



TEMA TELECOMUNICAZIONI

"IP COMMUNICATION AND SECURITY COMPANY"

WWW.TEMATLC.IT

AD635

VoIP SIP 12W PoE Wall Speaker



Serie Audio Over IP Network
"SipComStage"

Products for VoIP SIP LAN networking Communications, Paging Amplifiers Systems and Audio Applications. Zone Announcements, Night Ringer, Multicast general call, Background music, Standard SIP call or Emergency call, SD memory with pre-recorded messages, Relays for LAN drives.

PRODUCT MANUAL

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Revision	Date	Revision reason	Prepared	Checked/Approved
1	21/02/2018	First release	MM, DP	DP, FL



DICHIARAZIONE DI CONFORMITÀ CE

DECLARATION OF CONFORMITY CE

We, **TEMA TELECOMUNICAZIONI SRL Via C. Girardengo, 1/4 - 20161 MILANO**

declare under our sole responsibility that the product:

Product name **Altoparlante VoIP SIP 12W PoE per montaggio a parete**

Trade name **TEMA TELECOMUNICAZIONI Srl**

Type or model **AD635**

and accessories --

to which this declaration relates is in conformity with the essential requirements and other relevant requirements of the R&TTE Directive (1999/5/EC, 2006/95/EC, 2004/108/EC).

The product is in conformity with the followings standards and/or other normative documents:

HEALT & SAFETY EN 60950-1:2006 +A11:2009 +A1:2010 +A12:2011

EMC EN 55022:2010, EN 55024:2010, EN 61000-3-2:2006
EN 61000-3-3 :2008

MILANO, 20 February 2017

TEMA TELECOMUNICAZIONI SRL
D. Pontillo

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RECOMMENDATIONS

1. It is recommended to read this entire manual before proceeding to the installation of the device.
2. The installation and commissioning of the device can only be performed by specialized technicians.
3. The device is accurately manufactured and tested. In any case, the product is not recommended for use where an error of operations can cause property damage and/or injury to persons.
4. It is expressly not recommended maintenance inside the device which must be carried out by Tema Telecomunicazioni, the removal of the closures will invalidate the warranty and makes accessible internal parts with risk of electric shock.
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This symbol in the descriptions indicates a general warning or a damage danger to equipment or people.



This symbol in the descriptions indicates useful information or a suggestion for the optimization of the device functionality.

INDEX	PAGE
1. PRESENTATION	5
2. FEATURES.....	7
3. PACKING LIST	7
4. TECHNICAL SPECIFICATIONS	8
5. OPERATION.....	9
5.1. DEVICE CONNECTION DIAGRAMS.....	9
6. OPERATING MODES.....	10
6.1. CALLS TO DEVICES.....	10
6.2. RELAY FUNCTION.....	10
6.3. CALLS GENERATED FOR ACQUISITION OF EXTERNAL CONTACTS FOR SPECIAL SIGNALINGS.....	10
6.4. MULTICAST AUDIO STREAMING	11
7. COMMANDS AND CODES.....	11
8. INSTALLATION OF THE DEVICE	12
8.1. MOUNTING AND POSITIONING OF THE AD635 SYSTEM.....	12
8.2. ACCESS TO INTERNAL PARTS - CABLE ROUTING.....	12
8.3. CONNECTING THE AD635 INTERNAL MODULE.....	13
8.4. CORRECT CONNECTION OF AN ADDITIONAL PASSIVE SPEAKER	15
8.5. 100V AUDIO LINE FOR ADDITIONAL SPEAKERS AWAY FROM AD635 IP SPEAKER	16
9. PROGRAMMING	17
9.1. PREPARATION FOR THE SYSTEM PARAMETERS PROGRAMMING.....	17
9.2. ACCESS TO PROGRAMMING.....	19
9.3. NETWORK PARAMETERS.....	20
9.4. SIP PARAMETERS	21
9.5. GENERAL PARAMETERS.....	22
9.6. SET OF THE OPERATING MODE	23
9.7. RELAY AND ALARM INPUT SETTINGS	24
9.8. CAMERA	25
9.9. CALL BUTTONS	26
9.10. MESSAGES MANAGEMENT	27
9.11. AUTOMATIC ANNOUNCEMENTS	29
9.12. CALLS REPORT	31
10. MAINTENANCE.....	32
10.1. SYSTEM	32
10.2. LOGIN CREDENTIALS	33
10.3. DIAGNOSTIC LOGS	33
11. PRESENTATION AND USE OF THE "AA Video Console" SOFTWARE	34
11.1. PRESENTATION	34
11.2. SOFTWARE CONFIGURATION FOR SIP SERVER MODE	35
11.3. SOFTWARE CONFIGURATION FOR PEER-TO-PEER MODE.....	36
12. Introduction to AA-Video Console APP version for operating systems iOS.....	37
12.1. DOWNLOADING AND INSTALLING THE APP	37
12.2. USING THE APPLICATION	39
13. Introduction to AA-Video Console APP version for ANDROID systems	39
13.1. DOWNLOADING AND INSTALLING THE APP	39
13.2. USING THE APPLICATION	41
14. APPENDIXES.....	43
14.1. APPENDIX 1: OTHER EXAMPLES OF MULTICAST AUDIO STREAMING APPLICATIONS.....	43
14.2. APPENDIX 2: USE OF THE VLC MEDIA PLAYER SOFTWARE AS A MULTICAST ENCODER FOR AUDIO FILES.....	45
14.3. APPENDIX 3: USE OF THE AUDACITY SOFTWARE FOR AUDIO FILES RECORDING.....	46
14.4. APPENDIX 4: CABLING OF A UTP RJ45 NETWORK CABLE ACCORDING TO THE STANDARD EIA568B.....	47

1. PRESENTATION

AD635 allows to realize Paging Amplification Audio Sound Systems in a standard LAN network completely integrating with IP-PBX SIP in order to be able to play announcements from any telephone in the internal network and any technologies: analog, SIP, Smartphones and Softphones.

Access can be authorized by Password with code to be typed before starting the announcement. **Two internal relays** can be programmed to be automatically activated when it is called or to be controlled from the phone via LAN that originated the call to the AD635 speaker, eg. to report the event to any auxiliary devices connected downstream.

The system programming is done remotely via LAN thanks to the integrated Web server. AD635 incorporates an efficient Class-D 10W (2x5W) amplifier.

2nd SIP Account – Night Ringer. AD635 can be registered on the PBX with a second telephone number, different from the one used for ads and inserted in the night ring group. To the arrival of an incoming call, the system plays a sound (user selectable) to all the network speakers. The volume can be adjusted independently of the others managed audio channels.

Inputs from external contact with a variety of functions, for example: provide to make a SIP call to a preprogrammed number and inform the operator of the event with an appropriate voice message. The signaling can be repeated a number of programmable times, the operator can interrupt the sequence with a keyboard code. Other examples of use will follow in this manual.

Multicast Audio Streaming for music and announcements diffusion. AD635 handles up to 5 multicast channels in LAN with priority levels to allow the background music broadcasting on loudspeakers network. The generation of musical programs in streaming audio can be managed from a PC of the LAN/WAN network with special software or special TEMA Encoder.

Service "SIP Security Info Call" - Emergency SIP Call. By connecting a button or an external contact, AD635 can call a phone number programmed to alert the event with a specific warning message. It is a security service for emergencies or simple request for help and information, and allows a one-way phone call.

Total remote management via LAN, integrated Web Server. Programming, configuration, loading and listening to audio files, firmware release update, audio volume adjustment, backup and restore the configuration, device reboot.

Possibility to connect one or more external passive loudspeakers on the **2nd amplifier** to expand audio coverage of the served area.

AD635 can be powered with an external power supply, or only from the LAN cable via PoE, the two power sources can coexist.



VoIP SIP Amplifiers-Speakers Products and Accessories of the AD600 “SipComStage” series



AD630 IP-SIP PoE 25W Horn Speaker with 40W internal amplifier (2x20W) IP65 protection.



AD635 IP-SIP PoE 12W speaker for wall mounting with the possibility of integrating a PoE injector adapter.



AD633 IP-SIP speaker 12W PoE ceiling mount version.



AD633C SIP IP-12W PoE Speaker ceiling mount version with IP54 flameproof cover.



AD610 2X2W PoE IP-SIP Amplifier Module, External Amplifier Adapter with Sound Isolation Transformer. Directly pilot external power amplifiers or 8 Ohm external passive speakers.



AD611 IP-SIP PoE 10W Amplifier Module (2X5W). Directly pilot 8 Ohm external passive speakers.



AD612 IP-SIP PoE 40W (2x20W) Amplifier Module when powered with an external power supply. Directly pilot 8 Ohm external passive speakers.



AD615/S Audio Encoder Module from analog to digital on LAN Network in Multicast/Broadcast Channels.



AD333/12XTP Passive 8 Ohm 12W speaker with anti-flame cover (AD333/12TP without cover), internal transformer for 100V audio line. Ideal for connecting to AD610-611-612 or as 2nd speaker to the AD63x series IP-SIP speakers.



AD335/06TP Passive 8 Ohm 6W speaker with 100V audio line transformer. Ideal for connecting to AD610-611-612 or as 2nd speaker to the AD63x series IP-SIP speakers.



AD330/25T Passive horn speaker 25W 8 ohm with transformer for 100V audio line. Ideal for connecting to the AD610-611-612 modules or as 2nd speaker for AD63x IP-SIP speakers series.



AD330/xx Are available Speakers of different power, Horns and Loudspeakers for flush and ceiling mount.



AA-39DL

Plug Power Supply 220Vac/12Vdc-1,0A.



AA-39D1A

DIN Power Supply 220Vac/15Vdc-1,0A.



AA-39P4

PoE injector 230Vac/48Vdc 0,5A.



AA-39E3 /-E6V

DIN Power Supplies 220Vac/24Vdc-1,5A 220Vac/24Vdc-2,5A.



AD301R

30W analog amplifier, 2 channels, Volume-High-Low +/-12dB controls



AD320/30

PA 100V audio line transformer 30W, constant voltage, high efficiency toroidal type with low magnetic flux leakage.



AD32

Isolation transformer, balanced, mixer, attenuator, audio signal filter, low impedance output. Ideal for decoupling devices of audio sources to other amplifiers to eliminate noises.



AA-36

Protected Power Relay Actuator 250Vac/16A/4KVA, command in AC/DC 12V/24V, 1 contact, Led, contacts protected by electric arcs. Ideal for driving loads up to 4.000W.



AA-699xxx

Flash lights with Xeon lamp or high brightness LEDs. Ideal to be controlled by the relay of the IP-SIP speakers of the AD630 series or by the IP-SIP amplifier AD610, AD611, AD612 modules, with a call in progress add a light signal to the acoustic signal.



2. FEATURES

- IP 10W PoE Speaker for indoor installation.
- Possibility of housing an optional power supply PoE injector module
- Audio output power 10W (2x5W)
- Possibility to register a second SIP account for the "Night Ringer" feature
- 5 RX Multicast Channels for Music/Ads/Messages diffusion with 5 priority levels
- 2 remote controlled relays via LAN
- 1 multifunction input from external contact
- Possibility of playing a pre-recorded announcement, associated with the available input, or up to 6 announcements by making a call and sending the respective code via telephone
- Notification service with dedicated messages following external event
- 2 buttons inputs for direct call to SIP numbers differentiated by communication/alert
- "SIP Security Info Call" warning/emergency telephone call, sending of pre-recorded messages on loudspeakers and on the called
- "Push to Talk" function to control the direction of communication from an external button (Not included)
- Independent adjustment of audio volumes: communications, multicast, night ringtone, alert tones
- SD memory card with audio files from 16sec. customizable by the user (opt. up to 960min. - 16h audio)
- Great versatility with ease of use and programming
- VoIP connection with standard SIP Proxy Server protocol
- Compatibility with all IP-PBX of the most prestigious brands
- P2P (Peer to Peer) for operation also without IP-PBX
- Power supply via PoE (Power over Ethernet) with a single UTP cable or external power supply, also at the same time
- Free APP developed for smartphones/tablets with iOS and Android operating systems
- AA-Videoconsole software for Windows XP/7/10 PC for management of TEMA IP terminals included
- Programming via dedicated Web Interface with password protection
- Possibility of software / firmware update via LAN
- Integration with the local LAN, 100BaseT Ethernet LAN port with RJ45 connector
- Integrated PoE 802.af, one UTP cable for connection
- Dimensions 225 x 215 x 120 mm (H x W x D)
- Wall mounting inside industrial buildings, corridors, large offices, etc.
- Possibility of receiving and sending MULTICAST RTP audio streaming, for paging audio announcements, up to 16 priority levels (in reception) and with different volumes for each channel
- Audio streaming with high quality codecs
- Possibility of diffusing pre-recorded announcements at pre-established times (up to 5 for each day of the week)
- Possibility of diffusing a pre-recorded daily announcement, at a set time or manually controlled, with programmable interval and repetitions

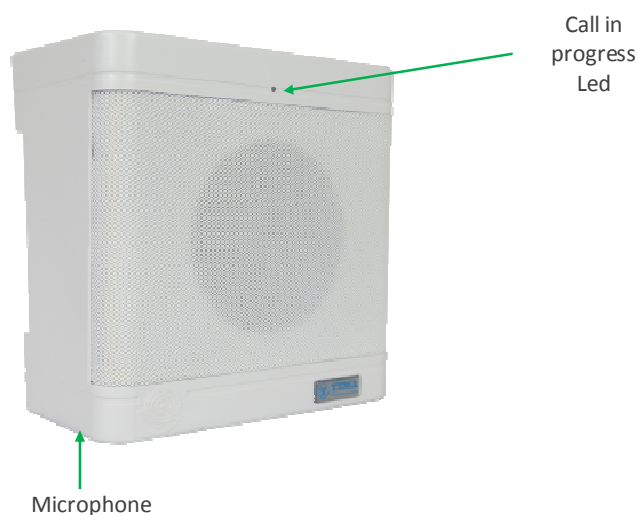
3. PACKING LIST

The systems are supplied with the parts included in the following list:

- One speaker device code AD635
- A printed system documentation, installation, programming, use manual
- A CD-ROM with complete documentation

4. TECHNICAL SPECIFICATIONS

LAN	TCP/IP Network 10/100BaseTx
Protocols	SIP 2.0, RFC 3261
RTP Multicast audio Streaming	G711μ, G711a, G722, L16 from 16 to 44 kHz
Connection	SIP Server (IP-PBX) or P2P (Peer To Peer)
Power Supply	PoE, PoE Injector and/or external Ac/Dc power supply
PoE	802.3af class 0 12,95W
PoE injector optional module possibility	Optional, model that can be directly housed into AD635
External Power Supply (Opt.)	230Vac / 12-15Vdc -1A, 24Vdc - 2A
Technology	IMX25 400MHz Microprocessor
Memory	256MB Ram, Micro-SD Flash 2GB
Programming	practical Web interface and password
APP for Smartphones	iOS, Android
Messages/Sounds	prerecorded in the internal SD memory card
Audio File Format	Windows .wav – 8K – 16 bit
Duration	16sec each. Standard (Option up to 960 min.16H audio)
Bandwidth	180Hz – 16KHz
Power	Class-D 10W (2x5W) amplifier
Sound pressure	100dB A (SPL)
Dispersion angle	110° @ 2KHz
Audio communication	Unidirectional / Bidirectional / Push to Talk
Internal Microphone	Omni-directional electret 30Hz-18KHz
Additional speaker output	1 output for external speaker, passive, impedance 8 Ohm
Automatic check mode	Through self audio feedback
Inputs from buttons or external contacts	2 for buttons + 1 for warning/alarm
Integrated relays	2
Relay contacts capacity	max 30Vdc – 1,5A
Signalings	Active call Led, call tone, Ding-dong ads
Installation	Wall mount
Housing Material	ABS
Storage temperature	From -20° to +65°C
Operating temperature	From -20° to +55°C
Relative humidity	Up to 90% non-condensing
Dimensions	218 x 216 x 120 mm (H x W x D)
Weight	1,1 Kg (1,4 Kg with PoE injector module)
Warranty	2 years, possibility of extension (Option)
Compatibility	CE, ROHS



5. OPERATION

In stand-by and correctly configured, the system waits for incoming calls.

The device allows also the “streaming” Multicast sound diffusion. In this case the RTP audio diffused in LAN will be played amplified by AD635. Differing from the announce mode on direct call, with multicast mode, more devices can diffuse the same message at the same time, useful for general pre-recorded ads or for music sound diffusion.

The operator who want to make an announcement on the device will make a call, from any extension of the PBX, to the number to which the device is registered or to its IP address in the case of Peer-to-Peer connection.

It is always monitored the change status of an alarm input to which it is possible to associate a number to call and a message to be played to the called party answer. It is possible to make common adjustment of the level output of the speakers to better suit the acoustic characteristics of the served area.

The system can activate a relay contact for signaling to external devices.

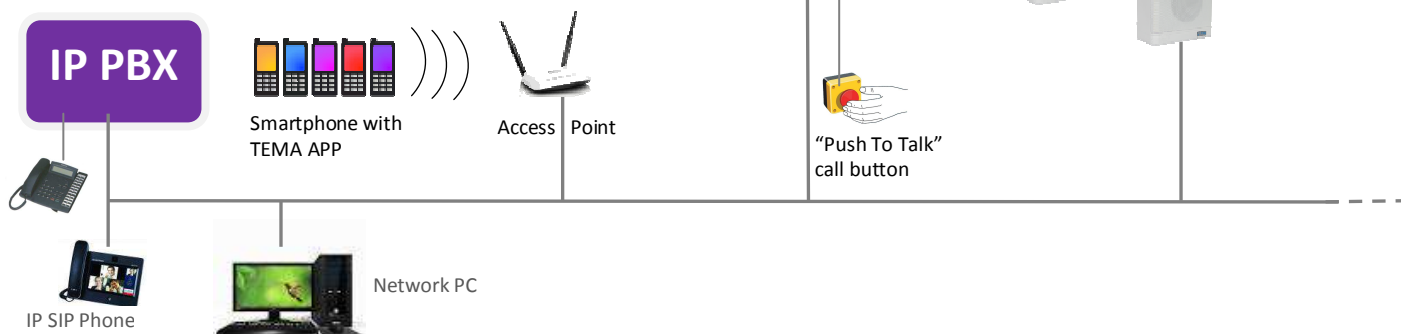
5.1. Device connection diagrams

Application with IP-PBX or Peer to Peer

Each IP Speaker can be reached from SIP phones, Smartphone and other registered terminals in the IP-PBX that can launch ads. The integrated relay can be operated from the SIP phone that originated the call. With a Network PC with installed the free software TEMA “Videoconsole” it is possible to make calls to IP speakers. If the free software “VLC” is also installed, it will possible to send on Streaming Audio speakers multicast channels, interrupted by ads as background music. In each AD600 series speaker, it is possible to independently adjust the audio volume reproduced via LAN thanks to the integrated web server.

ZONE 1 AD635 IP Speaker with relay remote control and call button

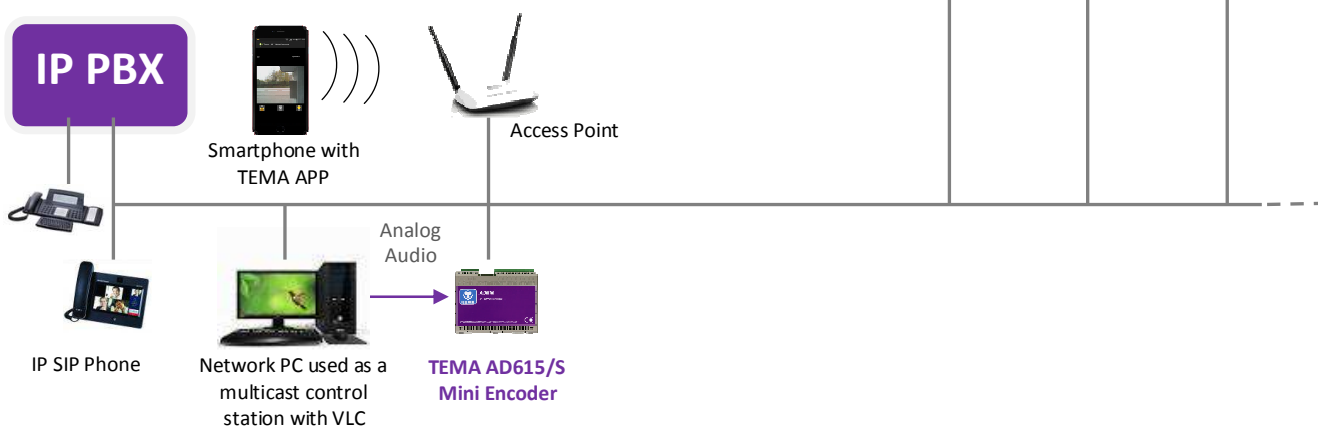
ZONE 2 AD635 IP Speaker with other passive loudspeakers on a 100V line made by adding an AD320 / 30 transformer



Multicast Audio Streaming for sound diffusion

Each AD635 is accessible from IP-PBX registered SIP phones and smartphones that can launch an advertisement. With the help of an encoder TEMA AD615 it is possible to stream music on multicast channels managed by AD635, the music is taken in analogue audio from the PC (or any audio player) and sent to the Encoder that will redistribute on the LAN. The announcement from a SIP call to a specific AD635 device will stop the music that will be automatically restored at the end.

Zone 1 Zone 2 Zone 3 **AD635**



6. OPERATING MODES

6.1. Calls to devices

Call from the PBX phones to the AD635 system allows to make announcements to the network speaker. However, it is a normal telephone call, typically unidirectional although AD635 makes possible to hear the sound present in its vicinity, being equipped with an internal microphone. Calling the extension number connected to the systems, they will answer after a set time. It is also possible to have an appropriate code to protect the function from unauthorized access. Hang up to end the announcement. Any background music will be automatically restored after some seconds.

6.2. RELAY function

The relays are typically used to signal to any auxiliary external devices that the announce is played, automatic activation call per call. If not used for the function described above it is available and can be controlled with an appropriate code from the caller's telephone.

6.3. Calls generated for acquisition of external contacts for special signalings

Are the calls that the system generates on his line to alert after triggering the alarm by the equipment input contact connected (aux devices or a button available to users in the proximity of the device). At the answer it is played to the called a pre-recorded message. It is possible to assign a phone number or an IP address that will be called when the input is activated. It is possible to determine the activation status of the same. It is the closure of the external contact that triggers the sequence of signaling but it is also possible to reverse this logic, in this way the signaling can take place after the opening of the contact (normally closed) connected to the input.

AD635 continuously monitors the status of the contact in the event of the condition of the activation stored on non-volatile memory card. As soon as possible it will begin to call the person who will manage the situation found at the telephone number programmed reproducing the message associated with the event. It is also possible to choose to play on a local speaker and on any connected audio output a pre-recorded message, which will be played prior to the call to alert the present persons in the area served by the system detected event. It is possible to define an acquisition/silencing code of alarm signaling that the called must type to inform the device of the alarm acknowledgment. If the called number is busy or does not reply, or in any other case where AD635 does not receive the capture/acknowledgment code, at the end of each call attempt return in standby and prepares itself for a new alarm notification

When the systems receive the correct acquisition/acknowledgment code related to the alarm in progress, the alter signaling will stop and will not be carried out further alarm notification calls. In order to be ready again, it is necessary that the condition which had triggered the previous notification returns in standby. Only at the occurrence of a new activation of the contact condition the calls cycle with the alert notification will start again. In practice: if a connected contact is closed and it is detected its activation, AD635 starts to make warning calls.

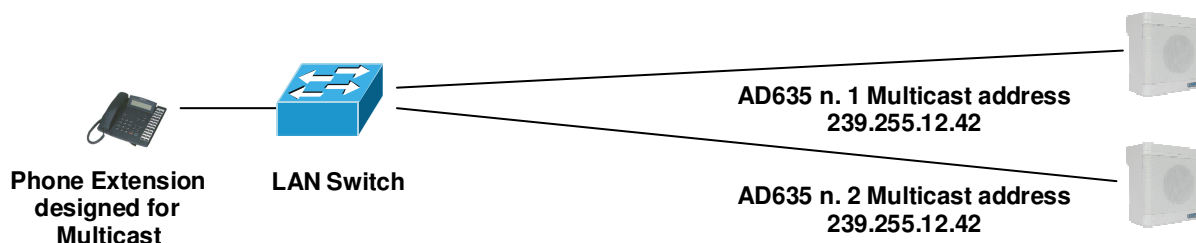
In the event that the person called by the system answers and successfully enter the acknowledge code, the alert calls will be terminated. If the contact that had triggered the alert, however, remained closed (this obviously depends by the external device that controls the contact) will NOT be triggered another warning cycle! To have new alerts for this contact, it is necessary that come back in standby before (reopening) and then to its new next possible closure will be detected from AD635 system with new telephone alerts.

6.4. Multicast Audio Streaming

In a LAN network, the Multicast term indicates the possibility to distribute an information like data, audio or video, to a group of IP terminals of the Ethernet network. For Multicast are used class D IP addresses and they range from 224.x.x.x to 239.x.x.x. In our case the AD635 system is able to receive audio in Multicast into the specific IP channel and play it amplified. The audio can be generated from a PC software application (for example VLC) or by a IP SIP phone. The received audio stream is played without the intervention of any operator, this function is useful for playing back voice messages and information or emergency announcements (also called "Paging" mode). Obviously the Multicast audio streaming is unidirectional, the audio stream is sent from source to destination, but not vice-versa. The audio stream can be sent simultaneously to multiple terminals (same IP Multicast), or only to distinct terminals (each provided with its own IP address). It is possible to program up to 16 audio receive addresses, each with its own priority and its playback volume, so that the same terminal, if it is already playing audio (eg music) can be interrupted by a higher priority stream (for example an announcement) and with a different volume (typically an announcement must be played at a higher volume than background music). The audio supported by this mode is in the G.711 format (aLaw or μ Law), G722 or linear high quality 16 bit (proprietary format, diffused through the AD615 device or an Intercom AA-540).

Example 1

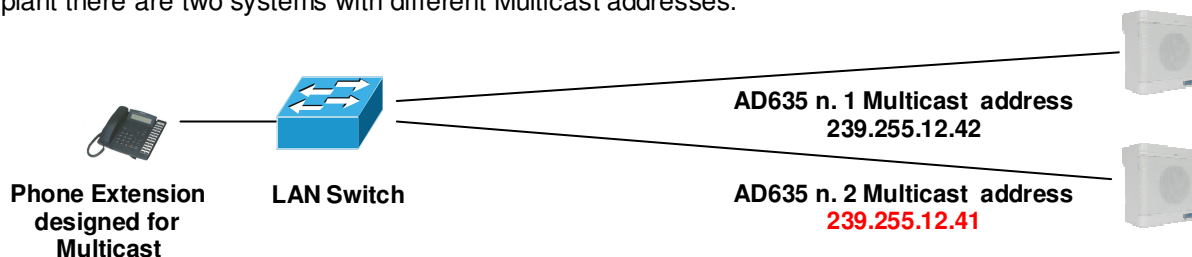
In a plant, there are two systems, connected to the same network switch. From a suitable phone, it is possible to make a voice announcement via multicast address 239.255.12.42:



Both systems will play the announcement audio message. Many more devices than those given in the example can be connected, since there are no limits.

Example 2

In the plant there are two systems with different Multicast addresses.



The phone, selecting to send the multicast voice to one or other address of the terminal, will decide which device must play the streaming message.

7. COMMANDS AND CODES

During the announcement will be possible to send the commands described here (which will be these by default):

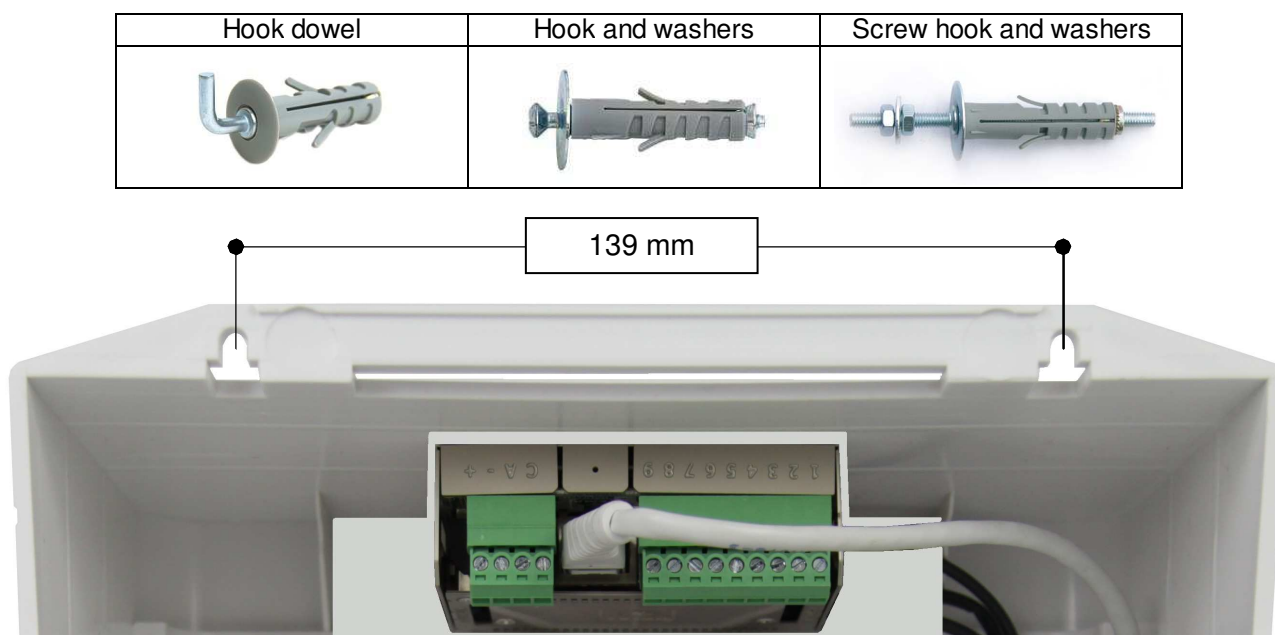
DTMF Command	Function	Description
#1 - #2	Activate the relay contact 1 or 2	Used to manually activate the relays if not programmed to be automatically activated per announcement.
#5	Extension of announcement time	AD635 alert the operator with some tones 30 seconds before the expiration of the time for the announcement. Having to extend the announcement over the set time it is possible to recharge original time to continue the conversation (with this code).

8. INSTALLATION OF THE DEVICE

8.1. Mounting and positioning of the AD635 system

The AD635 IP loudspeaker box when mounted will be hanging on the wall. On the upper side of AD635 there is a plastic cord comprising two housings for wall anchors. The distance between the fixing eyelets is 139mm.

To support AD635 it is possible to use robust hook dowels or, always using the provided housings, may be used instead dowels with screw and washer or even threaded screw with lock washers and tightening nuts. In this way the AD635 will be fixed and locked to the wall (unmovable) and not just hanging on the hooks.



Because of the multiple attachment modes of AD635, no accessory is provided for this purpose. According to the desired mode and the wall, adopt the most suitable material.

8.2. Access to internal parts - cable routing

The AD635 comes with the back of the device opened and allows access to the system components.

The arrival of the cables can be achieved via an external conduit to the wall in which case use to enter in AD635 with the cables one of the three slots present on the right, left or bottom of the plastic box.



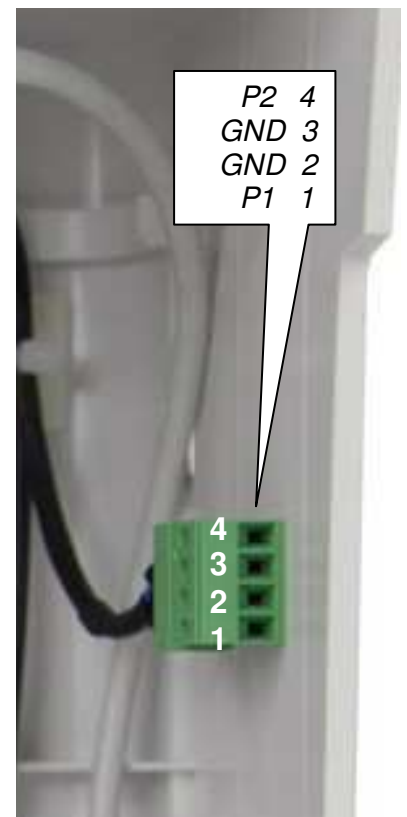
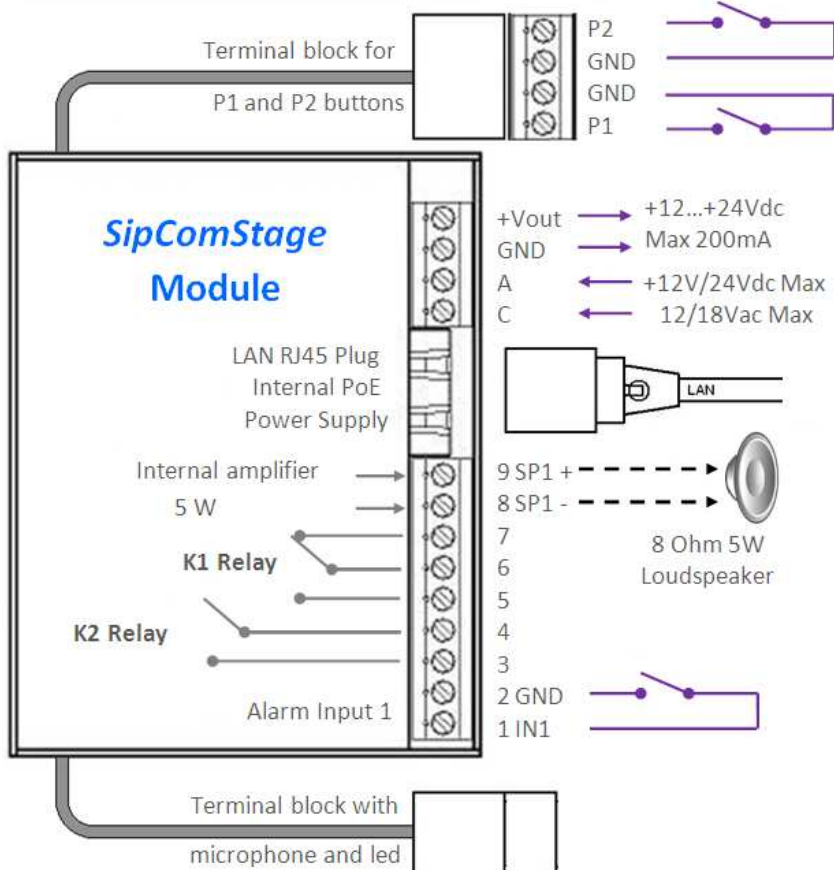
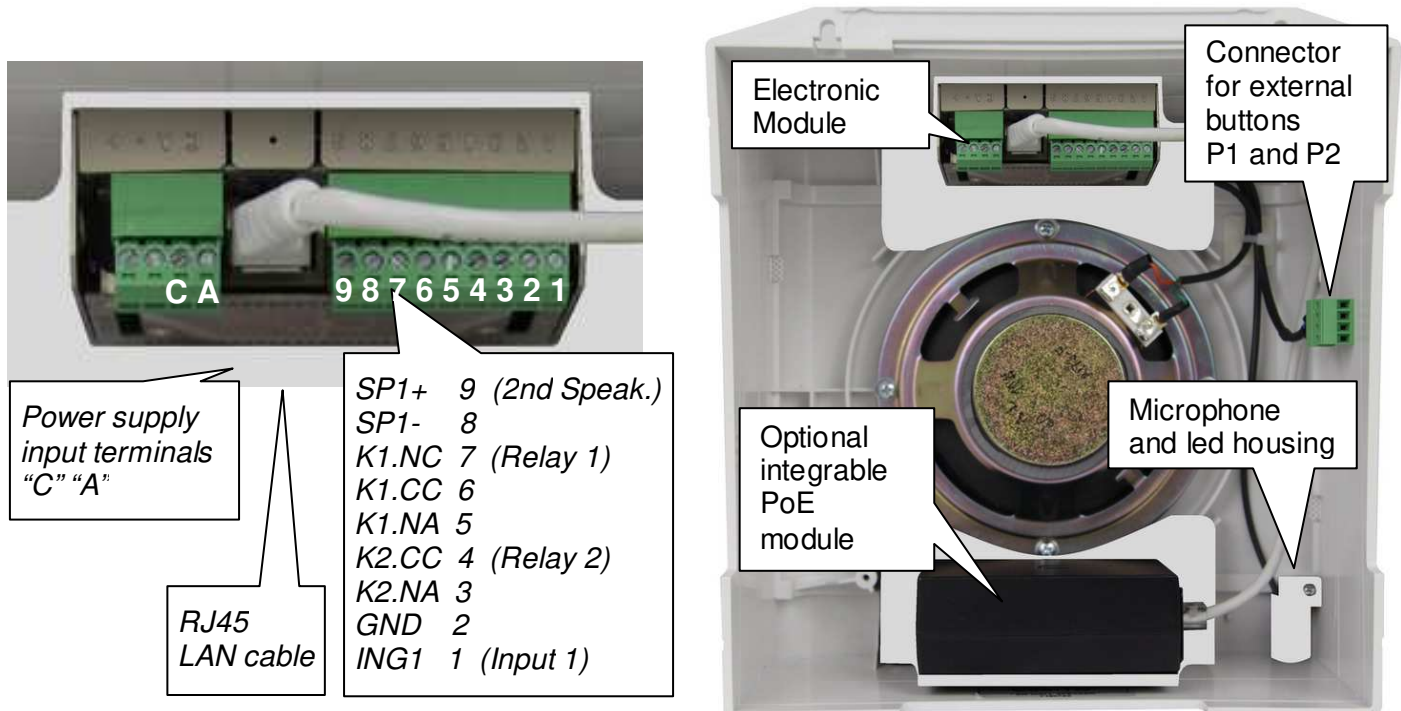
By providing instead one or more connecting conduits of suitable section (depending on the device and the accessories to be connected) simply provide for the arrival of the conduits exit from the wall, in the central area, the one that will remain covered by the plastic box of the AD635 speaker.

8.3. Connecting the AD635 Internal Module

Once the AD635 box has been fixed, it is necessary to make the connections necessary for its operation before it will be permanently fixed.

Inside the AD635 there is an electronic module for managing the communication functions on the VoIP network and for amplifying the audio signal. Connection of the signal cables from the field must be carried out by qualified technicians, working by checking that no cables are under tension, and also observe the voltage and current values for power supplies and other parts of the system.

Follow the instructions in the block diagram for the correct electrical connection of the system. Below is detailed each shown terminal block.



4-pin removable terminal block (screw connector inserted to the electronic module)

+Vout	Terminal block from which it is possible to withdraw unregulated power supply, POSITIVE
GND	Terminal block from which it is possible to withdraw unregulated power supply, NEGATIVE
A	Terminal block to power the system, irrelevant polarity
C	Terminal block to power the system, irrelevant polarity



At the "+Vout" output there is a + 12Vdc voltage when the device is powered via PoE, otherwise, at this output the voltage will be the same as at the terminals A-C. The use of "+Vout" is permitted as long as it is not exceeded a maximum 200mA current consumption and the load has a protection on the input current. Improper use of this output will permanently damage the unit.

RJ45 LAN port (present on the electronic module)

AD635 requires a LAN cable to connect to the network. If the port cable has also PoE, it will not be necessary to supply the module with other power sources (up to max 10W powers). For higher powers will be necessary to supply the module with other power source of 24 Vdc 2A or max 18Vac 2.5A.



Devices powered via PoE (Power over Ethernet) may only be connected with cables coming from inside the building, they are not allowed connections to LAN cables coming from outside the building.

9-pin removable terminal block (screw connector inserted to the electronic module)

9 SP1+	Class-D amplifier 1st output terminal block for connection of a speaker, positive pole
8 SP1-	Class-D amplifier 1st output terminal block for connection of a speaker, negative pole
7 K1.NC	Terminal block of the K1 relay - NC contact, normally closed
6 K1.CC	Terminal block of the K1 relay - CC contact, central contact (contact load max 30V 1.5A)
5 K1.NA	Terminal block of the K1 relay - NO contact, normally open
4 K2.CC	Terminal block of the K2 relay - CC contact, central contact (contact load max 30V 1.5A)
3 K2.NA	Terminal block of the K2 relay - NO contact, normally open
2 GND	Terminal block referred to the negative of the system power supply, for the alarm contact
1 ING1	Terminal block for the detection of the external alarm contact



To terminals 1 (INP1) and 2 (GND) must only be connected a relay contact or a button free from any voltage to prevent permanent damage to the device.

4-pin removable terminal block (connector inserted to the electronic module)

P1	Connect here the dry contact of the button named P1
GND	Reference terminal of the P1 button contact
GND	Reference terminal of the P1 button contact
P2	Connect here the dry contact of the button named P2



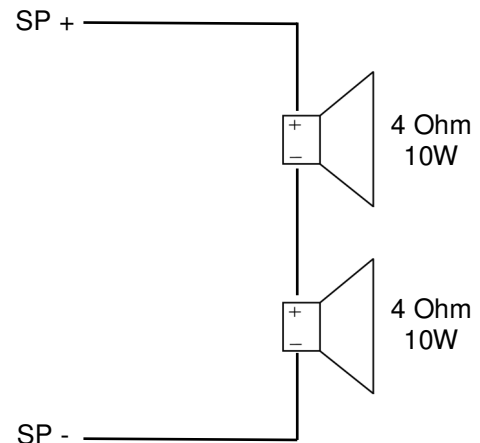
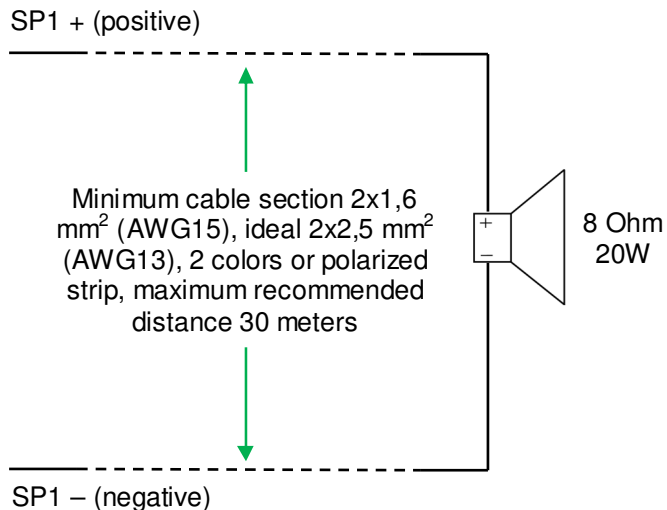
To terminals 1 (P1) and 2 (GND) / 4 (P2) and 3 (GND) must only be connected a relay contact or a button free from any voltage to prevent permanent damage to the device.

8.4. Correct connection of an additional passive speaker

The power amplified SP1 is an output where it is possible to connect an external additional speaker passive paying attention to its polarity but especially to the load impedance which cannot be lower than 8 Ohm.

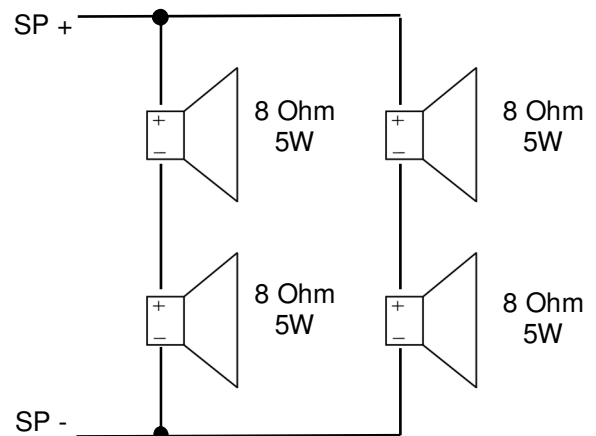
Furthermore, it must be respected the maximum output power from the amplifiers using adequate power speakers. In the simplest case just connect an 8 ohm speaker of at least 20W power or higher. Use cables with different colors, section of at least 1.5 mm² and limit the distance from the amplifier to no more than 30m.

Below are some examples of mixed combinations, to serve a wider area but with distributed power.



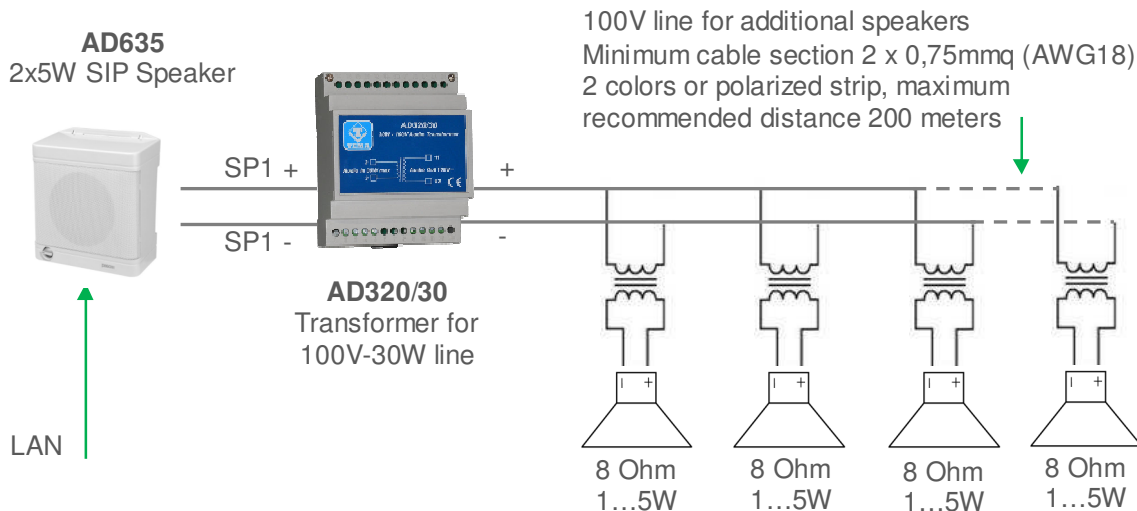
Correspondence cables AWG / mm²

AWG20 >	0,518 mm ²	resistance 33,31 Ohm/Km
AWG19 >	0,653 mm ²	resistance 26,42 Ohm/Km
AWG18 >	0,823 mm ²	resistance 20,95 Ohm/Km
AWG17 >	1,04 mm ²	resistance 16,61 Ohm/Km
AWG16 >	1,31 mm ²	resistance 13,17 Ohm/Km
AWG15 >	1,65 mm ²	resistance 10,45 Ohm/Km
AWG14 >	2,08 mm ²	resistance 8,286 Ohm/Km
AWG13 >	2,62 mm ²	resistance 6,571 Ohm/Km
AWG12 >	3,31 mm ²	resistance 5,211 Ohm/Km
AWG11 >	4,17 mm ²	resistance 4,132 Ohm/Km
AWG10 >	5,26 mm ²	resistance 3,277 Ohm/Km



8.5. 100V audio line for additional speakers away from AD635 IP Speaker

For special applications it is possible to generate from AD635 an audio line at a constant voltage of 100V of max 20W power using a Tema AD320/30 transformer to connect on the SP1 power output. In this way it is possible to install several other additional speakers (with internal transformer suitable for 100V line and selectable power) even at distances up to 200 meters from AD635. The total sum of the power the installed speakers must not exceed the maximum power of 20W.



Some examples of speakers available on Tema catalog (not amplified, passive models)



AD330/15T Horn Speaker 15W / 8Ohm with transf. 100V, sockets 15/7.5/3.7/1.9 W
response 300Hz - 7KHz, Dim. Diam. 210 x 240 mm



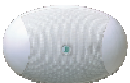
AD330/25T Horn Speaker 25W / 8Ohm with transf. 100V, sockets 25/12.5/6.25/3.12 W
response 300Hz - 7KHz, Dim. Diam. 240 x 290 mm



AD335/06TP Wall Speaker 6W / 8Ohm Transf. 100V sockets 6/3/1.5 W
response 180Hz - 16KHz, Dim. 218 x 216 x 120 mm



AD334/20TP Vandal proof Projector 20W with transf. 100V, outdoor, sockets 20/10/5 W, IP65
response 150Hz - 15KHz, Dim. Diam. 180 x 145 mm, weight 2.4kg, grey color



AD337/06TP Oval wall speaker 6W / 8Ohm with transf. 100V sockets 6/3/1.5W
response 180Hz - 10KHz, Dim. 258 x 169 x 72 mm, 0,8Kg



AD333/12TP Round speaker wall/ceiling flush mounting, 12W with Transformer 12/6/3 W
response 80Hz - 15KHz, Dim. Diam. 200 x 62 mm (Hole 160-165mm)



D333/12XTP Round speaker ceiling flush mounting, 12W with Transf. 12/6/3 W
Band 80Hz - 20KHz, Dim. Diam. 220 x 130 mm (Hole 200-205mm)
with flameproof cover AD333/12YC



The speakers listed above are not produced by TEMA, but a selection of the best third-parties quality producers that are best suited to our production amplifiers and PA analog speaker systems and IP VoIP SIP for audio LAN. The components offered however fall into the corporate policies in terms of warranty and technical support.

9. PROGRAMMING

9.1. Preparation for the system parameters programming

Programming is done via the WEB interface. To gain access, simply connect an Ethernet cable from a PC or from a switch to the LAN port of AD635.

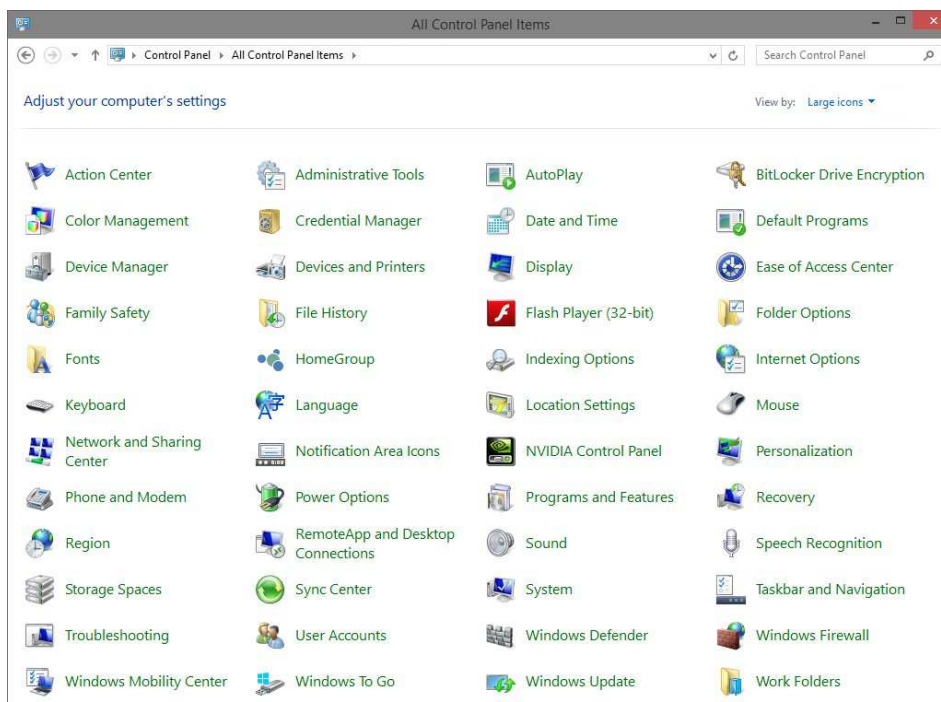
The default IP address of AD635 is "192.168.0.10".

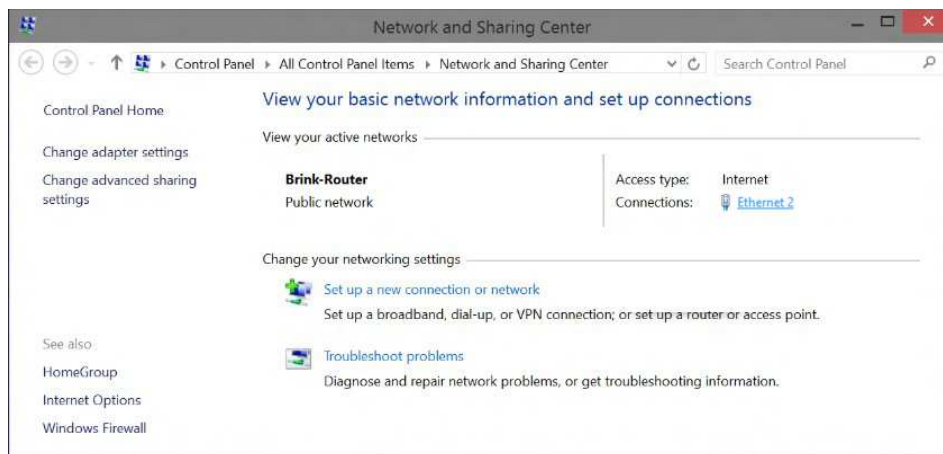
Remember that in order to successfully connect to the web interface of AD635, it is necessary that, in the IP addresses configuration of your PC, is present the subnet 192.168.0.x, where "x" is any number between 1 and 254 and different from 10. See below how to configure your PC to reach the correct subnet. The shown procedure applies to Windows® operating systems.

Open the Windows Control Panel and set the field "View by": "Category" "Large Icons" or "Small Icons".

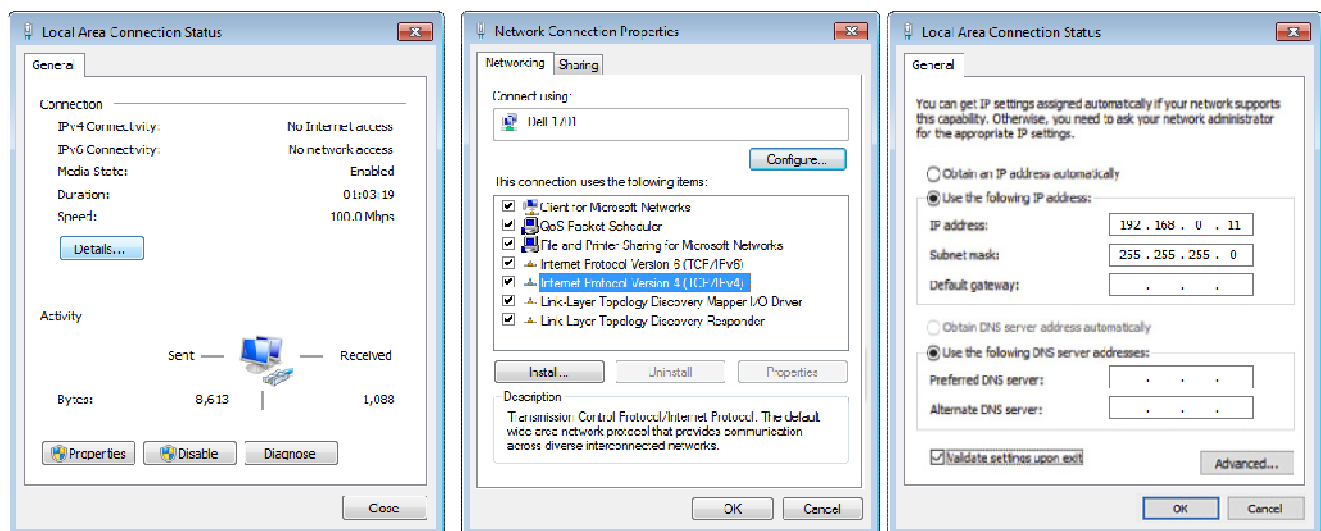


Choose "Network and Sharing Center" as shown in the first figure, detect your LAN connection, choosing the one referring to the network card that you are using to connect with AD635.





Once the correct connection is identified, click on it and it will appear the window where it is necessary to click on the "Properties" button. It will then open the window where must be selected "Internet Protocol Version 4 (TCP/IPv4)" and then click the Properties button again. See the following figures:



If the PC is already on subnet 192.168.0.x with a mask 255.255.255.0, ignore the following steps. Otherwise, proceed as follows. (The address of the PC configuration should not be 192.168.0.10). Remember the current TCP/IP configuration of your computer for any subsequent restore of the correct parameters. Click "Use the following IP address" and type in the appropriate field the following IP address: 192.168.0.11 (instead of "11" used in the example it is possible to enter any number between 1 and 254, but excluding the 10 which is the default address of the system to be programmed). In the "Subnet Mask" enter the netmask 255.255.255.0. Click OK to confirm the changes. The PC is now ready to configure the door phone. Remember at the end of programming to restore the network configuration of the PC to its original state if necessary.

Once the IP address of your PC is successfully configured, it is possible to reach the Web interface to configure AD635 at the address 192.168.0.10 .

9.2. Access to programming

To program the device, it is sufficient to use a standard browser such as Explorer, Firefox, Chrome or others. The default address of the device is **192.168.0.10** with a mask of **255.255.255.0**, and the user/password with which to connect are **master/master**. Make sure to have access to this network segment from your computer. Once logged in, it is possible to change the administrative password for the maximum safety of your device. Once logged in, it is possible to change the administrative password for the maximum safety of your device.

The use is very simple and intuitive, it is always visible on the left the menu for selecting the functions to be programmed, while on the right is shown the configuration window that is currently active. Any change will be confirmed by pressing the "Apply" or "Save" buttons. Closing the browser or changing the page without selecting those buttons will make lost any change.

The screenshot displays the web interface of the TEMA VoIP SIP 12W PoE Speaker AD635. On the left is a navigation menu with the following items: CONFIGURATION (Network, SIP parameters, General parameters, Call buttons, Relays and Alarms, Messages), MAINTENANCE (System, Password, Log), and a TEMA logo. The main area is titled 'SIP parameters' and features a red status bar at the top indicating 'NOT REGISTERED'. Below this, there are two sections: 'SIP server' and 'SIP account'. The 'SIP server' section includes fields for address, port, domain, and outbound proxy. The 'SIP account' section includes fields for user, password, and expiration (sec). A blue status bar labeled 'Ringer group' is positioned below the SIP account fields. At the bottom, there is a section for '2° SIP account' with a user field.

SIP parameters		
NOT REGISTERED		
SIP server	address	<input type="text"/>
	port	<input type="text"/>
	domain	<input type="text"/>
	outbound proxy	<input type="text"/>
SIP account	local sip port	<input type="text"/>
	user	<input type="text"/>
	password	<input type="text"/>
	expiration (sec)	<input type="text"/>
Ringer group		
2° SIP account	user	<input type="text"/>

Any changes do not require restarting the device (except the change of IP address, and the software update).

9.3. Network parameters

On this page it is possible to set the network parameters, such as IP address, netmask, etc.:

Network and e-mail parameters

NETWORK

IP address: 192.168.0.10

Subnet mask: 255.255.255.0

Default gateway: 192.168.0.1

Primary DNS server: 8.8.8.8

Secondary DNS server:

Time server: time.nist.gov

Ping address: 192.168.0.56

MAIL

SMTP server: sample.mail.com Port: 25

E-mail user: test

Password: ••••

TLS Connection: ☐

Destination: AA-5x0

Text message:

Apply Test Mail

The default IP address of the device is **192.168.0.10**. Gateway and DNS are only needed if you want the device to have the ability to access the Internet (for example to get the current date / time, in the example from the site time.nist.gov).

The changes to the network settings are taken over by the device until the next reboot. Once you have completed the configuration steps so be sure to reboot the system and if necessary, change the network segment of your computer so that it can connect to the new address.

- IP address: specify the IP address you want to assign to AD635.
- Subnet mask: indicate the subnet mask to be assigned to AD635.
- Default gateway: indicate the gateway that can enable AD635 to access to internet.
- Primary and secondary DNS server: indicate the addresses of two DNS servers you want to use to resolve IP addresses.
- Time server: indicate the address of the server you want to use for time synchronization device.
- Test address (ping): if inserted, this address is used by the system to verify the correct operation of the network connection.
- SMTP server: name or IP address of the mail server.
- Port: TCP port for the connection. Usually is 25
- User: authenticated user on the SMTP server
- Password: SMTP authentication password
- TLS connection: activate the secure connection
- Destination: email destination
- Text message: text to be included in the email sent

The button "Test Mail" can be used to test immediately if the configuration works.

9.4. SIP Parameters

Once the network parameters have been set correctly, you must configure the connection with the VoIP SIP PBX:

- SIP server address: specify the IP address of the SIP PBX to which AD635 should connect.
- Port: is the port number of the SIP PBX with which AD635 must operate. Generally it is the 5060, but some stations use a different port.
- Domain: enter the domain to which register the system.
- Outbound proxy: some PBXs require that the extension number to call is followed by the proxy address. In most cases this field can be left empty.
- Local SIP port: generally the 5060 port is used, but it is possible to specify a different number (i.e. for particular routing tables).
- User/password: credentials for the registration of the extension (which obviously must have been already created on the PBX).
- Expiration: indicates how many seconds the device should check the correct registration of the client.
- 2ND SIP account: this account is used for "Night ringer". It is possible to configure, in the PBX, a ringer group used in night mode, so if the doorphone is put in the same group, it will play the ringer message when receiving an incoming call, without answering.
- Password: the second account registration password.
- Volume: it is possible to set the volume used to reproduce the sound of Night Ringer. It is also the volume used to reproduce the prerecorded announcements.
- Amplifier: no function on AD635.
- Relay 1: for the entire duration of the call it is possible to keep the relay1 activated. It can be used for example to turn on a flash, a lamp, etc.
- Relay 2: for the entire duration of the call it is possible to keep the relay2 activated. It can be used for example to turn on a flash, a lamp, etc.

9.5. General parameters

In this section it is possible to set parameters for general use, such as call duration, audio volume, tones, ringing and so on:

General parameters

Call

Calling try time: 30 (sec)

Calling retry numbers: 1

Connection time: 60 (sec)

Answer time for incoming calls: 0 (sec)

Connection and communication code:

Monitoring code:

Send e-mail: 0 - Never

☒ Save a snapshot of the caller (only for camera version)

☒ Second button press to end current call

Audio

Calling speaker volume: 7 (0..9)

Microphone volume: 7 (0..9)

Input for Push to talk: 0 (0..6, 0=always active)

Local Ringer volume: 4 (0..9)

Outgoing audio stream codec: 0 - G711

☒ Tone signalling / tone volume: 3 (0..9)

Echo Limiter Threshold: 0.02 (0.02..0.10)

☒ In call ampli

Expansion

☒ Keyboard ☐ Button panel

Apply

- Calling try time: determines how long should be, in seconds, the call attempt to the extension (the called number is ringing but not responding). At the end of the attempt, the software may be called the second programmed number.
- Calling retry numbers: number of times that must be made the call cycle. At the end of the count of this parameter is called a possible supervisor
- Connection time: once in connection with the extension, the call is torn down anyway after the set time. Thirty seconds before the end of the call, the system will emit a short beep to the user within the company and repeats the message every 5 seconds. At this stage it is possible to type on the extension phone the sequence "#5", which forces the connection time to be reloaded.
- Answer time for incoming calls: when the system is called, it answers after the set time. If set to 0, responds immediately, if 999 never answers. In any case, when there is an incoming call, it is possible to answer by pressing any key.
- Connection ad communication code: when the device receives an incoming call, if this field is programmed, the audio will not be connected until the user will enter the right connection code.
- Monitoring code: as in the previous case, for incoming calls, the audio is not connected until the code is entered, but in this case only the audio from microphone is connected (a sort of "monitor" function, it is possible to hear the audio near the horn without being heard).
- Save a snapshot of the caller: (valid only for Tema Doorphones with camera).
- Second keypress to close: it is possible to choose whether, during a call made by the visitor, a further pressure of a key should interrupt the pressure or if it should be ignored.
- Send e-mail: it is possible to choose whether to send an email (to the address given in the configuration page of the network). Any mail sent as an attachment will have the image of someone who has pressed the call button.
- Calling speaker volume: sets the volume of the audio to the external user. Possible values range from 0 (very low) to 9 (very strong).

- Microphone volume: Sets the microphone sensitivity and consequently the volume of the audio to the user within the company. Possible values range from 0 (very low) to 9 (very strong).
- Input for Push-to-talk: with a value different of 0 (for example 1 if you wish to use input 1), the device will use the indicated input to activate the microphone (Push-to-talk). When the call is connected, the remote end cannot hear the audio from microphone, unless the button is locally pressed (and it should be pressed all the time you desire to talk).
- Local Ringer volume: sets the volume of the ringer issued by the system for incoming calls. Possible values range from 0 (mute ringer) to 9 (very strong).
- Outgoing audio stream codec: in the audio stream mode, it is possible to choose the quality of the transmitted audio, which goes from the G711 (the lowest) to the linear 16 bit 44 kHz (the highest).
- Tone signalling/Tone volume: it is possible to give to the user signalling tones (button pressing, call in progress, end call), sets the volume of any played signaling tones. Possible values range from 0 (very low) to 9 (very strong).
- Echo limiter threshold: this parameter is used to configure the audio level for switching the conversation between caller and called. The default value is optimal for normal communication environments.
- In call ampli: for versions that provide it, indicates whether or not to activate the power amplifier during communication.
- Keyboard/Button panel: set the type of expansion, keyboard or button panel.

9.6. Set of the operating mode

In the operating mode, it is possible to set the mode to DAY / NIGHT / INTERVAL, either manually or automatically (following time slots per week). This page is also configured to change the codes to the remote phone and coordinates the installation (used to relay Twilight mode 2):

Mode settings

CURRENT MODE

☒ Day
 ☐ Night
 ☐ Interval
 ☐ Automatic

CHANGE MODE CODES

Day: *1 Night: *2
 Interval: *3 Automatic: *0

TIME BANDS

	until... / mode	until... / mode	until... / mode	until... / mode	until... / mode
Monday	<input type="text"/> D ▾	<input type="text"/> D ▾	<input type="text"/> D ▾	<input type="text"/> D ▾	<input type="text"/> D ▾
Tuesday	<input type="text"/> D ▾	<input type="text"/> D ▾	<input type="text"/> D ▾	<input type="text"/> D ▾	<input type="text"/> D ▾
Wednesday	<input type="text"/> D ▾	<input type="text"/> D ▾	<input type="text"/> D ▾	<input type="text"/> D ▾	<input type="text"/> D ▾
Thursday	<input type="text"/> D ▾	<input type="text"/> D ▾	<input type="text"/> D ▾	<input type="text"/> D ▾	<input type="text"/> D ▾
Friday	<input type="text"/> D ▾	<input type="text"/> D ▾	<input type="text"/> D ▾	<input type="text"/> D ▾	<input type="text"/> D ▾
Saturday	<input type="text"/> D ▾	<input type="text"/> D ▾	<input type="text"/> D ▾	<input type="text"/> D ▾	<input type="text"/> D ▾
Sunday	<input type="text"/> D ▾	<input type="text"/> D ▾	<input type="text"/> D ▾	<input type="text"/> D ▾	<input type="text"/> D ▾
Time zone	<input type="text"/>	Latitude	<input type="text"/>	Longitude	<input type="text"/>

- Current mode: allows to set the current mode of operation.
- Change mode codes: enter the codes to change mode remotely (from any internal phone, call the Speaker and, at the answer, via DTMF type the code corresponding to the selected mode). The codes must consist of 2 characters.
- Time bands: in the case of automatic operation, it is possible to enter up to 5 bands per day. If a field is left blank, it is unused and the previous corresponding band will be used.
- Time zone: time zone of the location where the installation is made (+1 for Italy)
- Latitude/Longitude: Geographical decimal coordinates relative to the installation site. Can be retrieved easily from the internet (eg. www.mapcoordinates.net/en)

The time zone and the geographical coordinates are needed in the case of activation of relay 2 in "Twilight" mode.

9.7. Relay and alarm input settings

On this page it is possible to choose the operating mode of the internal relays and the operating mode for external inputs:

Relay and alarm inputs settings							
RELAY 1							
Mode	1 - Electric lock						
PHONE activation	#1						
Activation time (sec)	1						
Close call	<input checked="" type="checkbox"/>						
RELAY 2							
Mode	1 - Electric lock						
PHONE activation	#2						
Activation time (sec)	1						
Activation delay (sec)							
Close call	<input type="checkbox"/>						
ALARMS - INPUT SIGNALS							
INPUT	Call..	Retry	Separation	Delay	Inversion	Stop code	Announce
1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

- **Mode:** sets the function to be associated to the relay. It is possible to choose between:
 - 1 Electric lock: is activated only upon receiving the activation code.
 - 2 In call: is activated when a call is in progress and until the door phone does not come back to idle
 - 3 In call + timer: it activated when a call is in progress and for the activation time
 - 4 Pressure button: you press any key relay is activated for the time set

Only for the relay 2

 - 5 After relay 1: When you operate the relay 1, relay 2 is activated also for the time set
 - 6 Twilight: In this mode the relay is activated 30 minutes before sunset and 30 minutes after sunrise. The calculation of sunrise and sunset is done automatically by the system based on the current time and location of the installation (the exact time should be obtained from the internet).
- **Activation D - N - I:** enter here any sequence to dial, from the outside, to activate the corresponding relay
- **PHONE activation:** relay activation code to dial from the extension of the PBX (2 characters required)
- **Activation time:** activation time of the relay
- **Activation delay:** for relay 2, after how many seconds you have to turn with respect to the activation of relay 1 (if set in "after Relay 1")
- **Close call:** by setting this option, the call is immediately hang up when the relay is activated
- **Call.:** number or IP address of the phone to contact when the alarm condition is triggered. The input could be also used as "door opener": enter the number of the relay preceded by #. For example #1 activate the relay 1, #2 activate the relay 2. The activation time is the one entered in the activation time filed.
- **Attempts:** number of call attempts (max 999)
- **Separation:** separation, in seconds, between a call attempt and the other (max 999).
- **Delay:** it is the minimum time, in seconds, before validating the input. It could be useful, for example, to mask an open door switch. Supposing the maximum time of a pedestrian gate is 30 seconds, at the end of this time (if the switch would be still active) an alarm will be send to the reception.
- **Inversion:** the contact is normally open and the alarm occurs at the closing of the same. Enabling this flag it is possible to instruct the device to behave in the opposite way (the contact is normally closed and the alarm occurs at the opening).
- **Stop code:** code to dial on the phone calling to accept and acknowledge the alarm (max 3 digits).
- **Announce:** when activating this input, a prerecorded message will be played on the speaker. See messages management.

In the screenshot are represented up to 6 inputs, but only one is available on this model, other fields have no function. For each input is assigned a different message that will be played during the call. By default a neutral message is played ("Alarm 1", "Alarm 2", etc.) but the text can be customized.

9.8. Camera

This page has no effect on the programming of the AD635 IP Speaker because there is no camera, the mask is provided only for intercom video applications of internal electronic module.

The screenshot shows a web interface titled "Camera settings" with a light blue background. At the top center is a "Show" button. Below it is a blue header bar labeled "VIDEO PARAMETERS". Under this header are three settings: "Brightness" with a slider and a value of 1, "Contrast" with a slider and a value of 0, and "Color" with a slider and a value of 2. Below these is another blue header bar labeled "IMAGE SETTINGS". Under this header are two settings: "Frame rate" with a dropdown menu showing 1, and "Resolution" with a dropdown menu showing 320x240 and a note "(need reboot)".

- Brightness, contrast and color: can be adjusted to fit the image to your needs, but generally the default values are already the most suitable for the best vision (the camera is also equipped with an automatic brightness adjustment mechanism that, within certain limits, is able to compensate the light variations during the day).
- Frame rate, Resolution: Images per second (frame rate) affects the vision of the video in streaming mode. The video displayed in conversation, however, will be adapted to the workload of the internal CPU and generally ranges from 1 to 3 images per second. The change of the video resolution will require a restart of the device. It is generally recommended not to use high resolutions or high frame rates to not take up too much communication bandwidth, at the expense of audio quality.

The "Default" button allows to restore the optimal factory values.

9.9. Call buttons

AD635 has the possibility to make SIP calls, it is possible to connect 1 or 2 external keys that can be programmed to make calls to different numbers. The 4-pole terminal block allows to connect external buttons-keys in the points P1 and P2 and the window below allows the programming of any two keys. DO NOT consider the remaining programming of keys and the keyboard section because they are not present in the AD635 system.

	DAY	NIGHT	INTERVAL
Call buttons			
BUTTON 1			
First number	100	300	300
Second number	200		
BUTTON 2			
First number	101	300	300
Second number	201		

For each key, it is possible to enter for each mode of operation (day, night, interval), up to 2 contact numbers. If the software is unable to contact any of the numbers programmed, it is possible to transfer the call to another number, programmed in the "Supervisor":

Supervisor		

or the cycle ends (there is no one in company that can handle the request).

Sending Multicast audio: it is possible to program each button to activate the function of audio stream sending rather than performing a normal telephone call. In this case you must enter the address of Multicast preceded by # in the field "First number" of the Day mode, and in the "Second number" the port number, for example:

Supervisor		
Second number		
BUTTON 4		
First number	#239.255.12.43	
Second number	8001	

By pressing the keys programmed in this way, the audio captured by microphone is immediately sent to the programmed address stream. Sending will stop when the button will be released.

9.10. Messages management

In this window it is possible to change/listen to the messages for “Calling”, “Alarms”, “Announcement” and “Ringer”. Memory contains a default message for each position, the user can change any of them and the messages format must be WAV PCM 8 kHz, 16 bit, mono.



“Call message”, from 1 to 5, can be reproduced when one of the call button is pressed. The activation and deactivation of the message is done remotely, directly from an extension phone. It is possible to enter up to 5 wav messages to be chosen later in the combination of pressed key. An example of using this feature is to be able to give pre-recorded messages based on the key pressed by the caller / visitor.

“Alarm messages”, one for each input, are reproduced to the called telephone number configured in the alarm input (from 1 to 6): when the called answers, the message is played continuously, until the user enters the stop code or a timeout expires. “SIP Alert Call Button” function.

“Ann. Messages”, also one for each input, are reproduced on the local speaker when the relative check in the alarm mask is selected and the input is active. The message is played before calling. It is possible to play each message also during a call (see ahead) using a particular code.

Finally, the “Night ringer” is played on the local speaker when a call is received on the second SIP account, if programmed.

How to activate the call messages

To activate / deactivate a call message, you need to call the system and its response dial the programmed code followed by key, and so message: for example, if the activation code was set to ##, to turn on the key 1 as the Day message 3 should dial the sequence "## 0103".

NOTE 1:

in the basic version can be loaded messages of length of 16 seconds. For longer messages you need to enter a license to expand the page programming system.

NOTE2:

standard messages in the system to its delivery (unless specifically requested custom) are those listed below:

MSG1: "La chiamata è stata inoltrata, attendere prego"

MSG2: "Your call has been forwarded, please wait"

MSG3: "La chiamata è stata inoltrata, attendere prego, Your call has been forwarded, please wait"

Messages related to alarms by codes are rigidly associated.

ALR1: "Alarm 1" (ALR4, ALR5, ALR6 are not used)

How to active an announcement by telephone

As see before, announcement messages can be played when the corresponding input changes. It is also possible to make the same thing during a telephone call. In the field "Announcement activation code" insert the code for this function:

In the example the code is "99". Simply, follow the announcement number after this code (from 1 to 6). When the play starts, the call is hung up (internal extension will be freed). Attention please: the message could also be very long, so if you need to interrupt it for some reason, simply call the system, the message will be stopped to make room for new communications.

Audio Multicast Streaming

By enabling this feature, AD635 will listen to the specified address/port, and can reproduce on its speaker any received audio streaming. This function has a lower priority than the normal telephone operation of the system (outgoing or incoming calls will block or prevent the reproduction of the audio stream).

#	Address	Port	
1	239.255.12.43	8001	priority <
2	239.255.12.44	8001	
3			
4			
5			priority >

It is possible to configure up to 16 multicast addresses, each one with an higher priority than the previous. In the above example, there are two addresses. The first (...43) could be used to play music at low volume from a PC. The second (...44) could be an announcement from a special programmed phone for Multicast with an higher volume. Generally the music is always on but will stop immediately when an announcement from the phone is received. Normally the music would always be active and would be automatically stopped as soon will be issued an announcement came by phone from the 239.255.12.44 IP address that has been configured in a priority position relative to the address 239.255.12.43.

9.11. Automatic Announcements

It is possible to program the diffusion of announcements at pre-set times, which can take place on the local speaker or streamed to other devices.

Automatic announcements

DAILY ACTIVATION

time / msg / repeat separation (s)

PERIODIC ACTIVATION

☐ Function not active
 ☒ From table
 ☐ From file

TIME / ANNOUNCEMENT

	time / msg	time / msg	time / msg	time / msg	time / msg
Monday	<input type="text"/> / <input type="text"/>	<input type="text"/> / <input type="text"/>	<input type="text"/> / <input type="text"/>	<input type="text"/> / <input type="text"/>	<input type="text"/> / <input type="text"/>
Tuesday	<input type="text"/> / <input type="text"/>	<input type="text"/> / <input type="text"/>	<input type="text"/> / <input type="text"/>	<input type="text"/> / <input type="text"/>	<input type="text"/> / <input type="text"/>
Wednesday	<input type="text"/> / <input type="text"/>	<input type="text"/> / <input type="text"/>	<input type="text"/> / <input type="text"/>	<input type="text"/> / <input type="text"/>	<input type="text"/> / <input type="text"/>
Thursday	<input type="text"/> / <input type="text"/>	<input type="text"/> / <input type="text"/>	<input type="text"/> / <input type="text"/>	<input type="text"/> / <input type="text"/>	<input type="text"/> / <input type="text"/>
Friday	<input type="text"/> / <input type="text"/>	<input type="text"/> / <input type="text"/>	<input type="text"/> / <input type="text"/>	<input type="text"/> / <input type="text"/>	<input type="text"/> / <input type="text"/>
Saturday	<input type="text"/> / <input type="text"/>	<input type="text"/> / <input type="text"/>	<input type="text"/> / <input type="text"/>	<input type="text"/> / <input type="text"/>	<input type="text"/> / <input type="text"/>
Sunday	<input type="text"/> / <input type="text"/>	<input type="text"/> / <input type="text"/>	<input type="text"/> / <input type="text"/>	<input type="text"/> / <input type="text"/>	<input type="text"/> / <input type="text"/>

Daily activation:

it is possible to automate the diffusion of a daily announcement (which will take place at the set time) for each day. It will be reproduced for the number of repetitions, with separation between a message and the other given by the number of seconds set. It is also possible to manually activate the message (with the "Activate now" button) or stop playback (with the "Stop" button). If the manual activation mode is only used, it is not necessary to indicate the start time.

The shown message is one of the 6 alarm announcement messages that can be found in the "Message Management" section.

Periodic activation from table:

if you activate this function, it is possible to indicate in the table below, for each day of the week, up to five different times, for each of which it is possible to specify one of the six pre-recorded announcement messages.

Periodic activation from file:

it is possible to upload a text file in "csv" format (easily editable with "Excel") that contains, for each day of the year, up to 5 times in which to make the announcement diffusion. To compile the file simply download the default one already present (and empty), modify it and re-upload it (do not change the written months, are used by the device to index itself in the document):

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
250	28														
251	29														
252	30														
253	31														
254	set														
255	1														
256	2														
257	3														
258	4														
259	5														
260	6														
261	7	09:00-1	12:30-2	17:30-3											
262	8														
263	9														
264	10														
265	11														
266	12														
267	13														
268	14														

In the example it was indicated that on September 7th (every year) the message 1 should be reproduced at 09.00, message 2 at 12:30 and message 3 at 17:30 .

NOTE1:

the playback volume, in the case of diffusion on the local speaker, is the one set as the ringer volume in the "SIP Parameters" programming screen. In the case of streaming playback, the volume is given by the volume of the multicast channel programmed in reception.

NOTE2:

since the device does not have its own internal clock, the automatic diffusion of messages can take place only if it is synchronized with a time server (which can be one into the local network or any other on the internet, see the "Network parameters").

9.12. Calls Report

When to the AD635 speaker are connected one or two call buttons is kept a report of all dialed calls. The list is presented starting from the most recent call:

IP Intercom AA-5x/AA-6x/AD6x		
Report of last calls with the photo of the callers		
Photo	Button / Number	Date/Time
00000004.jpg	1	05/10/16 09:06:46
00000003.jpg	1	04/10/16 17:52:44
00000002.jpg	1	04/10/16 17:45:04
00000001.jpg	1	28/09/16 10:08:29

Delete all

The list can contain up to 250 entries, after which the older are deleted.

To keep a history list of events that goes beyond this limit, enable the function of sending e-mail with each press of the button by the visitor, the image will be sent as an attachment and you will create a list of all accesses performed.

10. MAINTENANCE

10.1. System

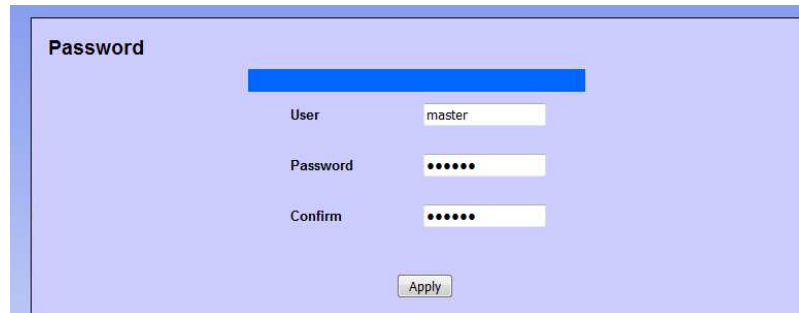
On this page it is possible to check the current firmware version, update software, and backup / restore the system configuration:

The screenshot shows a web interface titled "System administration" with a blue header bar labeled "INFO". Below the header, there are several sections separated by horizontal lines. The first section contains "Serial number" (0000000) and "MAC address" (00-00-00-00-00-00). The second section shows "Firmware version" (1.08) with "Update" and "Sfoglia..." buttons, and a message "Nessun file selezionato." The third section has a "License" field and an "Applica" button. The fourth section, "Backup and restore", includes "Backup", "Restore", and "Sfoglia..." buttons, with the same "Nessun file selezionato." message. The fifth section has "Reset to factory settings" and an "Apply" button. The final section has "Device reboot" and an "Apply" button.

- MAC address: is the physical address assigned to the network interface.
- Firmware version: displays the currently installed version of the program. It is possible to upload a different version (possibly provided by the technical support of TEMA) using the Browse/Update. Once you've uploaded the new version, the device must be restarted.
- License: enter in this field the license key to activate any additional services (such as the use of messages over 16 seconds).
- Backup and restore: it is possible to save the current settings to restore them in case of a programming error or device replacement.
- Reset to factory settings: all settings are lost and reset to factory defaults. You are prompted to confirm the operation.
- Device reboot: reboot as if it were taken away and put back power. Useful in case you have not physically present in front of the device and it needs to restart it. You are prompted to confirm the operation.

10.2. Login credentials

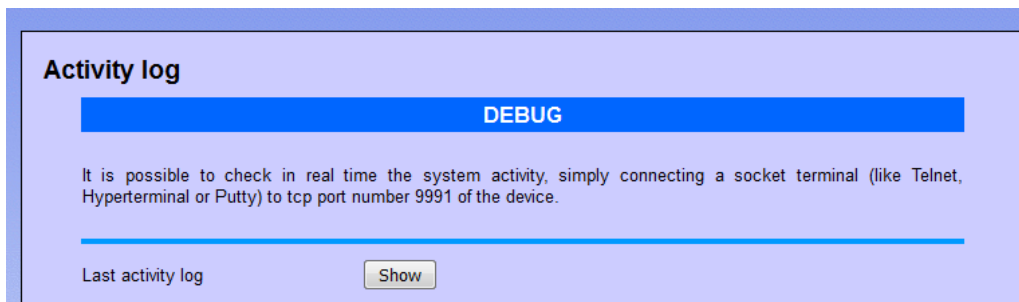
By default, the user name and password for access to the configuration are **master/master** (lowercase). It is not possible to have more than one user (there are not hierarchical levels of programming), but it is possible to change the login credentials. The password must be entered twice for confirmation.



Make a note of the new credentials introduced to then re-enter the system !

10.3. Diagnostic logs

To identify small configuration problems, it is possible to activate a diagnostic summary on the activity of the VoIP channel of the device. Simply connect via TCP port 9991 with Telnet or a terminal like Hyperterminal.



It is also possible to view the history of activities for each module by clicking "Last log". The log is deleted when it exceeds the size of about 2 MB.

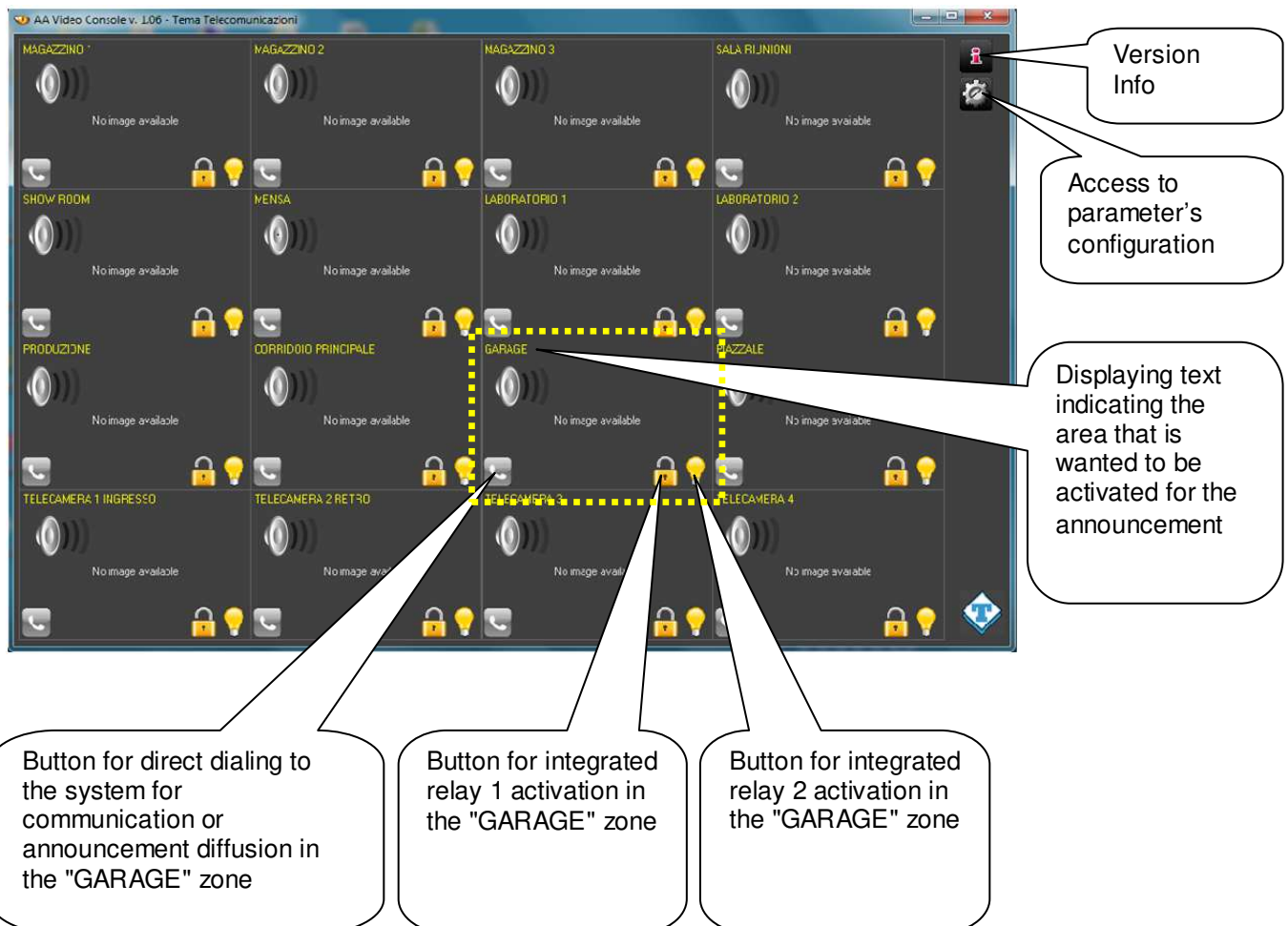
11. PRESENTATION AND USE OF THE "AA Video Console" SOFTWARE

AA-Video Console is an application that comes for free together with the IP audio devices AD600-AD635 and IP Video door systems series AA-500 and AA-600, is used to monitor and operate from a single location with 16 audio devices and/or IP videophones. The software is installed on one or more PCs (with no licensing restrictions) with the operating system from Windows XP® or later. The program allows to see the area framed by the built-in camera in the IP Intercom devices, to communicate and remotely operate the relay of managed terminals in the network, all from the same program window. The PC where AA-Video Console is installed must have a sound card and equipped with speakers and a microphone. It is possible to display up to 16 scenes/devices simultaneously and operating with a terminal at once chosen from those in the window. To install the program identify in the supplied CD-ROM the file "AAVideoConsole/setup.exe".



11.1. Presentation

This is the main program window. In the case of IP AD635 speakers that are not equipped with the camera, the program shows to the operator the IP speakers available to make announcements from PC. Into the network it is possible to have more than one PC running AA-Video Console program. The operator chooses the area where must perform the announcement without having to remember the device number to call (operating mode which is still available) simply by pressing on the handset symbol present in the box of the desired area.



Pressing the handset icon, the program establishes connection with the related terminal and the operator will be able to spread his message by speaking into the microphone connected to the PC.

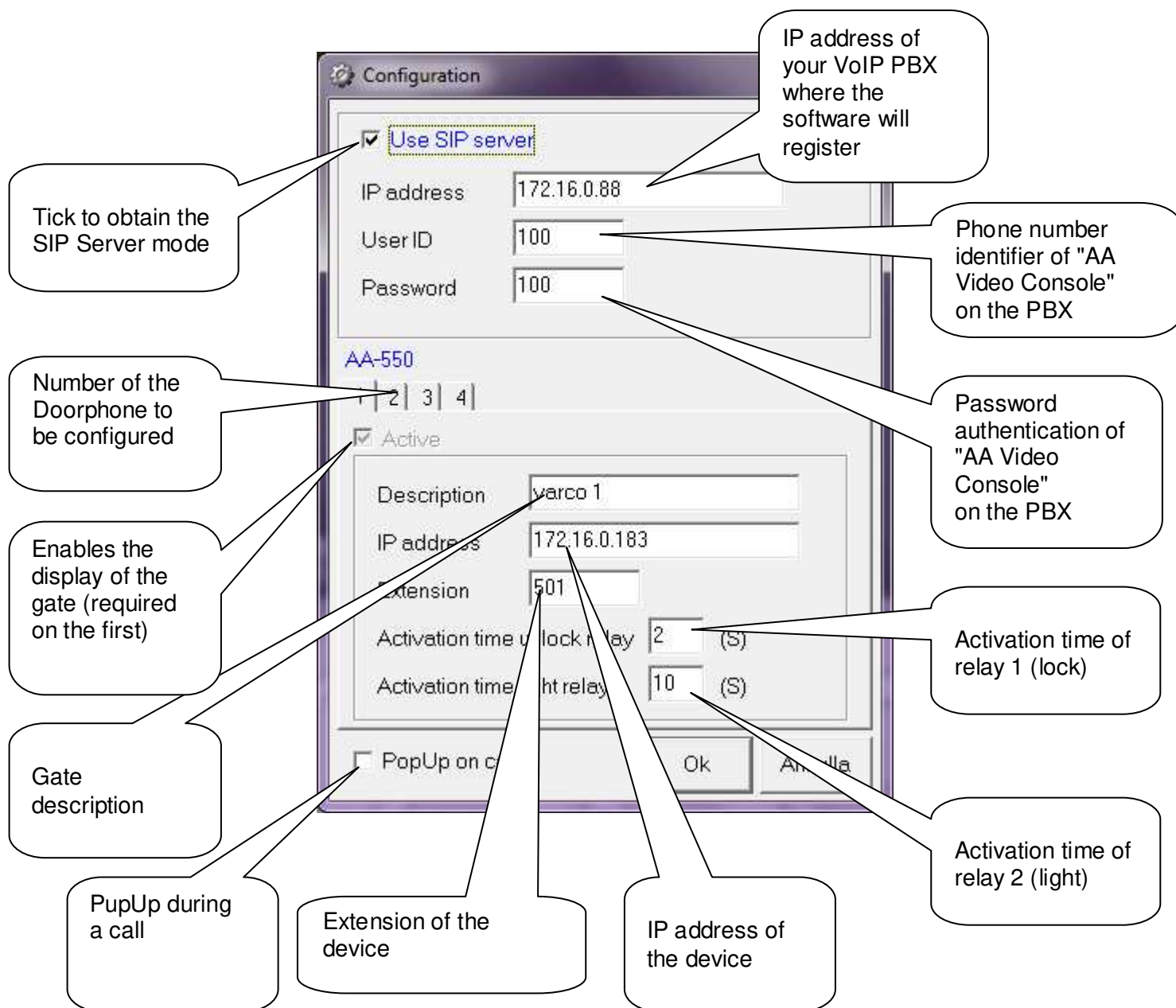
Changing area is easy, just click on the new desired icon and the connection to the previous announcement is terminated and it is established another to the other area for the new announcement.

11.2. Software configuration for SIP Server mode

It is possible that the company owns or installs between the various IP AD635 audio devices also one or more IP Video Intercoms Tema AA-500 and AA-600 series. These can have the camera that checks and shows in window live images from the framing area. Therefore the PA system can incorporate the control of corporate access points with IP video Intercoms whose video streams are displayed in the windows of the AA-Video Console program.

The audio of the conversation with the devices or the voice communication takes place as a normal VoIP communication between two SIP phones. In this case one of the interlocutors will AD635 (or any IP Videophone), the other is the PC with the "AA Video Console" program.

To make sure that the PC running this program can communicate using AD635 with a user, it is necessary to set the number assigned to "AA Video Console" for that device. By clicking on the configuration parameters button of the program, will appear the window shown below. It is possible to configure up to 16 systems. Select the System tab number to be configured in the AA-Video console and for each one will be the relevant parameters. By activating the checkmark "Active" from the second system, into the main page of the program will adapt in amplitude based on the number of active configured systems.



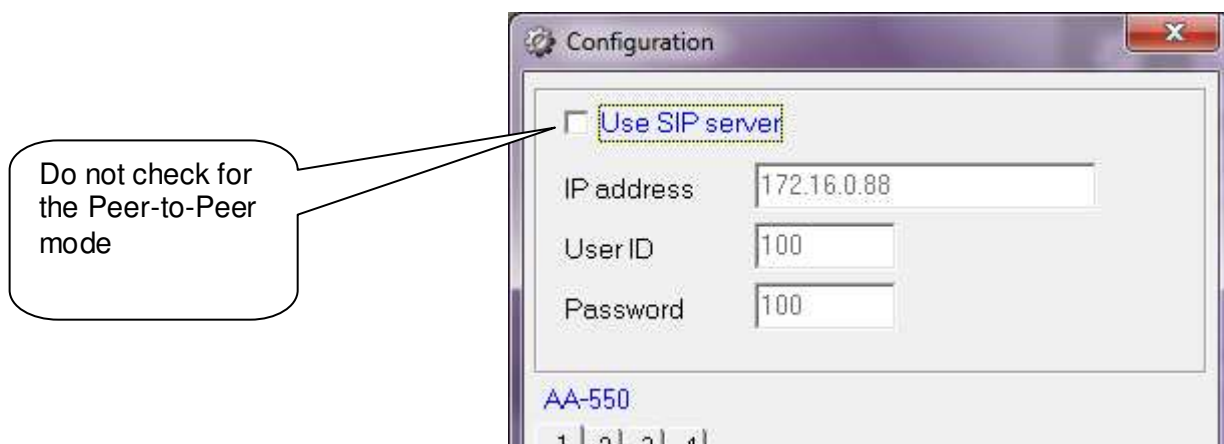
By customizing each description line for the operators will easily and immediately identify the system on the PC screen to be activated to perform the voice announcement from the PC microphone.

11.3. Software configuration for Peer-To-Peer mode

In this configuration mode, the software does not register on a PBX, but makes calls directly to the IP address of the specified device. So the video stream and the audio of the conversation with the device will take place without the intervention of the PBX (the two devices doesn't need to be registered to any existing SIP Server).

In this configuration, one of the interlocutors will be the IP audio terminal or the video intercom, the other is the PC with the "AA Video Console".

To ensure that a user who is in proximity of the terminal (set up with a call button), can "communicate" through the terminal itself with this program on the PC, it is necessary to of course set the IP address of the PC in the terminal parameters (AD635 or AA-500/600). Doing so, after pressing the button, the terminal will forward the call to the IP address of the PC where the "AA Video Console" software is installed.

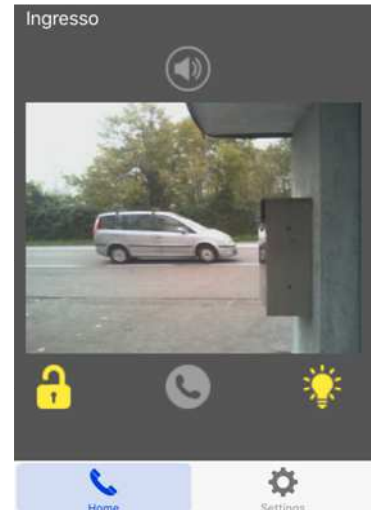


12. Introduction to AA-Video Console APP version for operating systems iOS

AA-Video Console is a free app that can be installed on any Apple iPhone® smartphone.

The program allows to see the area captured by the built-in camera in all the IP VoIP SIP TEMA Audio and Intercoms, to operate the device relays and to speak directly with the visitor. The application can be downloaded from the Apple AppStore, can be easily found typing AAVIDECONSOLE in the search box.

It is possible to configure up to 4 terminals and on your iPhone it will be showed a live image by the selected system camera (to switch from one system to the other just scroll on the display): the video streaming is always displayed, even without communication or calls in progress (continuous video monitor).

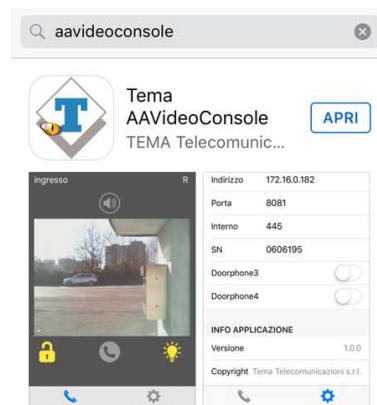


Offered services

- Sip calls to the network terminals, launching advertisements on IP SIP speakers
- Operation with both SIP Server and Peer-to-Peer mode
- Management of the door relay or step marker light (relay 1 and relay 2) even without necessarily being in communication
- Hands-free audio
- Display of the camera image even when you are not in communication (one Doorphone at a time)
- Up to 4 Doorphones management

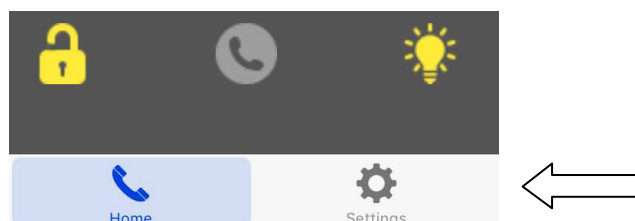
12.1. Downloading and installing the app

Like all the iPhone Apps, the installation can take place only through the official store. Inside the appstore, simply type AAVIDEOCONSOLE in the search box and confirm the installation:

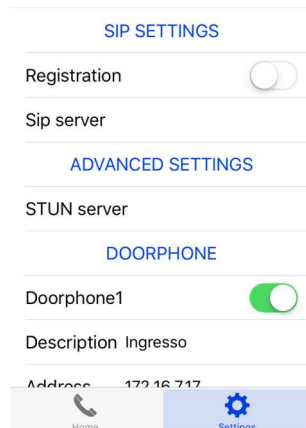


Configuration

Both the general configuration and the individual Doorphone configuration is done in the "Settings" menu:



You will see the following screen:



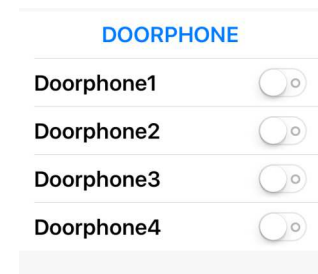
The first part, "SIP SETTINGS", allows to register your device to a PBX or a SIP provider (necessary if you want to reach the Doorphone through its extension number). Marking "Registration" you will have access to the account setup registration (user name, password, etc.). If into the network a SIP PBX is not installed and want to reach the Doorphone simply by its IP address, leave the check unmarked.

In the "ADVANCED SETTINGS" it is possible to configure any STUN Server (external to the private network) that allows the application to reach the Doorphone through a firewall.

NOTE: to access the Doorphone from outside the corporate network (ie from the Internet) it is necessary to program your router / firewall to allow incoming connections to an internal device. For this feature contact your network administrator (each router / firewall has its own programming that it is not possible to generalize in this manual).

Configuring Tema IP SIP terminals

It is possible to control with the application up to 4 systems simultaneously. Also in the settings page is the menu to configure them:



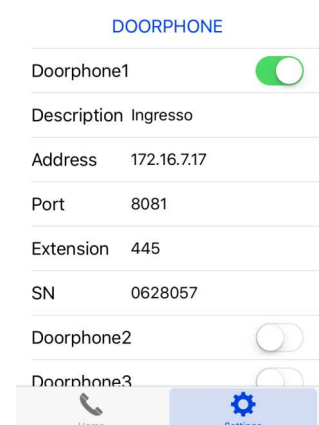
Activating the slider of each Doorphone (or IP audio system), the fields to be configured will appear:

The description appears in the displayed image and is useful to identify the selected Doorphone from time to time.

In the address field you must enter the IP address of the Doorphone. It is used to show the camera or to make a call in Peer-to-Peer.

The port number is used internally by the program for the communications, must be 8081.

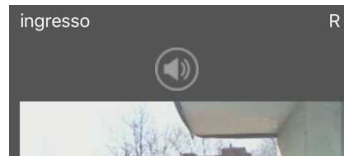
The extension number is the number that must be dialed when from the main screen is selected the call key. Obviously it makes sense only in SIP registered to the PBX Server. In Peer-to-Peer mode this field cannot be filled.



Finally in the field SN you must enter the serial number of the device. For safety reasons, it is needed to enable the opening keys for relay 1 and relay 2).

12.2. Using the application

Once the application is activated, it is possible to check the registration status in the "Home" screen. If you see an "R" in the upper right it means that the application is registered to the SIP PBX.



In normal operation, it is displayed the image of the first Doorphone (as mentioned above to switch from one to another simply scroll the screen). The keys below the displayed image will have impact on the selected terminal:



The first button activates the door relay (number 1). The center button makes the call to the Doorphone (or closes if it is in progress). The third button activates the relay normally connected to the light step marker (the number 2).

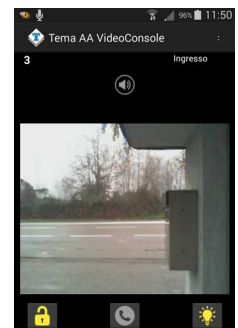
If the program is put into the background (using the "Home" or "Back" button) it is still active and ready to receive any incoming call (in which case it automatically puts itself in the foreground and is displayed the image of the terminal that has generated the call).

Exit from the App

Proceed as for any other installed iPhone APP.

13. Introduction to AA-Video Console APP version for ANDROID systems

Is a free app that can be installed on any Android® smartphone. The program allows to see the area captured by the built-in camera in all the IP VoIP SIP TEMA Doorphones, to operate the device relays and to speak directly with the visitor. The application is on the supplied CD together with the Windows® version (in apk format). It is possible to configure an unlimited number of terminals and is presented on your Smartphone a live image at that time by the selected system camera (to switch from one system to just scroll on the display): the video streaming is always displayed, even without communication or calls in progress (continuous video monitor).



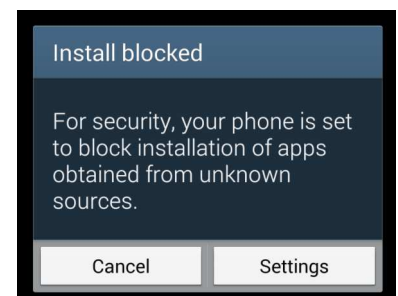
Offered services

Are the same as the iOS version (see above).

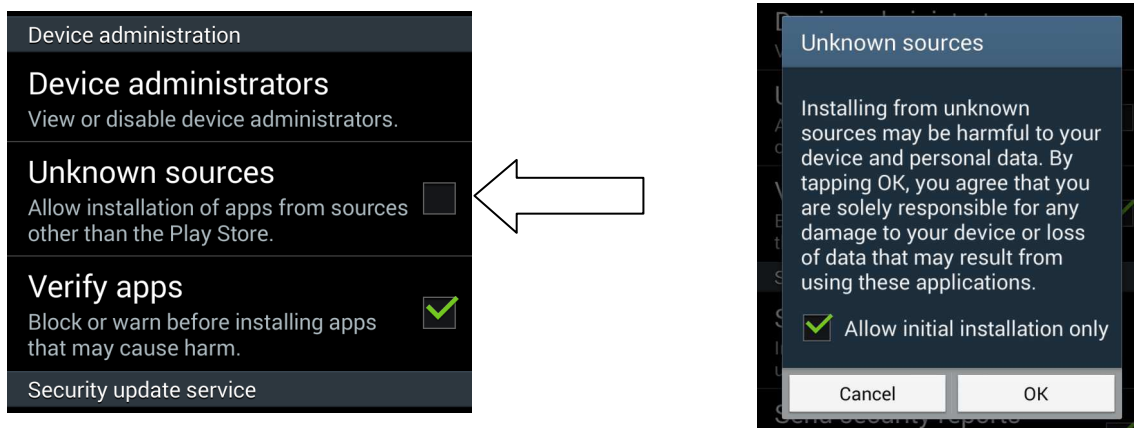
13.1. Downloading and installing the app

Like all the Android Apps, it is possible to install the app without passing from the store, simply by copying and installing the apk provided in the installation disk. To transfer the file to your device it is possible to follow two paths:

Method 1: send an email to the smartphone with attached aavideoconsole.apk file (on the CD). Once the email is opened on your smartphone and select the attachment, the system will ask whether you want install the application (which will happen in a few seconds). Probably the operating system will alert the installation from an unknown source:



You must select the "Settings" button and allow installation:

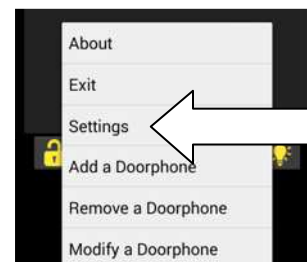


Method 2: copy aavideconsole.apk directly on the device connected to a computer via the USB cable normally supplied with the phone (from "My Computer" the phone is seen like a normal pen drive).

After copying the file you just select it on the phone and confirm the installation (in this case it will also be necessary to authorize the installation from unknown sources).

Configuration

First, from the application menu, the general configuration must be done:

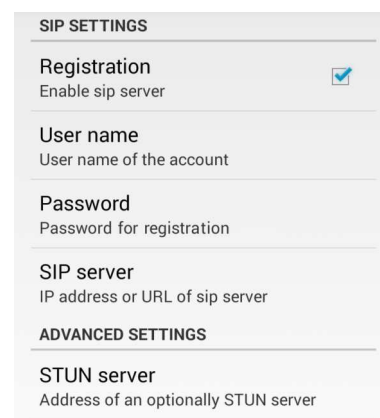


Then click "Settings":

The first part, "SIP SETTINGS", allows to register your device to a PBX or a SIP provider (necessary if you want to reach the device through its extension number). Marking "Registration" you will have access to the account setup registration (user name, password, etc.).

If into the network a SIP PBX is not installed and want to reach the device simply by its IP address, leave the check unmarked.

In the "ADVANCED SETTINGS" it is possible to configure any STUN Server (external to the private network) that allows the application to reach the device through a firewall.



NOTE: to access the device from outside the corporate network (ie from the Internet) it is necessary to program your router / firewall to allow incoming connections to an internal device. For this feature contact your network administrator (each router / firewall has its own programming that it is not possible to generalize in this manual).

Adding Tema IP SIP Terminals

It is possible to add in configuration as many terminals you want. Into the main screen of course it is always presented one at a time.

To switch from one system to the other just slide your finger horizontally on the application display. By choosing "Add a Doorphone" you will see the following screen:

The description appears in the displayed image and is useful to identify the selected terminal from time to time.

In the address field you must enter the IP address of the terminal. It is used to show the camera or to make a call in Peer-to-Peer.

The port number is used internally by the program for the communications. If left blank, it will be automatically filled with the default (8081).

The extension number is the number that must be dialed when from the main screen is selected the call key. Obviously it makes sense only in SIP registered to the PBX Server. In Peer-to-Peer mode this field cannot be filled.

Finally in the field SN you must enter the serial number of the device. For safety reasons, it is needed to enable the opening keys for relay 1 and relay 2).

Edit / delete terminals

This feature of course allows to change the configuration of a terminal or to delete an inserted one. Simply select from the list the one that you want to edit or delete:

Any changes must be confirmed with the "OK" button. The button "Cancel" or "Back" does not save, useful in case of mistakes.

13.2. Using the application

Once that the application was activated, it is possible to check into the "Info" screen, in addition to the program version, the registration status:

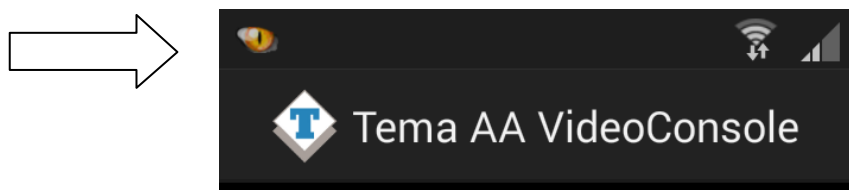
In normal operation, it is displayed the image of the first Doorphone (as mentioned above to switch from one to another simply scroll the screen). The keys below the displayed image will have impact on the selected Doorphone:



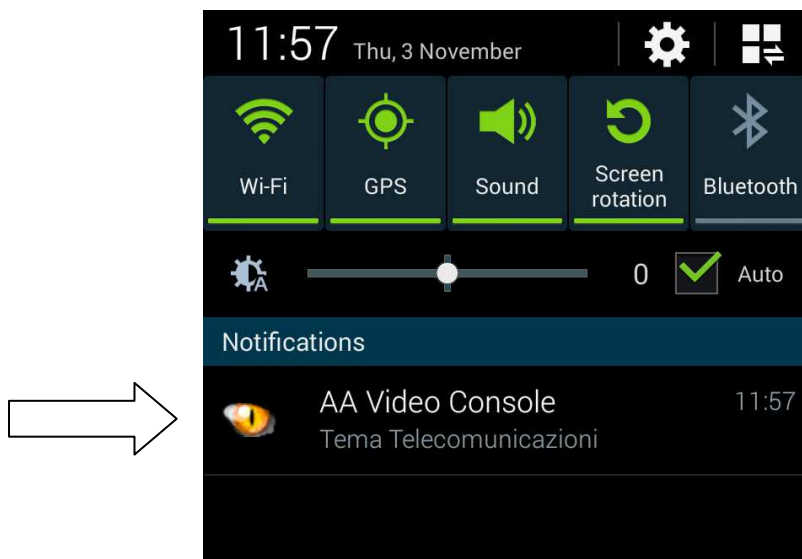
The first button activates the door relay (number 1). The center button makes the call to the Doorphone (or closes if it is in progress). The third button activates the relay normally connected to the light step marker (the number 2).

If the program is put into the background (using the "Home" or "Back" button) it is still active and ready to receive any incoming call (in which case it automatically puts itself in the foreground and is displayed the image of the Doorphone that has generated the call).

On the taskbar, the program icon will appear, indicating that it is running in the background:

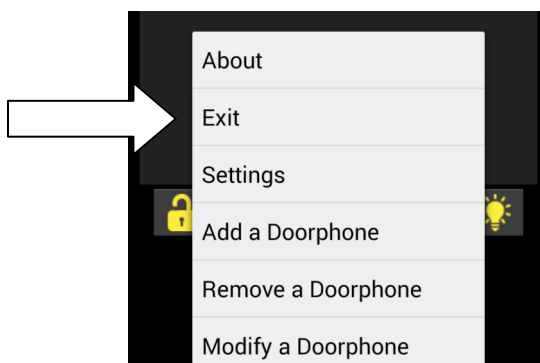


To restore the application in the foreground is therefore sufficient to select it from the toolbar:



Exit from the App

To end the application, as seen, do not use the "Back" button (like most of the app). To close the program, the "Exit" button must explicitly be selected from the main menu:



14. APPENDIXES

14.1. Appendix 1: Other examples of Multicast Audio Streaming applications

As described above, in a LAN network the Multicast term refers to the possibility to distribute informations like data, audio or video, to a group of IP terminals of the Ethernet network. For multicast are used Class D addresses that range from 224.x.x.x up to 239.x.x.x.

The AD635 systems, in addition to the classic functions previously described in this manual, are able to receive audio in Multicast in the specific IP channel (up to 5 channels) and play it on your speaker. Audio can be generated by a PC software application (for example the free VLC application), from a SIP IP phone or from a TEMA intercom of AA-500 IP series.

It is in fact possible to program each button of the AA-500 IP system for immediately audio sent picked up by his microphone, the received audio stream is played without the intervention of any operator, this function is useful for playing messages and information or emergency announcements (also called "Paging" mode).

SIP phone that has programmable function keys for Multicast calls can be used. Audio streaming using multicast is unidirectional, in the sense that the audio stream is sent from the source (such as a phone) to the destination (AD635 Speakers) but not vice versa.

The audio stream can be simultaneously sent to multiple terminals that all have the same IP Multicast address, or to distinct terminals (each has its own IP address).

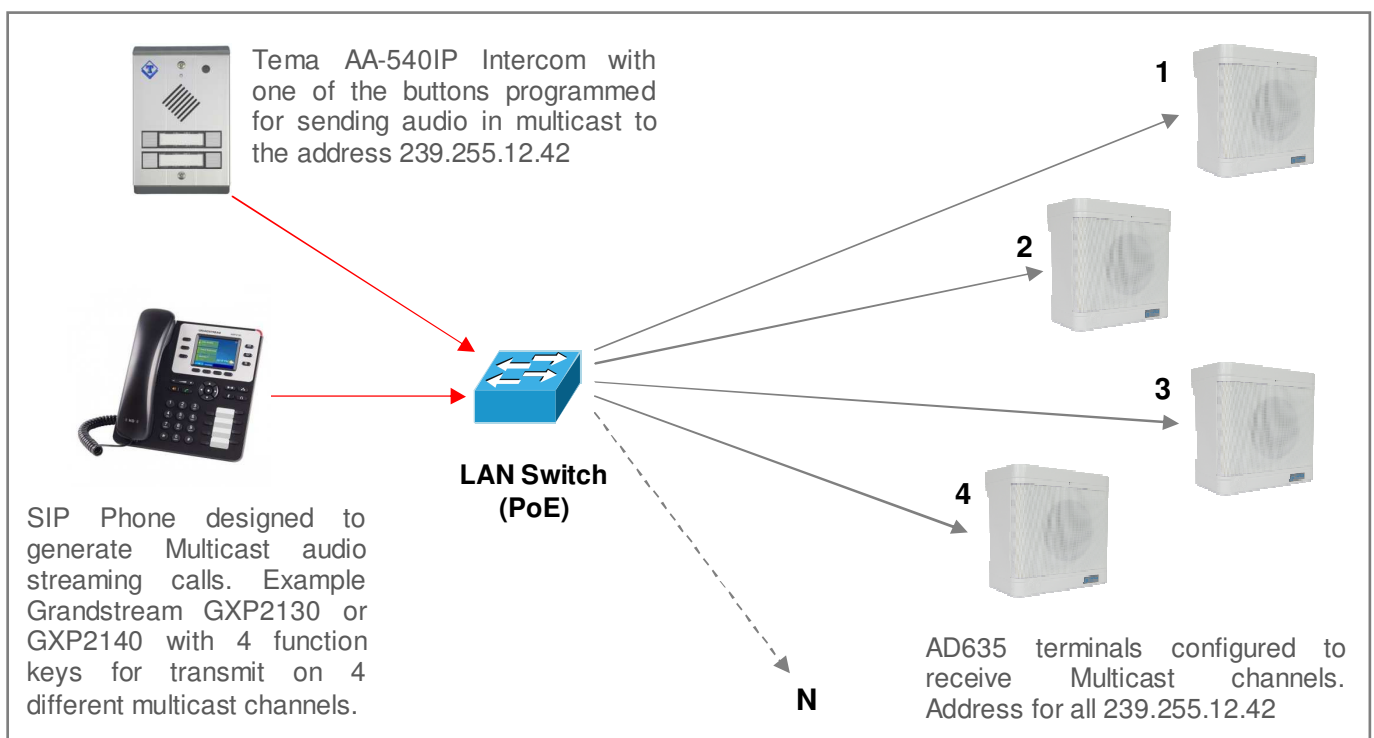
The audio supported by this mode must be in G.711 format (aLaw or μ Law).

Example of general call in Multicast

The diagram below shows a system where there are 4 AD635 devices connected to the network switch. From a preset telephone it is possible to make a multicast call and launch a voice announcement to the address 239.255.12.42. All the systems are configured with the same multicast address, and then all will reproduce the outgoing audio message.

This function does not affect the normal operation of the AD635 device since the multicast audio is received in a separate channel. At the end of the Multicast announcement, the normal functions are restored.

The use of a PoE (Power over Ethernet) Switch allows to feed the AD635 systems on the same network UTP cable, in this case external power supplies are not needed because the AD635 series systems are compatible with the PoE (Power over Ethernet) standard.



Sending Multicast ads to groups (zones) of IP Speakers

In the plant of the diagram are present 5 AD63x systems configured into three different groups.

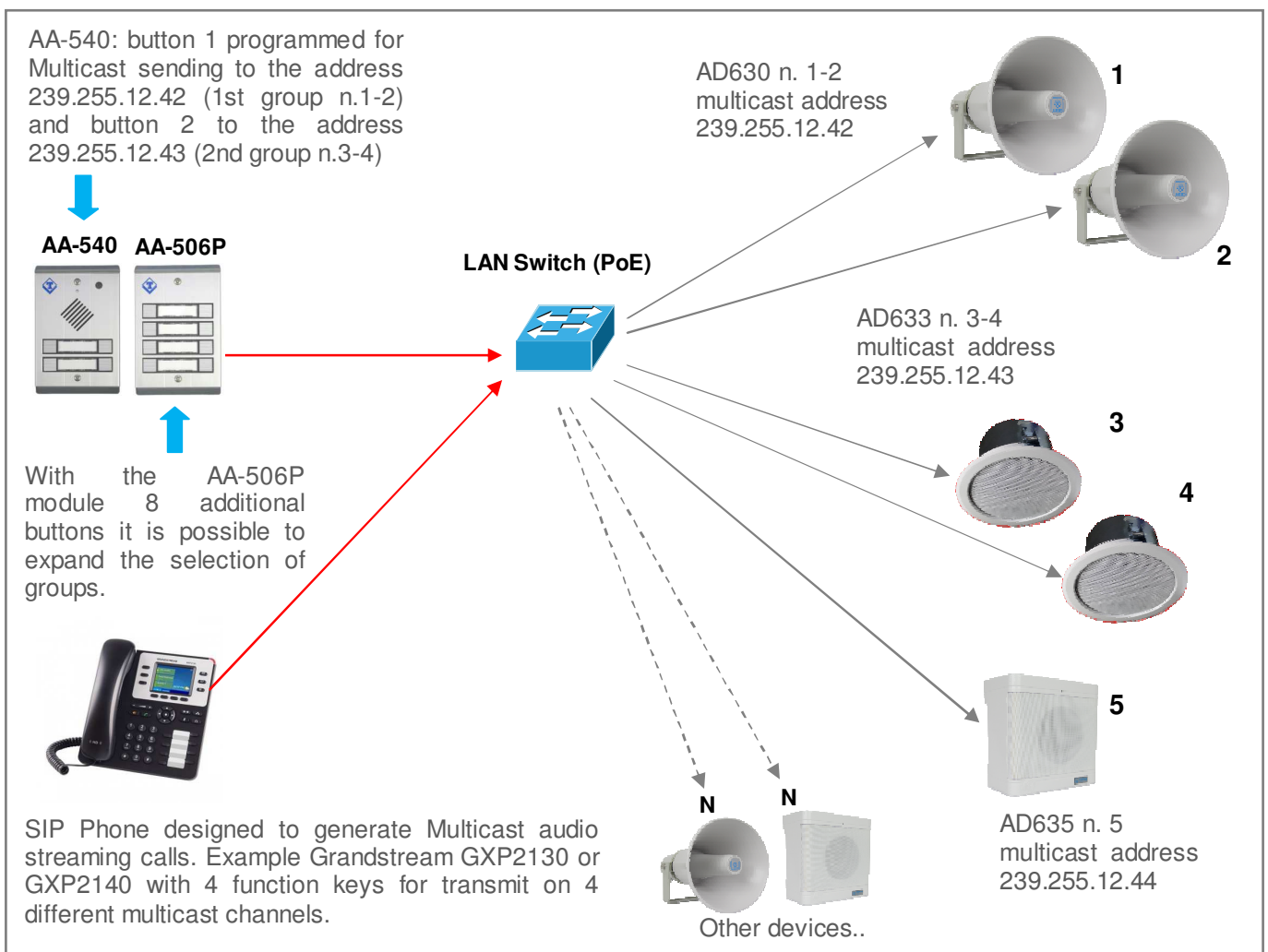
Group 1:	AD630 N. 1-2	IP 25W Horn	with IP address 239.255.12.42
Group 2:	AD633 N. 3-4	Ceiling mount IP speaker	with IP address 239.255.12.43
Group 3:	AD635 N. 5	Wall box speaker	with IP address 239.255.12.44

In SIP telephone, suitable for multicast services, are programmed 3 function keys with the IP address of the groups (Zones) configured so that each function button can send a multicast announcement on associated group.

It is also possible to use the Tema AA-500 Intercom to generate calls on Multicast channels by appropriately programming the system keys: holding a key the microphone audio is sent to the programmed Multicast IP address. For further needs of groups (zones) it is possible to add a buttons expansion module in the case of AA-540 or a expansion console of the function keys (DDS) in the case of using a SIP telephone.

Each group can have an unlimited number of AD63x devices according to the sound needs in the served area. The number of groups is expandable up to 10. By request the groups can be further expanded.

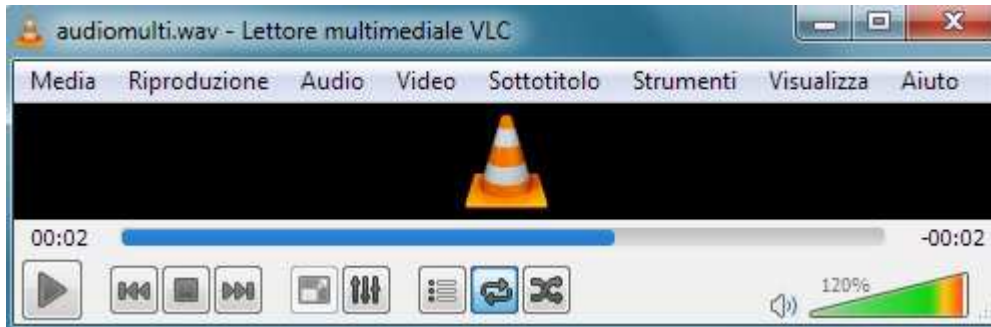
The 5 multicast channels in AD63x systems have configurable priority levels, so it is possible to reserve the highest priority channel with a dedicated IP address in order to reserve it for the general call on all AD63x or to create combinations of Zones for ads areas..



14.2. Appendix 2: Use of the VLC Media Player software as a Multicast Encoder for audio files

With the free VLC software downloadable from <http://www.videolan.org/vlc/index.it.html> it is possible to turn your Windows PC into an Encoder generator on a multicast IP address that can play a recorded audio file In WAV format 8KHz-16 Bit mono. A file of any duration can be an announcement or a music compilation to be transmitted as a background to all AD600 listening systems on one or more multicast transmission reserved addresses. To do this, follow these steps:

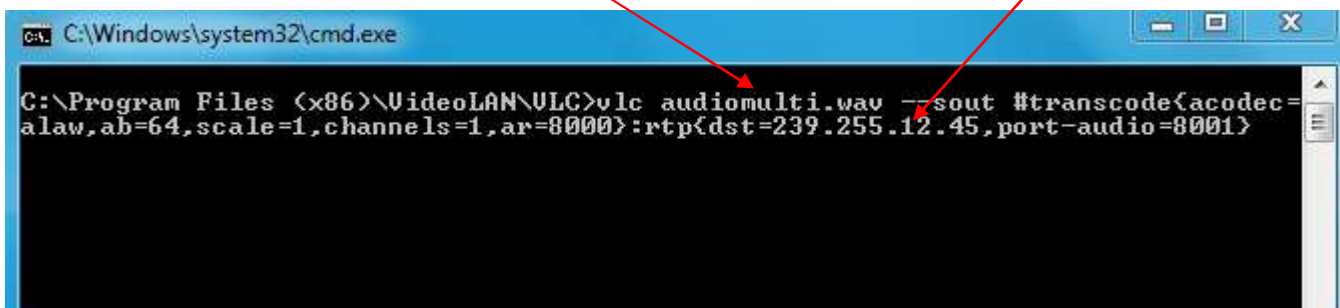
1. Download the VLC program and install it on your Windows PC, the folder where the VLC program is installed is located under C:/programmi (x86)/VideoLAN/



2. Record a WAV 8KHz-16Bit Mono audio file and copy it into the VideoLAN folder.
3. Create a file named "example.bat" as shown in the figure by entering the name of your audio file instead of the one shown in the figure (audiomulti.wav). A copy of the generic "example.bat" file that it is possible to edit is into the supplied CD.

Replace this text with the name of your .WAV audio file recorded at 8KHz-16Bit Mono

Replace this text with the desired multicast IP address, or keep the address shown and configure it on AD600 devices



4. Replace in the "example.bat" file the shown address (239.255.12.45) with the Multicast address where you want to stream audio, AD600 devices that have to play audio streaming must have set the same receive address on the programming page reserved for multicast. The address shown in the example file "example.bat" is already a reserved multicast address and can be used in your application.
5. Leave unchanged as above all the rest of the string of the file "example.bat".
6. When you want to stream over the Multicast channel, double-click on the file "example.bat", the VLC program will automatically opened and the contents of your "xxx.wav" file will be transmitted to all devices AD600 that will play it on the loudspeakers.
7. To pause the streaming, click the Pause button VLC (appears instead of the PLAY button). To end the streaming, close the VLC program.

It is possible to create several "xxx.wav", "xxx1.wav" audio files, which can be linked to as many as "example.bat", "example1.bat" files, and then launch the announcement and/or music from time to time to stream audio to a specific multicast IP address.

For more information on the VLC program, please refer to the manufacturer program guide.

14.3. Appendix 3: Use of the AUDACITY software for audio files recording

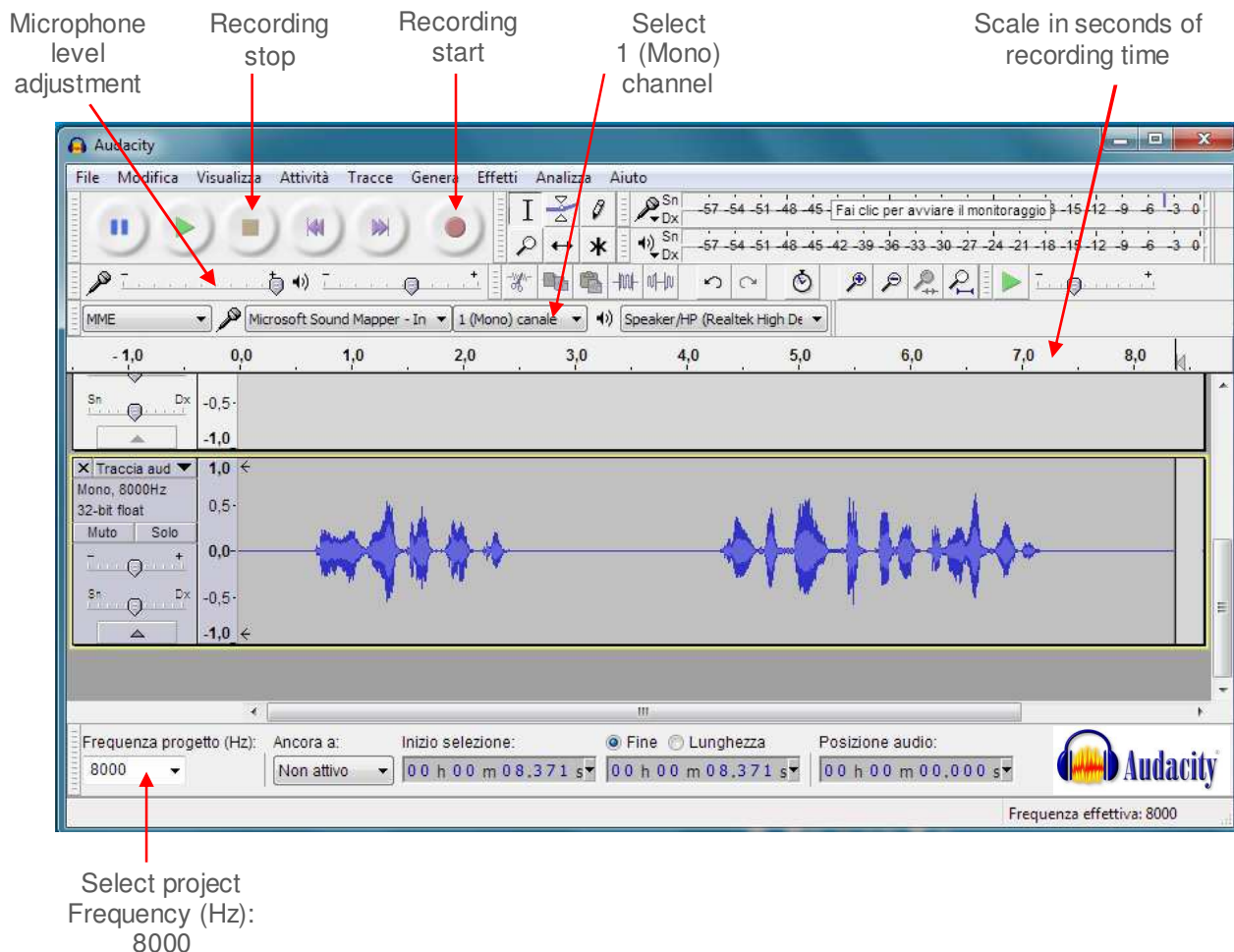
For recording your audio files, it is possible to use one of the free softwares such as AUDACITY downloadable for free from the link <http://www.audacityteam.org/> remembering to record and save audio files in .WAV format at 8KHz-16Bit Mono, other audio file formats will not work with the AD600 series devices. Below there are some informations about basic operations. For more information on the AUDACITY program, please refer to the manufacturer program guide.

Proceed as follows to record a message from the built-in microphone or connected to the PC.

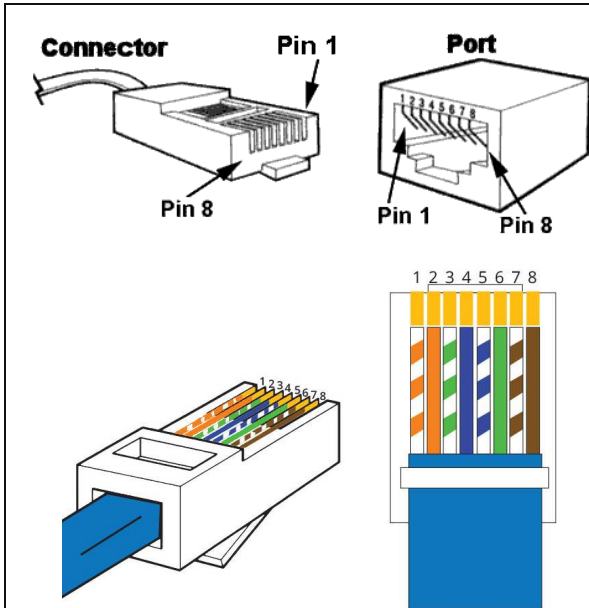
1. Select the 8,000Hz sampling rate, click Start Recording and start talking.
2. To end the recording, click on Stop recording, listen to the recorded audio, and then repeat recording if not optimal. To delete the previous recording, simply select the audio track (crawl from start to finish), press the "Delete" button and repeat the recording. With this procedure it is also possible to delete small parts of silence or sound inside the track.
3. To save the recording click on "File", "Export Audio", give a name and select in the "WAV (Microsoft) 16-bit PCM format" drop-down list. The saved file is ready to be used on all devices in the AD600 series or used with the VLC program (see previous appendix) to be sent as Multicast audio streaming.

The AUDACITY software allows a large number of audio signal processing such as: amplification/reduction of audio levels, duplication of track parts, elimination of silences, insertion of DTMF tones or tones, noise reduction, etc. For optimal use please refer to the product manual.

NOTE: TEMA provides you with its own internal recording studio for the creation of professional prompts with multilingual speakers from texts on customer specifications.



14.4. Appendix 4: Cabling of a UTP RJ45 network cable according to the standard EIA568B

	Pin	Signal	Connector 1	Connector 2
	1	TX+	White/Orange	White/Orange
	2	TX-	Orange	Orange
	3	RX+	White/Green	Bianco/Green
	4	PoE-	Blue	Blue
	5	PoE-	White/Blue	White/Blue
	6	RX-	Green	Green
	7	PoE+	White/Brown	White/Brown
	8	PoE+	Brown	Brown
NB: if the cable colors are different, the right matches must be maintained.				

- Cut the sheath (about one centimeter) to discover the wires.
- To facilitate the process it is possible, by exploiting the elasticity of the sheath, to pull the wires some additional millimeter. (Hold with one hand the wires and with the other pull the smoothing sheath).
- Straighten the wires previously individually pair twisted.
- Compose the color sequence following the pattern.
- Level the length of the cables into place.
- Insert the tightened wires into RJ45 connector holding them between your fingers until they are channeled into the guides inside the connector itself.
- Push well until the wires will touch the bottom of the connector (check in transparency that all the wires are in place).
- Make sure that the sheath has penetrated into the connector for at least 8 mm so that it can also be crimped.
- Place the connector in the crimping tool and tighten all the way. Should be audible a click caused by the outer stop.
- Repeat exactly all the above steps to crimp the cable on the other side.

Notes