



IP Speaker S21H

User Guide

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DOINGPRO SRL, ING. GIANNI SABATO
Registered office: Via E. Fermi 25, I-40033 Casalecchio di Reno (BO)
Operational HQ: Via F. Baracca 7, I-40033 Casalecchio di Reno (BO)
GSM +39 335 238046
Ph. +39 051 6211553
E-mail: info@doingsecurity.it
Web: www.doingsecurity.it



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Technical assistance Tel.: +39 051 6211553 / +39 335 238046

Tel.: +39 329 2288344 email: info@doingsecurity.it



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1 Foreword

This Manual describes how to use the horn IP Speaker S21 for outdoor use: the speaker is in compliance with SIP and Onvif standards and it is suitable to be integrated in VoIP security projects. S21 supports the 48K OPUS audio codec that allows high quality for security audio messages, for audio and pre-recorded audio messages broadcast.

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1.1 Use of the product

For a correct speaker usage, please, take care of the following instructions:

- Check the power supply voltage before connecting the speaker to the PSU



- Ensure that the installation is carried out by a qualified technician, in compliance with all local regulations
- Install protection switches for the device's power supply line
- Use wiring according to the actual conditions of the site where the device is to be installed (refer to the electrical system project)
- To prevent the device from overheating, ensure adequate ventilation around the speaker body
- Do not open the speaker: if the product is not working correctly, contact the supplier at the numbers given at the beginning of the document.

Please note that the product and its accessories, where applicable, are "CE" marked and comply with the following directives:

- Directive 2014/35/EU (Low Voltage)
- Directive 2014/30/EU (EMC)
- Directive 2014/53/EU (RED)
- Directive 2011/65/EU (RoHS)



Keep in mind Directive 2012/19/EU (WEEE): the product, at the end of its life, is subject to a waste recycling procedure as per the regulations. The product must be returned to the supplier in exchange for the purchase of a new device or taken to the waste disposal point at the appropriate collection points.

1.2 Organization of this user guide

This User Manual is divided into sections. The chapter "**Speaker description**" describes the main product characteristics; the chapter "**Speaker programming**" shows how to configure the S21.



2 Speaker description

S21 - IP PoE VoIP (SIP standard) horn speaker.

The main S21 characteristics are listed in the below table.

□ Technical Data / Features	Description
Audio codec	OPUS, G711U, G711A, GSM, MP3, wav
Security	Web login with password, IP address filtering, user access log
Network interface	10/100 base-TX, Ethernet RJ45
VoIP	SIP protocol support for integration with VoIP and SIP/PBX systems. Support SIP features: secondary / backend SIP server, ipv4. Supported codec: OPUS, G711U, G711A, GSM, MP3, wav.
Amplifier	Integrated 15W
Microphone	Integrated
Sound power (max)	113 dB
Frequency response	300 Hz ~ 8 kHz
Alarm	Digital input, NO (short circuit to get the alarm)
Power supply	PoE or 12 / 24 Vdc
Condizioni operative	Temperature from -30 °C to +60 °C, R.H. ≤ 85% without condensation
Grado di protezione	IP67, suitable for outdoor use
Dimensions	285 (L) x 205 (H) x 290 (D) mm, weight 1300 g

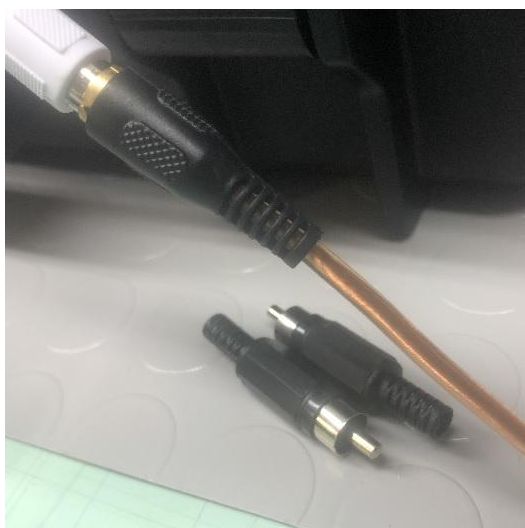


Fig. 2.1. RCA connector for the Alarm input



3 Speaker programming

3.1 Access using a web browser

Once the S21 has been connected to the power supply (via PoE or with a separate power supply), configuration is carried out using a Web Browser. Default access parameters are:

- IP address: **192.168.5.200**
- Username: **admin**
- Password: **tm1234**



TIP.

1. It is recommended that you change the administration password the first time you log in.
2. The speaker could be configured in DHCP: scan the IP addresses accessible in the address subnet, for example with a tool such as "Advanced IP scanner".

3.2 Status

Once logged in, the "Status" page is displayed - see Fig. 3.1.

Status
Basic
ONVIF
SIP Account
Audio
Media File
Alarm
Schedule
RTP Multicast
Firewall
System

Status	
Device Time	2022-03-01 09:37:22
Serial Number	50346849B08AA11C
Firmware Ver	CS20-V3.2.2
Free Space	3236KB
SIP1 Status	NONE
SIP2 Status	NONE

Network	
MAC Address	A2:C0:A4:20:02:10
IP Address	192.168.50.200
Subnet Mask	255.255.255.0
Gateway	192.168.50.1
Primary DNS	218.85.152.99
Secondary DNS	218.85.157.99

Refresh

Fig. 3.1. Status



3.3 Basic

With the first item of the Basic menu, you set the device's date and time and the network parameters - see Fig. 3.2.

The screenshot shows a web interface for configuring a device. On the left is a sidebar menu with items: Status, Basic (highlighted), ONVIF, SIP Account, Audio, Media File, Alarm, Schedule, RTP Multicast, Firewall, and System. The main content area is divided into two sections: 'Date/Time' and 'Network'.
In the 'Date/Time' section, 'Device Time' is 2022-07-08 03:35:39, 'Update Mode' is set to 'LocalTime' in a dropdown menu, and 'LocalTime' is 2022-07-08 09:35:40. A green 'Save' button is located at the bottom right of this section.
In the 'Network' section, 'DHCP' is unselected and 'Static IP Address' is selected. Below this, there are three input fields: 'IP Address' (192.168.50.200), 'Subnet Mask' (255.255.255.0), and 'Gatewav' (192.168.50.1).

Fig. 3.2. Basic - Date / Time & Network

Two methods of date/time adjustment are possible: NTP / local time.

In the first case, it is necessary to indicate the NTP Server and the time zone; in the second, the date and time of the computer is set as the date/time to be saved on the device.

In both cases, click on the "Save" button to save the settings.

The access parameters to the local network can also be configured in the "Basic" menu.

You can set the IP address of the device both in DHCP and statically.

Once you have made the desired settings, click on the "Save" button to save the settings.

3.4 ONVIF

If you want the S21 speaker to be integrated into an Onvif VMS, select this menu item, enable it by checking the box next to "ONVIF Enable" and use the credentials: Username = admin and Password = tm1234. See Fig. 3.3.



ONVIF

ONVIF Enable

User Name

Password

Save

Fig. 3.3. *Onvif*

Save the settings by clicking on "Save".

3.5 SIP account

Two SIP accounts can be defined for each S21 speaker (see Fig. 3.4): once the parameters **Username**, **Password**, **Display Name**, **Server Host** and **Server Port** have been indicated, the registration status to the SIP Server will appear in the status panel (see Fig. 3.1).

Note that the page indicates whether the speaker is correctly registered in the SIP Server ("REG SUCCESS").

Furthermore, it is possible to indicate as "Ringtone" a multimedia audio file that is played during a SIP call on the network; the message can be played back:

- Answer Immediately: the audio file is played immediately following the SIP call
- Answer Delay: the audio file is played with a delay of a time defined in seconds in the range 0 - 600

Similar configurations can be done for the second SIP address.

To upload audio files to the speaker memory, see the "Media File" function - paragraph 3.7.



SIP Set

Account	Account 1	REG SUCCESS
User Name	153	
Password	
Display Name	S01	
Server Host	192.168.50.101	
Server Port	5060	
Expire Time	3600	Seconds
Ringing Tone	userfile1	
Auto Answer	Answer Immediatly	
Incoming Notify	<input type="checkbox"/>	

Fig. 3.4. SIP account

Use the "Save" button to save the SIP account configurations.

3.6 Audio

The Audio settings concern the following parameters (see Fig. 3.5):

- Codec: indication of which Codecs you want to use
- Speaker: Speaker volume settings with a scale from 0 to 100
- Jitter buffer: to make the audio more stable (default value 360 ms)
- Mic: microphone volume adjustment (if present) with a scale from 0 to 100
- Acoustic Echo Canceling: echo suppression (select the "AEC" box with a checkmark)



TIP.

Microphone functions are not fully described in this document as the S21 does not have this option.



Codec

Codec Setting

<input checked="" type="checkbox"/>	OPUS
<input checked="" type="checkbox"/>	G.722
<input checked="" type="checkbox"/>	G.711U
<input checked="" type="checkbox"/>	G.711A

Speaker

Volume (0-100)

Amp Auto OFF ▼

Jitter Buffer (60 - 2000) ms

HPF

NR

MIC

Gain ▼

Volume (0-100)

AEC

Fig. 3.5. *Audio*

Click on "Save" to save the settings.

3.7 Media file

If you want to upload custom files (music, announcements, ringtones, etc.) you can, with this menu item, upload up to 10 different files - see Fig. 3.6.



5 ringtones are pre-loaded (bell 1-bell 5) which can be played with a click on the play button on the right of each item.

To upload custom files, use the "User File" panel: you can upload ads up to a maximum of approximately 3 MB.

Select the file to upload by clicking on the "Choose file" box and then upload by clicking on the button on the right with the "up arrow" icon.

The "play" icon is used to listen to the loaded file and the "trash" icon is used to delete a file from memory.

System File

#	Name	
1	bell1	
2	bell2	
3	bell3	
4	bell4	
5	bell5	

User File (3236KB free)

#	Name	File				
1	userfile1	LeaveTheTerm...	<input type="button" value="Scegli file"/> N...			
2	userfile2		<input type="button" value="Scegli file"/> N...			

Fig. 3.6. Media File

3.8 Alarm

To implement alarm functions, you can use the "Alarm" menu - see Fig. 3.7.



Alarm In

Alarm Enable

Play File

Cycle Mode

Http URL

Play URL Enable

Example1: `http://192.168.50.210/api/play?action=start&file=bell1`

Example2: `http://192.168.50.210/api/play?action=start&file=userfile1&mode=once&volume=10`

Example3: `http://192.168.50.210/api/play?action=start&file=userfile1&mode=multiple&count=10&volume=20`

Fig. 3.7. Alarm

Upon activation of the digital input (by short-circuiting the poles of the alarm pair), an audio file can be enabled among those provided in the "Media File" menu, including the desired type of playback: playback of the file only once, for a certain number of times (configurable parameter from 1 to 1000) or for a duration of time between 1 and 60,000 seconds.

In the second part of the page, examples of APIs are shown to allow the playback of an audio file via HTTP URL: for example, the API of "Example2" allows you to play the audio file corresponding to "userfile1" of the "Media list" File - see Fig. 3.6 - once and with a volume of 10 (on the scale 0-100).

3.9 Schedule

The "Schedule" function can be used in all those applications where time slots are foreseen, such as for example working hours in offices or shop opening times. Audio announcements can be made at predefined times. To edit a schedule from the list, click on the "pencil" icon.

Enable the scheduling, then assign it a name, choose the announcement to play and set it to the desired parameters. See Fig. 3.8.



Schedule Add/Edit

Schedule Enable	<input checked="" type="checkbox"/>
Schedule Name	<input type="text" value="MSG"/>
Start Date	01/01/2022 <input type="text"/>
End Date	31/12/2099 <input type="text"/>
Allowed Days	<input checked="" type="checkbox"/> Mon <input checked="" type="checkbox"/> Tue <input checked="" type="checkbox"/> Wed <input checked="" type="checkbox"/> Thu <input checked="" type="checkbox"/> Fri <input checked="" type="checkbox"/> Sat <input checked="" type="checkbox"/> Sun
Action Time	08:00 <input type="text"/>
Action Type	<input type="text" value="Start"/>
Play File	<input type="text" value="userfile1"/> <input type="button" value="▶"/>
Cycle Mode	<input type="text" value="Once only"/>
Times (1-1000)	<input type="text" value="1"/>
Duration (1-60000)	<input type="text" value="1"/> Seconds

Fig. 3.8. Schedule

3.10 RTP Multicast

In the S21 speaker there are 10 RTP addresses to implement "multicast" functions. Please note that the port numbers do not have to be continuous, when setting the same RTP addresses.

For example:

- 239.255.1.2:8000, 239.255.0.1:8001, 239.255.0.1:8002 is an incorrect setting
- 239.255.0.1:8000, 239.255.0.1:8002, 239.255.0.1:8004 is a correct setting

Also note that:

- The multicast address range varies from 224.0.0.0 to 239.255.255.255
- The port range varies from 1024 to 65536
- To use RTP multicast use IP tools such as "Audio manager" or "Public Address" systems (for example Tonmind PA System Lite or <https://www.doingsecurity.it/wp-content/uploads/2022/04/ASL-General-Product-Brochure.pdf>).



3.11 Firewall

The Firewall is used for network protection. You can edit the firewall rules that protect against possible cyber attacks - see Fig. 3.9. The “pencil” icon is used to edit and the “trash” icon is used to delete the rule.

Firewall Rules						
#	Name	Type	IP/MAC	Action		
1						
2						
3						
4						
5						

Automatic Defense Rules						
#	Name	Protocol	Port Range	Rate		
1			-			
2			-			

Fig. 3.9. Firewall

3.12 System

The last menu item allows you to carry out actions on the system such as:

- Reboot: restarting the speaker
- Reset: factory reset
- Upgrade (firmware version update): select the required binary file with “Choose file”, click on “Upgrade” and wait for the update to finish; the process takes about 20 seconds.

In the second part of the page it is possible to modify the access parameters to the speaker.



Upgrade

Reboot	Reboot Device Now
Reset	Reset to Factory Setting
Upgrade	<input type="button" value="Scegli file"/> Nessun file selezionato

Security

User Name	<input type="text"/>
Password	<input type="password"/>
New User Name	<input type="text"/>
New Password	<input type="password"/>
Confirm Password	<input type="password"/>

Fig. 3.10. System