'Advanced SIP', and 'Advanced Multicast'. The 'Time' tab is selected. The main content area is titled 'Time Settings' and contains a 'General' section with two fields: 'Timezone' set to '(UTC-08:00) Pacific Time (US and Canada)' and 'NTP Time Server' set to 'pool.ntp.org'. A 'Save' button with a green checkmark is located at the bottom right of the form.

Network time is used for logging events into memory for troubleshooting.

Timezone	Select timezone.
NTP Time Server	Allow the 8180 to synchronize to an external time server.

Provisioning

Provisioning allows installers to pre-configure 8180 units prior to installation on a network. It is typically used for large deployments to save time and ensure consistent setups.

The screenshot shows a web interface for configuring provisioning settings. At the top, there are tabs for 'Status', 'Basic Settings', 'Advanced Settings' (which is selected), 'System', and 'Logout'. Below these are sub-tabs for 'Network', 'Admin', 'Time', 'Provisioning' (selected), 'Tones', 'Advanced Ring/Alert', 'Input/Output', 'Advanced SIP', and 'Advanced Multicast'. The main heading is 'Provisioning Settings'. Under 'Mode', there is a 'Provisioning Mode' section with radio buttons for 'Enabled' (selected) and 'Disabled'. Under 'Settings', there are several fields: 'Server Method' with radio buttons for 'DHCP Option 66' and 'Static' (selected); 'Static Server' with an empty text input; 'Download Method' with radio buttons for 'TFTP', 'FTP' (selected), and 'HTTP'; 'Auth User Name' with an empty text input; 'Auth Password' with an empty text input and a blue eye icon; 'Config Download Path' with an empty text input; and 'Firmware Download Path' with an empty text input. A green 'Save' button is located in the bottom right corner.

There are two different Provisioning methods that can be used: via DHCP Option 66 or via a Static Server. In addition, there are three different ways to download provisioning files from a “Provisioning Server”: TFTP (Trivial File Transfer Protocol), FTP, or HTTP.

For example, 8180 configuration files can be automatically downloaded from a TFTP server using DHCP Option 66. This option code (when set) supplies a TFTP boot server address to the DHCP client to boot from.



DHCP must be enabled if using DHCP Option 66, in order for Provisioning to work (see “DHCP” on page 22).

One of two files can be uploaded on the Provisioning Server (for access via TFTP, FTP, or HTTP):

generic file `algop8180.conf` or specific file `algom[MAC].conf`

MD5 Checksum (TFTP Only)

For TFTP only an .md5 checksum file must also be uploaded to the Provisioning server. This checksum file is used to verify that the .conf file is transferred correctly without error.

A tool can be found at the website address below to generate this file.

<http://www.fourmilab.ch/md5>

The application doesn't need an installation. To use the tool, simply unzip and run the application (md5) from a command prompt. The proper .md5 file will be generated in the same directory.



If using the above tool, be sure to use the "-l" parameter to generate lower case letters.

Generating a generic configuration file

1. Connect an 8180 on the network
2. Access the 8180 Web Interface Control Panel
3. Configure the 8180 with desired options
4. Click on the System tab and then Maintenance.
5. Click "Backup" to download the current configuration file
6. Save the file settings.txt
7. Rename file settings.txt to algop8180.conf
8. File algop8180.conf can now be uploaded onto the Provisioning server

For more Algo SIP endpoint provisioning information, see:
www.algosolutions.com/provision

Backup / Restore Configuration

Download Configuration File

Restore Configuration File

No file chosen

Restore Configuration to Defaults



If using a generic configuration file, extensions and credentials have to be entered manually once the 8180 has automatically downloaded the configuration file.

Generating a specific configuration file

1. Follow steps 1 to 6 as listed in the section “Generating a generic configuration file” on page 29.
2. Rename file settings.txt to algom[MAC address].conf (e.g. algom0022EE020009.conf)
3. File algom[MAC address].conf can now be uploaded on the Provisioning server.



The specific configuration file will only be downloaded by the 8180 with the MAC address specified in the configuration file name. Since all the necessary settings can be included in this file, the 8180 will be ready to work immediately after the configuration file is downloaded. The MAC address of each 8180 can be found on the back label of the unit.

Ring Tones - Loading/Replacing

During the Provisioning process, the 8180 will try to download a file called `algop8180-tones.md5`. If the file exists, the 8180 will compare that file to its internal file. If the files do not match, the 8180 will load a compressed file called `algop8180-tones.zip` that contain all the new or replaced tones, decompress it, and add the tones to the 8180 list.



New tones (that have new names) will be added to the list. New tones that have the same names as ones already in the list will be replaced.

To generate a ring tones file that the 8180 can use to update or add ring tones:

1. Use compression software to generate the `algop8180-tones.zip` file.
2. Add the new ring tone files to this file.
3. Use an MD5 generator (see “MD5 Checksum” on page 27) to generate a file called `algop8180-tones.md5` from the `algop8180-tones.zip` file created above.

Tones

Status Basic Settings **Advanced Settings** System Logout

Network Admin Time Provisioning **Tones** Advanced Ring/Alert Input/Output Advanced SIP Advanced Multicast

Tone Management

Tones

File List

- [bell-na.wav](#) 93 kB
- [chime.wav](#) 187 kB
- [page-notif.wav](#) 5 kB
- [warble-lo-l.wav](#) 187 kB
- [warble-lo-long.wav](#) 126 kB
- [warble2-med.wav](#) 93 kB
- [warble3-high.wav](#) 93 kB
- [warble4-trill.wav](#) 93 kB

Total Size 877 kB


Play Selected Tone

Delete Selected Tone

Rename Selected Tone to

Upload

Upload New Tone File No file selected.

 8kHz/16kHz, 16-bit, Mono, PCM/u-law WAV File, or such files in zip format. Please limit the file name to 32 characters, and no spaces.

Auto Sound Level

Compression (u-law)

Max Available Space: 2332 KB

File List	This shows all the audio files currently on the 8180. Select to play, rename or delete the file. Note that limited storage is available on the device.
Play Selected Tone	
Delete Selected Tone	
Rename Selected Tone to	
Upload New Tone File	Files must be 8kHz/16kHz, 16-bit, Mono, PCM/u-law WAV File only.
Auto Sound Level	When selected, will maximize the volume of the sound file during the upload process.
Compression (u-law)	Reduces file size to maximize storage when selected.

Advanced Ring/Alert Settings

Status Basic Settings **Advanced Settings** System Logout

Network Admin Time Provisioning Tones **Advanced Ring/Alert** Input/Output Advanced SIP Advanced Multicast

Advanced Ring/Alert Settings

The Rule-based Ring Tone uses [Extended POSIX Regular Expression](#) to define rules to match the SIP From field or the extension in "Subscribe/Notify" event mode.

More Ring Extensions

#2 Ring Extension	<input checked="" type="radio"/> Enabled <input type="radio"/> Disabled
Extension	<input type="text"/>
Authentication ID	<input type="text"/>
Authentication Password	<input type="text"/>
Ring Tone	<input type="text" value="bell-na.wav"/>
#3 Ring Extension	<input type="radio"/> Enabled <input checked="" type="radio"/> Disabled
#4 Ring Extension	<input type="radio"/> Enabled <input checked="" type="radio"/> Disabled
#5 Ring Extension	<input type="radio"/> Enabled <input checked="" type="radio"/> Disabled

Rule-based Ring Tone

#1 Custom Tone	<input checked="" type="radio"/> Enabled <input type="radio"/> Disabled
Rule	<input type="text"/>
Delay (seconds)	<input type="text" value="0"/>
Ring Tone	<input type="text" value="warble2-med.wav"/>
#2 Custom Tone	<input type="radio"/> Enabled <input checked="" type="radio"/> Disabled
#3 Custom Tone	<input type="radio"/> Enabled <input checked="" type="radio"/> Disabled
#4 Custom Tone	<input type="radio"/> Enabled <input checked="" type="radio"/> Disabled

Save

Ring Extension	Additional SIP Ring Extensions may be assigned with unique ring tones.
Extension	See definition on page 13.
Authentication ID	See definition on page 13.
Ring Tone	Select which ring tone will be played when the SIP extension is called.

Custom Tone	Enable to select Ring Tone based on Caller ID and/or add delay before Ring Tone begins. Applies to all SIP Ring Extensions. Note Caller ID may be set to "Any" if only a delay is desired.
Rule	<p>The Rule field uses the POSIX Extended "Regular Expression" format to allow maximum flexibility. Note that the double quote characters are used below to show the start and end of the examples, and must NOT be entered in the Rule field.</p> <p>1)"^" means that the text must be at the beginning of the Caller ID string. So "^Group1" matches all strings that start with the text "Group1" (e.g. "Group1 555-123-4567").</p> <p>2)"\$" means that the text must be at the end of the Caller ID string. So "123\$" matches all strings that end with "123" (e.g. "Steve 123")</p> <p>3)For an exact match, use both of the above. Thus "^Steve\$" matches only the string "Steve"</p> <p>4)If none of the special character above are used, then it will match the text anywhere in the string. So a Rule of just "Steve" will match both "123 Steve" and "Steve 123".</p> <p>5)For a default case, use "." which matches everything (any number of any characters), including blank.</p> <p>6)There is one special case: a blank Rule string does not match anything, so is the same as using the Disabled setting</p> <p>Rules are tested starting at Custom #1, so the first rule to match determines the ring tone file that is played. If no rules match, then the default tone in Basic Settings - Ring is played.</p>
Delay (seconds)	This option allows time to answer a phone before loud ringing over the 8180 begins.

Input/Output

Input/Output Settings

Output

Speaker Mode
 Auto
 External
 Internal
 Disabled
! The "External" speaker mode cannot be used if "Relay Input" mode is selected for the Speaker Terminal Function.

Relay Mode
 Both
 Ring
 Page
 Disabled

Message Waiting Light
 None
 On
 Flash

Message Waiting Event
 Any
 Status Line
 New Message

Explicit MWI Subscription
 Enabled
 Disabled

Heartbeat Light
 Enabled
 Disabled

Page Light
 Enabled
 Disabled

Input

Speaker Terminal Function
 Speaker Output
 Relay Input

Relay Input Polarity
 Normally Open Contact
 Normally Closed Contact

Ring Tone

Ring Duration
 Play Once
 Play While Held
 Play until Cancelled
! The "Play until Cancelled" mode requires the Ring/Alert Mode setting to be set to "Call to Cancel".

Program Buttons
 Enabled
 Disabled

Speaker Mode	Auto: Detect automatically if an external speaker is connected to the 8180. External/Internal: Manually select which speaker to use. Disabled: No audio
Relay Mode	Relay activation: Ring, Page, Both, or disabled. Relay can trigger external light or other device when specified event occurs.
Message Waiting Light	If enabled the blue indicator will activate when there is a message waiting signal on the line. Function uses RFC 3842 and available if supported by the SIP server.

Heartbeat Light	If enabled the blue indicator will flash every 30 seconds as visual confirmation of PoE power and SIP server registration.
Page Light	If enabled then the blue indicator will be on during paging. If talkback is enabled then the page light will flash when the microphone path is active.
Speaker Terminal Function	When no external speaker is required, the function for detecting an external speaker may be re-configured to detect an external dry contact relay; either normally open or normally closed. If detected, the 8180 will activate as if a ring signal were received to initiate both WAV file playback and multicast broadcast (if enabled).
Relay Input Polarity	Select option to match connection type.
Ring Tone	Selection of files that can be played when relay detect is activated.
Ring Duration	<p>“Play once” will play the selected WAV file once to completion.</p> <p>“Play while held” will play the selected WAV file repeatedly while the input is triggered.</p> <p>“Call to Cancel” changes the behavior of the ring extension such that it will cancel the playback activation. In this mode the tone will continue to be played after the relay is deactivated until the 8180’s ring extension is called.</p>
Program Buttons	The buttons on the unit can be disabled to avoid tampering.

Advanced SIP Settings

Status	Basic Settings	Advanced Settings	System	Logout				
Network	Admin	Time	Provisioning	Tones	Advanced Ring/Alert	Input/Output	Advanced SIP	Advanced Multicast

Advanced SIP Settings

SIP

Outbound Proxy

STUN Server

Register/Subscribe Period (seconds)

Keep-alive Method None Double CRLF

Keep-alive Period (seconds)

Different Ports for Extensions Enabled Disabled
Turn this option on for certain proxies, e.g. Cisco Communication Manager 7, to send ring and page SIP requests through different port numbers.

Server Redundancy

Server Redundancy Feature (Multiple SIP Server Support) Enabled Disabled

Backup Server #1

Backup Server #2

Polling Interval (seconds)
Time period between sending monitoring packets to each server. Non-active servers are always polled, and active server may optionally be polled (see below).

Poll Active Server Enabled Disabled
Explicitly poll current server to monitor availability. May also be handled automatically by other regular events, so can be disabled to reduce network traffic.

Automatic Failback Enabled Disabled
Reconnect with higher priority server once available, even if backup connection still fine.

Polling Method SIP NOTIFY SIP OPTIONS
SIP message used to poll servers to monitor availability.

Save

Outbound Proxy	IP address for outbound proxy. A proxy (server) stands between a private network and the internet.
STUN Server	IP address for STUN server if present.
Register/Subscribe Period (seconds)	Maximum requested period of time where the 8180 will re-register with the SIP server. Default setting is 3600 seconds (1 hour). Only change if instructed otherwise.
Keep-alive Method	If Double CRLF is selected the 8180 will send a packet every 30 seconds (unless changed) to maintain connection with the SIP Server if behind NAT.

Different Ports for Extensions	Enable different ports for extensions for certain proxies such as Cisco Communication Manager 7, to send a page SIP request through different port numbers.
Server Redundancy Feature	Two secondary SIP servers may be configured. The 8180 will attempt to register with the primary server but switch to a secondary server when necessary. The configuration allows re-registration to the primary server upon availability or to stay with a server until unresponsive.
Backup Server #1	If primary server is unreachable the 8180 will attempt to register with the backup servers. If enabled the 8180 will always attempt to register with the highest priority server.
Backup Server #2	
Polling Intervals (seconds)	Time period between sending monitoring packets to each server. Non-active servers are always polled, and active server may optionally be polled (see below).
Poll Active Server	Explicitly poll current server to monitor availability. May also be handled automatically by other regular events, so can be disabled to reduce network traffic.
Automatic Failback	Reconnect with higher priority server once available, even if backup connection still fine.
Polling Method	SIP message used to poll servers to monitor availability.

Advanced Multicast

Status Basic Settings **Advanced Settings** System Logout

Network Admin Time Provisioning Tones Advanced Ring/Alert Input/Output Advanced SIP **Advanced Multicast**

Advanced Multicast Settings

ⓘ Multicast mode can be set in "Basic Settings > Multicast"

Basic Zone Definition

Priority Call (DTMF:9)	<input type="text" value="224.0.2.60:50000"/>
All Call (DTMF:0)	<input type="text" value="224.0.2.60:50001"/>
Zone 1 (DTMF:1)	<input type="text" value="224.0.2.60:50002"/>
Zone 2 (DTMF:2)	<input type="text" value="224.0.2.60:50003"/>
Zone 3 (DTMF:3)	<input type="text" value="224.0.2.60:50004"/>
Zone 4 (DTMF:4)	<input type="text" value="224.0.2.60:50005"/>
Zone 5 (DTMF:5)	<input type="text" value="224.0.2.60:50006"/>
Zone 6 (DTMF:6)	<input type="text" value="224.0.2.60:50007"/>
Music (DTMF:N/A)	<input type="text" value="224.0.2.60:50008"/>

Expanded Zone Definition

Zone 10	<input type="text" value="224.0.2.110:50000"/>
Zone 11	<input type="text" value="224.0.2.111:50000"/>

↓

Zone 50	<input type="text" value="224.0.2.150:50000"/>
---------	--

Save

Zone Definition


The "Expanded" Slave or Master zones can be enabled/disabled in the "Basic Settings > Multicast" tab. Default IP address and ports may be revised for any given zone in the table.

Ensure that the address and Port settings are the same for all master and slave devices.

[Status](#) | [Basic Settings](#) | **Advanced Settings** | [System](#) | [Logout](#)


[Network](#) | [Admin](#) | [Time](#) | [Provisioning](#) | [Tones](#) | [Advanced Ring/Alert](#) | [Input/Output](#) | [Advanced SIP](#) | **Advanced Multicast**

Advanced Multicast Settings

 Multicast mode can be set in "Basic Settings > Multicast"

Basic Zone Definition

Priority Call (DTMF:9)	224.0.2.60:50000	<Use Default Page Tone>
All Call (DTMF:0)	224.0.2.60:50001	<Use Default Page Tone>
Zone 1 (DTMF:1)	224.0.2.60:50002	<Use Default Page Tone>
Zone 2 (DTMF:2)	224.0.2.60:50003	<Use Default Page Tone>
Zone 3 (DTMF:3)	224.0.2.60:50004	<Use Default Page Tone>
Zone 4 (DTMF:4)	224.0.2.60:50005	<Use Default Page Tone>
Zone 5 (DTMF:5)	224.0.2.60:50006	<Use Default Page Tone>
Zone 6 (DTMF:6)	224.0.2.60:50007	<Use Default Page Tone>
Music (DTMF:N/A)	224.0.2.60:50008	<Use Default Page Tone>

 Save

Page Tone - Master

By default, the same page tone is set for all zones in the "Basic Settings > Features" tab of a master. Unique paging tones may be revised for any given zone in the table above.

Note: Expanded Zones are only available in Slave mode. The Algo 8301 Paging Adapter & Scheduler can be used as Master (source) device for Expanded Zones.

System

Maintenance

Status Basic Settings Advanced Settings **System** Logout

Maintenance System Log About

System Maintenance

Backup / Restore Configuration

Download Configuration File

Restore Configuration File No file selected.

Restore Configuration to Defaults

Reboot

Reboot the device

Upgrade to New Firmware

Method From Local Files From URL

Firmware Image No file selected.

MD5 Checksum No file selected.

Upgrade

Download Configuration File	Save the device settings to a text file for backup or to setup a provisioning configuration file.
Restore Configuration File	Restore settings from a backup file.
Restore Configuration to Defaults	Resets all 8180 device settings to factory default values.
Reboot the Device	Reboots the device.
Firmware Image	This is the firmware image and checksum as provided by Algo
MD5 Checksum	

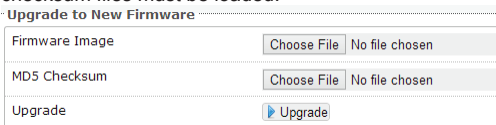
Upgrade 8180 Firmware

1. From the top menu, click on System, then Maintenance.
2. In the Maintenance section, click Reboot



Wait 30-60 seconds for the device to reboot and the web page to automatically reload.

3. Login to the device again, and click on System.
4. In the Upgrade section, click on Choose File and select the 8180 firmware file to upload. Note that both the FW firmware and MD5 checksum files must be loaded.



5. Click Upgrade
6. After the upgrade is complete, confirm that the firmware version has changed (refer to top right of Control Panel).

System Log

Status Basic Settings Advanced Settings **System** Logout

Maintenance **System Log** About

System Log

Download Log Files

Part 1	Download log1.txt
Part 2	Download log2.txt
	View All

Part 1	Use on the advice of Algo technical support only.
Part 2	
View All	

Appendix

Hardware Specifications

Power Input	48 V PoE Class 0 (Max 12.95 W - Idle 1 W)
Sound Pressure Level (dBA at 1 m)	106 dBA internal speaker 122 dBA external 1186 horn speaker
Internal Memory	3 MB <ul style="list-style-type: none">• 6 minutes @ 8 kHz sampling 8-bit μ-Law audio• 90 seconds @ 16 kHz sampling 16 bit linear audio
Relay Output	Max 30 V 50 mA
Speaker Output	8 Wrms 8 Ohm (auto-detection disconnects internal speaker)
Audio Output	0 dBm into 600 Ohm load
Ring Tones (Shipping with 8180)	<ul style="list-style-type: none">• Bell NA• Bell UK• Buzzer• Chime• Dogs• Gong• Warble1 (low)• Warble2 (medium)• Warble3 (high)• Warble4 (trill)
Environmental	0-40° C; 10-95% RH non-condensing; Indoor use only (horn speaker may be located outdoors)
NAT (Network Address Translation)	STUN, CRLF Keep Alive
Compliance	EN60950:2001, IEEE 802.3-2008, RFC3261, RoHS, CE, FCC, CSA (USA & Canada)

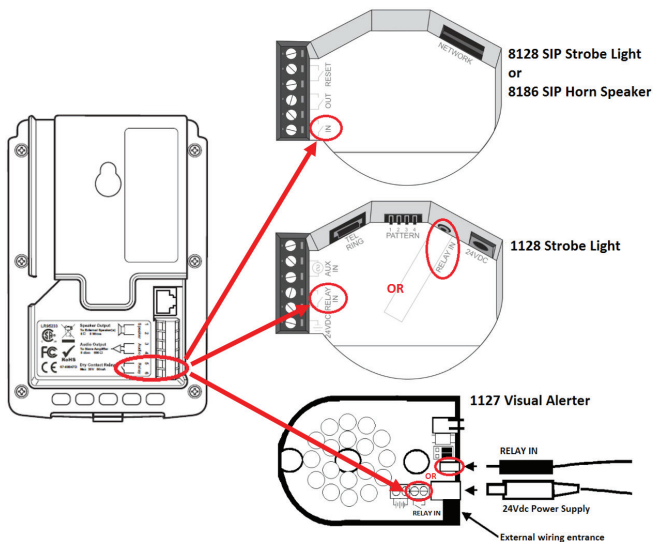
In the interests of continuing product improvement, specifications are subject to change without notice.



For more in-depth information on the 8180, including application notes and FAQ, please visit www.algosolutions.com/8180

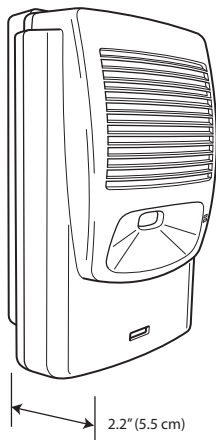
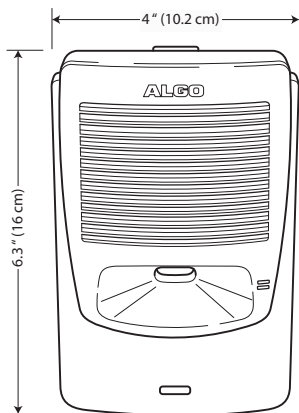
Wiring 8180 to other Algo Devices

The Relay Output (polarity independent) on the back of the 8180 can be wired to a number of Algo devices like 1127, 1128, 8128, or 8186.



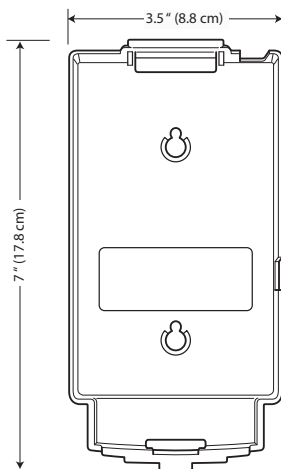
* If connecting the 1127 Visual Alerter, you may use the relay input cord supplied with the 1127 by snipping one end and connecting it to the 8180 terminal block. Alternatively, you may take a single twisted pair (CAT 3 or 5) and connect the two devices via the terminal blocks.

Dimensions - Front and Side



With wall bracket: 2.6" (6.5 cm)

Dimensions - Wall Bracket



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FCC Compliance

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy, and if it is not installed and used in accordance with the instruction manual, it may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his own expense.

Important Safety Notice

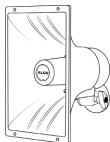


The 8180 is intended for installation in a dry indoor location with all connected wiring located within the perimeter of a building.

The 8180 is a Power over Ethernet (PoE) device. The PoE power source must be a Limited Power Source (LPS), provided by CAT5 UTP cable, and isolated from mains by minimum reinforced or double insulation. Ensure that the PoE injector or PoE enabled switch carries safety regulatory approval marks (ie CSA, UL, CE).

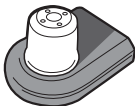
Optional 8180 Accessories

1186 Horn Speaker



algosolutions.com/1186

1127 Visual Alerter



algosolutions.com/1127

1128 Strobe Light



algosolutions.com/1128

ALGO

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