

# Voice evacuation systems Multizone voice/music systems

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## Historical origins ...

PASO S.p.A. is an industrial company established in 1973 as the result of the enthusiastic work of the managerial and technical staff previously employed by the historical Milan-based company GELOSO, active since 1931 and international leader on the market of professional sound-broadcasting. PASO took over GELOSO's trademark, their patents and a valuable heritage of experience, skills and technical knowledge.

With roots firmly embedded in solid and prestige know-how, the company continued to increase its knowledge in the field of system and industrial engineering, with the primary aim of constant evolution of its Public Address products, in terms of technology, quality and reliability.

As a result of the company's experience with discussion and conference systems, in 2000 the trademark "AULA" was created to distinguish a line of top-of-the-range products for managing congresses.









## ... an important reality.

PASO S.p.A., a company of the FBT Elettronica S.p.A., is now a leading company on the sound-broadcasting and congress system markets and is highly appreciated both in Italy and abroad.

The key issue of the company's policy is customer satisfaction, achieved by ensuring top-quality products and a top-quality service, pursued consistently and with enthusiasm, and supported by a catalogue of products able to meet all sorts of different needs as well as by a competent and professional sales department. All this is topped by the guarantee provided by the Quality System certified according to the latest version of UNI EN ISO 9001.

In the current global marketplace context, PASO S.p.A. claims with well-justified pride its identity as an Italian manufacturing company that designs, develops, makes and markets its own products. Thanks to the commitment and professional skills of its personnel, the company has always remained in step with the technological evolution of both its products and its manufacturing activities, complying with the appropriate standards and directives that have succeeded each other in time.





# Voice evacuation systems

# Multizone voice/music systems

PASO provides complete audio solutions for conventional sound-broadcasting systems and for systems applied to emergency able to manage alarm situations.







## Enlarge your safety

Hospitals, schools, shopping centers, supermarkets, office buildings, sport centers...

On premises where large numbers of people are present it is essential to provide a suitable sound-broadcasting system that, following activation by the firefighting control unit, will handle the emergency situation and enable guided and controlled evacuation of the building.

Current standards define in detail the features of an electro-acoustic system for evacuation and emergency purposes in terms of design and installation so that it will meet the applicable safety and reliability requisites.

The Voice Evacuation **PASO** Systems are current answer to the needs specified in standards.



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## CERTIFICATO DI COSTANZA DELLE PRESTAZIONI CERTIFICATE OF CONSTANCE OF PERFORMANCE

n. 0068-CPR-082/2013 del/of 28/11/2013

In conformità con il Regolamento 305/2011/UE del Parlamento Europeo e del Consiglio del 9 marzo 2011 (Regolamento Contrazione o CPR), questo certificato si applica alsi prodottori da contrazione:

Regolamente with Regolament 305/2011/EU of the European Parlament and of the Contract of 9 March 2011 (the Contraction Regolament on CPR), this confricte applies to construction products):

Apparecchiatura di controllo e segnalazione per sistemi di allarme vocali modello PA8500-VES per i sistemi di rivelazione e allarme con alimentatore integrato

Voice alarm control and indicating equipment model PA8500-VES for fire detection and fire alarm system with integrated power supply le cui caratteristiche e prestazioni sono descritti in all'egato

fabbricati da / produced by

PASO S.p.A.
Via Settembrini, 34 - 20020 LAINATE (MI) - ITALIA

nello stabilimento di produzione / in the manufacturing plane

PASO S.p.A. Via Settembrini, 34 - 20020 LAINATE (MI) - ITALIA

siti concementi la valutazione e la verifica della costanza delle prestazioni descrine

#### EN 54-16:2008

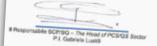
nell'ambito del Sistema I sono applicati e che unifor suspen I ere applied and that

il prodotto soddisfa tutti i requisiti prescritti sopraindicati the product fulfils all the prescribed requir

Il presente certificato è stato emesso per la prima volta il 28/11/2013 e rimantà valido fintanto che i metodi di prov-requisiti del controllo di produzione in fabbrica inclusi nelle norme amonizzate utilizzate per la verifica delle prestazion caratteristiche dichiarate non cambiano e il produzio e le condizioni di produzione nell'impianto non sono modificate in

carateristicne dismarate non-santonine and vill remain valid at long at the test methods and/or f rigidicative,

This certificate was first issued on 28/11/2013 and will remain valid at long at the test methods and/or f control requirements included in the harmonized standard, used to assess the performance of the declared of not change, and the product, and manufacturing conditions in the plant are not modified significantly.







PA8506-V Six zone integrated Voice Evacuation System

## PAW4500-VES range Voice Evacuation System

## PAW4500-VES range • 500W Voice Evacuation System for wall mounting



| PAW4502-V | 500W 2-zone wall VES system |  |
|-----------|-----------------------------|--|
| PAW4504-V | 500W 4-zone wall VES system |  |
| PAW4506-V | 500W 6-zone wall VES system |  |

The new PAW4500-VES compact systems - equipped with a EN54-16 certified control unit - have been designed for ease of installation and for operating in a vast range of applications.

These systems are able to manage, depending on the model, up to 6 alarm zones via local controls, remote microphone station and controlled inputs.

#### Three available models:

- PAW4502-V 2 zones double line
- PAW4504-V 4 zones double line
- PAW4506-V 6 zones double line

(cert. No. 0068-CPR-038/2016)

#### **FUNCTIONAL FEATURES**

- Audio rated power: 500 W freely distributed between the zones up to a maximum of 250W within a single zone.
- 4.3" touch screen back-lighted display for alert & evacuation zone selection, levels adjustment, settings and failure visualization.
- Fireman's monitored microphone on the front panel.
- Sending of EVACUATION and ALERT pre-recorded messages.
- 7 monitored inputs, each of which is conf gurable for the playback or either evacuation or alert messages, programmable for each zone, or for the reset of the messages.
- 1 auxiliary input for external sound sources.
- 1 VOX input.
- 3 configurable relay outputs.
- Double output A+B per zone.
- Secure front-panel button for operating the emergency system complete with LED indicator.
- Front-panel reset button.
- Possibility to source either BGM or paging announcements from an auxiliary input or microphone.
- Possibility to connect up to 16 paging units PMB106-G, PMB112-G.
- Possibility to connect up to 4 remote emergency microphone units PMB132/12-V, PMB132-V or, as an alternative, up to 2 touch screen remote emergency microphone units TSB8500-V.
- Possibility to connect further PAW4500-VES (up to 6 units).
- Industry-standard 19" rack-mounting format (optional).



| MODEL   | PAW4502 - V   | PAW4504 - V  | PAW4506 - V |  |
|---|---|--|-------------|--|
| Number of managed zones                             | 2   | 4  | 6           |  |
| Maximum output power (@230VAC)                      | 500 W RMS - 2 to 6 amplifiers (max 250 W per zone)  |  |             |  |
| Maximum output power (@24VDC)                       | 410 W RMS (205 W RMS per amplifier)   |  |             |  |
| Number of output zones                              | 2   | 4  | 6           |  |
| with double redundant lines (A+B)                   |   |  | -           |  |
| Display   | 4   | 4.3" backlit resistive touchscreen (480x27                                     | 2)          |  |
| Inputs Emergency microphone                         |   | Front panel balanced XLR-F   |             |  |
| Sensitivity / Impedance                             |   | Signal level 20 mV / 10 kΩ   |             |  |
| • Frequency response / S/N ratio                    |   | 60 ÷ 20.000 Hz / 72 dB   |             |  |
| VOX   |   | etting mode: ON/ OFF / VOX with A.P.   |             |  |
| Socket (LINE-VOX)  • Sensitivity / Impedance        |   | Balanced terminal strip (HOT-COM-GND)<br>Signal level: Max 3600 mV / 3 kΩ      |             |  |
| Frequency response / S/N ratio                      |   | 90 ÷ 20.000 Hz / 86 dB   |             |  |
| AUX   | RCA sock  | et for stereo BGM source - Conversio   | n to mono   |  |
| Sensitivity / Impedance     Sensitivity / Impedance |   | Signal level: Max 1800 mV / 31 kΩ  |             |  |
| Frequency response / S/N ratio     Paging units     | 1 Di.   | 60 ÷ 20.000 Hz / 84 dB   | 2.6         |  |
| Sensitivity / Impedance                             | i nj  | 1 Rj45 for Paging units PMB106-G/PMB112-G<br>Signal level: Max 1400 mV / 85 kΩ |             |  |
| Frequency response / S/N ratio                      |   | 60 ÷ 20.000 Hz / 83 dB   |             |  |
| Emergency units                                     |   | 1 Rj45 for Remote emergency unit   |             |  |
| Outputs   |   |  |             |  |
| Constant voltage outputs                            | Max   | 6 zones per 100V line to double line (   | A/B)        |  |
| Load impedance                                      | <b>Tot. 12 pairs of terminals, 2.5 mm²</b> Minimum 40 Ω per zone                                    |  |             |  |
| BF Monitor  | Built-in speaker on front panel 1 W / 8 Ω   |  |             |  |
| Connecting to external devices                      |   |  |             |  |
| Remote links  | 2 Rj45 to connect PAW4500-VES   |  |             |  |
| Sensitivity / Inputs impedance voice - music        | Signal level: Max 3600 mV / 3 kΩ  |  |             |  |
| Output / Channels impedance voice - music           |   | 1 V / 400 Ω  |             |  |
| 3 relays, N.O-N.Cexchange terminals                 |   | rammable for normal or emergency magnostic inputs. Terminals and 24 VDC su     |             |  |
| Outputs   |   | relays, N.O-N.C exchange terminal  |             |  |
| General   |   |  |             |  |
| Mains power supply                                  |   | 230 Vac 50/60 Hz   |             |  |
| Max power consumption/applied power                 | P = 700W/1045 VA (250+250 W load)   |  |             |  |
| 24VDC secondary power supply / Absorption           | 24 VDC (min 22VDC ÷ max 28VDC) / 20 A (200+200 W load)  |  |             |  |
| Secondary internal power supply                     |   | EN 54-4 rated charger  |             |  |
| Battery compartment                                 |   | Max 2 batteries 12VDC / 40 Ah  |             |  |
| Environmental specification                         | Temperature: +5°C ÷ +40°C   |  |             |  |
| Rack mounting                                       | Relative humidity: 25%-75% without condensation  Optional brackets for mounting in a 19" rack (14U) |  |             |  |
| Dimensions  | Optional brackets for mounting in a 19 Tack (140)  430 x 620 x 240 mm                               |  |             |  |
| DIIIICIIOIOIO                                       |   | 400 A 020 X 240 IIIII  |             |  |



## Enlarge your safety

EN 54-16:2008 system



certificate n. 0068-CPR-082/2013 dated 28/11/2013

PASO, leader brand of "made in Italy" products is presenting the new range of products PA8500-VES. It has been designed and engineered to offer the most innovating solutions in the realization of alarms systems, in order to manage emergency situations and to permit the guided evacuation, according to actual regulations (EN 54-16, ISO 7240-19 e EN 60849).

The PA8500-VES offers the right answer for any system requirement; the combined action of the new control units and the new digital amplifiers permits flexible and easily expandable installations both for numbers of zones and for sound power, in compliance with safety standards.

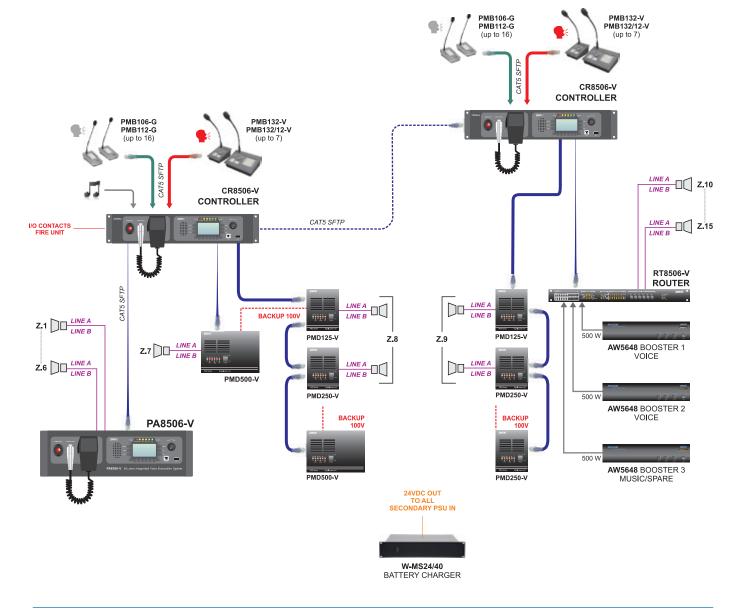
The complete architecture of PA8500-VES system is based on the controller CR8506-V, the management and diagnostics unit. It is highly recommended for big as well as small installations, where high performance of security, flexibility and easiness are required. CAT5 network assures an easy connection of the several units, controllers, routers, digital amplifiers and emergency and/or paging call stations. This solution performs in efficient and economic installation, allowing the usage of both local and centralized equipment.

Each CR8506-V can manage 6 lines to which the following units can be directly connected:

- PMD range of digital amplifiers, equipped with a diagnostics card (up to 16 per line)
- Router **RT8506-V** for up to 6 outputs zones with A & B speaker lines
- PA8506-V Integrated Voice Evacuation Systems with 6 zones

The remote consoles PMB132/12-V and PMB132-V are fully monitored, and allow greater operational and management flexibility for any service and/or emergency calls and/or prerecorded messages on the zones of the system.

The possibility to connect in daisy chain up to 6 controller CR8506-V and to manage up to 36 lines allows to realize up to 216 zones for voice evacuation/music.









CAT5 network assures an easy connection of the several units:

- 6 control lines for PMD digital amplifiers and/or router RT8506-V and/or integrated voice evacuation system PA8506-V
- 2 redundant lines to connect other CR8506-V in daisy chain (max
- 2 redundant lines for emergency microphone consoles, PMB132 range (max 7)
- 2 lines for call stations PMB range (max 16 with 7 priority levels)

system; it has been designed to drive all the supervising functions of the entire system, in compliance with the current safety standard for voice evacuation systems. It also manage and controls all the audio signals (evacuation, alert and standard messages and background music).

#### **FUNCTIONAL FEATURES**

- Controlled emergency microphone
- 2-channel broadcast system
- Built-in message generator to broadcast prerecorded messages (EVAC and ALERT)
- USB input for background music source
- Back-up power amplifier management
- Secondary emergency power supply input (24 VDC)
- 7 controlled input contacts
- 3 relay outputs
- Graphic display 128x64 pixel monochrome
- · Complete diagnostic of system fault events
- Standard rack mounting 19" (2 units)



| MODEL   | CR8506-V  |  |  |
|---|---|--|--|
| Inputs  |   |  |  |
| USB-EXT.  | USB input powered via the front panel –Type A socket  |  |  |
| Emergency microphone  | Balanced XLR-F on front panel   |  |  |
| IN1 MIC (Programmable modes: ON / OFF / Precedence / VOX)   | Balanced XLR-F (with activatable 21 V phantom power supply)   |  |  |
| IN2 (Programmable modes: ON / OFF / Precedence / VOX)   | MIC: Bilanced XLR-F (with activatable 21 V phantom power supply); LINE: Balanced with terminals (HOT-COM-GND) |  |  |
| AUX   | RCA stereo socket for source of sound (BGM)   |  |  |
| Paging units (2 lines)  | 2 RJ45 sockets per unit (PA) - PMB106-G, PMB112-G and ACIO8136  |  |  |
| EMERGENCY UNITS (2 lines) 4 RJ45 for connection and dedicated emergency microphone station (PMB132 range) |   |  |  |
| Outputs   |   |  |  |
| SLAVE LINK OUTPUT (6 lines)   | 6 RJ45 RT8506-V / PMD / PA8506-V unit connections   |  |  |
| CR8506-V LINK (2 lines)   | 4 RJ45 CR8506-V redundant connections   |  |  |
| Emergency controls  | 7 inputs with diagnostics (RJ45) and 3 relays for signalling emergencies and failures, N.O-N.C. terminals     |  |  |
| General informations  |   |  |  |
| Mains power supply, consumption   | 230 Vac 50/60 Hz, 10 W  |  |  |
| Vdc secondary power supply, consumption 24 Vdc (min 22 Vdc ÷ max 28Vdc), 0,3 A                            |   |  |  |
| 19" rack mounting (modular units)   | Direct (2U)   |  |  |
| Dimensions (W x H x D)  | 482 x 88 x 220 mm   |  |  |
| Weight 4 kg   |   |  |  |

## PMD range • Class "D" modular amplifiers



Careful design and a choice of very reliable hi-tech components led to the creation of this range of Class D amplifiers, featuring an extremely compact size and low energy consumption. Each has its own diagnostics card for testing correct operation and checking soundness of the loudspeaker line and a double output circuit with separate controls (A and B) for creating systems featuring line redundancy; if a short circuit is detected on one of the two outputs, this line is automatically disconnected to enable proper operation of the other. These modular amplifiers require a PMS2001 card-cage for mounting on a 19" rack. PMD amplifiers, connected directly to the CR8506-V controller by means of CAT5 shielded cable, can be used to create high-power areas. It is possible to connect up to 16 PMD units in cascade fashion to each of the six output lines (zones) of the CR8506-V. It is possible to configure one amplifier in each group as a stand-by unit. The fact that each amplifier is powered independently makes the system extremely reliable and in line with safety standards.

#### **SPECIAL APPLICATIONS**

PMD amplifiers can also be used without a PA8500-VES system whenever small layout dimensions combined with great reliability are required.

They can be controlled by means of configuring dip-switches on the rear of each unit or by means of a simple RS485 communication protocol, with complete supervision of the loudspeaker line connected to them. The communication protocol is compatible with the PMS2000-VES modular system. In addition to all the operations and/or checks set locally by means of the dip-switches, it will also be possible to view and modify all the parameters, including the following:

- reading of the reference impedance for the test
- minimum and maximum values within which the test is applicable
- reading of the test status
- testing of inputs
- measurement of the temperature of the end transistors
- volume control

#### **FUNCTIONAL FEATURES**

#### **General features**

- Operation on 230 VAC and 24 VDC
- Both stand-alone and remote-controlled operation are possible
- Double RJ45 input socket (for connecting more than one amplifier in parallel)
- Two audio inputs
- Front-panel LEDs indicating the output level or the operational status of the amplifier
- Forced fan cooling with an electronic control and protection circuit
- · Output terminal block of the removable bayonet type

#### Local controls or via serial communication

- Output volume control
- Selection of the amplifier input
- · Activation of the low-cut filter

#### **Diagnostics**

- · Diagnostics of the main functions of the amplifier
- · Checking and measurement of the impedance of the loudspeaker line (A and B)
- Check and exclusion of short-circuited loudspeaker lines
- Check of earth connections (GND FAULT)

#### PROTECTION DEVICES

In addition to conventional protection in the form of fuses, these amplifiers have electronic protection devices and circuit-breakers with automatic resetting, protecting them from the possible risk of damage due to overloads.

The front-panel LEDs have a dual function as VU Meter (in normal conditions) and for indicating the types of any failures detected by the control card.

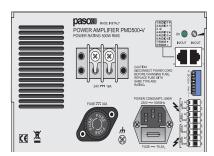


#### CONNECTIONS

There are two RJ45 sockets on the rear panel of the unit. Their connections are in parallel with one another to enable audio connections at line level and for serial communication.

There is a removable bayonet-type terminal block for connection to the loudspeaker lines and, if required, to a stand-by amplifier.



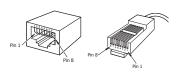


PMD125-V PMD250-V PMD500-V

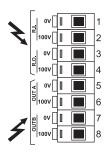
| RJ45 input |                |  |  |
|------------|----------------|--|--|
| Pin        | Description    |  |  |
| 1          | Audio 1+       |  |  |
| 2          | Audio 1-       |  |  |
| 3          | GND            |  |  |
| 4          | Audio 2+       |  |  |
| 5          | Audio 2-       |  |  |
| 6          | Audio switch   |  |  |
| 7          | RS485 serial + |  |  |
| 8          | RS485 serial - |  |  |
| Shield     | GND            |  |  |

Audio Input 1 and 2 are balanced electronically.

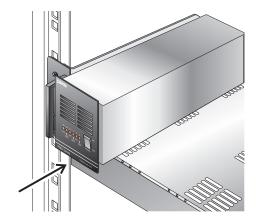
All the connectors must be shielded RJ45 connectors.

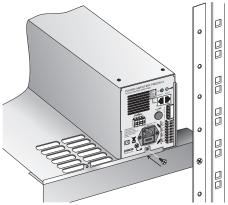


| Power output          |  |  |  |
|-----------------------|--|--|--|
| Description           |  |  |  |
| Stand-by Bus IN (0 V) |  |  |  |
| Stand-by IN (100 V)   |  |  |  |
| Stand-by OUT (0 V)    |  |  |  |
| Stand-by OUT (100 V)  |  |  |  |
| Output A (0 V)        |  |  |  |
| Output A (100 V)      |  |  |  |
| Output B (0 V)        |  |  |  |
| Output B (100 V)      |  |  |  |
|                       |  |  |  |



#### RACK-MOUNTING WITH A PMS2001 CARD CAGE





To install **PMD** amplifiers on 19" racks it is necessary to use the card-cage provided for this purpose. PMD amplifiers differ from one another only in terms of output power and size (two 125-W or 250-W amplifiers occupy the same space as one 500-W amplifier). Each PMS2001 card-cage can contain two 500-V amplifiers or four PMD125-V or PMD250-V amplifiers, or any intermediate configuration.

| MODEL  | PMD125-V   | PMD250-V  | PMD500-V  |  |
|--|--|---|-----------|--|
| Nominal output power @230 Vac / 27 Vdc         | 125 W RMS  | 250 W RMS   | 500 W RMS |  |
| Power outputs                                  |  | 100 V (A and B lines)                                     |           |  |
| Distorsion at rated power                      |  | < 0,05 %  |           |  |
| Inputs   | 2  | 2 x RJ45, In/Out - 2 audio inputs (770 mV) and RS485 data | a         |  |
| Frequency response                             |  | 90-20.000 Hz  |           |  |
| Low Cut filter (- 3 dB)                        | 330 Hz   |   |           |  |
| Mains power supply                             | 230 Vac ± 10% - 50/60 Hz / 24 Vdc                        |   |           |  |
| Power consumption at 230 Vac                   | 195 W 410 W 740 W  |   |           |  |
| Current consumption at 24 Vdc                  | 4,4 A 7,6 A 16,3 A                                       |   |           |  |
| Consumption with no signal at 230 Vac / 24 Vdc | 14 W / 0,14 A 15 W / 0,2 A 16 W / 0,25 A                 |   |           |  |
| 19" rack mounting                              | Optional PMS2001 card cage (H: 3U + 1U support brackets) |   |           |  |
| Mounting units to each PMS2001                 | 4 2  |   |           |  |
| Dimensions (W x H x D)                         | 100 x 130 x 395 mm 200 x 130 x 395 mm                    |   |           |  |
| Weight   | 8,4 kg   | 9,2 kg  | 14,8 kg   |  |

### RT8506-V • Router



The router **RT8506-V** is the best solution for the sound systems with a very interesting compromise between price and performance; connected to a CR8506-V control line, it can drive up to 6 zones with external power amplifiers (AW5600 range) to a maximum of 1000 W.

Each output line consists of 2 speaker circuits (A & B) in order to guarantee the complete area coverage also in case of one loudspeaker circuit failure. The maximum system configuration includes 6 controllers connected to 36 routers (6 for each CR8506-V) for a total of 216 zones.

The router can be used with power signals (amplifier 100 V output). Two different configurations are possible: in the first one you can connect 2 amplifiers (one for music and one for speech); in the second one it is possible to manage 2 voice amplifiers (3 zones each) and one music amplifier.

In any case all amplifiers are constantly monitored and the music one can be also used as backup: in case of a failure it automatically replaces the voice amplifier.

#### **FUNCTIONAL FEATURES**

- 6 loudspeakers zones with double output lines A+B
- Double input 100 V for 1 or 2 voice amplifiers (IN 1 zone 1÷3, IN 2 zone 4÷6)
- 100 V input for music/stand-by amplifier
- Front panel push button to switch on/off the music on each single zone
- RJ45 socket for CR8506-V connection
- 7 controlled input contacts
- 6 open collector outputs
- 2 relay outputs
- Standard rack mounting 19" (1 unit)

#### **AW5600 RANGE AMPLIFIERS**

With the RT8506-V router it is possible to use the certified AW5600 range boosters. Two models are available; one with an output of 240 W (AW5624) and the other with an output of 480 W (AW5648). The amplifiers of the AW5600 range are the ideal products for emergency systems. There is a specific switch on the rear panel for disabling all the front-panel controls (tone and volume controls), preventing accidental changes to the levels set during commissioning.

For further information about AW5600 range, consult the "Section 2 - Booster Units" of the catalogue.

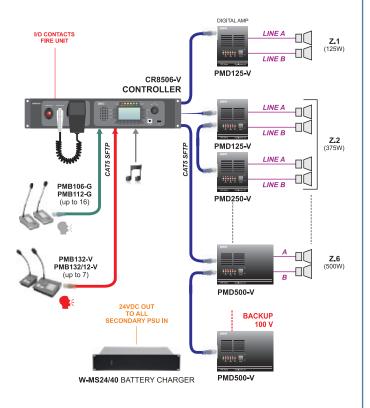


| MODEL                                    | RT8506-V          |
|--|-------------------|
| Mains power supply                       | 230 Vac 50/60 Hz  |
| Consumption @230Vac                      | 12 W              |
| Vdc secondary power supply               | 24 Vdc            |
| Consumption @24Vdc                       | 0,5 A             |
| Maximum power switchable for single zone | 500 W             |
| 19" rack mounting (modular units)        | Direct 19" (1U)   |
| Dimensions (W x H x D)                   | 482 x 44 x 220 mm |
| Weight                                   | 4 Kg              |



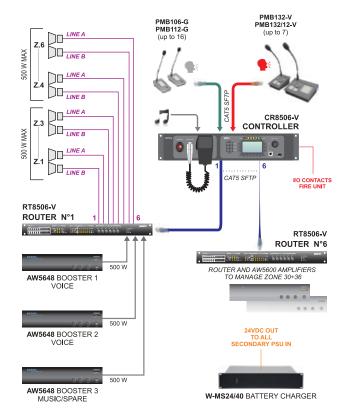
#### CR8506-V Controller and Digital Amplifier PMD Series

It is possible to connect 6 controllers CR8506-V to each other and to manage up to a maximum of 36 groups of PMD digital amplifiers, obtaining a 2 channel system with 36 output zones with double line.

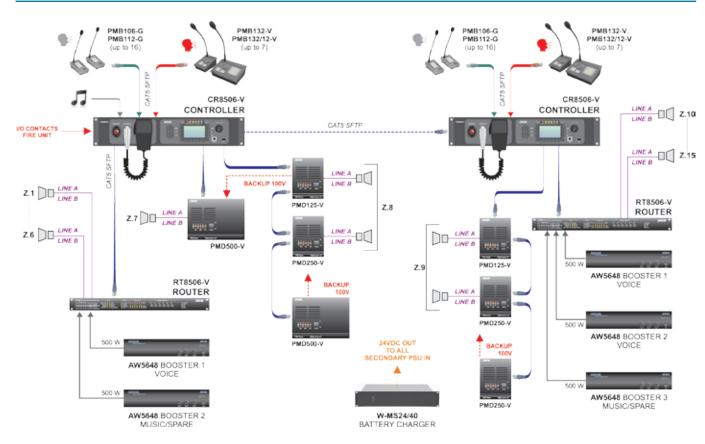


#### CR8506-V Controller and RT8506-V Router

In a system which includes 6 controller CR8506-V, each one connected to a maximum of 6 routers RT8506-V, it is possible to obtain up to 216 double line output zones.



#### PA8500-VES • Solution with a Mixed Configuration



## PA8506-V • Integrated Voice Evacuation System



The PA8506-V is a PASO sound management system, which integrates emergency and general purpose broadcast functions. It enables background music and general or zone calls without interfering with its diagnostic routine. It's designed for easy installation and operation in a wide range of applications where both emergency voice alarm systems and public address systems are required, always according to the voice evacuation safety standards.

It can be possible to connect easily (by simple CAT 5 cable) two main PA8506-V to create systems of up to 12 zones, for a maximum of 1000W and connect up to 14 emergency microphone units (thanks to the PMB132 series). The PA8506-V has all the functional features normally provided by more expensive systems, and it is therefore characterized by an exceptionally favourable price/performance ratio. It includes an emergency microphone, two class D power amplifiers, a message generator and BGM USB input. It provides also 6 zone outputs, with continuous speaker line monitoring function.

- EN 54-16: 2008 certified (n. **0068-CPD-081/2011**)
- ISO 7240-19 and EN 60849 compliance
- All in one Message/alarm generator, paging, BGM
- Up to 12 output zones (using 2 PA8506-V units)
- Music volume control for each zone
- 1000 W maximum total power (complete configuration, 2 PA8506-V units and 2 AW5624 external amplifiers)
- Full digital audio control (DSP)

The speaker output section consists of 6 separated lines; each line has its own internal music level control. Furthermore, each output line consists of 2 speaker circuits (A & B) in order to guarantee the complete area coverage also in case of one loudspeaker circuit failure. The front controls and the LCD display allow easy system setup.

Other than paging and music broadcast operations, the PA8506-V is able to make alarm announcements in emergency situations. According to EN54-16 standard, the built in surveillance function continuously checks the system for all possible failures. The equipment is a fully 2-channel broadcast system including 2-built in class D amplifiers (2 x 250 W RMS, one for music and one for speech). Both amplifiers are continuously monitored. The music amplifier operates also as stand-by amplifier: in case of speech amplifier failure, the music amplifier automatically replaces it.

The PA8506-V can be mounted in a 19" standard rack (3-unit height).





#### PA8506-V • TECHNICAL FEATURES

- Two built-in 250 W RMS class D power amplifiers
- External 250 W amplifier to increase power (AW5624)
- Up to 7 remote emergency microphone units (SFTP CAT5 cable)
- Up to 16 paging units, 7 priority levels (SFTP CAT5 cable)
- Balanced microphone input (IN 1) with Phantom power supply and priority contact
- Balanced microphone or line input (IN 2) with Phantom power supply (MIC), priority contact or automatic precedence (VOX)
- Balanced line input (IN 3) with automatic precedence (VOX)
- Auxiliary line input for an external music source
- USB input for background music source

- 6 open collector outputs (system status or override to by pass attenuators)
- 8 programmable and controlled input contacts
- 2 relay outputs for emergency and failure conditions
- Built-in loudspeaker for channel monitoring and acoustic failure signalling (beep)
- Graphic display 128x64 pixel monochrome, for displaying multiple windows management
- Multi-function keys and knob help to navigate through the menus
- Emergency zone disabling and Do Not Disturb functions (DND)

#### **MAIN EMERGENCY FEATURES**

- Frontal Fireman's microphone. It works only under Emergency Manual and has priority over pre recorded messages of an emergency. The microphone capsule is controlled by the internal diagnostic system
- Emergency button with LED (red) collected for the activation of the Emergency Manual mode. Allows access to the system, with absolute priority, from the "State of Quiet" or during the Emergency Automatic ongoing, previously activated by external devices
- Remote emergency microphones units, PMB132 series
- Control and monitoring of the integrity of the critical path (from the emergency signal sources to the loudspeaker lines)
- Continuous loudspeaker line monitoring (integrity and dispersion to earth) without interruption of BGM or paging calls
- Two output loudspeaker lines for each zone (A & B)
- Built-in message generator to broadcast prerecorded messages (EVAC and ALERT)
- Back-up power amplifier management (built-in unit)
- · Complete diagnostic of system fault events
- Management of a secondary source of 24 Vdc power with a battery-charging unit

| MODEL  | PA8506-V  |  |                                       |  |
|--|---|--|---------------------------------------|--|
| Rated output power (230 Vac / 24 Vdc)            | 250 + 250 W RMS / 160 + 160 W RMS (dual voice and music channel)  |  |                                       |  |
| Inputs   | IN 1  | IN 2   | IN 3                                  | AUX  |
| Туре   | Balanced XLR-F (with activate   | able 21 V phantom power supply)  | Balanced with terminals (HOT-COM-GND) | Unbalanced RCA                             |
| Programmable mode                                | ON / OFF / PRECEDENCE / MIX IN2   | ON / OFF / PRECEDENCE / VOX  | ON / OFF / VOX                        | -  |
| Sensitivity / Impedance                          | Min. 3 mV - Max 100 mV / 1,8 kΩ   | MIC: Min. 3 mV - Max 100 mV / 1,8 k $\Omega$ LINE: Max 1800 mV / 31 k $\Omega$ | Max 3600 mV / 3 k $\Omega$            | Max 1800 mV / 31 kΩ                        |
| Frequency response / S/N ratio                   | 240 ÷ 20.000 Hz / 63 dB   | MIC: 240 ÷ 20.000 Hz / 63 dB<br>LINE: 60 ÷ 20.000 Hz / 84 dB                   | 90 ÷ 20.000 Hz / 86 dB                | 60 ÷ 20.000 Hz / 84 dB                     |
| Dedicated inputs                                 | Emergency mi  | crophone, bilanced XLR - Paging Units (PI<br>Emergency Units, RJ45 - U         |                                       | RJ45                                       |
| External amplifier input (EXT. AMP. IN)          |   | Input with terminals 0-70-100  | V (max 250 W RMS)                     |  |
| Constant voltage outputs                         | 6 zones for dual-line /A/B) 100 V lines – Tot. 12 pairs of terminals, 2.5 mm²   |  |                                       |  |
| Load impedance                                   | Min. 40W for total group of zones 1 to 6 with 250 W external amplifier: Min. 40W for total group of zones 1 to 3 / Min. 40W for total group of zones 4 to 6   |  |                                       |  |
| External amplifier output                        | Balanced XLR  |  |                                       |  |
| Sensitivity / Impedance                          | 1 V / 500 Ω   |  |                                       |  |
| Frequency response / S/N ratio                   | 40 ÷ 20.000 Hz / 84 dB  |  |                                       |  |
| Monitor BF OUT                                   | Loudspeaker built into front panel 1 W / 8 W and rear output with terminals (HOT-GND) - 1 V / 400 W   |  |                                       |  |
| Emergency controls                               | Programmable to normally open or normally closed states   |  |                                       |  |
| Туре   | 8 inputs with diagnostics. Terminals and service power supply: 24 Vdc (CONTROL INPUTS) 6 open-drain outputs, max 200mA. Terminals and service power supply: 24 Vdc (CONTROL OUTPUTS) 2 relays for signalling emergencies and failures, N.O-N.C. terminals |  |                                       |  |
| Mains power supply                               | 230 Va  | 230 Vac 50/60 Hz   |                                       | ONE SELECTION                              |
| Max consumption @ rated output power RMS         | (500 W System) P = 650 W/800 V  | A - (250 W System) P = 370 W/480 VA  |                                       | To PA8506-V can                            |
| Typical consumption with voice signal            | (500 W System) P = 160 W/200 V  | 'A - (250 W System) P = 90 W/120 VA  |                                       | be easily and quickly                      |
| Consumption with no signal (test tone only)      | P = 30  | ) W/45 VA  | 7 /                                   | connected up to 16 microphone paging       |
| Vdc secondary power supply                       | 24 Vdc (min 22  | Vdc ÷ max 28 Vdc)  | / /                                   | units (PMB106-G and                        |
| Max consumption @24Vcc (@28Vcc)                  | 500 W System = 17 A (21 A) - 250 W System = 9 A (11 A) PMB112-G) an   |  |                                       | PMB112-G) and up to 7                      |
| Typical voice signal consumption @24Vcc (@28Vcc) |   |  |                                       | microphone emergency<br>units PMB132-V and |
| Consumption with no signal (test tone only)      |   |  |                                       | PMB132/12-V), which                        |
| Operating environmental conditions               | Temperature: +5°C to +40°C - Relative humidity: 25%-75% non-condensing allow to send mess   |  |                                       | allow to send messages                     |
| 19" rack mounting                                | Optional AC8506 brackets (height: 3U + 1U support brackets)   |  |                                       | either to one or more zones. The usage of  |
| Dimensions (W x H x D)                           |   |  |                                       | shielded cables CAT5e                      |
| Weight   | 20  | 0,5 Kg   |                                       | SF/UTP is needful.                         |

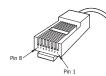
## PMB132 range • TSB8500-V • Emergency Paging Units



#### CONNECTIONS

The connections to these emergency stations are made by means SFTP CAT5E shielded cable and RJ45 shielded connectors.





| ГIII   | Describuon    |  |
|--------|---------------|--|
| 1      | Audio +       |  |
| 2      | Audio -       |  |
| 3      | GND           |  |
| 4      | Not connected |  |
| 5      | Not connected |  |
| 6      | + Vdc         |  |
| 7      | Serial +      |  |
| 8      | Serial -      |  |
| Shield | GND           |  |
|        |               |  |

| MODEL                     | PMB132-V                           | PMB132/12-V | TSB8500-V      |
|---------------------------|------------------------------------|-------------|----------------|
| N° of zone selectable     | -                                  | 12          | 1 ÷ 216        |
| Typical output level      |                                    | 300 mV      |                |
| Frequency response        | 130 ÷ 19                           | 9.000 Hz    | 20 ÷ 20.000 Hz |
| Distortion                | < 1%                               |             |                |
| LOW CUT filter            | -3 dB / 380 Hz -10 dB / 100 Hz     |             |                |
| S/N ratio                 | > 60 dB                            |             |                |
| Connections               | RJ45 (IN/OUT)                      |             |                |
| Power supply voltage      | 24 Vdc                             |             |                |
| Maximum absorption @24Vdc | 60 mA 130 mA 165                   |             | 165 mA         |
| Dimensions (W x H x D)    | 140 x 80 x 200 mm 230 x 80 x 200 m |             | x 200 m        |
| Net weight                | 0,77 kg 1,55 Kg 1,6 Kg             |             | 1,6 Kg         |

## Broadcasting Paging Units

Standard paging units can be used in the PASO Voice Evacuation Systems. The units are connected to one another in cascade formation, and the connecting cables (CAT5e SF/UTP) carry both the analogue audio signal and the digital signal for the controls and station addresses.

The PMB106-G call station can make selective calls to up to a maximum number of 6 zones and the PMB112-G up to 12. The PMB112-EG extension module enables 12 programmable shortcut keys for one or more functions to be added. It is possible to connect up to two expansion modules to the PMB112-G.

#### **FUNCTIONAL FEATURES**

- Fully monitored
- Emergency key
- Live emergency calls
- Sending of pre-recorded Evacuation/Alert messages
- Broadcast calls
- Zone-selection keys with status-LEDs (PMB132/12-V only)
- Faults/Failures LEDs
- AUX function to call pre-set messages
- Reset of emergency messages
- Muting of the buzzer for failure detection (ACK)

The remote consoles PMB132/12-V and PMB132-V are fully monitored, and allow greater operational and management flexibility for any service and/or emergency calls and/or prerecorded messages on the zones of the system. The LEDs on the front panel provide the main information on the status of the emergency system and on any failures. The **PMB132-V** station enables a single All-Call to be made; if the alarm messages have to be sent to separate zones, on the other hand, it will be necessary to use the PMB132/12-V station, which enables a maximum of 12 zones to be selected. The **TSB8500-V** emergency station combines all the features of the PMB132 range with a 7" touch screen back-lighted display for zone selection, which allows an easy and quick configuration of the unit. Six function keys are available to set group of zones. Each station must be completed with an additional microphone to be chosen from among the following models:

- MC132-V Dynamic gooseneck microphone
- M132-V Dynamic hand-held microphone with P.T.T. key





## W-MS24 range • Battery-charging and checking units



W-MS24/150 W-MS24/40

The **W-MS24/4** charging unit, featuring low energy consumption, has an aluminium cabinet covered in ABS. It ensures continuity of services for your system, with an exceptionally good price/performance ratio.

The ease of installation and cabling of this unit, with two charging outputs enabling a larger number of applications and the rated maximum battery-charging capacity not exceeding 55 Ah, are ideal features for using it with the PA8506-V integrated voice evacuation system in medium-sized to small installations, always in accordance with the applicable provisions of law.

The W-MS24/4 battery—charger, which complies in full with EN54-4 (certificate no. **0333-CPD-075192**), is suitable for installing directly on a 19" rack (height: 3 U).

The 24 Vdc **W-MS24/150** and **W-MS24/40** battery chargers have been designed specifically for voice evacuation systems. They are based on microprocessor-driven devices and able to charge lead batteries (back-up batteries connected to the voice evacuation system) and, at the same time, to supply power to auxiliary equipment.

The W-MS24/40 and W-MS24/150 battery chargers meet in full the requirements of EN54-4 (certificates nos. **0333-CPD-075382** and **0333-CPD-075381**), and ensure maximum charging currents of 6 and 12 A respectively. They have standard chassis for installing directly on 19" racks (height: 2 U).



W-MS24/4



The **W-MS24/WF** power supply and battery-charging unit consists of a switching type PSU with protection against short circuits and overloading and a card for managing controlled dynamic recharging of sealed lead batteries (tested regularly) and alarm outputs, a self-testing function and LEDs for signalling 16 different system statuses.

The white-painted metal cabinet can also house the two batteries, providing a compact solution for easy and handy wall-mounting.

The W-MS24/WF, which complies with EN54-4 (certificate no. **0051-CPD-0116**) must be connected to batteries not exceeding a rated output of 27 Ah.

#### W-MS24/WF

| MODEL                              | W-MS24/40              | W-MS24/150                                       | W-MS24/4             | W-MS24/WF             |  |
|------------------------------------|------------------------|--|----------------------|-----------------------|--|
| Mains power supply                 |                        | 230 Vac ± 15% - 50/60 Hz                         |                      |                       |  |
| Maximum load output current        | 40 A                   | 150 A  | 4                    | A                     |  |
| Main load outputs @24 Vdc          | 2 x 20 A               | 6 x 40 A   | 2 x 4 A              | 3 x 4 A               |  |
| Aux load outputs @24 Vdc           | 3 x                    | 5 A  |                      |                       |  |
| Battery capacity (minimum/maximum) | 24 Ah min – 110 Ah max | 65 Ah min – 225 Ah max                           | 7 Ah min – 55 Ah max | 18 Ah min – 27 Ah max |  |
| Nominal output rectifier current   | 6 A                    | 12 A   | 3 A                  | 1,5 A                 |  |
| ault indications                   |                        | Mains fault, battery fault, output voltage fault |                      |                       |  |
| ow voltage disconnection threshold |                        | 21,6 V ± 3%                                      |                      |                       |  |
| 19" rack mounting (modular units)  | Direc                  | Direct (2U) Direct (3U) Wall mounting            |                      |                       |  |
| Dimensions (W x H x D)             | 432 x 88 :             | x 399 mm   | 482 x 133 x 110 mm   | 395 x 385 x 185 mm    |  |
| <i>N</i> eight                     | 3,1 kg                 | 5,4 kg   | 3 kg                 | 9,6 kg                |  |

## Master/Slave • 216 zone voice/music control unit





The multi-zone system is particularly suitable for large and small installations in which particularly reliable, versatile and practical equipment is required. The simplicity with which the various different units and the control bases can be connected to one another even when far away (CAT 5 connections) makes sound-broadcasting inside complex buildings effective and inexpensive, using both centralised and/or local control units. Both the Master unit (P8136) and the Slave unit (P8236) enable management of up to six zones each. It is possible to activate/de-activate music for each zone using the frontpanel switches provided for this purpose. The Master and Slave units can be used for switching both line signals (one amplifier for each zone) and the power signals (output from the amplifier, 100 V line). In this latter case, it is possible to connect two amplifiers (one for music and the other for speech, two-channel system) or a single voice/ music amplifier (single-channel system). To increase the power being managed, the units have provisions for connecting two amplifiers for speech (3 zones each) and two for music. Depending on the size and configuration of the audio system, it is possible to use the Master and/

or Slave units separately or connecting them to one another. The maximum system configuration envisages the use of 6 Master control units connected to 30 Slave units (five for each Master), thus managing up to 216 voice/music broadcasting zones. Up to 16 PMB106-G and/ or **PMB112-G** microphone consoles can be connected to each unit.

Unlike the Slave unit, on the P8136 there are four inputs for auxiliary sound sources with a selector switch and level control, two line inputs with automatic priority activation (VOX) and four RJ45 inputs for PMB106-G and/or PMB112-G call stations to be configured as Masters and able to control all the zones in the system. The P8136 has provisions for inserting an optional ACMG8136 card, needed for automatic and/or manual broadcasting of pre-recorded messages. ACIO8136 cards can also be connected to the same lines as the "local" or "master" microphone stations. These are expansion cards with one balanced line input and 6+6 programmable input/output contacts and they can be used to send pre-recorded messages and/or the incoming audio signal to the various different zones in the system.

#### FUNCTIONAL FEATURES OF THE P8136 • MASTER UNIT

- CAT 5 RJ45 inputs for:
  - PMB106-G and/or PMB112-G call stations (max. 16)
  - P8136 Master units (max. 1)
  - P8236 Slave units (max. 5)
  - ACIO8136 external I/O cards (max. 6)
- · Configuration via software and USB link to a PC
- Two VOX line inputs with automatic activation of priority (telephone/emergency audio inputs)
- Four music inputs (Tape, CD, Tuner, Aux)
- Line input from another Master unit (centralised BGM signal)
- Two separate 100-V inputs for voice and music signals
- Six line-output zones split up into 2 groups of 3 each (100 V / 0 dB depending on how the system is configured)
- Voice and music audio outputs (0 dB)
- Music audio output (0 dB)
- Zone override connection (24 VDC)
- ACMG8136 pre-recorded message generating card (optional)
- Push-buttons for activating music in the six zones
- Push-buttons and encoder for control and configuration
- Power supply: 230 VAC/24 VDC

#### FUNCTIONAL FEATURES OF THE P8236 • SLAVE UNIT

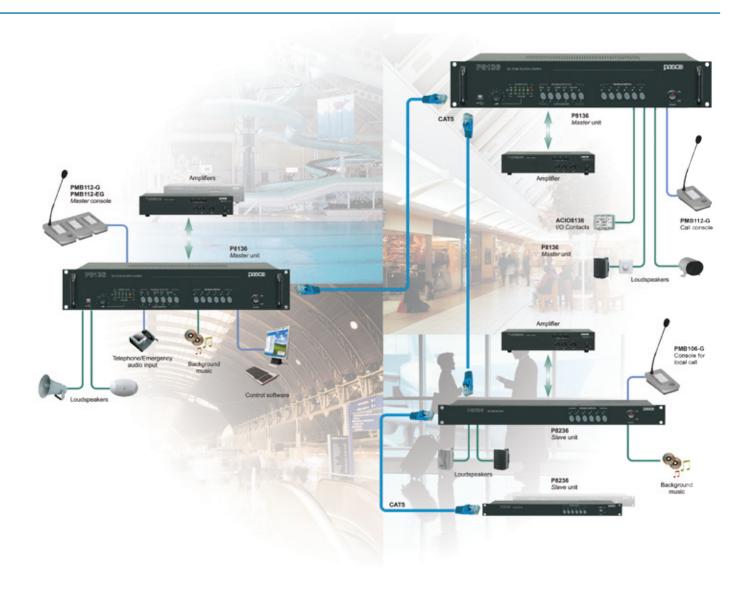
- CAT 5 RJ45 inputs for:
  - PMB106-G and/or PMB112-G call stations (max. 16)
  - P8136 Master units (max. 1)
  - P8236 Slave units (max. 5)
  - ACIO8136 external I/O cards (max. 6)
- Local music input
- Two separate 100-V inputs for voice and music signals
- Six line-output zones split up into 2 groups of 3 (100 V / 0 dB depending on how the system is configured)
- Voice and music audio output (0 dB)
- Zone override connection (24 VDC)
- Push-buttons for activating music in the six
- Power supply: 230 VAC/24 VDC

#### **PAGING MICROPHONE STATION UNITS**

With the multi-zone Master/Slave system it is possible to use the PMB106-G and/or PMB112-G preamplified desktop microphone stations for All Calls and for calling zones. RJ45 link with CAT5 and SF/UTP shielded cable.







### **ACCESSORIES**

#### ACI08136 I/O card unit

- CAT5 master/slave unit connection
- 6 opto-insulated input contacts
- 6 output relay contacts
- 24 Vdc power supply
- 0 dB audio input
- Enable/disable VOX function (telephone/emergency audio input)
- 12 Vdc output



#### ACMG8136 Pre-recorded message generator

- Optional P8136 master card unit
- SD memory card
- Wav message type
- 127 messages
- microphone input
- Headphone output
- USB connector

| MODEL                                    | P8136                               | P8236    |  |
|--|-------------------------------------|----------|--|
| Mains power supply                       | 230 Vac ±10% -                      | 50/60 Hz |  |
| Vdc external power supply                | 24 Vdc                              |          |  |
| Mains consumption                        | 30 VA                               |          |  |
| Vdc consumption                          | 1,5 A                               |          |  |
| Maximum power switchable for single zone | 500 W (@ 100 V)                     |          |  |
| 19" rack mounting (modular units)        | Direct (2 U)                        |          |  |
| Dimensions (W x H x D)                   | 422 x 88 x 167 mm 482 x 44 x 143 mm |          |  |
| Weight                                   | 3,9 kg 2 kg                         |          |  |



## 6 zone voice/music control unit



This equipment enables up to six zones to be selected from a microphone base. It is possible to activate/de-activate music for each zone by means of the front-panel switches provided for this purpose. It can be used both with line signals (upstream from the amplifier) and with power signals (output from the 100-V line amplifier). The P8036 has provisions for connecting two amplifiers (one for music and one for speech) to it or it can be configured for operation with a single amplifier for both voice and music. It has 4 inputs for auxiliary sound sources with a selector switch and level control, an input on a terminal board for connecting several microphone stations (B711-G and/or B711/6-G) and a VOX priority input for sound sources such as a message or alarm-tone generator. The selected music signal, with a controlled amplitude, will be available on the MUSIC OUT output, while the voice signal from the base or from the VOX input (depending on the priority) will be available on the MIX OUT output. If there is only one amplifier, the music featuring the lowest priority level may also be available on that input. The unit can be installed directly on a 19" rack, occupying the height of one modular unit.

#### **FUNCTIONAL FEATURES**

- Selection of voice/music on six zones via relay
- Possibility of activating/de-activating music for each zone by means of front-panel switches
- Four inputs for music sources
- VOX line input with automatic activation of precedence and All Call
- Input for B711 range pre-amplified microphone bases on a screwdown terminal block
- Separate 100-V inputs for music and speech
- Selection of Base/VOX or VOX/Base priority
- Six zone-line outputs on screw-down terminal block with threewire connection for overriding the local volume attenuators
- MUSIC OUT and MIX OUT outputs
- Service relay for special types of activation (pre-recorded messages, alarm tone, etc.).
- Can be mounted in a 19" rack, height: 1 module
- Power supply: 230 VAC/24 VDC



| MODEL                                | P8036   |                 |                  |        |
|--------------------------------------|---|-----------------|------------------|--------|
| Mains power supply (max consumption) | 230 Vac ±10% - 50/60 Hz (18 W) / 24 Vdc (0,8 A) |                 |                  |        |
| Max power switchable for single zone | 5   | 500 W (@ 100 V) |                  |        |
| Service relays (12V coil)            | Vmax  | = 35 V /        | Imax = 5 A       |        |
| Microphone bases                     | Preamplified B7                                 | 11-G - B        | 711/6-G units (r | max 5) |
| Auxiliary input                      | CD  | TAPE            | TUNER            | AUX    |
| Туре                                 | Unba  | alanced d       | ouble RCA        |        |
| Sensitivity / Impedance              | 480 mV / 45 kΩ                                  |                 | 100 mV / 33 kΩ   | )      |
| Noise / Signal ratio                 |   | > 80 (          | dB               |        |
| Frequency response @-3dB             | 25 ÷ 20.000 Hz                                  |                 |                  |        |
| "BASE INPUT" input                   | Unbalanced with terminals                       |                 |                  |        |
| Sensitivity / Impedance              | 190 mV / 10 kΩ                                  |                 |                  |        |
| Noise / Signal ratio                 | 85 dB   |                 |                  |        |
| Frequency response @-3dB             | 50 ÷ 20.000 Hz                                  |                 |                  |        |
| "VOX IN" input                       | Unbalanced RCA                                  |                 |                  |        |
| Sensitivity / Impedance              | (   | 300 mV /        | 46 kΩ            |        |
| Noise / Signal ratio                 |   | 85 d            | В                |        |
| Frequency response @-3dB             |   | 30 ÷ 20.0       | 00 Hz            |        |
| Tripping threshold VOX               |   | ~30 n           | ٦V               |        |
| Output                               | MIX. OUT MUSIC OUT                              |                 |                  |        |
| Туре                                 | Unbalanced RCA                                  |                 |                  |        |
| Output level / Impedance             | 775 mV / 100 $\Omega$ 775 mV / 600 $\Omega$     |                 |                  | Ω 00   |
| 19" rack mounting (modular units)    | Direct (1 U)                                    |                 |                  |        |
| Dimensions (W x H x D)               | 48  | 2 x 44 x        | 233 mm           |        |
| Weight                               |   | 3,6 k           | g                |        |

#### MICROPHONE BASES FOR ANNOUNCEMENTS AND CONNECTIONS

It is possible to use **B711-G** (All-Call) and/or **B711/6-G** (zone calls) pre-amplified microphone bases, both of which have RJ45 sockets

for direct SFTP CAT5 shielded cables (AUDIO IN / AUDIO OUT). B711/6-G stations also have ZONE 1 to 6 sockets for controlling the zone-switching relays. The connectors must be shielded RJ45 connectors. On the P8136, on the other hand, there are two removable bayonettype terminal blocks for connections: one for the audio and the precedence control ('BASE INPUT') and the other for selecting the zones to be called ('ZONE SELECT').



| RJ45   | B711-G<br>B711/6-G | P8036 connections | B711/6-G          | P8036 connections |
|--------|--------------------|-------------------|-------------------|-------------------|
| PIN    | AUDIO IN/OUT       | BASE INPUT        | <b>ZONE 1 ÷ 6</b> | ZONE SELECT       |
| 1      | Audio +            | AF                | Zone 1            | Zone 1            |
| 2      | Audio -            | -                 | Zone 2            | Zone 2            |
| 3      | GND                | GND signal        | Zone 3            | Zone 3            |
| 4      | Priority           | Priority          | Zone 4            | Zone 4            |
| 5      | N. C.              | -                 | Zone 5            | Zone 5            |
| 6      | + Vdc              | + 12 Vdc          | + Vdc             | + 12 Vdc          |
| 7      | Serial +           | -                 | Zone 6            | Zone 6            |
| 8      | Serial -           | -                 | GND               | -                 |
| Shield | GND                | GND signal        | GND               | -                 |



## SDM200 • RF six audio channel modulator



The SD200 system enables simultaneous distribution of 6 different programmes over a single pair of wires. The ease of installation as compared with conventional systems makes it particularly suitable for sound-broadcasting to the single rooms of accommodation facilities such as hotels, nursing homes, tourist centres, residential centres, cruise ships, ferries and private homes.

SDP220 • Amplified six channel receiver

This unit demodulates the signals distributed by the SDM200 modulator. Even when the receiver is switched off, it can be activated from a remote station, by means of a 12V control. This feature enables forcing of emergency signals to be sent out for single receiving zones. The module can be powered by a 12 VDC source or from the 230 VAC power mains through an SDT100 transformer contained in the SDA200-T loudspeaker module. The channels are selected cyclically by means of keys. The selected channel is shown on a display featuring automatic brightness adjustment in relation to the ambient lighting. The volume control is of the electronic type. It is possible to connect headphones to the socket provided for this purpose. It is available in pale grey (SDP220) and anthracite grey (SDP220-N).

#### SDA200 • Loudspeaker

This contains a 3 W / 8  $\Omega$  loudspeaker and can be connected to SDP220 receivers that are already powered. It is available in pale grey (SDA200) and anthracite grey (SDA200-N).

#### SDA200-T • Loudspeaker and power supply for SDP220

In addition to the 3 W / 8  $\Omega$  loudspeaker, this module also contains a transformer, SDT100, from the mains 230 Vac voltage for the SDP220 receiver module. Available in light grey colour (**SDA200-T**) or black colour (**SDA200-TN**).

#### SDB200 • Line amplifier

This module must be used if the length of the line attenuates the signal excessively or, in any case, if the number of SDP220 receivers is greater than 80. Each SDB200 enables a further 80 receivers to be added. It is possible to expand the system to a practically unlimited number of receivers using the appropriate additional SDB200 amplifiers. For the 230 Vac mains power, it is necessary to add the SDT101 transformer. Available in light grey colour (**SDB200**) or black colour (**SDB200-N**).

The heart of the system is the **SDM200** central unit, which enables six sound signals, generated locally by their respective sound sources (CD players, tuners, multimedia players, etc.) to be modulated and transmitted, mixed on a telephone pair. A pre-amplifying circuit controls the amplitude of the signals from the sources for correct modulation of the relevant carriers, which are generated by a stage that operates according to PLL technology with a quartzed reference frequency. The six modulated carriers are sent to an RF amplifier and then to the output sockets through an RF transformer that achieves balancing and the correct impedance. The SDM 200 modulator is able to supply a constant signal for a maximum of 80 **SDP220** receivers. Repeated expansion in multiples of 80 is possible by including one or more **SDB200** amplifiers on the signal line.





SDP220

**SDP220-N** 



SDA200 SDA200-T



SDA200-N SDA200-TN

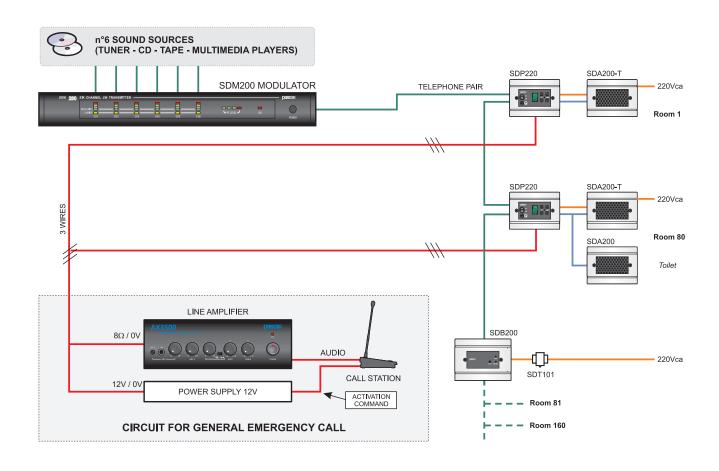


SDB200



SDB200-N





| ACCESSORI | ES CONTROL OF THE CO |
|-----------|--|
| SDT100    | Transformer for 230 VAC mains power supply for the SDP220  |
| SDT101    | Transformer for 230 VAC mains power supply for the SDB200  |
| 27/901    | Flush-mounting box for the SDP220, SDA200(-T) and SDB200 modules. Size (WxHxD): 107 x 72 x 53 mm               |

| MODEL                  | SDP220 SDP220-N  | SDA200 SDA200-N  | SDA200-T SDA200-TN | SDB200 SDB200-N  |
|------------------------|------------------|------------------|--------------------|------------------|
| Rated power            | 1 W              | 3\               | -                  |                  |
| Impedance              |                  | 0.8              |                    |                  |
| Dimensions (W x H x D) | 116 x 77 x 45 mm | 116 x 77 x 35 mm | 116 x 77 x 55 mm   | 116 x 77 x 40 mm |

| MODEL                             | SDM200   |  |
|-----------------------------------|--|--|
| Generator                         | 6 frequencies, PLL type controlled by quartz oscillator                            |  |
| Transmission frequency            | CH1=178 kHz; CH2=211 kHz; CH3=244 kHz;<br>CH4=277 kHz; CH5=310 kHz; CH6=343 kHz    |  |
| Output power                      | Carrier only: 10 mW / Channel;<br>With modulation: 50 mW Peak / Channel (80% mod.) |  |
| Output voltage attenuation        | About 0÷26 dB  |  |
| Output line impedance             | 25 Ω or 100 Ω  |  |
| LF input impedance                | 150 kΩ   |  |
| Sensitivity for 30% modulation    | 150÷3.000 mV   |  |
| Mains power supply                | 230 Vac ±10% 50/60 Hz  |  |
| Dimensions (W x H x D)            | 411 x 44 x 235 mm  |  |
| 19" rack mounting (modular units) | 27/2466 optional brackets (1 U)  |  |
| Weight                            | 3,3 kg   |  |

## 25 W • Class "D" amplifiers



**AW25** 25 W stereo amplifier module

The models of the AW25 range are high-efficiency Class D stereo amplifiers. They are small and compact but extraordinarily powerful thanks to the high-quality components with which they are made. They are capable of high performance levels in terms of signal dynamics. The basic **AW25** card can be installed directly inside electrical junction boxes or in false ceilings, while models AW25-DIN and AW25R-DIN, supplied with their own boxes, are suitable for installation on standard DIN guides.

Contacts for remote volume control are provided, and if necessary it is possible to set operation simply as a booster unit (maximum volume on switching on). In this way, the output power will be determined by the level of the input power. Model AW25R-DIN has a trimmer-type volume control built into the internal circuit. This enables local adjustment of the volume of the two inputs, LEFT and RIGHT, in addition to any external volume controls.

The ease of installation, the compact size



25 W stereo amplifier unit, standard DIN guides AW25-DIN

As AW25-DIN with volume control AW25R-DIN

#### **FUNCTIONAL FEATURES**

- Class D stereo amplifier, 25 W maximum
- High-efficiency
- Small and compact sizes (AW25 card version or AW25-DIN and AW25R-DIN models with box suitable for installation on standard DIN guides)
- suitable for sound broadcasting to small areas (hotel rooms, booths of wellbeing centres, meeting rooms)
- 3 different operating modes: STEREO / BRIDGE / PA
- volume control simply by means of remote push-buttons
- 12 ÷ 24 Vdc power supply

and the high quality of these amplifiers make them particularly suitable for professional use for separate broadcasting of sound to small areas (e.g. TV signal in hotel rooms, booths of wellbeing centres, signals from video projectors/personal computers in meeting rooms) or for mobile applications such as amplification for market stalls, ships, buses, etc.







An interesting feature of these models is that it is possible to control the volume simply by means of remote push-buttons (similar to common electrical UP/DOWN push-buttons), enabling all sorts of possible uses and making it easy to build them into systems.

It is also possible to switch on the amplifiers from a remote station using a remote stand-by switch. A specific service output will enable activation of a signal confirming that they have switched on.

These specifications, combined with the possibility of powering the amplifier from a source ranging from 12 to 24 VDC, ensure excellent flexibility and versatility of installation.

#### **OPERATING MODES**

The unique feature of these amplifiers is that they can be used in three different modes, depending on requirements:

- **STEREO**. Amplifier with two stereo channels (L + R)
- **BRIDGE** (mono). Amplifier with a single channel featuring a higher output power (bridge connection). If a stereo source is connected to them, the Left and Right inputs are mixed.
- PA (mono). Amplifier with two independent channels, the first
  of which for background music and the second (priority) for
  calls, by activation from an external contact. The typical soundbroadcasting application for interrupting the background music, by
  means of a control, when a handsfree call is received.

| MODEL                                    |                            | AW25, AW25-DIN, AW25R-DIN                             |                                 |      |  |  |
|--|----------------------------|---|---------------------------------|------|--|--|
| Operating mode                           | 2 stereo o                 | 2 stereo channels Bridge channels (mono)              |                                 |      |  |  |
| Output power at 12 Vdc (D= 1%)           | $RL = 8 \Omega + 8 \Omega$ | 1,5 + 1,5 W   | RL = 8 Ω                        | 6 W  |  |  |
|  | $RL = 4 \Omega + 4 \Omega$ | 2,5 + 2,5 W   | RL = 4 Ω                        | 10 W |  |  |
| Output never et 04 Vde (D. 49/)          | RL = 8 Ω + 8 Ω             | 7+7 W   | DI OO                           | OE W |  |  |
| Output power at 24 Vdc (D= 1%)           | $RL = 4 \Omega + 4 \Omega$ | 11+11 W   | RL = 8 Ω                        | 25 W |  |  |
| LINE input sensitivity (12 Vdc / 24 Vdc) |                            | 150 / 300 mV rms                                      |                                 |      |  |  |
| HIGH LEVEL input sensitivity             |                            | max 10 V rms  |                                 |      |  |  |
| S/N ratio @12 Vdc                        |                            | > 80 dB   |                                 |      |  |  |
| S/N ratio @24 Vdc                        |                            | > 85 dB   |                                 |      |  |  |
| Frequency responce                       | 60 ÷ 20.000 H              | 60 ÷ 20.000 Hz (0 ÷ -3 dB) 40 ÷ 20.000 Hz (0 ÷ -3 dB) |                                 |      |  |  |
| V.OUT output @12/24 Vdc                  |                            | max 3W  |                                 |      |  |  |
| Mains power supply                       |                            | 11 Vdc (min) ÷ 28 Vdc (max)                           |                                 |      |  |  |
| Maximum consumption @12/24 Vdc           |                            | 1 A / 1,7 A   |                                 |      |  |  |
| Minimum consumption @12V/24 Vdc          |                            | 60 mA / 70 mA   |                                 |      |  |  |
| Stand-by consumption                     |                            | 12 mA   |                                 |      |  |  |
| Dimensions (W x H x D)                   | AW2                        | <b>5</b> : 95 x 50 x 30 mm - <b>AW25-DI</b>           | N and AW25R-DIN: 90 x 53 x 58 r | nm   |  |  |

# P5800-D range Rack cabinet 19" and accessories



PASO is one of the few companies in the business able to boast its own original integrated design industrialisation and manufacturing system for a full range of products, from the most complex and sophisticated equipment to the simplest accessories.

The rack containers of the P5800-D range have been designed specifically for housing all PASO electronic equipment and service panels with provisions for modular fixing in 19" racks. All the models of the range are made of thick reinforced steel sheeting and are available in black.

A mounting kit consisting of two sides with ventilation slits, an upper closing panel and a lower one, four feet, a set of screws for mechanical assembly, 4 cables with lugs on the ends for connecting the equipment to earth and a set of caged nuts for securing the service equipment. Black front window panels with double locks are available for opening to the right or to the left (P5700 range). As an alternative to the normal rear closing panels secured by screws, black blind rear doors with locks and ventilation slits are also available (P5400-D range).

The racks of the P5800-D range comply with IEC 297-2 and CEI EN 60065 standards. Also, as called for in the general safety regulations for electrical systems (CEI 64-8, CEI 64-11, CEI 23-48), both the racks and the various different accessories (doors, closing panels, etc.) are equipped with the appropriate terminals for connection to earth.



Rack cabinet from P5808 to P5840-D



Front window panels from P5712 to P5740



from P5416-D to P5440-D



Blind rear panels P5404-D P5408-D P5410-D



#### **SERVICE PANELS**



#### P8001-B

Panel with 16 Amp mains switch, ON/OFF lamp and mains fuse (1 U).



#### P8002-M

Monitoring panel with 6-position switch (6 lines), volume control and loudspeakers (1U).



#### P8004

Panel with main 50 Amp circuitbreaker and ON/OFF lamp. Monitoring section with 6-position switches, loudspeaker and volume control (2 U).



#### P8003/2-B

Forced ventilation panel complete with two 230 VAC 50/60 Hz fans (3 U).



#### P8008-D

Mains distribution unit with eight multi-standard sockets.





Cabled selector switch with 12 switches for activation of the loudspeaker lines and one main switch (1 U).



#### P8030

Container for special applications with mains switch and ON/OFF lamp.



#### P8032

Drawer for accessories (3 U).

#### P8035

Top for supporting audio/video sources and various types of equipment (adaptable, 2, 3 and 4 U).

#### **ACCESSORIES**



#### **AC50**

Pair of side brackets



#### AC51

Pack of 40 caged nuts (type: M5)



#### AC52

Pack of 20 screws and 20 washers (type: M5)



#### AC54-D

Kit consisting of four wheels, load-bearing capacity: 65 kg each



#### AC5801-D

Foundation base for cabinets with cable output

#### **CLOSING PANELS**

#### **Perforated panels**

equipped with earth terminals.



P5201-D 1 modular unit

P5202-D 2 modular units

P5203-D 3 modular units

#### **Blind panels**

equipped with earth terminals.



P8011-D 1 modular unit

P8012-D 2 modular units

P8013-D 3 modular units

P8014-D 4 modular units

| MODEL                   | P5808   | P5812-D | P5816-D | P5820-D   | P5824-D | P5830-D  | P5840-D  |
|-------------------------|---|---------|---------|---|---------|----------|----------|
| Modular units           | 8 U   | 12 U    | 16 U    | 20 U  | 24 U    | 30 U     | 40 U     |
| Techinal specifications |   |         |         | its, an upper closing panel<br>quipment to earth and a se |         |          |          |
| Width                   |   |         |         | 52,5 cm   |         |          |          |
| Depth                   | 45,6 cm   | 52,5 cm |         |   |         |          |          |
| Height                  | 40,8 cm   | 58,6 cm | 76,4 cm | 94,2 cm   | 112 cm  | 138,6 cm | 183,1 cm |
| Front door              | -   | P5712   | P5716   | P5720   | P5724   | P5730    | P5740    |
| Rear door               | -   | -       | P5416-D | P5420-D   | P5424-D | P5430-D  | P5440-D  |
| Blind rear panels       | P5404-D (4 U), P5408-D (8 U) and P5410-D (10 U) |         |         |   |         |          |          |
| Colour                  | Black   |         |         |   |         |          |          |
| Weight                  | 13,35 kg  | 17,9 kg | 21,2 kg | 24,8 kg   | 28,3 kg | 33,2 kg  | 41,6 kg  |

# Mixer Amplifiers

## **Booster units**

The functional nature and versatility of **PASO** amplifiers are the outcome of many years of experience with these systems.







## 120 W, 240 W RMS • 3 output zones



This range of built-in amplifiers is characterised by its versatility, userfriendliness, robustness and reliability, designed for a vast range of applications in the field of sound-broadcasting for both commercial and industrial use. The numerous functions offered by the AX6000 range include three output lines (to zones), CAT5 links to the microphone stations for calling the zones, priority emergency calls to single zones or groups of zones and provisions for a USB/SD card music module. The internal CPU is easily able to manage all the many functions of the equipment and the micro-switches on the rear panel can be used to select the required operating model. All the models have 5 inputs with independent front-panel controls and professional XLR connectors equipped with mechanical locking hold-down devices. The first two are of the electronically balanced microphone type, with a phantom power supply (input 1 with automatic VOX activation).

The third can be used either as a microphone input or as an input for PMB106-G microphone stations (RJ45 connector) with the possibility of making calls to zone. The last two can be configured separately, as microphone inputs (with or without phantom power supplies) or as line inputs. There are two auxiliary inputs (CD and TAPE) for connecting sources of music, with normalised input levels and a double RCA socket for using standard stereo cables. There is a special Telephone/ Emergency audio input with automatic activation (VOX) that can be used for a priority call. If the system requires acoustic correction, it is possible to connect any equalizer whatsoever or a device for preventing acoustic feedback (Larsen effect) to the PRE OUT and PWR IN sockets after positioning the control switch provided for this purpose. The front panel has a compartment for housing an optional **AC6000** module, enabling external devices such as SD/MMC cards and USB storage units used as sources of music to be played. All the amplifiers of the range ensure a high degree of reliability thanks to electronic devices protecting them from overload currents and over-temperatures of the power devices. Each unit also has a cooling fan, with automatic control of the speed depending on the temperature.

AX6120 120 W RMS mixer amplifier with 3 output zones

AX6240 240 W RMS mixer amplifier with 3 output zones

#### **ACCESSORIES**

AC5660 Brackets for rack-mounting (2 U)

**AC50** Lateral supporting brackets for rack-mounting

#### **FUNCTIONAL FEATURES**

- 2 balanced/unbalanced mic inputs with phantom power supply
- Microphone input or microphone stations of the **PMB** range
- 2 MIC/PH/LINE inputs with specific selector switch
- 2 auxiliary inputs for sound sources (TAPE/CD)
- Telephone/emergency audio input for priority calls with adjustable threshold and sensitivity
- Front-panel adjustment of the level of each microphone and auxiliary input
- Front-panel control of overall volume and of treble and bass tones
- Provisions for inserting a USB/SD CARD module (AC6000)
- Constant voltage (50/70/100 V) or 8  $\Omega$  impedance loudspeaker line output.
- 3 output lines for zones
- Balanced line output for connection to other amplifiers
- Output/input for connection to audio processors
- LED-type Vu meter for clear and quick reading of power emitted
- Microswitches for setting operating modes
- Includable/excludable speech filters on all microphone inputs
- Contacts for activating input precedence and override
- "Music On Hold" output with output level control (output of the selected auxiliary signal)
- Alerting signal (chime) with level control
- Front-panel keys for selecting music listening zones
- Selectable mains power supply 230/115 VAC or 24 VDC



## 120 W, 240 W RMS • 3 output zones

#### **CONNECTION OF STATIONS**

With the amplifiers of the AX6000 range, connecting a PMB106-G microphone station, so as to enable messages to be sent to one or more receiving zones is simple and guickly done. It is essential to use SFTP CAT.5E shielded cables (IN UNITS input), and it is possible to connect up to 16 stations in cascade fashion over a maximum distance of up to 1 km. If necessary, the bases can be powered by means of their rear-panel sockets. The output level is adjustable by means of the appropriate front-panel control (MIC/UNITS).

#### **BACKGROUND MUSIC**

This equipment enables activation/de-activation of BACKGROUND MUSIC in the chosen zone by means of the switches provided for this purpose on the front panel. The appropriate LED will light up to confirm that the music has been activated in the zone in question.

#### **CONFIGURATION MICRO-SWITCHES**

The main feature of the AX6000 range is the presence of microswitches on the rear panel enabling the settings of all the operational parameters of the equipment to be checked and/or changed. Specifically, it is possible to manage priorities among the various different audio inputs, to enable a warning signal, to enable VOX (automatic activation) of the MIC1 input and to programme the zones for calls by means of a precedence contact and from the telephone/emergency input.

#### TELEPHONE/EMERGENCY INPUT

There is a special audio input (TEL/EMERG) on the rear terminal block, balanced with a transformer and with automatic activation of precedence (VOX). Controls for adjusting the level and the activation threshold are provided on the rear panel. This input can be used for connecting the appropriate audio output of a telephone switchboard.









## USB/SD card module for the AX6000 range, with remote control

Each amplifier of the AX6000 range has a compartment for housing an optional module enabling an external device such as an SD/MMC card or a USB storage unit to be played. The player has a display for indicating the presence/lack of a SD/MMC/USB medium, the chosen functions and information about the tracks. A remote control unit is also provided with the module.

#### **FUNCTIONAL FEATURES**

- Keys for normal control of how the tracks are played out (PLAY/ PAUSE, PREV, NEXT, STOP)
- RANDOM function for playing out the tracks at random
- REPEAT function for playing out one or more pieces of choice
- PROGRAM function for playing out a pre-set sequence of pieces of music

#### AC6000 USB/SD Card reader





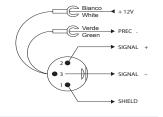
#### CONNECTIONS

### Microphone precedence and warning signal

When the precedence contacts (PR and +12V) on the rear terminal block are closed, all the inputs except for MIC.1 and TEL./EMERG are muted (it is in any case possible to use the micro-switches to programme the inputs to be muted and priority of the precedence contact).

Closing the contact generates a two-tone warning signal (CHIME).

#### Microphone base B701-MG



## Microphone inputs (XLR)

BALANCED connection

- 1 Shield
- 2 Signal (hot side)
- 3 Signal (cold side)

#### UNBALANCED connection

- 1 Shield and GND
- 2 Signal
- 3 Shield and GND

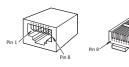


## Pin Description 1 Audio + 2 Audio

**UNITS input (RJ45)** 

| / taalo i     |
|---------------|
| Audio -       |
| GND           |
| Not connected |
| Not connected |
| + Vdc         |
| Serial +      |
| Serial -      |
| GND           |
|               |

All the connectors must be shielded RJ45 type.



#### **Auxiliary inputs (RCA)**

UNBALANCED connection



2 Shield and GND

| MODEL   | AX6120  | AX6240   |  |
|---|---|--|--|
| Rated power output                                      | 120 W   | 240 W  |  |
| Constant voltage outputs / Low impedance outputs        | 100-70-50 V and 8 $\Omega$  |  |  |
| Tones control   | Bass ± 10 dB (100 Hz) ; Treble ± 10 dB (10 kHz)                                 |  |  |
| Microphone inputs MIC.1 and MIC.2                       | 2 balanced XLR (phantom supply 17,5   | V), MIC1 with activation threshold (A.P.T.)  |  |
| Sensitivity / Impedance                                 | 1,2 mV / 1300 Ω   |  |  |
| S/N Ratio   | > 66 dB   |  |  |
| Frequency response                                      | 40 ÷ 19   | 9.000 Hz   |  |
| Microphone input MIC.3/UNITS                            | Balanced XLR (phantom supply 17,5 V)  | ) / 1 RJ45 (PMB106-G base station unit)  |  |
| Sensitivity / Impedance                                 | MIC.: 1,2 mV / 1,5 kΩ ;   | UNITS: 900 mV / 47 kΩ  |  |
| S/N Ratio   | MIC.: > 66 dB;  | UNITS: > 71 dB   |  |
| Frequency response                                      | MIC.: 40 ÷ 19.000 Hz -  | · UNITS: 60 ÷ 15.000 Hz  |  |
| Maximum number of microphone station units (PMB106-G)   |   | over a maximum distance of up to 1 km;<br>and by means of their rear-panel sockets |  |
| Microphone inputs MIC./LINE 4 and 5                     | 2 balanced XLR with Phantom/Mic/Line selection                                  |  |  |
| Sensitivity / Impedance                                 | MIC: 1,3 mV / 1300 $\Omega$ ; LINE: 140 mV / 130 k $\Omega$                     |  |  |
| S/N Ratio   | MIC: > 66 dB; LINE: > 75 dB   |  |  |
| Frequency response                                      | MIC: 35 ÷ 17.000 Hz ; LINE: 30 ÷ 20.000 Hz                                      |  |  |
| Auxiliary inputs  | 2 RCA (CD + TAPE)   |  |  |
| Sensitivity / Impedance                                 | CD: $600~\text{mV}/35~\text{k}\Omega$ ; TAPE: $300~\text{mV}/18~\text{k}\Omega$ |  |  |
| S/N Ratio   | > 80 dB   |  |  |
| Frequency response                                      | 30 ÷ 20.000 Hz  |  |  |
| Telephone / Emergency (TEL / EMERG) audio input         | Balanced with terminals (HOT-COM-GND) with activation threshold adjustment      |  |  |
| Sensitivity / Impedance                                 | 120 mV  | ' / 5,5 kΩ   |  |
| S/N Ratio   | > 81  | 0 dB   |  |
| Frequency response                                      | 250 ÷ 2   | 0.000 Hz   |  |
| Line signal outputs                                     |   | 5  |  |
| LINE OUT  | XLR balance   | d 1,3 V / 4 kΩ   |  |
| PRE OUT   | 1 RCA 1   | V / 3,7 kΩ   |  |
| TAPE OUT  | 2 RCA 1,  | 2 V / 2 kΩ   |  |
| Music On Hold (MOH) - PRE-AMPLIFIED LINE                | terminals (HOT-C  | OM) 2,6 V - 300 Ω  |  |
| Music On Hold (MOH) - AMPLIFIED LINE                    | terminals (GND-   | MON) 1 W – 8 Ω   |  |
| Mains power supply                                      | 230/115 Vac - 50/60 Hz / 24 Vdc   |  |  |
| Maximum consumption                                     | 280 W (325 VA) 530 W (600 VA)   |  |  |
| 24 Vdc current consumption (max power / with no signal) | 6,9 A / 0,3 A   | 13 A / 0,3 A   |  |
| 19" rack mounting (modular units)                       | Optional AC5660 brackets with re  | ecommended AC50 supports (2U)  |  |
| Dimensions (W x H x D)                                  | 432 x 88  | x 360 mm   |  |
| Weight  | 9,5 kg  | 11,8 kg  |  |

## 120 W, 240 W, 480 W RMS



This is a new range of power units designed specifically for professional sound-broadcasting systems with service and emergency messages. Thanks to the great reliability of the protection circuits used, combined with an attractive appearance and the very tough structures, the **AW5600** range constitutes the ideal product for quality amplification, with a particularly interesting price/performance ratio.

Each amplifier of the **AW5600** range has an electronically balanced line input/output with a double XLR socket, one female socket and one male socket to facilitate connection of a number of boosters in cascade fashion. To connect a source of sound directly, it is possible to use a second unbalanced input by means of a double RCA socket for using standard stereo cables.

All the boosters of this range have an RJ45 input for connection to **B711-G** pre-amplified microphone bases simply by means of SFTP CAT.5E shielded cables. There is a special balanced input (TEL/EMERG) with a transformer and automatic activation of precedence (VOX) on the rear panel. Controls for adjusting the level and the activation threshold are present on the rear panel. This input can be used for connecting the appropriate audio output of a telephone switchboard.

The AW5600 range has a large number of devices for protection against overloads and short circuits (an output current peak-limiting circuit, a thermal circuit-breaker inside the power transformer, a resettable thermal circuit-breaker in contact with the power-transistor heat sink, mains fuses). In addition, each unit has a cooling fan, with automatic control of the speed depending on the temperatures of the heat sinks to which the power devices are applied.

| AW5612 | 120 W RMS booster unit   |
|--------|--------------------------|
| AW5624 | 240 W RMS booster unit 1 |
| AW5648 | 480 W RMS booster unit 2 |

| ACCESSORIES |   |
|-------------|---|
| AC5660      | Brackets for rack-mounting (2 U)              |
| AC50        | Lateral supporting brackets for rack-mounting |

#### **FUNCTIONAL FEATURES**

- Balanced line input/output (XLR-F and XLR-M sockets, with adjustable sensitivity).
- Unbalanced line input (double RCA socket)
- B711-G microphone station input (RJ45 socket)
- Telephone/emergency audio input for priority calls with adjustable threshold and sensitivity
- Front panel overall volume control and treble and bass controls
- Rear-panel selector switch for enabling/disabling front-panel tone and volume controls
- Constant voltage (50/70/100 V) or 8  $\Omega$  impedance loudspeaker line output.
- LED-type Vu meter for clear and immediate monitoring of output power
- Contacts for activating precedence on line input
- Alerting signal (chime) with level control
- Selectable 230/115 Vac and 24 Vdc mains power supply

<sup>1</sup> EN54-16:2008 certificate nr. **0068-CPD-081/2011** dated 05 December 2011 <sup>2</sup> EN54-16:2008 certificate nr. **0068-CPR-082/2013** dated 28 November 2013





#### MICROPHONE BASES

**B711-G** microphone stations can be used simply and rapidly with the amplifiers of the AW5600 range. It is essential to use CAT5e SF/UTP shielded cables (IN input UNITS), and it is possible to connect up to 6 microphone stations in cascade fashion. The output level can be adjusted by means of the appropriate rear-panel control (LEV).



#### FRONT PANEL CONTROL EXCLUSION

If this amplifier is used in emergency systems, it is possible to disable all the front-panel controls (tone and volume controls). In this way it is possible to prevent the levels set at the time of commissioning the system from being altered accidentally.



#### TELEPHONE/EMERGENCY INPUT

There is a special audio input (TEL/EMERG) on the rear terminal block, balanced with a transformer and with automatic activation of precedence (VOX). Controls for adjusting the level and the activation threshold are provided on the rear panel. This input can be used for connecting the appropriate audio output of a telephone switchboard.



| MODEL   | AW5612   | AW5624         | AW5648            |
|---|--|----------------|-------------------|
| Rated power output                                      | 120 W  | 240 W          | 480 W             |
| Constant voltage outputs / Low impedance outputs        | 100-70-50 V and 8 Ω  |                |                   |
| Tones control   | Bass ± 10 dB (100 Hz) ; Trable ± 10 dB (10 kHz)                                    |                |                   |
| Microphone input UNITS                                  | RJ45 (B711-G)  |                |                   |
| Sensitivity / Impedance                                 | 1250 mV 320 mV   |                |                   |
| S/N Ratio   | >78 dB   |                |                   |
| Frequency response                                      | 30 ÷ 20.000 Hz   |                |                   |
| Maximum number of microphone station units (B711-G)     | Up to 6 microphone stations in cascade fashion over a maximum distance of up 200 m |                |                   |
| Line input  | Balanced XLR, unbalanced RCA   |                |                   |
| Sensitivity / Impedance                                 | 300 mV / 60 kΩ   |                |                   |
| S/N Ratio   | >77 dB   |                |                   |
| Frequency response                                      | 30 ÷ 20.000 Hz   |                |                   |
| Telephone / Emergency (TEL / EMERG) audio input         | Balanced with terminals (HOT-COM-GND) with activation threshold adjustment         |                |                   |
| Sensitivity / Impedance                                 | 120 mV / 6 kΩ  |                |                   |
| S/N Ratio   | >75 dB   |                |                   |
| Frequency response                                      | 230 ÷ 13.000 Hz  |                |                   |
| Line output (LINEA OUT)                                 | Balanced, XLR  |                |                   |
| Mains power supply                                      | 230/115 Vac - 50/60 Hz / 24 Vdc  |                |                   |
| Maximum consumption                                     | 280 W (320 VA)   | 535 W (610 VA) | 1160 W (1330 VA)  |
| 24 Vdc current consumption (max power / with no signal) | 6,6 A / 0,2 A  | 13,2 A / 0,2 A | 33 A / 0,8 A      |
| 19" rack mounting (modular units)                       | Optional AC5660 brackets with recommended AC50 supports (2U)                       |                |                   |
| Dimensions (W x H x D)                                  | 432 x 88 x 272 mm  |                | 432 x 88 x 360 mm |
| Weight  | 8,2 kg   | 10,5 kg        | 16 kg             |

### AX3506 • 60 W RMS / AX3512 • 120 W RMS



#### **FUNCTIONAL FEATURES**

- 2 mic inputs with phantom power supply (XLR). MIC1 with automatic precedence function (VOX) and adjustable threshold
- Mic input (XLR) with phantom power supply or RJ45 to connect up to 6 B711-G microphone stations (max distance 200 m)
- MIC/PH/LINE input with associated selector switch
- 2 auxiliary inputs for sound sources (TAPE/CD)
- Telephone/emergency audio input for priority calls with adjustable threshold and sensitivity
- Front-panel level control for each microphone and auxiliary input.
- Front panel overall volume control and treble and bass controls
- 50/70/100 V or 8  $\Omega$  impedance loudspeaker line output
- Auxiliary line output
- LED-type Vu meter for immediate monitoring of output power
- Microswitches for setting priorities and input functions
- Inclusion/exclusion of speech filter on all microphone inputs
- Contacts for activating input precedence
- Alerting signal (chime) with level control
- Selectable 230/115 VAC and 24 VDC mains power supply

#### **ACCESSORIES**

Brackets for rack-mounting (AX3506 and AX3512 (2 HE) AC3500

Models **AX3506** (output 60 W) and **AX3512** (120 W) have excellent functional features and stand out for their exceptionally good price/ performance ratios. The wide range of possible configurations makes each of them a versatile unit able to meet the needs of any small or medium-sized system. Three balanced microphone inputs with phantom power supplies plus an input for **B711-G** microphone bases. There are two auxiliary inputs for sources of sound (Tape, CD) that can be selected by means of the front-panel control. On the rear terminal

block there is an audio input with automatic activation of precedence (VOX); the level and activation threshold can be adjusted via the rear panel. This input can be used for connecting the appropriate audio output of a telephone switchboard. The precedence contact can be used to activate priority of the microphones over the auxiliary sources, sending a warning signal (chime)

at the same time. A VU-meter on the front panel indicates clearly the power being output and any overloads. Each amplifier has electronic protection against short circuits on the loudspeaker line. These units can be mounted on a standard 19" rack using the specific AC3500

brackets.

## AX3504 • 40 W RMS



The **AX3504** 40 W amplifier is the basic model of the AX3500 range. It is particularly suitable for small systems, and features great flexibility of use thanks to the large variety of inputs and outputs: two microphone inputs (one on the front panel with VOX priority, handy and simple to use), two auxiliary inputs for sound sources (Tape, CD) that can be selected by means of a front-panel control and an audio input with automatic activation of precedence (VOX). A precedence contact activates priority of the microphone over the auxiliary sources, sending a warning signal (chime) at the same time. This unit can be mounted on a standard 19" rack using the specific **AC3504** brackets.

#### **FUNCTIONAL FEATURES**

- Front microphone input (jack ¼"). Input with automatic precedence function (VOX) and threshold adjustment
- Microphone input with phantom power supply (XLR)
- To be used with microphone bases B701-MG and B701-PG
- 2 auxiliary inputs for sound sources (TAPE/CD)
- Telephone/emergency audio input for priority calls with adjustable threshold and sensitivity
- Front-panel level control for each microphone and auxiliary input
- Front-panel treble and bass controls
- Constant voltage (50/70/100 V) or 8  $\Omega$  impedance loudspeaker line output
- Auxiliary line output
- Contacts for activating precedence on line input
- Alerting signal (chime) with level control
- Selectable 230/115 Vac and 24 Vdc mains power supply

#### **ACCESSORIES**

AC3504 Brackets for rack-mounting (AX3504) (2 HE)



| MODEL   | AX3506                                     | AX3512                                      |
|---|--|---|
| Rated power output                                      | 60 W                                       | 120 W                                       |
| Constant voltage outputs / Low impedance outputs        | 100-70-50                                  | V and 8 $\Omega$                            |
| Tones control   | Bass ± 10 dB (100 Hz);                     | Treble ± 10 dB (10 kHz)                     |
| Microphone inputs MIC.1 and MIC.2                       | 2 balanced XLR (phantom supply 17,5 \      | /), MIC1 with activation threshold (A.P.T.) |
| Sensitivity / Impedance                                 | 0,9 mV                                     | / 900 Ω                                     |
| S/N Ratio   | >62  | ? dB  |
| Frequency response                                      | 40 ÷ 20                                    | .000 Hz                                     |
| Microphone input MIC.3/UNITS                            | Balanced XLR (phantom supply 17,5          | V) / 1 RJ45 (B711-G base station unit)      |
| Sensitivity / Impedance                                 | MIC.: 0,9 mV / 900 Ω - L                   | JNITS: 290 mV / 700 k Ω                     |
| S/N Ratio   | MIC.: >62 dB -                             | UNITS: >65 dB                               |
| Frequency response                                      | 40 ÷ 20                                    | 1.000 Hz                                    |
| Maximum number of microphone station units (B711-G)     | Up to 6 microphone stations in cascade fas | hion over a maximum distance of up 200 m    |
| Microphone / Line input (MIC / LINE 4)                  | Balanced XLR with Pha                      | ntom/Mic/Line selection                     |
| Sensitivity / Impedance (MIC / LINE 4)                  | MIC: 0,9 mV / 900 Ω                        | - LINE: 90 mV / 50 kΩ                       |
| S/N Ratio MIC / LINE 4                                  | MIC: >62 dB -                              | - LINE: >70 dB                              |
| Frequency response MIC / LINE 4                         | 40 ÷ 20                                    | .000 Hz                                     |
| Auxiliary inputs  | 2 unbalanced, F                            | RCA (CD, TAPE)                              |
| Sensitivity / Impedance                                 | 450 mV (CD) –                              | 230 mV (TAPE)                               |
| S/N Ratio   | >70  | ) dB  |
| Frequency response                                      | 35 ÷ 20                                    | 0.000 Hz                                    |
| Telephone / Emergency (TEL / EMERG) audio input         | Balanced with terminals (HOT-COM-GN        | ND) with activation threshold adjustment    |
| Sensitivity / Impedance                                 | 150 m\                                     | //6kΩ                                       |
| S/N Ratio   | > 72                                       | 2 dB  |
| Frequency response                                      | 250 ÷ 1                                    | 7.000 Hz                                    |
| Line signal outputs                                     | Unbaland                                   | ced, RCA                                    |
| LINE OUT  | 900 mV                                     | / 100 Ω                                     |
| Mains power supply                                      | 230/115 Vac - 50                           | 0/60 Hz / 24 Vdc                            |
| Maximum consumption                                     | 130 W (150 VA)                             | 270 W (320 VA)                              |
| 24 Vdc current consumption (max power / with no signal) | 3,4 A / 0,1 A                              | 6,7 A / 0,2 A                               |
| 19" rack mounting (modular units)                       | Optional AC350                             | 00 brackets (2U)                            |
| Dimensions (W x H x D)                                  | 430 x 88                                   | x 234 mm                                    |
| Weight  | 6,5 kg                                     | 9 kg  |

| MODEL   | AX3504   |
|---|--|
| Rated power output                                      | 40 W   |
| Constant voltage outputs / Low impedance outputs        | 100-70-50 V and 8 $\Omega$   |
| Tones control   | Bass ± 10 dB (100 Hz) ; Treble ± 10 dB (10 kHz)  |
| Microphone inputs MIC.1 and MIC.2                       | 2 balanced (MIC1:Jack 6,5 mm, no phantom - MIC2: XLR with phantom power supply 16,5 V) |
| Sensitivity / Impedance                                 | 1 mV / 1300 Ω  |
| S/N Ratio   | MIC.1 >64 dB; MIC.2: >61 dB  |
| Frequency response                                      | 35 ÷ 20.000 Hz   |
| Auxiliary inputs  | 2 unbalanced RCA (CD, TAPE)  |
| Sensitivity / Impedance                                 | 520 mV (CD) – 250 mV (TAPE)  |
| S/N Ratio   | >73 dB   |
| Frequency response                                      | 30 ÷ 20.000 Hz   |
| Telephone / Emergency (TEL / EMERG) audio input         | Balanced with terminals (HOT-COM-GND)  |
| Sensitivity / Impedance                                 | 150 mV / 6 kΩ  |
| S/N Ratio   | > 73 dB  |
| Frequency response                                      | 170 ÷12000 Hz  |
| Line signal outputs                                     | Unbalanced, RCA  |
| LINE OUT  | 800 mV / 100 Ω   |
| Mains power supply                                      | 230/115 Vac - 50/60 Hz / 24 Vdc  |
| Maximum consumption                                     | 100 W (117 VA)   |
| 24 Vdc current consumption (max power / with no signal) | 2,8 A / 0,1 A  |
| 19" rack mounting (modular units)                       | Optional AC3504 brackets (2U)  |
| Dimensions (W x H x D)                                  | 275 x 88 x 230 mm  |
| Weight  | 4,2 kg   |

# AWF/HV and AXF/HV range Industrial amplifiers



### 4 kV insulation



The peculiarity of these amplifiers is that they are able to withstand high voltages between the mains power supply/loudspeaker outputs and the frame, even reaching up to 4 kV. This feature increases the safety of the system, preventing possible discharges on the mains or on the loudspeakers connections from passing along the audio chain thus causing serious damage or personal injury.

This built-in amplifier has a standard format that enables it to be mounted also inside telephone type cabinets. The fact that it can be directly wall-mounted using the special backplate enables it to be used in all situations in which there is little room available.

The input of the amplifier is electronically balanced. For special needs, for example in case of particularly long connecting lines or lines prone to interference, it is possible to isolate the input galvanically by means of an optional TM92 card equipped with a line transformer.

Each amplifier is equipped with a diagnostics card able to provide a high number of additional functions (line impedance measurements, amplifier diagnostics, check of integrity of the loudspeaker line, volume control, selection of two inputs, failure-signalling relay control, possibility of including a 'LOW CUT' filter, operation in the 'LOW POWER' energy-saving mode).

In addition to all the operations and/or checks set locally by means of the micro-switches, it will also be possible to alter all the parameters via the TS485 serial interface.

Models **AXF120-HV** and **AXF240-HV** have four inputs with RJ45 sockets on the lower panel: one input for a **B711-G** microphone station (BASE) and three auxiliary inputs (AUX1, AUX2 and AUX3). These inputs, which are electronically balanced, are switched to one another and have their own

order of priority: the BASE input has priority over inputs AUX1/2/3, input AUX1 over AUX2/3 and input AUX2 over AUX3. On each of them, switching of the inputs takes place by means of a positive power supply from outside. There is a voltage on sockets AUX1/2/3 that is cut off in the event of failure of the amplifier or if it is switched off. This enables operation of the amplifier to be monitored from a remote station. There is a 'busy' signal on sockets AUX 2 and AUX 3 when the BASE input or the AUX 1 input are active.

| AXF120-HV | 120 W RMS mixer amplifier, 4 kV insulation |
|-----------|--|
|           |  |
| AXF240-HV | 240 W RMS mixer amplifier, 4 kV insulation |
|           |  |
| AWF120-HV | 120 W RMS booster unit, 4 kV insulation    |
|           |  |
| AWF240-HV | 240 W RMS booster unit, 4 kV insulation    |

#### DIAGNOSTICS

- SPK impedance of loudspeaker line out of spec
- AMP amplifier not working properly
- OVL overloading of loudspeaker line
- HOT thermal overload

| MODEL   | AWF120-HV      | AWF240-HV       | AXF120-HV AXF240-H |                              |          | 40-HV  |  |
|---|----------------|-----------------|--------------------|------------------------------|----------|--------|--|
| Rated power output                                      | 120 W          | 240 W           | 120 W 240 W        |                              | O W      |        |  |
| Vdc rated power output                                  | 90 W (24 Vdc)  | 150 W (24 Vdc)  | 90 W (2            | 90 W (24 Vdc) 150 W (24 Vdc) |          |        |  |
| Constant voltage outputs / Low impedance outputs        |                | 100-70-50       | O V and 8-4 Ω      |                              |          |        |  |
| Distortion at rated power                               |                | <               | : 1 %              |                              |          |        |  |
| Remote control  |                | Seria           | al RS485           |                              |          |        |  |
| Inputs  | Balano         | ced, XLR        | BASE               | BASE AUX1 AUX2 AU            |          |        |  |
| Sensitivity   | 77             | 0 mV            | 400 mV             | 400 mV 260 mV                |          |        |  |
| S/N Ratio   | > 9            | 00 dB           |                    | > 85 dB                      |          |        |  |
| Frequency response                                      | 40 ÷ 3         | 0.000 Hz        |                    | 60 ÷ 19.000 Hz               |          |        |  |
| Secondary input   |                | Balanced        | with terminals     | vith terminals               |          |        |  |
| Sensitivity   |                | 7:              | 20 mV              |                              |          |        |  |
| Frequency response                                      |                | 50 ÷            | 18.000 Hz          |                              |          |        |  |
| Distortion  |                | <               | 0,5%               |                              |          |        |  |
| Mains power supply                                      | 230 Vac - 50   | /60 Hz / 24 Vdc |                    | 230 Vac -                    | 50/60 Hz |        |  |
| Maximum consumption                                     | 250 W / 300 VA | 500 W / 600 VA  | 250 W /            | 300 VA                       | 500 W    | 600 VA |  |
| 24 Vdc current consumption (max power / with no signal) | 6,5 A          | 11 A            | 6,5                | A                            | 11 A     |        |  |
| Dimensions (W x H x D)                                  | 150 x 368      | 3 x 150 mm      |                    | 150 x 365 x 150 mm           |          |        |  |
| Weight  | 7,4 kg         | 10,7 kg         | 7,4                | kg                           | 10,      | 7 kg   |  |



### Systems for hearing-aid wearers



The amplifiers of the **LAX** range are designed specifically for inductive sound transmission and are used in particular in dedicated audio systems for hearing-aid wearers. Most modern hearing aids have a two-position switch, the positions being marked "M" and "T". Position "M" is for "normal" listening through the microphone. Position "T" (Telecoil) is for inductive sound reception, through a special coil built into the hearing aid.

The output from the current amplifier feeds a loop made of suitably insulated normal copper wire positioned on the perimeter within which to broadcast sound. The current running through the loop generates a variable magnetic field in the room that is "induced" in the coil of the hearing aid. As a rule, this magnetic field is sufficiently strong to enable the person to move about freely, still enjoying a comfortable level of reception.

The main advantage of this system is that the sound reaches the user in an undistorted manner free from any ambient noise, echo or reverberation, and is therefore perfectly intelligible. The use of induction systems for hearing-aid wearers is becoming increasingly widespread in public places such as theatres, churches, banks, schools and offices etc., and there are also effective and increasingly numerous household applications, with connections to the television set, the radios, the telephone and/or the door-phone.

| LAX200 | Current amplifier up to 200 mq |
|--------|--------------------------------|
| LAX450 | Current amplifier up to 450 mq |
| LAX800 | Current amplifier up to 800 mq |



| ACCESSORIE | S   |
|------------|---|
| LACF01     | Feeder cable, 50 m                            |
| LACL10     | Loop feeder cable, 100 m                      |
| LAC50      | Induction coil for counters or tables (LAX50) |
| LALT01     | Scotch tape for LACF01, 50 m                  |
| LAL01      | Loop present stickers (10 pcs.)               |
| LAM50      | Tie clip microphone (LAX50)                   |
| LASC100    | SCART adaptor for TV (LAX200/450/800)         |
| LASC50     | SCART adaptor for TV (LAX50)                  |
| LATR100    | Interface for 100 V line (LAX200/450/800)     |
| LATR50     | Interface for 100 V line (LAX50)              |
|            |   |

### Measuring instruments



### LASFM01 Magnetic-field measuring instrument

This instrument enables accurate measurement of the magnetic field inside the area covered by the current loop and therefore control of the installation and regular maintenance.



### LARX01 Sample receiver

This enables reception and control of the programme being transmitted by means of the magnetic induction system. It is supplied complete with headphones.

| MODEL                  | LAX200        | LAX450                          | LAX800   | LAX50   |  |  |
|------------------------|---------------|---------------------------------|--|---|--|--|
| Audio inputs           | 3, XL         | R (2 balanced micro             | phones, 1 MIC/LINE selectable) - Phantom 15 V selectable | 2 micro (jack mono 3,5 mm) with phantom 4,5 V |  |  |
| Sensitivity            |               |                                 | -50 dB (MIC), -10 dB (LINE)                              | -50 dB  |  |  |
| Impedance of loop      |               | from 0,1 $\Omega$ to 1 $\Omega$ |  |   |  |  |
| RMS current            | 2 A (@ 1 KHz) | 3 A (@ 1 KHz)                   | 4 A (@ 1 KHz)  | 1,5 A (@ 1 KHz)                               |  |  |
| Mains power supply     |               |                                 | 230 Vac - 50/60 Hz                                       |   |  |  |
| Consumption            | 100 VA max    | 180 VA max                      | 300 VA max   | 20 VA max                                     |  |  |
| Dimensions (W x H x D) |               |                                 | 430 x 44 x 220 mm  | 91 x 170 x 33 mm                              |  |  |
| 19" rack mounting      |               |                                 | Optional 27/4555 backets (1U)                            | •   |  |  |
| Weight                 | 3,7 kg        | 4 kg                            | 4,3 kg   | 0,6 kg  |  |  |

# CMDS Compact Music Distribution Systems

## Sound sources

# Mixer and audio processor units

PASO compact systems, sound sources and mixers provide many possible solutions for broadcasting music and messages able to meet any needs in the most appropriate and effective manner.







### Amplified Sinto-CD/mp3 and USB/SD Card player • 6 output zones



PA6120 120 W RMS compact system with 6 output zones

PA6240 240 W RMS compact system with 6 output zones

The PA6240 and PA6120 compact systems combine in a single container a multi-function sound source (CD-MP3 player, USB, SD/ MMC card and AM/FM tuner) and an amplifier-mixer, 120 W and 240 W RMS respectively, with six output zones and separate volume control. They have an internal CPU able to manage easily the many functions of the equipment. Specific micro-switches on the rear enable the desired operating mode to be selected.

Designed starting out from the amplifier-mixers of the AX6000 range, all PA6000 models have five inputs with independent front-panel controls and with professional XLR connectors with mechanical holding devices. The first two are of the electronically balanced microphone type, with a phantom power supply (input 1 with automatic VOX activation). The third can be used either as a microphone input or as an input for PMB106-G microphone stations (RJ45 connector) with the possibility of making zone calls. The last two can be configured separately, as microphone inputs (with or without phantom power supplies) or as line inputs.

There are two auxiliary inputs (CD and TAPE) for connecting to external sources of music, with normalised input levels and a double RXA socket for using standard stereo cables.

There is a special Telephone/Emergency audio input with automatic activation (VOX) that can be used for a priority call. If the system requires acoustic correction, it is possible to connect any equalizer whatsoever or a device for protection against acoustic feedback (Larsen effect) to the PRE OUT and PWR IN sockets after positioning the control switch provided for this purpose. All the models of the range ensure a high degree of reliability thanks to electronic devices protecting them from overload currents and over-temperatures of the power devices. Each unit also has a cooling fan, with automatic control of the speed depending on the temperature.

### **FUNCTIONAL FEATURES**

- 2 balanced/unbalanced microphone inputs with phantom power supplies
- Microphone input or microphone bases of the PMB range
- 2 MIC/PH/LINE inputs with associated selector switch
- 2 auxiliary inputs for sound sources (TAPE/CD)
- Telephone/emergency audio input for priority calls with adjustable threshold and sensitivity
- Front-panel level controls for each microphone and auxiliary input
- Front panel overall volume control and treble and bass controls
- Multi-purpose sound source module with CD-MP3/ USB/SD CARD player and AM/FM tuner
- Constant voltage (50/70/100 V) or 8Ω impedance loudspeaker output lines
- 6 output lines (zones) with front-panel level control for the music signal for each single zone
- Balanced line output for connection to other amplifiers
- Output/input for connection to audio processors
- Connection to an external amplifier for simultaneous music and speech in different zones
- LED-type Vu meter for clear and immediate monitoring of output
- Microswitches for setting the operating modes
- Inclusion/exclusion of speech filter on all microphone inputs
- Contacts for activating input precedence and override
- "Music On Hold" output with output level control (output of selected auxiliary signal)
- · Alerting signal (chime) with level control
- Selectable 230/115 Vac and 24 Vdc mains power supply

#### **ACCESSORIES**

AC50/3 Brackets for rack-mounting (3 HE)



### Amplified Sinto-CD/mp3 and USB/SD Card player • 6 output zones

#### **CONNECTION OF STATIONS**

With the compact systems of the PA6000 range, connecting a PMB106-G microphone station, so as to enable messages to be sent to one or more receiving zones is simple and quickly done. It is essential to use SFTP CAT.5E shielded cables (IN UNITS input), and it is possible to connect up to 16 stations in cascade fashion over a maximum distance of up to 1 km. If necessary, the bases can be powered by means of their rear-panel sockets. The output level is adjustable by means of the appropriate front-panel control (MIC/UNITS).



### **MUSIC VOLUME CONTROL**

These units enable separate control of the volume of the background music broadcast to the single zones, thanks to the specific front-panel 'ZONE MUSIC LEVEL' controls.



### **CONFIGURATION MICRO-SWITCHES**

The main feature of the PA6000 range is the presence of microswitches on the rear panel enabling the settings of all the operational parameters of the equipment to be checked and/or changed. Specifically, it is possible to manage priorities among the various different audio inputs, to enable a warning signal, to enable VOX (automatic activation) of the MIC1 input and to programme the zones for calls by means of a precedence contact and from the telephone/emergency input.



#### TELEPHONE/EMERGENCY INPUT

There is a special audio input (TEL/EMERG) on the rear terminal block, balanced with a transformer and with automatic activation of precedence (VOX). Controls for adjusting the level and the activation threshold are provided on the rear panel. This input can be used for connecting the appropriate audio output of a telephone switchboard.



### Multi-function module

Each unit of the PA6000 range has a multi-function module with a tuner/ CD/MP3 player that also enables external devices such as SD/ MMC cards to be played and an USB storage unit.

The module has a display for indicating the presence or lack of CD/ SD/MMC/USB media, the chosen functions, information about the tracks and the type of tuning selected. All the keys needed for control of the module are accessible on the front panel: selection of the device to be used, controls for playing out the tracks in the normal module, programming functions for listening to the pieces of music, repeating them or playing them out in random order. The AM/FM tuner can be used for automatic or hand tuning and for storage of 10 programmes in both bands.





### **EXTERNAL CALL AMPLIFIER**

With a single internal amplifier, the compact system functions in the single-channel mode: a zone call will interrupt the background music also in those areas not receiving the call. With the PA6000 it is possible to connect an external dedicated voice amplifier. In this way it will be possible to receive both announcements and background music in different zones at the same time.

### **MUSIC ON HOLD OUTPUT**

The presence of the Music On Hold output (MOH OUTPUT) provides an interesting function. The signal from the selected sound is always available, without being subject to any type of precedence. On the output terminal block provided for this purpose, there are a balanced line signal with a transformer (COM-HOT terminals) for connection to other

equipment or to a telephone exchange, and a power signal (MON-GND terminals) for driving directly an 8 Ohm/1 W monitoring loudspeaker. The output level can be controlled directly from the rear panel.

### **CALLS TO ZONES**

The unique feature of this equipment is that the group of zones to be activated for each available source of calls can be configured: the PMB106-G microphone stations can be used, directly via the keypad, to send a call to one or more receiving zones; the announcements to be made with automatic activation of the MIC.1 input, those to be made with the emergency input (TEL./EMERG) and those to be made by closing the precedence contact may affect one or more receiving zones, depending on the settings made by means of the microswitches on the rear panel.

| MODEL   | PA6120   | PA6240                                     |  |  |
|---|--|--|--|--|
| Rated power output                                      | 120 W  | 240 W                                      |  |  |
| Constant voltage outputs / Low impedance outputs        | 100-70-50  | V and 8 Ω                                  |  |  |
| Tones control   | Bass ± 10 dB (100 Hz);   | Treble ± 10 dB (10 kHz)                    |  |  |
| Microphone inputs MIC.1 and MIC.2                       | 2 balanced XLR (phantom supply 17,5 V  | ), MIC1 with activation threshold (A.P.T.) |  |  |
| Sensitivity / Impedance                                 | 1,2 mV /   | 1300 Ω                                     |  |  |
| S/N Ratio   | > 66   | dB   |  |  |
| Frequency response                                      | 40 ÷ 19  | 000 Hz                                     |  |  |
| Microphone input MIC.3/UNITS                            | Balanced XLR (phantom supply 17,5 V)   | / 1 RJ45 (PMB106-G base station unit)      |  |  |
| Sensitivity / Impedance                                 | MIC: 1,2 mV / 1,3 kΩ ; l   | JNITS: 850mV / 800 kΩ                      |  |  |
| S/N Ratio   | MIC: >66 dB;   | JNITS: >76 dB                              |  |  |
| Frequency response                                      | MIC: 30 ÷ 20.000 Hz ;  | UNITS: 30 ÷ 20.000Hz                       |  |  |
| Maximum number of microphone station units (PMB106-G)   | Up to 16 stations in cascade fashion of if necessary, the bases can be powered |  |  |  |
| Microphone inputs MIC./LINE 4 and 5                     | 2 balanced XLR with Pha  | intom/Mic/Line selection                   |  |  |
| Sensitivity / Impedance                                 | MIC: 1,2 mV / 1,3 kΩ;  | LINE: 110 mV / 130 kΩ                      |  |  |
| S/N Ratio   | MIC: >66 dB;   | LINE: >77 dB                               |  |  |
| Frequency response                                      | MIC: 30 ÷ 20.000 Hz ;  | LINE: 30 ÷ 20.000 Hz                       |  |  |
| Auxiliary inputs  | 2 RCA (CE  | ) + TAPE)                                  |  |  |
| Sensitivity / Impedance                                 | CD: 450 mV / 35 k $\Omega$ ; TAPE: 220 mV / 18 k $\Omega$                      |  |  |  |
| S/N Ratio   | > 80 dB  |  |  |  |
| Frequency response                                      | 30 ÷ 20.000 Hz   |  |  |  |
| Telephone / Emergency (TEL / EMERG) audio input         | Balanced with terminals (HOT-COM-GN  | D) with activation threshold adjustment    |  |  |
| Sensitivity / Impedance                                 | 105 mV   | /6 kΩ                                      |  |  |
| S/N Ratio   | > 74   | dB   |  |  |
| Frequency response                                      | 200 ÷ 20   | 0.000 Hz                                   |  |  |
| Line signal outputs                                     | 5  |  |  |  |
| LINE OUT  | XLR balanced   | , 1 V / 3,9 kΩ                             |  |  |
| PRE OUT   | RCA, 0,8   | / / 3,8 kΩ                                 |  |  |
| TAPE OUT  | 2 RCA, 0,9   | 9 V / 2 kΩ                                 |  |  |
| Music On Hold (MOH) - PRE-AMPLIFIED LINE                | terminals (HOT-C   | OM), 2 V / 300 Ω                           |  |  |
| Music On Hold (MOH) - AMPLIFIED LINE                    | terminals (GND-M   | ON), 1,9 W / 8 Ω                           |  |  |
| Mains power supply                                      | 230/115 Vac - 50   | 0/60 Hz / 24 Vdc                           |  |  |
| Maximum consumption                                     | 280 W (325 VA)   | 510 W (590 VA)                             |  |  |
| 24 Vdc current consumption (max power / with no signal) | 6,8 A / 0,2 A  | 13,1 A / 0,3 A                             |  |  |
| 19" rack mounting (modular units)                       | Optional AC50/   | 3 brackets (3U)                            |  |  |
| Dimensions (W x H x D)                                  | 432 x 133  | x 360 mm                                   |  |  |
| Weight  | 14 kg  | 16,5 kg                                    |  |  |

### Amplified Sinto/USB/SD Card player • 60 W / 120 W / 240 W



When it comes to CMDS systems, the PA1000 range has excellent functional characteristics and stands out for its exceptionally good price/performance ratio. A multi-function module with a digital FM tuner, an MP3 player for a USB/SD-MMC card, an amplifier-mixer and the wide range of possible configurations make each of these units a versatile sound-broadcasting system able to cover the needs of any small or medium-sized installation. The XLR sockets on the rear panel can be configured separately as microphone inputs (with or without phantom power supplies) or as line inputs: the mode is selected by means of the specific three-position switches.

Each of these inputs has its own level control for metering the amplitude of the various different signals suitably. Furthermore, the INPUT1 microphone input has an automatic precedence function (VOX): when the microphone connected to this input is used to speak, all the music and microphone inputs will automatically be muted. For connection to external music sources there is an auxiliary input with a double RCA socket for using standard stereo cables. It is possible to connect all dynamic microphones and **B701-MG** microphone bases to PA1000 compact systems. A precedence terminal block on the rear panel enables signals fro, the MP3 player, from the tuner and from the auxiliary input to be muted.

If, due to a particularly difficult environment, the system requires acoustic correction, it is possible to connect any equalizer whatsoever or a device for preventing acoustic feedback (Larsen effect) to the PRE OUT and PWR IN sockets. All the models ensure a high degree of reliability thanks to electronic devices protecting them from overload currents and over-temperatures of the power devices. Each unit also has a cooling fan, with automatic control of the speed depending on the temperature.

| PA1060 | 60 W RMS compact system  |
|--------|--------------------------|
| PA1120 | 120 W RMS compact system |
| PA1240 | 240 W RMS compact system |

#### **FUNCTIONAL FEATURES**

- MP3 player module (via USB, SD or MMC card)
- Digital FM tuner
- 3 MIC./LINE inputs with mode selection
- 1 VOX input (INPUT 1)
- 1 auxiliary input for sources of sound (TAPE/CD)
- Front-panel level control for each microphone an auxiliary input
- Front-panel master volume control and treble and bass control
- XLR sockets for connecting dynamic microphones and/or B701-MG stations
- Constant-voltage (25/70/100 V) or 4Ω impedance loudspeaker line output terminal block
- Terminal block for activating precedence of microphone inputs
- Output/input for connection to audio processors
- Unbalanced line output for connection to other amplifiers
- LED-type Vu meter for clear and immediate check of output power
- Terminal block for DC power (24 VDC)
- Selectable mains power (230/115 VAC)
- Mountable in standard 19" rack using optional brackets

### **ACCESSORIES**

AC5660 19" rack mounting brackets (2U)



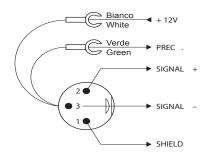


### CONNECTIONS

### Microphone precedence

When the precedence contacts (P and +) on the rear terminal block are closed, all the music sources and auxiliary input are muted.

### Microphone base B701-MG



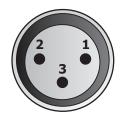
### Microphone inputs (XLR)

BALANCED connection

- 1 Shield
- 2 Signal (hot side)
- 3 Signal (cold side)

UNBALANCED connection

- 1 Shield and GND
- 2 Signal
- 3 Shield and GND



### **Auxiliary input (RCA)**

UNBALANCED connection

- 1 Signal
- 2 Shield and GND



| MODEL                            | PA            | PA1060 PA1120 PA1240 |                    |                   |                                  | 1240            |  |
|----------------------------------|---------------|----------------------|--------------------|-------------------|----------------------------------|-----------------|--|
| RMS output power (THD <1%)       | 60            | ) W                  | 120 W              |                   | 240 W                            |                 |  |
| Constant voltage outputs         |               | 100, 70, 25 V        |                    |                   |                                  |                 |  |
| Low impedance outputs            |               | 4 Ω                  |                    |                   |                                  |                 |  |
| Tones control                    |               |                      |                    |                   |                                  |                 |  |
| Bass tones @100 Hz               |               | ± 12 dB              |                    |                   |                                  |                 |  |
| Treble tones @10 kHz             |               |                      | ± 1                | 11 dB             |                                  |                 |  |
| Microphone/line inputs           | MIC.          | LINE                 | MIC.               | LINE              | MIC.                             | LINE            |  |
| Input sensitivity / impedance    | 3 mV / 1,5 kΩ | 250 mV / 100 kΩ      | 3 mV / 1,5 kΩ      | 250 mV / 100 kΩ   | $3\text{mV}/1,\!5\text{k}\Omega$ | 250 mV / 100 kΩ |  |
| S/N Ratio                        | 68 dB         | 72 dB                | 70 dB              | 76 dB             | 70 dB                            | 76 dB           |  |
| S/N Ratio ('A' weighted)         | 73 dBA        | 80 dBA               | 73 dBA             | 82 dBA            | 73 dBA                           | 82 dBA          |  |
| INPUT 1 VOX activation threshold | 0,9 mV        | -                    | 0,9 mV             | -                 | 0,9 mV                           | -               |  |
| Frequency response               |               |                      | 35 ÷ 1             | 6.000 Hz          |                                  |                 |  |
| Phantom supply                   | 18 V / 2,2 kΩ | -                    | 8 V / 2,2 kΩ       | -                 | 18 V / 2,2 kΩ                    | -               |  |
| Auxiliary input                  |               |                      |                    |                   |                                  |                 |  |
| Sensitivity / Impedance          |               |                      | 400 m <sup>1</sup> | V / 22 kΩ         |                                  |                 |  |
| S/N Ratio                        | 78            | 3 dB                 | 80 dB              |                   | 80 dB                            |                 |  |
| S/N Ratio ('A' weighted)         | 85            | 85 dBA               |                    | 82 dBA            |                                  | 85 dBA          |  |
| Frequency response               |               | 30 ÷ 18.000 Hz       |                    |                   |                                  |                 |  |
| VOX and precedence attenuation   |               |                      | -6                 | 0 dB              |                                  |                 |  |
| PWR IN input                     |               |                      |                    |                   |                                  |                 |  |
| Sensitivity / Impedance          |               |                      | 1 V /              | ′ 22 kΩ           |                                  |                 |  |
| S/N Ratio                        | 85            | i dB                 | 93 dB              |                   | 93 dB                            |                 |  |
| S/N Ratio ('A' weighted)         | 100           | ) dBA                | 100 dBA            |                   | 100 dBA                          |                 |  |
| Frequency response               |               |                      | 30 ÷ 1             | 8.000 Hz          |                                  |                 |  |
| LINE OUT output                  |               |                      |                    |                   |                                  |                 |  |
| Output level / Impedance         |               |                      | 1 V /              | ′ 200 Ω           |                                  |                 |  |
| PRE OUT output                   |               |                      |                    |                   |                                  |                 |  |
| Output level                     |               |                      |                    | 1 V               |                                  |                 |  |
| Mains power consumption          |               |                      | 230/115 Vac -      | 50/60 Hz / 24 Vdc |                                  |                 |  |
| Maximum consumption              | P= 1          | 50 W                 | P= 300 W           |                   | P= 600 W                         |                 |  |
| Vdc maximum consumption          |               | A                    | 10 A               |                   | 2                                | 0 A             |  |
| Dimensions (W x H x D)           |               |                      | 430 x 88           | 3 x 270 mm        |                                  |                 |  |
| Weight                           | 6,0           | 3 kg                 | 8,3 kg             |                   | 10                               | ,5 kg           |  |



### P8083 • CD-MP3/USB/SD Card player and FM/AM stereo tuner



A single container that can be mounted in a standard 19" rack and is one modular unit high, comprises a CD-MP3/USB/SD Card player and an FM/AM stereo tuner. Volume control and independent audio outputs on a double RCA socket for both sources of sound. There is an additional combined audio output from which it is possible to pick up both signals of the modules with priority of the CD player over the tuner. The CD player module has a back-lit display, a shockproof system,

and normal, repeat, random or programmed play functions. The CD player is supplied with a remote control enabling full remote management. Stereo FM/AM tuner module with backlit display, automatic and/ or manual tuning, pre-selection of up to 20 stations (10 FM plus 10 AM), and SLEEP function. FM and AM aerial included.

Power supply requirements: 230/115 VAC - 50/60 Hz / 24 VDC. Size (LxHxD): 482 x 44 x 285 mm

### P8083-R • Digital USB/SD Card player/recorder



The **P8083-R** is a digital recorder and player for audio files in MP3 format on external storage devices such as SD cards or USBs (playing of MP3/WMA audio files and recording in MP3 format). Front-panel master volume control. Rear-panel line input and output on a double RCA socket. Management of external storage devices from 128 MB to 16 GB (SD Card/USB). Possibility of selecting the recording quality (128 Kbps or 192 Kbps). Recordable audio tracks up to a maximum of 99. It is possible to programme customised sequences for playing

out the music and to select and repeat a single section of a piece of music. Files can be deleted and it is possible to copy data from a USB to an SD card or vice versa. Large backlit display for showing the various different functions. A remote control enabling full remote management is supplied with the equipment. The P8083-R has provisions for mounting in a standard 19" rack and has the height of a single unit. Power supply requirements: 230/115 VAC - 50/60 Hz / 24 VDC. Size (LxHxD): 482 x 44 x 285 mm

### Module available on request

Other models created by combining various different modules of the P8083 range are available on request. They all feature a standard container suitable for mounting in a standard 19" rack and of the height of one modular unit. Double RCA sockets are provided for connecting the line outputs on the rear panels, using standard stereo cables. Power supply requirements: 230/115 VAC - 50/60 Hz / 24 VDC. Size (LxHxD): 482 x 44 x 285 mm

### P8083-ALL

CDM-P3/USB/ SD CARD player and FM/AM tuner. Master volume con-



trol. Backlit display. CD player with shock-absorbing system. normal, repeat, random or programmed play functions. Tuner with automatic scanning and pre-selection of up to 20 stations (10 FM and 10 AM stations). Remote control and aerials included in the supply.

### P8083-2ALL

Model with two CD-MP3/USB/SD CARD player module and FM/AM stereo tuner module.

#### P8083-T

FM/AM stereo tuner. Master volume control, backlit display, automatic and



manual tuning, pre-selection of up to 20 stations (10 FM and 10 AM stations) and SLEEP function. FM and AM aerial included in the supply.

#### P8083-2T

Two FM/AM stereo tuners.

#### P8083-P

CDM-P3/USB/ SDCARD player with PITCH speed control. Master volume



control and control of speed at which the audio tracks are played out (PITCH). Backlit display, shock-absorbing system and normal, repeat, random or programmed play functions. Remote control included in the supply.

## Mixer and audio processor units



### DLC9000 • Automatic controller of audio level



#### **FUNCTIONAL FEATURES**

- Level of background noise shown in real time
- Storage of background noise level (minimum and maximum)
- Level of attenuation definable on the basis of the required S/N ratio
- Incremental adjustment of the ratio
- "Precedence" contact or "VOX" function for emergency calls
- · Monitoring loudspeaker

The DLC9000 is a device for automatic control of the audio level for broadcasting messages in places featuring variable background noise levels such as, by way of example, a railway station or a chain store where the level of the background noise is higher when the area is crowded than when there is no movement. The DLC9000 uses a microphone, not included in the supply (for example, an M936 dynamic microphone or an MC102 flat electret microphone) to detect the ambient noise. The output of the control is connected between the pre-amplifier and the power amplifier of the zone considered.

The noise measuring device is extremely simple to configure. The various different stages of programming can be selected easily using only three push-buttons (Up/Down and Select) in the menu shown on the 16-digit backlit display.

### DAG9300 • Alarm-tone generator and voice recorder



The DAG9300 is an alarm-signal generator that can be used to record and play out two voice messages. 12 different alarms (to be chosen from among the 20 different synthesised tones available). The tones and pre-recorded messages can be activated either by means of the front-panel controls or by means of contacts on the rear panel. One very interesting feature is that a microphone station of the **B711** range can be used to record a voice message and play it out with a certain

delay after completion of the recording ("DELAY PLAY" mode). In this way it will be possible to make voice announcements to be broadcast with a certain delay, so as to avoid triggering the Larsen effect, created when the microphone is too close to the loudspeakers. With the "REC PLAY" mode, on the other hand, it will be possible to use the base for sending out a pre-recorded message.



### DMX8008 • Digital matrix mixer 8IN 80UT



DMX8008 Digital matrix mixer 8IN 8OUT

DMP8008 Wall panel for remote control

The **DMX8008** is a high performance 8 inputs x 8 outputs digital matrix mixer.

Specially designed for commercial and professional applicaton such as Conference rooms, Auditoriums, Sport utility buildings, House of worship, Pubs and Disco. It includes 8 independently switchable MIC/LINE inputs with Phantom power supply, 8 Line outputs, managed by a powerful 48kHz 24 Bit DSP engine, in addition to high performance 24 Bit AD/DA converters. The DMX8008 supports a full matrix mixing mode where inputs may be routed/mixed in any ratio or any output. Each MIC/LINE input channel provides Lo/Hi pass 1st order filers, 3-band parametric EQ, Noise Gate function and Gain control. In addition, MIC inputs include a Feedback Eliminator function, based on a powerful «Pitch Shifting» algorithm, particularly suitable for voice applications. Automixing function automatically adjusts input level to make operating easier using either N.O.M. (Number of Open Mics) attenuation function or Gain Sharing algorithm.

Ducking Process enforces a «priority order» of open microphones in order that high-priority inputs atenuate lower-priority inputs. Each output offers up to 5-band of parametric equalization, crossover filters, RMS compressor, Peak limiter, Phase and Delay controls; 8 digital IN/OUT ports are provided for general purpose (preset recall, trigger third parts or device); 8 front knobs provides a quickly way to control input Gain.

Up to 32 units can be managed by software applications.

#### **FUNCTIONAL FEATURES**

- Excellent audio performance with 24 bit converters coupled with 48kHz sample rate.
- 8 MIC/LINE inputs, 8 outputs with full matrix mixing, 3-band parametric equalization and Low/High pass filters per input channel.
- 5-band parametric equalization per output channel. Each band can be switched to peaking, Low/High shelving with variable Q response.
- Crossover filters with slopes from 6dB/Oct. up to 24dB/Oct. including Butterworth, Bessel, Linkwitz-Riley.
- Gain control, Noise Gate, Feedback eliminator (Mic input only) per input channel.
- Each output features a precision dynamic range controller composed of a Peak Limiter and a RMS Compressor with selectable ratio and variable knee.
- Automixing functions include: configurable N.O.M. attenuation, Gain sharing algorithm, Priority Ducking.
- Adjustable Delay time up to 380mS per output channel.
- Front panel interactive LCD display for local access and configuration.
- Front panel 6-led status indicators per IN/OUT channel.
- 8 front knobs available for MIC input Gain control.
- 4 input contacts for additional 4 preset selections with priority configuration.
- 4 digital output ports for triggering external devices.
- Simultaneous control up to 32 units via PC software iPad®
- Security lockout.
- TCP/IP, RS 485 and USB connection for remote controls.





| MODEL                           | DMX8008  |
|---------------------------------|--|
| Audio                           |  |
| Analog inputs                   | 8 electronically balanced ( Mic - Line - Unbalanced )  |
| Analog outputs                  | 8 electronically balanced  |
| Input level                     | Line: +14 dBu; Mic: -20/0 dBu (+6 dBu unbalanced )   |
| MIC input gain                  | 35 dB ( 223 dB analog, 12 dB digital )   |
| Output level                    | +14 dBu  |
| THD+N                           | 0.005% @ 1kHz 0 dBu  |
| S/N ratio                       | > 104 dBA  |
| Frequency response              | 20 Hz ÷ 20.000 Hz ± 1dB  |
| AD & DA converters              | 4 x AK5385B 24bit, 1 x AK4358 24bit (48 kHz)   |
| Phantom power supply            | 48 Vdc   |
| DSP & PROCESSING                | 70 100   |
| DSP Engine                      | Dream SAM3716, 24 bit (data) x 96 bit (coeff.)   |
| DSP Resolution                  | 24 x 32 bit  |
|                                 | 3-band parametric (peaking or Low/High shelving)   |
| Equalization   Input            | Low/High pass 1st order filter per input channel   |
| Equalization   Ouput            | 5-band parametric (peaking or Low/High shelving)   |
| Equalization   Gain             | From -12 dBu up to +12 dBu (0.5 dBu resolution steps)  |
| Equalization   Frequency        | 1/24 <sup>th</sup> of octave resolution (20 Hz steps)  |
| Equalization   Q/BW             | Q from 0.4 up to 10 (0.1 resolution steps)   |
| Crossover section HPF/LPF       | Butterworth 6/12/18/24dB per octave Bussel, Linkwitz-Riley and Custom 12/24dB per octave Filter resolution 1/24th of octave  |
| RMS compressor and peak limiter | Threshold from 14,2 dBu up to -33,8 dBu Attack time from 5ms up to 200ms  (1 ms up to 20 ms, 10 ms up to 100 ms and 20 ms up to 200 ms) Release time from 0.1 sec up to 3 sec (0.1 sec resolution) Release time from 0.1 sec up to 3 sec (0.1 sec resolution) Ratio from 1:1 to 32:1 (compressor only) Adjustable soft or hard knee (compressor only)  |
| Delay                           | 380,998 ms (21 us steps)   |
| Feedback eliminator             | Pitch shifting algorithm only for MIC input channels   |
| Automixing functions            | N.O.M., Gain sharing and priority ducking algorithm  |
| General informations            |  |
| Device presets                  | 6 user presets + 4 by using S1-S4 digital input ports.   |
| Front panel                     | 2Threshold from 14,2 dBu up to -33,8 dBu 6-LED status indicators (Line, Mic, Mute In, Signal/Clip, Mute Out) 1-LED indicator Phantom power 6 x double-function push buttons (Preset recall, Setup) USB type B connector  |
| Rear panel                      | 2 x 12 pin Phoenix connector (Mic/Line inputs) 2 x 12 pin Phoenix connector (Line outputs) 2 x 4 pin Phoenix connector (S1-S4 digital input ports - TTL level 0-5V) 2 x 4 pin Phoenix connector (S1-S4 digital output ports - TTL level 0-5V) 2 x 4 pin Phoenix connector (S1-S4 digital output ports - TTL level 0-5V) 2 x RJ45 for RS485 In/Out connection 1 x RJ45 with activity leds for Ethernet connection (10/100 TCP-IP) IEC C13 16A connector power ON/OFF switch |
| Optional device                 | DMP8008 wall panel remote control  |
| Included software               | PC users interface; Free app. for iPad®  |
| Main AC                         | 90 ÷ 240 Vac (50/60Hz) - 40W   |
| Dimensions                      | 482 x 44 x 229 mm - 1U   |
| Net weight / Gross weight       | 3.5 kg / 4 kg  |



# **Microphones**

# Microphone bases

# Wireless microphones

PASO offers a full range of professional microphones, microphone bases and wireless microphones that combine exclusive design and specific technical characteristics able to meet any need.

## **Microphones**

### Dynamic microphones

#### M976

Very sensitive one-directional dynamic microphone with a hyper-cardioid pattern, suitable for use for both speech and music. Its special elastic suspension and its high degree of directivity make it advisable also in difficult situations with acoustic feedback problems (Larsen effect). It has an ON/OFF switch and a 5-metre long XLR/XLR cable, a coupling for mounting on a stand and a handy carrier case are included in the supply.

#### M936

Unidirectional dynamic microphone with a cardioid pattern for general use. It features high sensitivity, particularly good intelligibility of speech and good reproduction of music. The supply includes an ON/OFF switch, a 5-metre XLR/XLR cable, a coupling for mounting on a stand and a carrier case.

#### M1-NC

Unidirectional dynamic microphone with PTT push button, 1.5 m spiralled cable and XLR plug.

### Electret microphones

#### MC102 • MC102-N

Ultra-flat surface microphones with a hemi-cardioid polar pattern. They are used on flat horizontal surfaces (tables, floors). Their peculiar directivity characteristics (60° from the front in respect of the surface on which they rest) makes them particularly suitable for conferences, religious ceremonies and/or theatrical events.

Phantom power supply and 5-metre long cable with carrier case.



#### MC250

Pen microphone with a hyper-cardioid polar pattern. It ensures high levels of useful signal with a limited receiving angle, thus keeping the impact of surrounding noises to a minimum. It has a very extensive frequency response. It is suitable also for critical receiving situations at some distance from the source with minimum sensitivity to the Larsen effect. Phantom power supply. It has a voice-filter switch, a 4.5-metre long cable, a coupling for mounting on a stem, a wind screen and a carrier case.



### MC260 • MC265

Family of electret microphones featuring an elegant appearance and able to meet the increasingly demanding specifications of architectural design and interior decoration of halls, conference rooms and places of worship. The cardioid type response of the microphone housing and the very sensitive electret capsule make these microphones perfect for enhancing the user's oratory qualities.

#### B260

Table-top base for MC260 and MC265 microphones. ON/OFF switch, XLR/F connector with mechanical locking device for fitting a microphone and rear XLR/M output connector. Black die-cast zinc structure. Size (LxHxD): 120 x 40 x 125 mm. Weight: 1.2 kg.



MC260 Electret microphone with a double-jointed stem 55 cm long

**MC265** Electret microphone stem flexible at the base, 42 cm long

| MODEL  | M1-NC                       | M936           | M976   | MC102<br>MC102-N  | MC250   | MC265              | MC260         |
|--|-----------------------------|----------------|--|---|---|--------------------|---------------|
| Characteristics  | Dinamic unidire<br>cardioid | ,              | Dinamic unidirectional,<br>hypercardioid                         | Electret unidirectional,<br>hemicardioid                                  | Electret, hypercardioid   | Electret, cardioid |               |
| Power supply   |                             | -              |  | Phar  | ntom 11 ÷ 52 Vdc  | Phantom 9          | 9 ÷ 52 Vdc    |
| Impedance  | 600 Ω                       | 600 Ω          | 600 Ω  | 100 Ω   | 150 Ω   | 20                 | Ω             |
| Sensitivity  | –78 dB/ µbar                | -72 dB/µbar    | -71 dB/µbar  | -65 dB/µbar   | −54 dB/µbar   | -58 dl             | 3/µbar        |
| Frequency responce   | 100 ÷ 10.000 Hz             | 50 ÷ 15.000 Hz | 50 ÷ 16.000 Hz   | 50 ÷ 16.000 Hz  | 20 ÷ 20.000 Hz  | 50 ÷ 18.000 Hz     |               |
| Body   | ABS                         | Die            | e-cast Zn-Al   | Die-cast Al   | Brass   | Brass              |               |
| Production in the second secon | Divil                       | Auth           |  | White (MC102)   | Dividend  | Black              |               |
| Finish   | Black                       | Anthi          | racite grey mat  | Black (MC102-N)   | Black mat   |                    |               |
| Supplied accessories   | 1,5 m spiralled cable (XLR) | jointed m      | chable cable (XLR),<br>icrophone support<br>-proof carrying case | 5 m detachable cable<br>(Micro-XLR/ XLR) and<br>shock-proof carrying case | 4,5 m detachable cable (XLR) jointed microphone support and shock-proof carrying case |                    | -             |
| Dimensions (M - 11 - D)  | 100 00 50                   | Ø 50 170       | 0.50 170   | 00 17 115   | 0.00100   | Ø 19 x 424 mm      | Ø 19 x 550 mm |
| Dimensions (W x H x D)   | 100 x 60 x 50 mm            | Ø 53 x 170 mm  | Ø 53 x 170 mm  | 90 x 17 x 115 mm  | Ø 23 x 163 mm   | (Ø 7 stem)         | (Ø 7 stem)    |
| Weight   | 165 g                       | 236 g          | 290 g  | 264 g   | 148 g   | 124 g              | 140 g         |

## **Microphones**

### B700 range • Microphone bases

### Pre-amplified microphone bases

Each unit has an electret microphone and a stem with a flexible part on the base. They can run on a 12 and/ or 24 VDC power supply, adapting to any applicationrelated need. They can be mixed with one another or interlocked with two priority levels. The level of the microphone signal and of the warning tone ("Chime" generator included) can be adjusted via the rear panel.

#### B711-G

Pre-amplified base with a hold-down key (PTT, press to speak), a toggle button (LOCK) for long messages and a LED for signalling activation of the microphone.

### PRE-AMPLIFIED MICROPHONE BASE CONNECTIONS

| PIN    | AUDIO IN/OUT | ZONES 1÷6 |  |
|--------|--------------|-----------|--|
| 1      | Audio +      | Zone 1    |  |
| 2      | Audio –      | Zone 2    |  |
| 3      | GND          | Zone 3    |  |
| 4      | Prec. IN/OUT | Zone 4    |  |
| 5      | N. C.        | Zone 5    |  |
| 6      | + Vdc        | + Vdc     |  |
| 7      | Serial +     | Zone 6    |  |
| 8      | Serial -     | GND       |  |
| Shield | GND          | GND       |  |



Each base is equipped with RJ45 sockets for direct connection by means of SFTP Cat 5 shielded cables (AUDIO IN and AUDIO OUT). The B711/6-G station also has a ZONES 1 to 6 socket for controlling the switching relays for the zones and/or for activating alarms. The connectors must be of the shielded RJ45 type.

#### B711/6-G

Pre-amplified base with six zone push-buttons and associated signalling LEDs, an All-Call key, a hold-down call key (PTT), a toggle key (LOCK) for long messages and a LED for signalling activation of the microphone.



#### B701-MG

Non pre-amplified microphone base with a dynamic microphone, a gooseneck stem and a status LED. It has a hold-down key (PTT, press to speak) and a toggle push-button (LOCK) for long messages.



### NO PRE-AMPLIFIED MICROPHONE BASE CONNECTIONS

Each base is supplied with a 5-metre long balanced shielded cable fitted with an XLR plug and terminals for activating microphone precedence in PASO amplifiers.

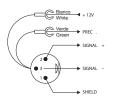
Pre-amplified station with 12 programmable

zone push-buttons and associated indicator

LEDs, an All-Call key, a hold-down call key

(PTT), a toggle button (LOCK) for long mes-

sages and a microphone activated and



### PMB range • Digital microphone bases

#### Microphone bases

This model features an electret microphone and a stem with a flexible part near the base. It can be run on a central and/or local power supply (18 to 36 VDC). The following can be configured from the keypad: setting of the address (up to 31), priority level (up to 7), adjustment of microphone sensitivity, programming of zone keys and of the All-Call key (ALL), activation of the speech filter for improved intelligibility.

#### PMB106-G

Pre-amplified station with 6 programmable zone push-buttons and associated indicator LEDs, an All-Call key, a hold-down call key (PTT), a toggle button (LOCK) for long messages and a microphone activated and busy LED.



AUDIO IN/OUT

Audio +

Audio -

**GND** 

Not connected

Not connected + Vdc

Serial +

Serial -

GND

### Expansion module

### PMB112-EG

busy LED.

PMB112-G

Expansion keypad for PMB112-G microphone stations, 12 programmable zone push-buttons, signalling LEDs, All-Call key. It is possible to connect up to two units in cascade fashion.



### B53 range • Special applications

Pre-amplified microphone case with a dynamic microphone featuring a gooseneck stem, a hold-down key for making calls and LED that lights up when a call is in progress. Its limited width makes it suitable for fixing to surfaces on which there is not much room (e.g. supermarket cash desks). Adjustable sensitivity and line output signal level. 1.5-metre long cable with weldable wires included in the supply.

#### CONNECTIONS

PMB microphone bases are equipped with RJ45 sockets for direct connection by means of SFTP Cat 5 shielded cables.

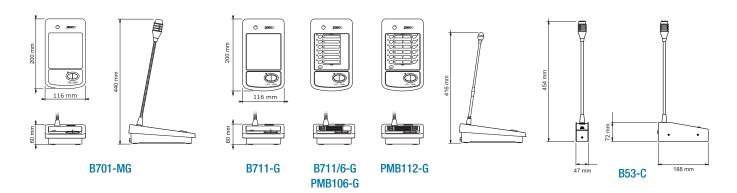




All the connectors must be shielded RJ45 type.



| MODEL                   | B701-MG   | B711-G              | B711/6 -G  | PMB106-G          | PMB112-G  | B53-C                |
|-------------------------|---|---------------------|--|-------------------|---|----------------------|
| Characteristics         | Dynamic microphone, general call push-button (PTT), automatic release or one switch type (LOCK) |                     | Electret microphone, general call push-button (PTT),<br>automatic release or one switch type (LOCK), dynamics compressor |                   | Dynamic microphone, general call push-<br>button (PTT), dynamics compressor |                      |
| Zone selection          | 1   |                     | 6+4  | ALL               | 12 + ALL  | 1                    |
| Sensitivity / Impedance | 1,8 mV/Pa / 500 $\Omega$  | Trimmer a           | djustment  | Keyboard          | adjustment  | Trimmer adjustment   |
| frequency response      | 100 ÷ 12.000 Hz   | 100 ÷ 15            | .000 Hz  | 100 ÷ 1           | 4.000 Hz  | 50 ÷ 14.000 Hz       |
| Output audio level      | -   | 1,2 Vrms (          | balanced)  | 2,2 \             | / max   | 2 V RMS (unbalanced) |
| Connections             | 5 m cable with XLR plug e 2 terminals for activacting microphone precedence                     | RJ45 (AUDIO OUT)    | RJ45 (AUDIO OUT<br>e ZONE 1÷6)   | RJ45 (IN/OUT)     |   | Solder wires         |
| Mains power supply      | 12 Vdc (precedence)   | 12 / 2              | 4 Vdc  | 18 /3             | 6 Vdc   | 11÷28 Vdc            |
| Consumption             | LED 8 mA (12 V)   | 45 mA               | 60 mA  | 16 mA             | 22 mA   | 30 mA                |
| Finish                  |   | Light grey ABS stru | ıcture   |                   |   | Black metal          |
| Dimensions (W x H x D)  | 116 x 440 x 200 mm 116 x 416 x 200 mm   |                     |  | 47 x 454 x 188 mm |   |                      |
| Weight                  | 0,88 kg   | 0,8                 | kg   | 0,6               | kg  | 0,8 kg               |
| Accessories             | AC700 fixing mounting kit for B700 and PMB microphone station range                             |                     |  |                   | -   |                      |



## Compatibility between PASO Microphone/Consoles and Amplifiers

| MODEL              | M1-NC M936<br>M976    | MC102 MC250<br>MC260 MC265                       | B701-MG   | B53-C   | B711-G                | B711/6-G                                     | PMB106-G<br>PMB112-G                      |  |
|--------------------|-----------------------|--|---|---|-----------------------|--|---|--|
| Туре               | Dynamic<br>microphone | Electret microphone<br>(Phantom<br>power supply) | Base with dynamic<br>microphone<br>(+12 V precedence) | Pre-amplified base with<br>dynamic microphone<br>(+12 V precedence) | Pre-amplified base    | e (+12 V precedence)                         | Pre-amplified base<br>(RS485 serial data) |  |
| Connection         |                       | XLR  | XLR + 2 precedence wires                              | Wires   | RJ45 sockets (SFTP    | CAT 5 shielded cables and shie               | elded connectors)                         |  |
| Functionality      | N                     | Mixing   | Mixing or with priority if connecting precedence      | With pri  | ority                 | With priority and zone                       | riority and zone selection keys           |  |
| Compatibility with | audio inputs of PA    | SO amplifier/control u                           | nits  |   |                       |  |   |  |
| AX3504             | N                     | AIC 2  | MIC 2 + Precedence                                    | TEL/EMERG + Preceden  | ce (wires connection) | -  | -   |  |
| AX3506, AX3512     | M                     | IC 1÷4   | MIC 1÷4 + Precedence                                  | TEL/EMERG + Precedence (wires connection)                           | IN UNITS              | -  | -   |  |
| AX6000 range       | М                     | IC 1÷5   | MIC 1÷5 + Precedence                                  | TEL/EMERG + Precedence (wires connection) -                         |                       | -  | IN UNITS                                  |  |
| PA6000 range       | М                     | IC 1÷5   | MIC 1÷5 + Precedence                                  | TEL/EMERG + Precedence (wires connection) -                         |                       | -  | IN UNITS                                  |  |
| PA1000 range       | М                     | IC 1÷3   | MIC 1÷3 + Precedence                                  | MIC 1÷3 + Precedence (wires connection and XLR)                     |                       | -  | -   |  |
| AW5600 range       | -                     | -  | -   | TEL/EMERG + Precedence (wires connection)                           | IN UNITS              | -  | -   |  |
| MX5539             | M                     | C 2÷9  | MIC 2÷9 (no precedence)                               | -   | -                     | -  | -   |  |
| P8036              | -                     | -  | -   | BASE IN with p<br>(wires conn                                       |                       | BASE IN with prec. + ZONE (wires connection) | -   |  |
| P8136              |                       |  | -   | Using ACIO8136 module (wires connection)                            |                       | nection)                                     | MASTER UNITS and LOCAL UNITS              |  |
| P8236              |                       |  | -   | Using ACIO8136 module (wires connection)                            |                       | nection)                                     | LOCAL UNITS                               |  |
| Connection acces   | sories                |  |   |   |                       |  |   |  |
| Extension cables   | ion cables CV15, CV24 |  | CV15, CV24<br>+ 2 wires for precedence                | - CV20xx cable range  |                       |  |   |  |
| Cable rolls        | 31                    | /2-100   | 31/84-100   | 31/65-250   | 31/142-100            |  |   |  |

## Wireless microphones and accessories



### Wireless microphones UHF multi-channel



The MA855/R850A and MA853/R850A kits are wireless microphone systems of the Diversity UHF type featuring high performance levels and PLL technology. They enable selection of 120 channels for maximum flexibility. The "Diversity" technology of the receiver and the microphone antenna ensure an exceptionally broad range for maximum reliability of the signal and freedom of movement.

Both transmitters (MA855A with a handgrip and MA853A pocket model) have a handy mute function, an LCD display, a keypad lock and a battery-status indicator.

The R850A receiver, which has its own power supply, is equipped with an automatic scanning system for identifying the frequency of the microphone, a large LCD display, an RF/AF level measuring device and a squelch circuit that enables any interferences present in the surrounding environment to be eliminated.

| <b>ACCESSO</b> | RIES   |
|----------------|--|
| AC850          | Support for rack mounting of one R850A receiver (1 U)  |
| AC852          | Support for rack mounting of two R850A receivers (1 U) |
| AC855          | Battery charger for MA855A and MA853A transmitters     |

| MODEL                             | MA855/R850A  | MA853/R850A  |
|-----------------------------------|--|--|
| Characteristics                   | - Hand-held wireless microphone with dynamic capsule - 120 channels              | - Pocket wireless microphone with electret capsule<br>- 120 channels     |
| Carrier frequency                 | 638 ÷ 662  | MHz (UHF)  |
| RF sensitivity                    | -100 dB  | m/30dB   |
| Frequency response                | 50 ÷ 15  | .000 Hz  |
| Receiver output level             | Balanced X<br>Unbalanced Jack  | ·  |
| Operating range (line of sight)   | 100 m  | 100 m  |
| Mains power supply                | - R850A receiver: 12 Vdc/ 500 mA<br>- MA855A or MA853A transmitter: AA (2 off) o | or rechargeable NiMH batteries   |
| Supplied accessories              | AC/DC power supply unit, audio LF cable, 2 antennas, color ID caps               | AC/DC power supply unit, audio LF cable, 2 antennas, windscreen          |
| 19" rack mounting (modular units) | AC850 optional support fo<br>AC852 optional support fo                           |  |
| Dimensions (W x H x D)            | MA855A transmitter: 51 x 278 mm<br>R850A receiver: 210 x 46 x 159 mm             | MA853A transmitter: 70 x 98 x 23 mm<br>R850A receiver: 210 x 46 x 159 mm |
| ainnt                             |  | MA853A transmitter: 90 g<br>R850A receiver: 0,95 kg                      |

### Accessories for microphones and microphone bases



#### S1

Jointed microphone support, can be screwed onto telescopic table-top or floor bases.



### B160

Table-top base for MC30-GN microphones, complete with shielded cable

(L) 100 cm. Size: Ø 4.5 cm; (H) 4.2 cm.



### 27/59

Adaptor for screwing supports S1 and S10 onto the pins of telescopic bases with M12 x 1 or 3/8" threads.



#### **S10**

Same features as the S1, with vibrationdamping elastic body.



### B60-N

Chromium-plated ring-nut for table-top mounting, black. Provisions for using F5-N or F11-C flexible stems.

Dimensions: Ø 4.5 cm.



### B70-N

Chromium-plated ring-nut for table-top mounting, black. Provisions for using F5-N or F11-C flexible stems.

Dimensions: Ø 6.5 cm.



Jointed support for microphones and wireless microphones with spring-type seal.



Cast-iron table-top base, black, for F5-N and F11-C flexible stems.



## Accessories for microphone bases





### B13-N

Floor stand, complete with telescopic rod and folding tripod. With adjustable height and microphone boom. Height: 92÷152 cm

Height: 92÷152 cm Base spread: 70 cm Weight: 2.5 kg

#### B20-N

Floor stand with circular cast metal supporting structure. Telescopic rod with adjustable height and painted black tubular metal.

Height: 95÷175 cm Base width: 30 cm Weight: 4 kg



#### F5- N

Flexible support with threaded (16x1) male and female ends. To be used between the B12, B60-N and B70 and the S1, S8 and S10 supports. Length 40 cm. Dia 14 mm. Black, without cable.



#### B116-B

Table-top base in black cast-iron, with chromiumplated telescopic rod, adjustable from 37 to 60 cm. For microphone supports S1, S8 and S10.

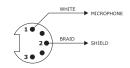


### MC30-GN

Electret microphone with a cardioid polar response and flexible support. It's equipped with a 5-poles DIN male connector. It is possible to use with AC14-B preamplifier card.

Length: 44 cm

Frequency response: 100÷20000 Hz Sensitivity: -67 dBV/µbar. Impedance: 680  $\Omega$ 





#### F11-C

Flexible support, with microphone XLR socket, balanced shielded cable (1.1 m) with XLR plug. L.: 40 cm. Dia.: 14 mm.



### AC14-B

Pre-amplifier module for dynamic and electret microphones. Screw connectors. Suitable to install into standard electric box (e.g. 27/901). Balanced audio output. Sensitivity and output signal level can be adjusted. It has provisions for connection to a LED and a push-button activation.

Power supply: 12/24 Vdc Dimensions: 74 x 50 x 10 mm

| CV2002     | CAT5e SF/UTP shielded cable, length 2 m, with RJ45 connectors                 |
|------------|---|
| CV2005     | CAT5e SF/UTP shielded cable, length 5 m, with RJ45 connectors                 |
| CV2010     | CAT5e SF/UTP shielded cable, length 10 m, with RJ45 connectors                |
| 31/142-100 | CAT5e SF/UTP shielded cable, 100 m roll                                       |
| 31/2 -100  | Shielded microphone cable (2 wires + shield), 100 m roll                      |
| 31/84-100  | Shielded cable (2 wires and 2 wires + shield), 100 m roll                     |
| 31/65-250  | CEI 20-22 II cable, (3 wires + 1 shielded wire), 250 m roll                   |
| CV15       | 5 m microphone extension cable, complete with male and female XLR connectors  |
| CV24       | 10 m microphone extension cable, complete with male and female XLR connectors |
| CV27       | 1 m shielded cable, complete with 5-pole DIN connectors                       |
| CV28       | 1 m shielded cable, complete with 5-pole DIN and phono RCA connectors         |
| CV33       | 1,5 m shielded cable, complete with phono RCA connectors                      |
| CV37       | 1,5 m cable DB9/CAT5 adaptor (PMB106-G and PMB112-G microphone station units) |

# Speaker units

Thanks to the variety of models and characteristics of PASO speaker units, it is easy to find just the right model and the most suitable for each and every application and/or environment.

ISTITUTO DI RICERCHE E COLLAUDI

CERTIFICATO DI CONFORMITÀ CE EC CERTIFICATE OF CONFORMITY

TRX20-EN - C86/20-EN - C48/12-EN - C48/6-2EN - C36/6-EN - C37/6-EN

PASO S.P.A.



# Wall-mounting speakers



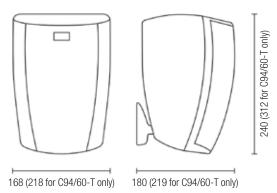
### C94 range



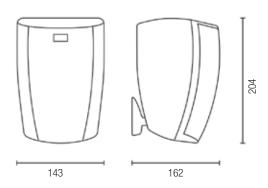


**C94** sound speakers have been created and designed in Italy. Their exclusive and elegant design allows the loudspeakers to be used for any installations and environment, keeping the same high quality sound throughout. The C94 range, made of ABS with a front metal grille, utilizes a compact two-way system guaranteeing high performances, wide dynamics, high fidelity sound reproduction and high voice intelligibility. C94 speakers are equipped with an exclusive fully adjustable support bracket for easy installation, to cut costs and save installation time. The bracket may be attached to the wall prior to installing the loudspeaker and is provided with a safety cable. Connection to the loudspeakers is via plug in "Euroblock" connector and adjustment of loudspeaker output is made via screwdriver adjustable switch.

| C94/30-T  | 30 W, two-way, bass-reflex, white |
|-----------|-----------------------------------|
| C94/30-TN | 30 W, two-way, bass-reflex, black |
| C94/60-T  | 60 W, two-way, bass-reflex, white |



| C94/15-T  | 15 W, two-way, bass-reflex, white |
|-----------|-----------------------------------|
| C94/15-TN | 15 W, two-way, bass-reflex, black |



| MODEL                        | C94/15-T         | C94/15-TN               | C94/30-T                         | C94/30-TN         | C94/60-T            |  |
|------------------------------|------------------|-------------------------|----------------------------------|-------------------|---------------------|--|
| Rated power                  | 15 W (30 V       | 15 W (30 W / 8 Ω)       |                                  | 30 W (60 W / 8 Ω) |                     |  |
| Adjustable power             | 15 / 7,5 / 4     | 1/2W                    | 30 / 20 / 18                     | 5 / 10 W          | 60 / 45 / 30 / 15 W |  |
| Impedance                    |                  |                         | 8Ω                               |                   |                     |  |
| Characteristics              |                  |                         | ABS body, metal front grille     |                   |                     |  |
| Loudspeakers                 |                  | 1Wf + 1Tw (bass-reflex) |                                  |                   |                     |  |
| Sound pressure SPL (Pnom/1m) | 100 d            | 100 dB                  |                                  | 106 dB            |                     |  |
| Efficiency (1W/1m)           | 85 df            | 85 dB                   |                                  | 87,5 dB           |                     |  |
| Frequency response           | 100 ÷ 15.0       | 100 ÷ 15.000 Hz         |                                  | 000 Hz            | 70 ÷ 20.000 Hz      |  |
| Dispersion angle @2kHz       | 120°             | )                       | 100                              | 0                 | 90°                 |  |
| Mounting                     |                  |                         | Wall mounting bracket (supplied) |                   |                     |  |
| Colour                       | White (RAL 9016) | Black                   | White (RAL 9016)                 | Black             | White (RAL 9016)    |  |
| Dimensions (W x H x D)       | 143 x 204 x      | 143 x 204 x 162 mm      |                                  | 180 mm            | 218 x 312 x 219 mm  |  |
| Weight                       | 1,5 k            | 1,5 kg                  |                                  | 2,3 kg            |                     |  |

# Wall-mounting speakers

## C33 "FLAT" range

Flat two-way speaker unit for wall-mounting, in white ABS with metal front grille. Elegant and discreet design with good reproduction of both speech and music. Suitable for any indoor environment. Wall-mounting is quick and easy. A transformer for connecting to constant-voltage lines is included in the supply.

**C33/10-T** 10 W, two-way, "FLAT"





| MODEL                        | C33/10-T                     |
|------------------------------|------------------------------|
| Rated power                  | 10 W                         |
| Adjustable power             | 10/5W                        |
| Impedance                    | ·                            |
| Characteristics              | ABS body, metal front grille |
| Loudspeakers                 | 1 Wf + 1 Tw                  |
| Sound pressure SPL (Pnom/1m) | 99 dB                        |
| Efficiency (1W/1m)           | 89 dB                        |
| Frequency response           | 200 ÷ 18.000 Hz              |
| Dispersion angle @2kHz       | 90°                          |
| Mounting                     | Screw                        |
| Colour                       | White                        |
| Dimensions (W x H x D)       | 185 x 272 x 46 mm            |
| Weight                       | 0,92 kg                      |



### C36 "CANDY" range • ABS UL 94-VO



C36/6-EN Mono-directional, 6 W, EN 54-24, ABS UL94-V0
C36/6-T Mono-directional, 6 W, ABS UL94-V0

The speaker units of the **C36** range, featuring a refined and modern design and ideal for both background music and speech, have been designed specifically for schools, hospitals, waiting rooms, hotels, shops, offices and restaurants. They can be either wall-mounted or ceiling-mounted. The housing is made of white self-extinguishing ABS (UL94-V0) with a metal front grille. Each unit has a ceramic terminal block and a thermal fuse.

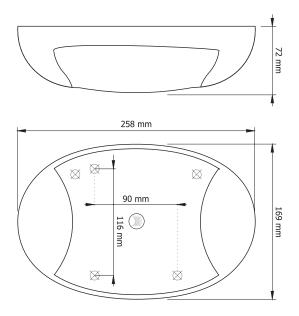
Models **C36/6-EN** and **C36/6-2EN** were developed specifically for use in emergency and evacuation systems (VES). They are certified according to **EN 54-24:2008** since each unit is equipped with a ceramic terminal block and a thermal fuse to guarantee safety of the line connecting the loudspeakers in the event that one or more of the speaker units connected to it are damaged by fire.

**C36/6-T** and **C36/6-EN** speaker units each have a loudspeaker with a transformer for constant-voltage lines (50, 70 and 100 V); the output power is adjustable (6, 3 or 1.5 W).



C36/6-2T Bi-directional, 3+3 W

**C36/6-2EN** Bi-directional, 3+3 W, EN 54-24, ABS UL94-VO



Two-directional **C36/6-2T** speaker units are suitable in particular for installing in transit areas and corridors. Each unit has two 3 W loudspeakers, again with a transformer for constant-voltage lines (50, 70 and 100V) and the output power is adjustable to 6, 3 or 1.5 W.

| MODEL                        | C36/6-T           | C36/6-EN            | C36/6-2T               | C36/6-2EN           |
|------------------------------|-------------------|---------------------|------------------------|---------------------|
| Rated power                  | 6 W               |                     | 6 W (3+3 W)            |                     |
| Adjustable power             |                   | 6/3/                | 1,5 W                  |                     |
| Characteristics              |                   | UL94-V0 ABS boo     | ly, metal front grille |                     |
| Loudspeakers                 | 1 broadbar        | nd                  | 2 broadl               | oand                |
| Sound pressure SPL (Pnom/1m) | 100 dB            |                     | 93 dB                  |                     |
| Efficiency (1W/1m)           | 92 dB             | 92 dB 86 dB         |                        | В                   |
| Frequency response           | 180 ÷ 10.000      | ) Hz                | 130 ÷ 14.000 Hz        | 170 ÷ 16.000 Hz     |
| Dispersion angle @2kHz       | 110°              |                     | 150° (@4kHz)           | Or. 35° / Ver. 120° |
| Mounting                     |                   | Wall or ceiling mou | unting with screws     |                     |
| Colour                       | White             |                     |                        |                     |
| Dimensions (W x H x D)       | 258 x 169 x 72 mm |                     |                        |                     |
| Weight                       | 0,8 kg            | 0,8 kg              |                        | 0,95 kg             |

## Wall-mounting speakers

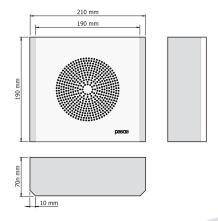


### C37 range • Metal



**C37/6-EN** 6 W, EN 54-24 certified, metal

The **C37/6-EN** speaker unit is certified for compliance with **EN 54-24:2008** (certif. no. **0068-CPD-033/2013**), and was developed specifically for use in a vast range of applications. It can be wall or ceiling-mounted. It has a particularly tough housing made of metal sheeting, with a matte white powder paint finish. It has a ceramic terminal block and a thermal fuse to ensure safety of the line connecting the loudspeakers in the event that one or more of the speaker units connected to it are damaged by fire.



### C34 range

The speaker units of the **C34** range for interiors consist of a shockproof plastic housing with a white UV-stabilised finish, fitted with a metal grille of the same colour.

These units have loudspeakers with a broad frequency response for excellent reproduction of background music and speech. Both models have transformers for constant-voltage lines. The **C34-RB** speaker unit also has an external step-by-step volume control.

| C34-TB | 6 W, wall-mounting speaker |  |
|--------|----------------------------|--|
| C34-RB | 6 W, with volume control   |  |



| MODEL                        | C37/6-EN                             | C34-TB  | C34-RB |  |
|------------------------------|--------------------------------------|---|--------|--|
| Rated power                  |                                      | 6 W   |        |  |
| Adjustable power             | 6/3/1,5\                             | 6/3/1,5W 6/3/1  |        |  |
| Characteristics              | Metal                                | Metal UV-stabilised shockproof plastic housing, metal fro |        |  |
| Loudspeakers                 |                                      | 1 broadband   |        |  |
| Sound pressure SPL (Pnom/1m) | 99 dB                                | 100 dB  |        |  |
| Efficiency (1W/1m)           | 91 dB                                | 93 dB   |        |  |
| Frequency response           | 150 ÷ 15.000 Hz                      | 150 ÷ 15.000 Hz 180 ÷ 16.000 Hz                           |        |  |
| Dispersion angle @2kHz       | 90°                                  | 110°  |        |  |
| Mounting                     | Wall or ceiling mounting with screws | Wall or ceiling mounting with screws Screws               |        |  |
| Colour                       | White                                | White White   |        |  |
| Dimensions (W x H x D)       | 210 x 190 x 70 mm                    | 210 x 190 x 70 mm 218 x 216 x 120 mm                      |        |  |
| Weight                       | 1,6 kg 1,24 kg                       |   | ,24 kg |  |

## Flush-mounting speakers



### C41 range





Rectangular two-way speaker units for flush-mounting on walls or in false ceilings. Their performance is excellent for reproducing music and speech. They are ideal in refined environments such as wellbeing centres, hotels and conference halls. They are white and made of ABS with a metal front grille. Each speaker unit has a transformer for connection to constant-voltage lines. They are equipped with special hooks for enabling direct installation in false ceilings. For easy flushmounting in a wall, (optional) AC941 boxes should be used.

10 W, two-way, flush-mounting (wall/false ceiling)

#### **ACCESSORIES**

AC941 Wall-mounting box (210 x 155 x 70 mm)

### C44 range

The ideal application for speaker units of the C44 range is in hospitals, hotels, offices, schools, shops or anywhere where flush-mounting and a discreet and elegant appearance are required. Each unit is made of self-extinguishing plastic material UL94-VO with a metal front grille. Two models are available, with an output power of 6 and 20 W with a line transformer respectively. The (optional) **AC91** box for flush-mounting makes wall-mounting easy and quick.



C44/12-EN

Models C44/12-EN were designed specifically for use in emergency and evacuation systems (VES). Each unit has a ceramic terminal block and a thermal fuse. They are certified for compliance with EN 54-24:2008. The metal box for flush-mounting makes this operation easy and quick, with spring-mounted hooks (included in the supply).



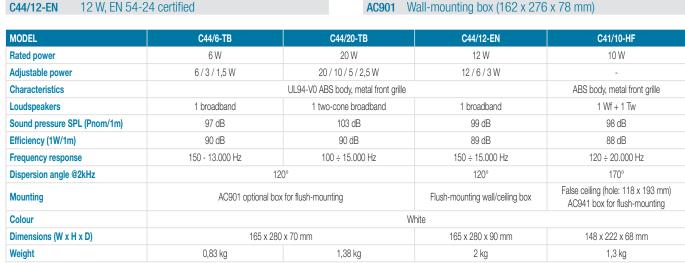
20 W flush-mounting

### **ACCESSORIES**

C44/6-TB

**AC901** Wall-mounting box (162 x 276 x 78 mm)

6 W flush-mounting





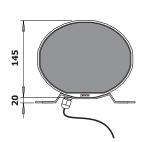
### C86 range • Vandal-proof housing

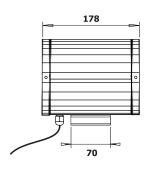


C86/20-TW 20 W, aluminium vandal-proof housing, IP65

C86/20-EN 20 W, EN54-24 certified

The models with the suffix **-EN** were designed specifically for use in emergency and evacuation systems (VES). Each unit has its own thermal fuse that excludes the loudspeaker in the event of overheating plus a flame-proof connecting cable (80 cm in length); they are certified for compliance with EN 54-24:2008 (cert. No. 0068-CPR-033/2013 and 0068-CPR-039/2016). The C86/20-2TW and C86/20-2EN two-directional sound projectors are particularly suitable for installation in transit areas or corridors.

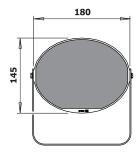


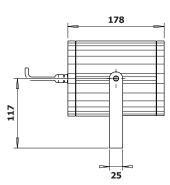


The vandal-proof sound projectors of the **C86** range feature a grey aluminium housing and a yellow-galvanised front grille, tropicalised and stove-enamelled. Thanks to the particularly tough and sealed design, class of protection IP65, this range is especially suitable for use in particularly difficult environmental conditions.

They have wide-band loudspeakers featuring a high level of acoustic efficiency for excellent reproduction of both voice and music. Each unit is supplied with a swivelling fixing bracket that slides along the housing and a transformer for 100/70/50 V constant-voltage lines with an output power adjustable to 20-10-5 W.

(cert. No. 0068-CPR-039/2016).







Bi-directional 10+10 W, vandal-proof housing, IP65 C86/20-2TW

Bi-directional 10+10 W, EN54-24 certified

| MODEL                        | C86/20-TW                               | C86/20-EN   | C86/20-2TW                         | C86/20-2EN                                     |  |
|------------------------------|---|---|------------------------------------|--|--|
| Rated power                  |   | 20 W  |                                    | 0+10 W)  |  |
| Adjustable power             |   | 20/10/5 W   |                                    |  |  |
| Characteristics              |   | Aluminium housing and                               | d a stainless steel front grille   |  |  |
| Loudspeakers                 | 1 br                                    | roadband  | 2 broa                             | adband   |  |
| Sound pressure SPL (Pnom/1m) | 1                                       | 05 dB   | 100 dB                             |  |  |
| Efficiency (1W/1m)           | 9                                       | 92 dB   |                                    | 87 dB  |  |
| Frequency response           |   | 150 ÷   | 15.000 Hz                          |  |  |
| Dispersion angle @2kHz       |   | 100°  | 2 x 110°                           | 2 x 140°                                       |  |
| Protection degree            |   |   | P 65                               |  |  |
| Mounting                     | Swivelling bracket and connecting cable | Swivelling bracket and flame-proof connecting cable | Fixed bracket and connecting cable | Fixed bracket and flame-proof connecting cable |  |
| Colour                       |   | Light grey body, black front grille                 |                                    |  |  |
| Dimensions (W x H x D)       |   | 180 x 145 x 178 mm                                  |                                    |  |  |
| Weight                       |   | 2,4 kg  |                                    | 2,90 kg  |  |

C86/20-2EN

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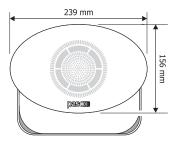
## C56 "SUNFLOWER" range

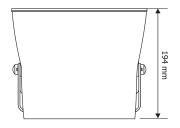


High acoustic efficiency and an original and modern design with an ellipse-shaped front are the particular features of this range of sound projectors, known as the **"SUNFLOWER"** model. The units of the **C56** range are available in versions with an output power of 6 W or 12 W RMS, with a white self-extinguishing ABS structure and a transformer for constant-voltage lines. Thanks to their elegant finish, these speaker units are also suitable for places with special interior decoration requirements such as shops, boutiques, outlets, offices and so on. C56 sound projectors have guides that slide along the housing for securing the supporting bracket, thus ensuring handy mounting and correct positioning of the unit.

| C56/6-T   | 6 W, ellipse-shaped sound projector        |
|-----------|--|
| C56/12-TW | 12 W, ellipse-shaped sound projector, IP55 |







| MODEL                        | C56/6-T              | C56/12-TW                               |  |  |
|------------------------------|----------------------|---|--|--|
| Rated power                  | 6 W                  | 12 W                                    |  |  |
| Adjustable power             | 6/3/1,5 W            | 12 / 6 / 3 W                            |  |  |
| Characteristics              | Self-extingu         | uishing ABS                             |  |  |
| Loudspeakers                 | 1 broa               | dband                                   |  |  |
| Sound pressure SPL (Pnom/1m) | 96 dB                | 99 dB                                   |  |  |
| Efficiency (1W/1m)           | 88 dB                |   |  |  |
| Frequency response           | 160 ÷10.000 Hz       | 160 ÷ 12.000 Hz                         |  |  |
| Dispersion angle @2kHz       | 9                    | 0°                                      |  |  |
| Protection degree            | IP 44                | IP 55                                   |  |  |
| Mounting                     | Swivelling bracket a | Swivelling bracket and connecting cable |  |  |
| Colour                       | White                |   |  |  |
| Dimensions (W x H x D)       | 239 x 156 x 194 mm   |   |  |  |
| Weight                       | 1,5 kg               | 1,9 kg                                  |  |  |

### C55 range

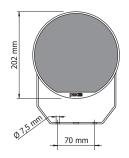


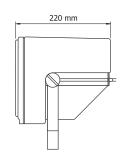
Sound projectors are used mainly for directing the sound beam and concentrating it towards a specific area and can be used for innumerable applications. The **C55-TW** uses a wide-band loudspeaker featuring very high acoustic efficiency for excellent reproduction of both voice and music, and it is often used for broadcasting sound along main roads and promenades for tourists.

**New Arbat Street in Moscow** – sound-broadcasting system featuring C55-TW speaker units. This is the most important shopping street in Moscow. It is over a kilometre long and offers all sorts of bars, clubs and restaurants.

The sound projectors of the **C55** range are made of pale grey UV-stabilised ABS, self-extinguishing to UL94-VO. Each unit has a black chromium-plated stainless steel front grille. It has a constant-voltage line transformer and a swivelling fixing bracket that slides along the housing. This range is characterised by excellent reproduction of both music and speech. There are models featuring a high sound pressure to ensure a high acoustic performance. Models are available for installation in covered areas **(C55)** as well as other sealed units **(C55-S, C55-TW)** that can also be installed outside. **C55/40-EN** model has been developed specifically for use in emergency and evacuation systems **(VES)** and each has its own ceramic terminal strip and thermal fuse (cert. No. **0068-CPR-039/2016**).

| C55       | 20 W sound projector                    |
|-----------|---|
| C55-S     | 20 W sound projector, IP66              |
| C55-TW    | 40 W sound projector, IP65              |
| C55/40-EN | 40 W sound projector, EN54-24 certified |







| MODEL                        | C55                                     | C55-S                    | C55-TW                             | C55/40-EN       |  |
|------------------------------|---|--------------------------|------------------------------------|-----------------|--|
| Rated power                  | 20                                      | W                        | 40 W                               | 1               |  |
| Adjustable power             | 20 / 10 / 5 W                           |                          | 40 / 20 / 10 / 5 W - 16 Ω          | 40 / 20 / 10 W  |  |
| Characteristics              |   | Self-extinguishing ABS b | oody, stainless steel front grille |                 |  |
| Loudspeakers                 |   | 1 br                     | roadband                           |                 |  |
| Sound pressure SPL (Pnom/1m) | 102 dB                                  | 100 dB                   | 103 dB                             | 104 dB          |  |
| Efficiency (1W/1m)           | 89 dB                                   | 87 dB                    |                                    | 88 dB           |  |
| Frequency response           | 150 ÷ 12.000 Hz                         | 150 ÷ 6.500 Hz           | 100 ÷ 19.0                         | 100 ÷ 19.000 Hz |  |
| Dispersion angle @2kHz       | 70                                      | )°                       | 110°                               | 90°             |  |
| Protection degree            | IP 44                                   | IP 66                    |                                    |                 |  |
| Mounting                     | Swivelling bracket and connecting cable |                          |                                    |                 |  |
| Colour                       | Light grey body, black front grille     |                          |                                    |                 |  |
| Dimensions (W x H x D)       |   | Ø 200 x 220 mm           |                                    |                 |  |
| Weight                       |   | 3 kg                     |                                    |                 |  |

### C48 range

C48/6-2EN



**C48/12-EN** 12 W, EN 54-24 certified, mono-directional

6+6 W, EN 54-24 certified, bi-directional



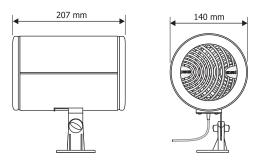
C48/12-TW 12 W, mono-directional sound projector, IP65

**C48/12-2TW** 12+12 W, bi-directional sound projector, IP65

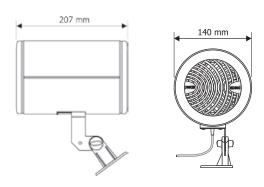
Thanks to the use of excellent wide-band loudspeakers, the sound projectors of the **C48** range are suitable for reproducing both music and speech, and can be used both indoors and outside. Contained in a cylindrical structure made of white self-extinguishing ABS (to UL94-V0), each unit is supplied with a line transformer and with a swivelling bracket to facilitate wall and/or ceiling mounting. Designed to obtain sound emission with very good directivity, they are suitable mainly for installation in transit areas, corridors and in particularly large areas.

The models with the suffix **-EN** were designed specifically for use in emergency and evacuation systems (VES). Each unit has its own thermal fuse that excludes the loudspeaker in the event of overheating plus a flame-proof connecting cable (80 cm in length); they are certified for compliance with **EN 54-24:2008** (cert. No. **0068-CPR-033/2013**). The **C48/12-2TW** and **C48/6-2EN** two-directional sound projectors are particularly suitable for installation in transit areas or corridors.

The sound projectors with the suffix **-TW** are watertight, class of protection IP65, and can therefore also be used in open-air installations.



C48/6-2EN • C48/12-2TW



C48/12-EN • C48/12-TW

| MODEL                        | C48/12-TW   | C48/12-EN    | C48/12-2TW        | C48/6-2EN   |
|------------------------------|---|--------------|-------------------|---|
| Rated power                  |   | 12 W         | 24 W (12+12 W)    | 12 W (6+6 W)  |
| Adjustable power             | 12/6/3W   |              | 24 / 12 / 6 / 3 W | 12/6/3W   |
| Characteristics              |   | UL94-V0      | ABS               |   |
| Loudspeakers                 | 1 b   | roadband     | 2 bro             | adband  |
| Sound pressure SPL (Pnom/1m) | 99 dB   | 99 dB 101 dB |                   | 99 dB   |
| Efficiency (1W/1m)           | 88 dB   | 90 dB        | 87 dB (*)         | 88 dB   |
| Frequency response           | 180 ÷ 15.000 Hz 170 ÷ 13.000 Hz   |              | 170 ÷12.000 Hz    | 170 ÷14.000 Hz                                      |
| Dispersion angle @2kHz       | 160°  | 100°         | 140° (*)          | 120°  |
| Protection degree            | IP 65   | IP 44        | IP 65             | IP 44   |
| Mounting                     | Swivelling bracket Swivelling bracket and flame-proof Swivelling bracket and connecting cable connecting cable and connecting cable |              | · ·               | Swivelling bracket and flame-proof connecting cable |
| Colour                       | White   |              |                   |   |
| Dimensions (W x H x D)       | Ø 140 x 207 mm  |              |                   |   |
| Weight                       | 1,7 kg  |              | 2,2 kg            | 2 kg  |

## Sound columns

### C400 "SLIM LINE" range

C440-T



A compact size and high acoustic performance are the typical features of the sound columns of the **C400** range. Each column consists of a weight-bearing structure made of extruded aluminium painted pale grey, a solid front grille and sealed shockproof end panels. Each column has a swivelling support for quick securing to a wall and a constant-voltage line transformer. Connections to the various sockets are made via the cable coming out of the column. A pair of sliding guides running along the whole height of the rear of the column enables the S4-B swivelling support included in the supply to be positioned so as to simplify mounting. The acoustic properties of this sound column are characterised by great intelligibility of speech and excellent reproduction of music, in addition to the limited size. This means that they are the ideal choice for places that are difficult from the acoustic point of view, where uniform distribution of the sound and excellent directivity are required. Model **C451-TW** is also suitable for outdoor use in poor weather conditions. **C420-EN**, **C430-EN** and **C440-EN** models have been developed specifically for use in emergency and evacuation systems (VES) and each has its own ceramic terminal strip and thermal fuse. **EN54-24:2008** (certificate no. **0068-CPR-039/2016**).

| C420-T  | Sound column, 20 W      | C430-T         | Sound column, 30 W       |
|---------|-------------------------|----------------|--------------------------|
| C440-T  | Sound column, 40 W      | C451-TW        | Sound column, 50 W, IP66 |
| C420-EN | Sound column, 50 W, EN5 | 4-24 certified |                          |
| C430-EN | Sound column, 50 W, EN5 | 4-24 certified |                          |
| C440-EN | Sound column, 50 W, EN5 | 4-24 certified |                          |



Using an M6x20 grub screw, as shown in the figure, it is possible to mount two sound columns (of the same type) with one on top of the other; this gives rise to a single sound column of twice the height, with an opening angle on the vertical plan that is further reduced.

#### **C402-T** 6 W, two-way speaker



In the **C400** range, the two-way model **C402-T** should be pointed out. It features a compact size and high-quality reproduction. It has the same structure as the other models of the C400 range but a swivelling bracket for fixing it is included in the supply.

### **ACCESSORIES**



#### **S4-B** Wall-mounting jointed support

The **S4-B** jointed support is included in the supply. This enables the column to be secured to a wall and then pointed in the required direction.

| MODEL                        | C402-T               | C420-T              | C430-T              | C440-T              | C451-TW                | C420-EN             | C430-EN             | C440-EN             |
|------------------------------|----------------------|---------------------|---------------------|---------------------|------------------------|---------------------|---------------------|---------------------|
| Rated power                  | 6 W                  | 20 W                | 30 W                | 40 W                | 50 W                   | 20 W                | 30 W                | 40 W                |
| Adjustable power             | 6/3/1,5W             | 20 / 10 / 5 W       | 30 / 15 / 7,5 W     | 40 / 20 / 10 W      | 50 / 25 / 12,5 W       | 20 / 10 / 5 W       | 30 / 15 / 7,5 W     | 40 / 20 / 10 W      |
| Loudspeakers                 | 1 Wf + 1 Tw          | 4 Wf + 1 Tw         | 6 Wf + 1 Tw         | 7 Wf + 2 Tw         | 4 Wf                   | 4 Wf + 1 Tw         | 6 Wf + 1 Tw         | 7 Wf + 2 Tw         |
| Characteristics              |                      | Aluminium structure |                     |                     |                        |                     |                     |                     |
| Sound pressure SPL (Pnom/1m) | 101 dB               | 105 dB              | 110                 | ) dB                | 109 dB                 | 105 dB              | 108 dB              | 109 dB              |
| Efficiency (1W/1m)           | 94 dB                | 92 dB               | 95 dB               | 94 dB               | 92                     | dB 93 dB            |                     | dB                  |
| Frequency response           | 200 ÷18.000 Hz       | 180 ÷ 16            | 6.000 Hz            | 150 ÷14.000 Hz      | 120 ÷15.000 Hz         | 180 ÷ 10            | 6.000 Hz            | 150 ÷14.000 Hz      |
| Dispersion angle @2kHz       | Or. 210° - Ver. 140° | Or. 160° - Ver. 30° | Or. 160° - Ver. 20° | Or. 160° - Ver. 13° | Or. 160° - Ver. 30°    | Or. 150° - Ver. 35° | Or. 150° - Ver. 20° | Or. 140° - Ver. 20° |
| Protection degree            | IP 44                | IP 44               | IP 44               | IP 44               | IP 66                  |                     | IP 44               |                     |
| Mounting                     | Supplied bracket     |                     |                     | S4-I                | B supplied jointed sup | pport               |                     |                     |
| Colour                       |                      | Light grey          |                     |                     |                        |                     |                     |                     |
| Dimensions (W x H x D)       | 95 x 182 x 78 mm     | 95 x 520 x 80 mm    | 95 x 725 x 80 mm    | 95 x 890 x 80 mm    | 95 x 520 x 80 mm       | 95 x 520 x 80 mm    | 95 x 725 x 80 mm    | 95 x 890 x 80 mm    |
| Weight                       | 1,2 kg               | 3,5 kg              | 4,8 kg              | 5,65 kg             | 2,3 kg                 | 3,5 kg              | 4,8 kg              | 5,65 kg             |

### C7200-EN sound column

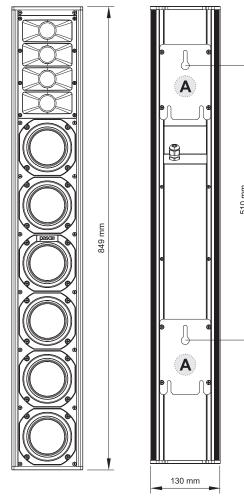


The **C7200-EN** sound column is extremely compact and elegant, and features a refined and functional design. Its uncompromising quality enables it to meet the requirements of the most demanding installations. The speaker unit is equipped with six 4" woofers and four 1" tweeters. The cylindrical wave-front of this sound column makes for the pleasant effect of a very powerful and precise forward-projected sound, with none of the typical reverberation of conventional speaker units that excite reflections within the environment, directing acoustic energy where it is not needed. The very narrow and elongated shape enables this sound column to fit into any environment in a very discret manner that is not invasive at all.

The C7200-EN sound column is a particular acoustic speaker unit designed for obtaining very precise directivity characteristics. It is ideal for installing in environments subject to reverberation, increasing the ratio of direct sound to reflected sound so as to improve the intelligibility of both music and speech. It has a powder-painted extruded aluminium load-bearing structure. The length of the line array can be extended by adding other modules so as to increase the SPL and restrict the vertical radiation lobe.

The C7200-EN column can be configured either in the constant-impedance mode or in the constant voltage mode by means of a line transformer. There is an optional accessory, the **AC7200**, for wall-mounting the C7200-EN column.

The C7200-EN sound column was developed for use in emergency and evacuation systems (VES); a thermal fuse that excludes the loudspeaker in the event of overheating and a flameproof connecting cable (90 cm in length) are included in the supply. This column is certified for compliance with EN 54-24:2008 (certificate no. **0068-CPR-058/2013**).





C7200-EN 100 W sound column, EN 54-24 certified

| MODEL                        | C7200-EN                              |
|------------------------------|---------------------------------------|
| Rated power                  | 100 W                                 |
| Adjustable power             | 100 / 50 W - 8 Ω                      |
| Loudspeakers                 | 6 Wf + 4 Tw                           |
| Characteristics              | Aluminium structure                   |
| Sound pressure SPL (Pnom/1m) | 110 dB                                |
| Efficiency (1W/1m)           | 91 dB                                 |
| Frequency response           | 140 ÷ 20.000 Hz                       |
| Dispersion angle @2kHz       | Or. 120° - Ver. 15°                   |
| Protection degree            | IP 32                                 |
| Mounting                     | AC7200 optional wall-mounting support |
| Colour                       | White RAL 9016                        |
| Dimensions (W x H x D)       | 130 x 849 x 133 mm                    |
| Weight                       | 8 kg                                  |

| ACCESSORII | ES                            |  |
|------------|-------------------------------|--|
| AC7200     | Wall-mounting jointed support |  |
|            |                               |  |

### Metal horns



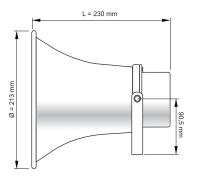
All models with the suffix **-EN** have been designed for use in safety and evacuation systems; each unit is equipped with a thermal fuse that isolates the speaker unit from the system in the event of overheating and with a flame-proof connecting cable (80 cm in length), and they are certified for compliance with **EN 54-24:2008** (certificate no. 0068-CPR-033/2013). The TRX20-V was designed for use in special systems (railways, underground railways etc.), and in addition to a thermal fuse and a flame-proof connecting cable, it also has a line transformer for insulation up to 4 kV.

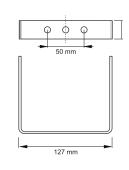
The **TR10-TW** horn-type speaker unit has a die-cast aluminium housing and a stainless steel bracket and screws, while the horn is made of shockproof ABS. It has a driver unit with a line transformer and a rear switch for selecting the operating power (four positions).

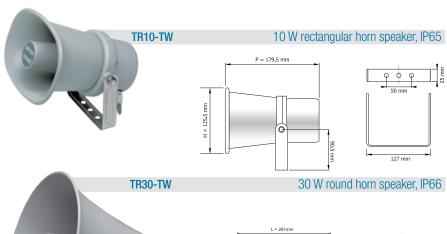
The sealed design (class of protection IP66) and the materials used make the TR30-TW speaker unit particularly suitable for use even in unfavourable climatic conditions, in a saline or polluted atmosphere. It has a driver unit with a line transformer and a rear switch for selecting the operating power (five positions).

The horn speaker units of the **TRX20** range, featuring a watertight design and intended to guarantee the highest possible level of sound pressure, are particularly suitable for outdoor use even in difficult weather conditions. The housing is made of die-cast aluminium with stainless steel screws and brackets, while the horn is made of aluminium sheeting. Each model has a driver unit with a line transformer, a rear switch for selecting the operating power (five positions) and a terminal for correct connection to earth.

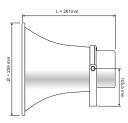
| TRX20-TW | 20 W round horn speaker, IP66                  |
|----------|--|
| TRX20-V  | 20 W horn speaker, 4 kV insulation transformer |
| TRX20-EN | 20 W horn speaker, EN54-24 certified           |

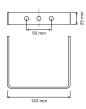












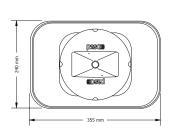
| MODEL                        | TRX20-TW                                | TRX20-EN | TRX20-V     | TR10-TW                                      | TR30-TW                 |  |
|------------------------------|---|----------|-------------|--|-------------------------|--|
| Rated power                  | 20 W                                    |          |             | 10 W   | 30 W                    |  |
| Adjustable power             | 20 / 15 / 10 / 5 / 2,5 W                |          | W           | 10/5/3/1W                                    | 30 / 20 / 15 / 10 / 5 W |  |
| Characteristics              | Die-cast aluminium body, aluminium horn |          | ninium horn | Die-cast aluminium body, shockproof ABS horn | Aluminium               |  |
| Loudspeakers                 |   |          |             | Supplied driver unit                         |                         |  |
| Sound pressure SPL (Pnom/1m) | 116 dB                                  |          |             | 112 dB                                       | 122 dB                  |  |
| Efficiency (1W/1m)           | 103 dB                                  |          |             | 102 dB                                       | 107 dB                  |  |
| Frequency response           | 500 ÷ 5.000 Hz                          |          |             | 450 ÷ 10.000 Hz                              | 350 ÷ 6.000 Hz          |  |
| Dispersion angle @2kHz       | 70°                                     |          |             | Or. 100° - Ver. 90°                          | 70°                     |  |
| Protection degree            | IP 66                                   |          |             | IP 65  | IP 66                   |  |
| Mounting                     | Swivelling bracket and connecting cable |          |             |  |                         |  |
| Colour                       |   |          |             | Light grey                                   |                         |  |
| Dimensions (W x H x D)       | Ø 213 x 230 mm                          |          |             | 176 x 126 x 180 mm                           | Ø 259 x 261 mm          |  |
| Weight                       | 1,8 kg                                  |          |             | 1,2 kg                                       | 1,75 kg                 |  |

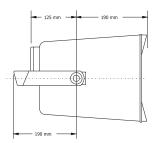


### Extended-range two-way horn



TR20-HF 16 W rectangular horn speaker
 TR40-HF 40 W rectangular horn speaker
 TR15HF-EN 15 W rectangular horn speaker, EN54-24 certified



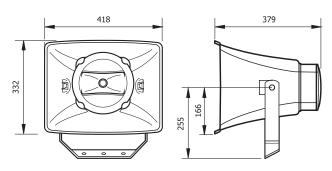


TR20-HF and TR40-HF horns are two-way speaker units featuring a high level of efficiency, a wide frequency response range and excellent power-handling capacity. The housing of the speaker unit is made of reinforced polypropylene, self-extinguishing according to UL94-VO. The particular shape of this speaker unit gives rise to practically constant and controlled coverage of the audio spectrum and makes it particularly suitable for any application in which the typical efficiency of horn-type speaker units must be accompanied by a pleasant tone colour and perfect intelligibility. The treble range is reproduced by a horn featuring constant directivity fed by a compression unit for the TR40-HF, and by a dome-type tweeter for the TR20-HF. The mediumbass range is reproduced in both models by a bent horn fed by a cone-shaped loudspeaker (mid-woofer). A cross-over filter separates the frequencies for the two loudspeakers- Thanks to the built-in repeating coil with sockets for adjusting the output power, these speaker units can be connected to constant-voltage sound-distribution lines (100-70-50 V); a 16  $\Omega$  connection is also available for low-impedance systems.

**TR15HF-EN** horn-speakers are fitted with fireproof cable according to UNI 9795 2010 (length 80 cm). This speaker unit has been developed specifically for use in emergency and evacuation systems (VES) and has its own thermal fuse. **EN54-24:2008** (certificate no. **0068-CPR-039/2016**).



TR30-HF 30 W rectangular horn speaker, IP66



The **TR30-HF** horn is a two-way speaker unit featuring high efficiency, a broad response range and good power-handling capacity. The type of construction and the materials used enable it to be used in outdoor applications even in extreme conditions, thanks to the IP66 class of protection. The housing of the speaker unit is made of reinforced polypropylene. The treble range is reproduced by a horn featuring constant directivity fed by a compression unit, while the medium-bass range is reproduced by a bent horn fed by a loudspeaker (mid-woofer) with a cone made of synthetic material. Thanks to the built-in repeating coil with sockets for adjusting the output power, these speaker units can be connected to 100V constant-voltage sound-distribution lines.

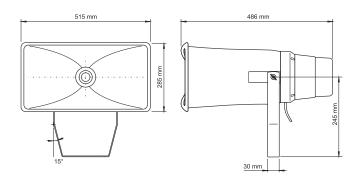
| MODEL                        | TR20-HF  | TR30-HF                | TR40-HF                   | TR15HF-EN           |  |  |
|------------------------------|--|------------------------|---------------------------|---------------------|--|--|
| Rated power                  | 16 W   | 30 W                   | 40 W                      | 15 W                |  |  |
| Adjustable power             | 16/8/4W-16Ω  | 30 / 15 / 7,5 / 3,75 W | 40 / 20 / 10 / 5 W - 16 Ω | 15/8/4/2/1 W - 16 Ω |  |  |
| Characteristics              | UL94-V0 reinforced polypropylene structure               |                        |                           |                     |  |  |
| Sound pressure SPL (Pnom/1m) | 116 dB   | 113 dB                 | 118 dB                    | 110 dB              |  |  |
| Efficiency (1W/1m)           | 102 dB   | 98 dB                  | 99 dB                     | 98 dB               |  |  |
| Frequency response           | 110 ÷ 20.000 Hz  | 150 ÷ 13.000 Hz        | 110 ÷ 17.000 Hz           | 160 ÷ 20.000 Hz     |  |  |
| Dispersion angle @2kHz       | Or. 45° - Ver. 80°                                       | Or. 35° - Ver. 65°     | Or. 45° - Ver. 80°        | Or. 30° - Ver. 60°  |  |  |
| Protection degree            | IP 44  | IP 66                  | IP 44                     |                     |  |  |
| Mounting                     | Swivelling bracket and connecting cable                  |                        |                           |                     |  |  |
| Colour                       | White  |                        |                           |                     |  |  |
| Dimensions (W x H x D)       | 335 x 240 x 315 mm 418 x 332 x 379 mm 335 x 240 x 315 mm |                        |                           |                     |  |  |
| Weight                       | 4,2 kg   | 5,7 kg                 | 6,2 kg                    | 4,2 kg              |  |  |

### TR1, TR2 and TR3 range





TR1-B, TR2-B and TR3-B exponential horns are made of grey Moplen. They are unbreakable and weather-proof. Each horn has a swivelling bracket for securing it in place and a rear cap able to contain a UT35 or UT60 impedance-type magneto-dynamic unit or a UT60-T unit with a 100V transformer, not included in the supply (refer to the appropriate technical table).

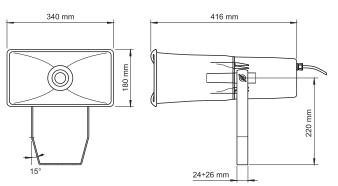


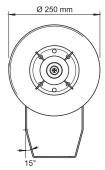
Rectangular exponential horn, IP65 TR2-B

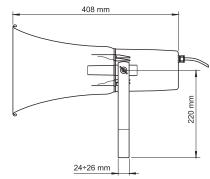
Round exponential horn, IP65 TR1-B











| MODEL                        | TR1-B                                   | TR2-B                                 | TR3-B   |  |  |
|------------------------------|---|---------------------------------------|---|--|--|
| Rated power                  | 35 W (UT35/16 Ω), 60 W (UT60-T/100 V)   |                                       | 35 W (UT35/16 Ω), 60 W (UT60/16 Ω), 60 W (UT60-T/100 V) |  |  |
| Characteristics              | UV reinforced polypropylene structure   |                                       |   |  |  |
| Sound pressure SPL (Pnom/1m) | 123 dB                                  | (UT35)                                | 125 dB (UT35)   |  |  |
| Efficiency (1W/1m)           | 108 dB                                  | (UT35)                                | 110 dB (UT35)   |  |  |
| Frequency response           | 350 ÷ 5000 Hz (UT35)                    |                                       |   |  |  |
| Dispersion angle @2kHz       | 50° Or. 70° - Ver.50° Or. 55° - Ver.40° |                                       | Or. 55° - Ver.40°                                       |  |  |
| Protection degree            | IP 65                                   |                                       |   |  |  |
| Mounting                     | Swivelling bracket                      |                                       |   |  |  |
| Colour                       | Grey                                    |                                       |   |  |  |
| Dimensions (W x H x D)       | Ø 250 x 408 mm                          | 340 x 180 x 416 mm 515 x 285 x 486 mm |   |  |  |
| Weight                       | 1,2 kg (no driver unit)                 | 1,25 kg (no driver unit)              | 2,1 kg (no driver unit)                                 |  |  |

### TR400 "SINCRO MIX" range



The **TR400-SX** horn can fit four **UT60** (60 W/16  $\Omega$ ) or **UT150** (150 W/16  $\Omega$ ) compression units, supplied separately. The sound waves generated by the single units are synchronised when their acoustic pressure is still in the initial expansion phase. Reinforced fibreglass material. Very high efficiency combined with perfect intelligibility of speech. These features

make it particularly suitable for powerful sound broadcasting and/or alarm-signalling systems for airports, motor-racing circuits, horse-racing courses, sports fields, etc.

TR400-SX Hight-power multiple horn (240 / 600 W)

| MODEL                        | TR400-SX + UT60                            | TR400-SX + UT150 |  |
|------------------------------|--|------------------|--|
| Rated power                  | 240 W (4x UT60/16 Ω) 600 W (4x UT150/16 Ω) |                  |  |
| Characteristics              | Reinforced fibreglass structure            |                  |  |
| Sound pressure SPL (Pnom/1m) | 135 dB                                     | 141 dB           |  |
| Efficiency (1W/1m)           | 112 dB                                     | 114 dB           |  |
| Frequency response           | 150 ÷ 6.000 Hz                             | 100 ÷ 10.000Hz   |  |
| Dispersion angle @2kHz       | Or. 125° - Ver.150°                        |                  |  |
| Protection degree            | IP 54                                      |                  |  |
| Mounting                     | Swivelling bracket                         |                  |  |
| Colour                       | Grey                                       |                  |  |
| Dimensions (W x H x D)       | 680 x 410 x 545 mm                         |                  |  |
| Weight                       | 10 kg (no driver unit)                     |                  |  |

### Exponential horn driver units

| DRIVER UNIT FOR TR1, TR2 AND TR3 RANGE | MODEL                        | UT35           | UT60-T   | UT60           |
|--|------------------------------|----------------|--|----------------|
|  | Rated power                  | 35 W / 16 Ω    | 60 W ( 60 / 40 / 20 W), with 100 V transformer | 60 W / 16 Ω    |
| <b>UT35</b> 35 W / 16 Ω                | Characteristics              | I              | For TR1-B / TR2-B / TR3-B                      | For TR3-B      |
| <b>UT60</b> 60 W / 16 Ω                | Sound pressure SPL (Pnom/1m) | 124 dB (TR3-B) | 128 dB (TR3-B)                                 | 127 dB (TR3-B) |
| 0100 00 W7 10 12                       | Efficiency (1W/1m)           | 109 dB (TR3-B) | 111 dB (TR3-B)                                 | 110 dB (TR3-B) |
| <b>UT60-T</b> 60 W / 100 V             | Dimensions (W x H x D)       | Ø 105 x 106 mm | Ø 112 x154 mm                                  | Ø 105 x 106 mm |
| 0100-1 00 W/ 100 V                     | Weight                       | 1,3 kg         | 2,1 kg   | 1,55 kg        |

| DRIVER UNIT FOR TR40 | O-SX RANGE |                          | MODEL                        | UT60                        | UT150                        |
|----------------------|------------|--------------------------|------------------------------|-----------------------------|------------------------------|
| 2.0                  |            |                          | Rated power                  | 60 W, impedance 16 $\Omega$ | 150 W, impedance 16 $\Omega$ |
|                      | UT60       | 60 W / 16 Ω              | Characteristics              | For TR400-SX                | For TR400-SX                 |
|                      |            |                          | Sound pressure SPL (Pnom/1m) | 135 dB (TR400-SX)           | 141 dB (TR400-SX)            |
| and the same         |            |                          | Efficiency (1W/1m)           | 112 dB (TR400-SX)           | 114 dB (TR400-SX)            |
|                      | UT150      | $150\mathrm{W}/16\Omega$ | Dimensions (W x H x D)       | Ø 105 x 106 mm              | Ø 116 x 100 mm               |
|                      |            |                          | Weight                       | 1,55 kg                     | 3,1 kg                       |

## Ceiling mounting

### C57 e C58 range



The **C57** and **C58** ranges of speaker units for installation in false ceilings guarantee excellent reproduction of both speech and music. They are made of moulded sheet metal treated with white scratchproof and non-reflecting paint and will fit elegantly into any environment.

Each unit consists of a load-bearing ring with spring-operated quick-fit hooks for easy securing to the ceiling. The central mask with the loudspeaker cabled to the line transformer fits into the ring by rotating it until it locks into place. It is possible to apply an optional flameproof cap to protect the unit: **AC957** for the C57-TB or **AC958** for the C58/6-TB and C58/12-TB.

| <b>ACCESSORIES</b> | 3                             |
|--------------------|-------------------------------|
| AC957              | Flame-proof cap for C57 range |
| AC958              | Flame-proof cap for C58 range |

### C57-EN and C58-EN range

**C57/6-EN** and **C58/12-EN** speaker units for installing in false ceilings ensure excellent reproduction of both speech and music. Made of moulded sheet metal treated with white scratchproof and non-reflecting paint, they will fit elegantly into any environment. Each unit consists of a load-bearing ring with spring-operated quick-fit hooks for easy securing to the ceiling.

The central mask with the loudspeaker cabled to the line transformer fits into the ring by rotating it until it locks into place. In accordance with **EN 54-24**, each unit has a galvanised steel flameproof cap, a ceramic terminal block for the connections, a thermal fuse and a terminal for correct connection to earth.



| MODEL                        | C57/6-EN             | C58/12-EN       | C57-TB                         | C58/6-TB       | C58/12-TB |  |
|------------------------------|----------------------|-----------------|--------------------------------|----------------|-----------|--|
| Rated power                  | 6 W                  | 12 W            | 6 W                            |                | 12 W      |  |
| Adjustable power             | 6/3/1,5W             | 12/6/3W         | 6/3/1,5W                       |                | 12/6/3W   |  |
| Characteristics              |                      | Metal structure |                                |                |           |  |
| Loudspeakers                 | 1 two-cone broadband |                 |                                |                |           |  |
| Sound pressure SPL (Pnom/1m) | 99 dB                | 105 dB          | 102 dB                         |                | 105 dB    |  |
| Efficiency (1W/1m)           | 92 dB                | 95 dB           |                                |                |           |  |
| Frequency response           | 100 ÷ 15.000 Hz      | 80 ÷ 20.000 Hz  | 100 - 15.000 Hz 80 ÷ 20.000 Hz |                | ).000 Hz  |  |
| Dispersion angle @2kHz       | 150°                 | 130°            | 150°                           | 150° 130°      |           |  |
| Mounting                     | Spring fixing system |                 |                                |                |           |  |
| Mounting hole                | Ø 160 ÷ 165 mm       | Ø 200 ÷ 205 mm  | Ø 160 ÷ 165 mm                 | Ø 200 ÷ 205 mm |           |  |
| Colour                       | White                |                 |                                |                |           |  |
| Dimensions (W x H x D)       | Ø 180 x 120 mm       | Ø 220 x 140 mm  | Ø 180 x 110 mm Ø 220 x 130 mm  |                | : 130 mm  |  |
| Weight                       | 1,5 kg               | 1,7 kg          | 1,1 kg                         | 1,3 kg         | 1,45 kg   |  |



# Ceiling mounting

## C51 range





The speaker units for ceiling-mounting of the **C51** range consist of an ABS structure with a RAL 9016 white-painted grille. They feature a compact size and an excellent acoustic performance. Each unit has handy tough spring-type hooks that make it easy to fasten securely to a false ceiling. A transformer for connection to a 100V constant-voltage line is included in the supply, with selectable power-output steps.

**C51/6-T** 6 W, ABS, Ø 175 mm

## C52 range



The speaker units for flush-mounting of the **C52** range are designed specifically for quick installation in false-ceiling panels. They are made of moulded sheet metal with an extremely thin front part. They are ideal for reproduction of both speech and music and are suitable for installation in conference halls, shops and offices. They have strong and handy spring-type hooks making them easy to secure quickly to a false ceiling. Each loudspeaker has a transformer for connection to a 100 V constant-voltage line. The various selectable power steps provide flexibility of installation and the ability to adapt to the acoustic characteristics of different types of room.

## C53 range



The units for ceiling mounting of the **C53** range, designed for easy and quick installation in a false ceiling by means of handy spring-type hooks, are made of moulded sheet metal with an extremely thin front part. Their size and the high quality of the loudspeaker used make it ideal for the reproduction of speech and music and suitable for installation in conference halls and medium-to-large shops and offices. A transformer for connection to a 100V constant-voltage line with selectable power-output steps is included in the supply.

**C53/10-T** 10 W, metal, Ø 265 mm

| MODEL                        | C52/6-T        | C52/12-T        | C53/10-T       | C51/6-T                           |  |  |
|------------------------------|----------------|-----------------|----------------|-----------------------------------|--|--|
| Rated power                  | 6 W            | 12 W            | 10 W           | 6 W                               |  |  |
| Adjustable power             | 6/3/1,5W       | 12/6/3W         | 10 / 5 / 2,5 W | 6/3W                              |  |  |
| Characteristics              |                | Metal structure |                | ABS structure, metal front grille |  |  |
| Loudspeakers                 |                | 1 two-cone      | broadband      |                                   |  |  |
| Sound pressure SPL (Pnom/1m) | 99 dB          | 102 dB          | 103 dB         | 100 dB                            |  |  |
| Efficiency (1W/1m)           | 92 d           | В               |                | 93 dB                             |  |  |
| Frequency response           | 80 ÷ 15.000 Hz |                 | 70 ÷ 20.000 Hz | 100 ÷ 15.000 Hz                   |  |  |
| Dispersion angle @2kHz       | 160°           |                 | 80°            | 150°                              |  |  |
| Mounting hole                | Ø 160 ÷ 165 mm |                 | Ø 230 mm       | Ø 150 mm                          |  |  |
| Colour                       | White          |                 |                | White (RAL 9016)                  |  |  |
| Dimensions (W x H x D)       | Ø 200 x 6      | 62 mm           | Ø 265 x 79 mm  | Ø 175 x 60 mm                     |  |  |
| Weight                       | 0,64 kg        | 0,7 kg          | 1,2 kg         | 0,5 kg                            |  |  |



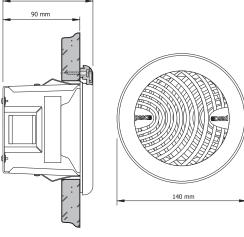
## C47 range



**C47/6-TB** 6 W, ABS, Ø 140 mm

C47/12-TW 12 W, ABS, for damp environments, Ø 140 mm

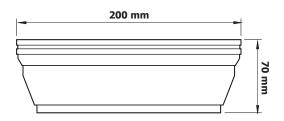
The units for ceiling mounting of the **C47** range are characterised by their compact size, excellent acoustic performance and peculiar spring-type system for rapid installation. The **C47/6-TB** is suitable for indoor installations, while the **C47/12-TW** is recommended for particularly damp places (bathrooms, kitchens, swimming pools, shelters and so on). Each unit is made of white self-extinguishing material according to UL94-VO and has a transformer for connection to constant-voltage lines 100 V with selectable power steps.



105 mm

# C49 range

Speaker units for protruded ceiling-mounting made of white self-extinguishing ABS according to UL94-VO; these units are recommended for all covered places when excellent sound reproduction with an interesting price/quality ratio is required. They can be combined with C47 units for flush mounting and with projectors of the C48 range which have a matching appearance from the front.





**C49/6-T** 6 W, ABS protruding speaker, Ø 140 mm

| MODEL                        | C47/6-TB        | C47/12-TW             | C49/6-T         |  |
|------------------------------|-----------------|-----------------------|-----------------|--|
| Rated power                  | 6 W             | 12 W                  | 6 W             |  |
| Adjustable power             | 6/3/1,5W        | 12/6/3W               | 6/3/1,5W        |  |
| Characteristics              |                 | UL94-V0 ABS structure |                 |  |
| Loudspeakers                 |                 | 1 broadband           |                 |  |
| Sound pressure SPL (Pnom/1m) | 97 dB 99 dB     |                       | 97 dB           |  |
| Efficiency (1W/1m)           | 89 dB           | 88 dB                 | 89 dB           |  |
| Frequency response           | 110 ÷ 12.000 Hz | 110 ÷ 14.000 Hz       | 110 ÷ 12.000 Hz |  |
| Dispersion angle @2kHz       |                 | 160°                  |                 |  |
| Mounting hole                | Ø 109           | Ø 109 mm              |                 |  |
| Colour                       | White           |                       |                 |  |
| Dimensions (W x H x D)       | Ø 140 x 105 mm  |                       | Ø 200 x 71 mm   |  |
| Weight                       | 0,75 kg         | 0,95 kg               | 1,2 kg          |  |

# Ceiling mounting

# CSPOT range • "SPOT LIGHT" ceiling-mounting



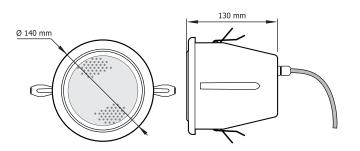
**CSPOT** ceiling-mounting units are designed specifically to meet the aesthetic requirements of modern interior design.

The small size and the shape of the structure of this speaker unit meet the need to camouflage the presence of the loudspeaker among the decorative and/or functional elements of the ceiling, e.g. flushmounted lighting fixtures. The structure is made of painted metal, making it a tough product with fine construction details.

The loudspeaker features an excellent performance in spite of the fact that it is smaller than the usual units for ceiling mounting. Installation in false ceilings is simple and rapidly accomplished thanks to the spring-type hooks. The built-in transformer enables connection to constant-voltage lines with adjustable power. The models of the CSPOT range are available in several different colours.

# C470 range

The speaker units of the **C470** range for installation in false ceilings are white, with an ABS housing and metal protecting grille. The simple and discreet design and good reproduction of both speech and music enable it to fit perfectly into any architectural environment The simple spring-type fixing system makes installation quick. The built-in transformer enables it to be connected to constant-voltage lines with variable power.





**C470/6-TW** 6 W, ABS, IP55, Ø 140 mm

The speaker units of the C470 range are characterised by their compact size and their sealed structure. They are recommended for particularly damp places. They have an ABS rear part, a sealed cable gland and a connecting cable made up of several leads.

| MODEL                        | CSPOT/6-T    | CSPOT/6-TN      | CSPOT/6-TS  | C470/6-TW                       |
|------------------------------|--------------|-----------------|-------------|---------------------------------|
| Rated power                  |              |                 | 6 W         |                                 |
| Adjustable power             |              | 6/4/2W          |             | 6/3W                            |
| Characteristics              |              | Metal structure |             | ABS housing, metal front grille |
| Loudspeakers                 |              |                 | 1 broadband |                                 |
| Sound pressure SPL (Pnom/1m) |              | 95 dB           |             | 98 dB                           |
| Efficiency (1W/1m)           |              | 86 dB           |             | 91 dB                           |
| Frequency response           |              | 100 ÷ 20.000 Hz |             | 150 ÷ 18.000 Hz                 |
| Dispersion angle @2kHz       |              | 130°            |             | 160°                            |
| Protection degree            |              | -               |             | IP 55                           |
| Mounting hole                |              | Ø 85            |             | Ø 125 mm                        |
| Colour                       | White        | Black           | Silver      | White                           |
| Dimensions (W x H x D)       | Ø 105 x 85mm |                 |             | Ø 140 x 130 mm                  |
| Weight                       |              | 0,5 Kg          |             | 0,9 kg                          |

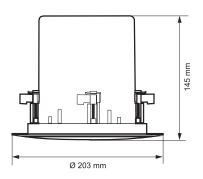


# C51-HF range



**C51/20-HF** 20 W, ABS, Ø 203 mm

The **C51/20-HF** is a high-quality and high-power two-way speaker unit for ceiling mounting. It has a white ABS structure with a rear cap and a quick-fitting securing system with hooks. It has all the features required for use in fixed installation and provides high intelligibility of speech and powerful and natural reproduction of music.



# C59 range • Pendant speakers

The spherical speaker units of the **C59** range, characterised by an excellent frequency response and ease of use, are suitable for use also in environments that are particularly difficult from the acoustic and plant engineering points of view. They are designed for suspended installation, meeting the requirements of quality sound broadcasting even in large rooms with high ceilings.

These elegant and discreet units feature a white ABS structure and are equipped with constant-voltage line transformers with adjustable power plus devices for securing to the ceiling and a 4 m cable.

**C59-T** 15 W ABS spherical speaker



| MODEL                        | C59-T  | C51/20-HF            |
|------------------------------|--|----------------------|
| Rated power                  | 15 W   | 20 W                 |
| Adjustable power             | 15 / 7,5 / 3,75 W                                  | 20 /10 / 5 / 2,5 W   |
| Characteristics              | ABS housing  | ABS housing          |
| Loudspeakers                 | 1 broadband  | 1 two-cone broadband |
| Sound pressure SPL (Pnom/1m) | 100 dB   | 101 dB               |
| Efficiency (1W/1m)           | 90 dB  | 88 ±3 dB             |
| Frequency resp onse          | 70 ÷ 20.000 Hz                                     | 100 ÷ 20.000 Hz      |
| Dispersion angle @2kHz       | 80°  | 180°                 |
| Protection degree            | IP 44  | IP 44                |
| Hooks / Mounting hole        | Device for securing to the ceiling and a 4 m cable | Ø 170 mm             |
| Colour                       | Whit   | te                   |
| Dimensions (W x H x D)       | Ø 202 x 176 mm                                     | Ø 203 x 145 mm       |
| Weight                       | 1,8 Kg   | 1,8 kg               |

# Accessories for speakers

# Transformer-type attenuators • "EUROPA" range

These attenuators enable the sound level in a room to be adjusted by attenuating the sound performance of the speaker units with a transformer in constant-voltage systems (100, 70, 50 V). Each attenuator has an autotransformer, an 11-position switch (10 positions + Off) and front masks. They are available with different output powers, depending on the load that can be connected to them.

Each model (**TL10-RE**, **TL30-RE**, **TL60-RE** and **TL101-RE**) has a by-pass relay able to exclude the attenuator in case of an alarm and/or emergency signal having priority (activation of the relay with a 24 VDC current on an additional two-pole line). They can can be easily fixed on round or square boxes with a 60mm center distance or secured to a wall using the **AC913** adaptor.



| TL10-RE   | 10 W attenuator with by-pass relay       |
|-----------|--|
|           | 00111                                    |
| TL30-RE   | 30 W attenuator with by-pass relay       |
|           | , ,                                      |
| TL60-RE   | 60 W attenuator with by-pass relay       |
| TEOU TIE  | oo w attoridator with by page rolay      |
| TI 404 DE | 100 M attacasetar suitta las sacra relas |
| TL101-RE  | 100 W attenuator with by-pass relay      |

#### ACCESSORIES FOR ATTENUATORS OF THE "EUROPA" RANGE

AC911 Plastic box for flush-mounting. Size (L x H x P): 70 x 70 x 50 mm

AC913 Plastic adaptor for protruding wall-mounting. Size (L x H x P): 80 x 80 x 50 mm

| MODEL                  | TL10-RE                 | TL30-RE | TL60-RE | TL101-RE |  |  |
|------------------------|-------------------------|---------|---------|----------|--|--|
| Rated power            | 10 W                    | 30 W    | 60 W    | 100 W    |  |  |
| Attenuation positions  | 10 + off                |         |         |          |  |  |
| Attenuation per step   |                         | 3 dB    |         |          |  |  |
| Total attenuation      |                         | 33 dB   |         |          |  |  |
| Override command       | 24 Vdc                  |         |         |          |  |  |
| Characteristics        | ABS structure           |         |         |          |  |  |
| Flush-mounting box     | AC911 (70 x 70 x 50 mm) |         |         |          |  |  |
| Wall-mounting box      | AC913 (80 x 80 x 50 mm) |         |         |          |  |  |
| Colour                 | White                   |         |         |          |  |  |
| Dimensions (W x H x D) | 80 x 80 x 67 mm         |         |         |          |  |  |
| Weight                 | 220 g                   | 260 g   | 320 g   | 330 g    |  |  |

# TLS60-RE • Selector switch for constant-voltage lines

The **TLS60-RE** selector switch enables selection of six different programmes from constant-voltage lines, directing them to one or more loudspeakers. It also has a 60 W attenuator with a by-pass relay capable of excluding the attenuator in case of an alarm and/or emergency signal having priority (activation of the relay by means of a 24 VDC current on an additional two-pole line). It can be wall-mounted using the **AC914** box.

| MODEL                  | TLS60-RE         |               |  |  |
|------------------------|------------------|---------------|--|--|
| SECTION                | Attenuator unit  | Selector unit |  |  |
| Rated power            | 60 W             |               |  |  |
| Attenuation positions  | 10 + off         | 6             |  |  |
| Attenuation per step   | 3 dB             | -             |  |  |
| Total attenuation      | 33 dB            | -             |  |  |
| Override command       | 24 V             | /dc           |  |  |
| Characteristics        | ABS str          | ucture        |  |  |
| Wall-mounting box      | AC914 (80 x 1    | 55 x 50 mm)   |  |  |
| Colour                 | Whi              | ite           |  |  |
| Dimensions (W x H x D) | 80 x 155 x 67 mm |               |  |  |
| Weight                 | 425              | 425 g         |  |  |



**TLS60-RE** 6-line selector switch, 60 W attenuator and by-pass relay

| ACCESSORIES FOR ATTENUATORS OF THE "EUROPA" RANGE |       |  |  |  |
|---|-------|--|--|--|
|   | AC914 |  |  |  |
|   |       |  |  |  |
|   |       |  |  |  |

# P8056 • 6-zone multiple attenuator



The **P8056** is a multiple volume control for 50, 70 and 100 V constant-voltage lines, suitable for rack mounting (1 modular unit). It consists of 6 inductive attenuators with 11 positions each (10 + Off), and each of which can bear a maximum load of 50 W. The six output lines (zones) can be split up into two groups of three each so as to drive them with one amplifier or two separate ones. Each attenuator has a bypass relay for sending out announcements and messages without any attenuation. Each relay requires a 24 VDC power supply, with absorption of 10 mA. The rear terminal blocks are of the removable type with slide-type fixtures.

#### **FUNCTIONAL FEATURES**

- Six 50-W attenuators
- 6 output lines separable into two groups of three each
- 2 inputs for constant-voltage lines (one for outputs 1, 2 and 3 and the other for outputs 4, 5 and 6)
- One bypass relay for each attenuator
- Can be mounted in a standard 19" rack (height: 1 U)



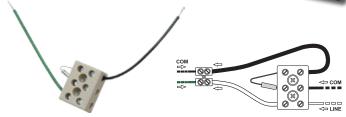
| MODEL                             | P8056  |
|-----------------------------------|--|
| Attenuator units and output lines | 6  |
| Inputs                            | 2 (IN A for outputs 1-2-3, IN B for outputs 4-5-6) |
| Attenuator rated power            | 50 W   |
| Attenuation positions             | 10 + off   |
| Override command                  | 24 Vdc   |
| 19" rack mounting (modular units) | Direct (1 U)                                       |
| Dimensions (W x H x D)            | 482 x 44 x 150 mm                                  |
| Weight                            | 4 kg   |

# AC950/20 • Ceramic terminal block with thermal fuse (kit containing 20 off)



Kit for connecting speaker units to bring the installation in line with the standards for voice alarms in those cases in which the whole loudspeaker circuit needs to be safeguarded when one or more speaker units are damaged by fire.

The kit consists of 20 ceramic terminal blocks for connections, able to withstand temperatures exceeding 650°C and fitted with 150°C thermal fuses for cutting the loudspeaker off from the main line in the event of fire.



# Constant voltage line transformers

| TM99-I  | Trasformer 50-70-100 V, 4-8 Ohm, 6-3-1,5 W |
|---------|--|
| TM104-I | Trasformer 50-70-100 V, 4-8 Ohm, 4-2-1 W   |
| TM106-I | Trasformer 50-70-100 V, 8 Ohm, 80-40-20 W  |

# Conference systems

PASO conference systems are capable of meeting any need, providing elegant solutions "made in Italy".





# Discussing, voting, informing... PASO makes them easy!



The secret of a smooth-running and successful conference often lies in the possibility of managing it properly, arranging the contributions in a logical order, controlling their length and the manner in which they are delivered, and requesting and obtaining rapid and clear responses from the meeting with regard to specific issues. All this has to be achieved with perfectly clear and intelligible sound messages.

PASO conference systems are able to meet these needs in a simple and orderly way, providing the right response for any requirements in terms of the system, from the simplest for small discussion groups, to more complex ones for large meetings or conventions (in which up to 100 microphone units can be installed).

The CS2080 system, for discussion only, or the CS2100 system, for managing conferences calling for electronic voting, are the ideal choices capable of ensuring exceptionally good price/performance ratios.



Simple and elegant desktop design, ABS structure fitted with non-slip feet, extremely user-friendly and rational controls. The stations for CS2000 conference systems are available in two versions: the B2080 range for discussion only and the B2100 range for discussion and voting.





# CS2100 • Conference and voting system

The **CS2100** conference system enables automatic management of up to a maximum of 100 stations. All the activities can be managed through a CL2100-G control unit. The available conference modes through which to manage the system are the 'OPEN', 'MANUAL' and 'AUTOMATIC' modes. Participants wishing to speak can queue to do so at any time during the discussion. In the MANUAL and AUTOMATIC modes, speaking is enabled by the operator (in the manual mode) or on the basis of a pre-set timeout (automatic). Delegate stations are

enabled to speak in the order in which they are queued by the central unit. At OPEN conferences, all the stations can speak at the same time. The Chairperson can join a conversation among Delegates or, if necessary, activate the 'Priority' function, placing all the other stations on hold. The heart of the system is the CS2100 power supply unit, with easy cascade connection of the various units by means of 6 lines of CAT5 shielded cable.



#### CS2100 Central control unit

The **CS2100** unit has a sophisticated digital controller and is able to manage the sequence of the contributions, electronic voting and the various different alphanumeric displays in the conference hall. At least one CL2100-G console is required for configuring the system and the various control activities (the system can include a maximum of four of these units).

The central control unit is able to power up to 100 stations, and has six RJ45 outputs for the various different cascade connections to the microphone stations, consoles and displays (CAT5e SF/UTP cable). It has two audio inputs ('MIC' and 'AUX IN') for connecting additional sources to the conference, such as wired microphones, wireless microphone receivers or other sources of sound (there is a 12 V phantom power supply for the 'MIC' input).

There are double 'IN' and 'OUT' sockets for connection to a recorder with which to record and play back the discussion. On the front panel there are three separate volume controls (signals from the units, from the 'TAPE' input and from the 'MIC/AUX IN' inputs). The 'BOOSTER OUT' (XLR) output can be used for connecting a power unit for sound broadcasting in the hall.

#### **SYSTEM FUNCTIONAL FEATURES**

- Maximum overall number of stations that can be connected: 100
- Up to 98 Delegate Units: B2100-DG for voting, B2080-DG with no voting function and B2080-DG for a secretary (Secretary mode)
- Up to 2 B2100-PG Chairperson stations
- Management of the conference mode: Automatic (timeoutbased management), Manual (managed by an operator) or Open (simultaneous management of a plurality of stations)
- Up to a total of 4 control console units (CL2100-G) for system management
- Management of electronic open voting or secret ballots
- Direct enabling of Delegate stations via the control console
- The Chairperson can speak either in the 'conversation' mode or in the 'priority' mode
- Easy cascade connections using CAT5 shielded cable
- Up to 6 connecting lines (max 20 units per line, maximum length of lines from the central unit to the last unit connected: 100 m)
- Up to a maximum of 4 CT 2001 conference hall displays
- RS232 serial connector for connecting a PC (to the central unit or to the station line using a CSIF2100 interface)
- Connection of additional sources such as wired microphones, wireless microphone receivers or other sources of sound
- It is possible to connect a recorder for recording and playing back the discussions
- Connection to a power unit for sound broadcasting in the conference hall





## CS2080 • Open conference system

The **CS2080** conference system is simple to install, its cost is reasonable and it does not require any programming or any assistance in the conference hall in order to work.

It is a discussion system featuring free access, in which the Chairperson or Moderator's microphone has priority. It is suitable for conferences attended by up to 80 people, including the Chairperson.



#### **CS2080** Central control unit

The heart of the system is the CS2080 control and power supply unit. It has been designed specifically for managing small discussion-only systems with no need for an operator in the conference hall. Versatility of the output connections and the independent front-panel level controls for each audio signal input are the strong points of this control unit. It can power up to 80 stations and has at disposal four RJ45 outputs for connecting the stations in cascade fashion (using CAT5e SF/UTP cable). There is a 'MIC'/'AUX IN' input for connecting additional sources to the conference system such as wired microphones, wireless microphone receivers or other sources of sound. It is possible to provide a 12 V phantom power supply for the 'MIC' input. There are double 'IN' and 'OUT' sockets for connecting a recorder. There is a 'BOOSTER OUT' (XLR) output socket to which a power unit can be connected for sound-broadcasting in the conference hall.

#### **SYSTEM FUNCTIONAL FEATURES**

- Maximum overall number of stations that can be connected: 80
- Up to 79 B2080-DG Delegate Stations
- One B2080-PG Chairperson station
- Open conference mode only (simultaneous management of a plurality of stations)
- The Chairperson can speak either in the 'conversation' mode or in the 'priority' mode
- Easy cascade connections using CAT5 shielded cable
- Up to 4 connecting lines (max 20 units per line, maximum length of lines from the central unit to the last unit connected: 100 m)
- · Connection of additional sources and of an audio recorder
- Three separate volume controls (signals from the units, from the 'TAPE' input and from the 'MIC/AUX IN' inputs)
- Connection to a power unit for sound broadcasting in the conference hall



| MODEL                             |                 | CS2100  | CS2080                     |                                      |  |
|-----------------------------------|-----------------|---|----------------------------|--------------------------------------|--|
| Conference mode                   |                 | Conference and voting                                       | Only open conference       |                                      |  |
| Maximum overall number of units   | 2 Cha           | airman units + 98 Delegate units                            | 1 Chairn                   | 1 Chairman units + 79 Delegate units |  |
| Control console unit              |                 | CL2100-G (min 1, max 4)                                     |                            | -                                    |  |
| Microphone unit connection lines  |                 | 6 RJ45  |                            | 4 RJ45                               |  |
| Microphone unit connecting cables |                 | CV20xx cables with RJ45 connectors or 31/142                | 2-100 (CAT5e SF/UTP shield | ded cable, 100 m roll)               |  |
| Availa innute                     |                 |   | 3                          |                                      |  |
| Audio inputs                      | MIC IN          | TAPE IN AUX IN  |                            | AUX IN                               |  |
| Туре                              | Balaced XLR     | XLR Unbalaced, 2 RCA  |                            |                                      |  |
| Sensitivity                       | 1,5 mV          | 220 mV 125 mV   |                            | 125 mV                               |  |
| S/N ratio                         | 65 dB           | > 70 dB   |                            |                                      |  |
| Frequency response                | 170 ÷ 13.000 Hz |   | 50 ÷ 20.000 Hz             |                                      |  |
| Audio outputs                     |                 |   | 2                          |                                      |  |
| 'BOOSTER OUT'                     |                 | Balaced XI  | _R, 420 mV                 |                                      |  |
| 'TAPE OUT'                        |                 | 2 RCA,  | 210 mV                     |                                      |  |
| Serial data output                |                 | RS232, DB9 -  |                            |                                      |  |
| Mains power supply                |                 | 230 Vac - 50/60 Hz (140 W)                                  |                            |                                      |  |
| Dimensions (W x H x D)            |                 | 482 x 44 x 240 mm (direct standard 19 " rack mounting, 1 U) |                            |                                      |  |
| Weight                            |                 | 5 kg  |                            |                                      |  |

# Conference and voting units

#### B2100-DG Delegate unit with voting

B2100-DG stations enable delegates both to take part in the discussion and to express their votes. With three possible choices: 'Yes', 'Abstained' or 'No'. Discretion during the voting is ensured by a cover protecting the three voting keys. Special signalling lamps indicate the following statuses: queued to speak, enabled to speak, timeout and voting accomplished. Each unit is supplied with its own cardioid electret microphone mounted on a 43-cm long flexible stem and a ring that lights up to indicate that it has been activated. Each station also has a push-button for requesting to speak, a built-in loudspeaker

that is automatically excluded when the station is active and a volume control. Delegates can also listen to the discussion via headphones or earpieces to be connected to the sockets provided for this purpose (3.5 mm jack). As soon as a jack is connected, the built-in loudspeaker is muted. A double RJ45 socket (IN/OUT) on the rear panel enables cascade connection to the other stations or to the control unit, using CAT5e SF/UTP shielded cable.



#### B2100-PG Chairman unit with voting

Each B2100-PG unit has the same features described above for B2100-DG delegate stations, plus the possibility, using the double key, to join in a conversation or to activate the Priority function. The Priority control excludes off all the other microphones. Like the Delegate Stations, the Chairman's station also enables voting, with a choice between three possibilities: 'Yes', 'Abstained' or 'No'. Each unit is supplied with its own cardioid electret microphone mounted on a 43-cm long flexible stem and a ring that lights up to indicate that it has been activated. Each unit also has a push-button for requesting to speak,

a built-in loudspeaker that is automatically excluded when the station is active and a volume control. The chairperson can also listen to the discussion via a headphone or an earpiece to be connected to the socket provided for this purpose (3.5 mm jack). As soon as the jack is connected, the built-in loudspeaker is muted. A double RJ45 socket (IN/OUT) on the rear panel enables cascade connection to the other stations or to the control unit, using CAT5e SF/UTP shielded cable.





#### CL2100-G Control console unit

The CS2100 control unit for configuring the system and performing the various control activities requires at least one **CL2100-G** console (up to a maximum of four can be installed). This unit enables programming and complete management of the discussion, of voting and, if required, activation of a speaker's station (B2100-DG and/or B2080-DG) without queuing. The backlit LCD display shows the statuses of the microphones (ID number of the currently active microphone, of the next one in the gueue and number of speakers gueued to speak) and the result of the voting (total number of people voting Yes, number voting No and number Abstaining). There is a double RJ45 socket (IN/ OUT) for direct connection to the control unit or for cascade connection to the other stations. The console has all the controls needed for easy and immediate use (numerical 0-9 keypad, key for selecting the conference mode, key for starting/ending the voting, key for continuing the discussion, menu key for selecting the language, selecting the length of the contributions in the automatic mode and selecting the service functions).



## Only open conference units

#### **B2080-DG** Delegate unit for open conference

Each **B2080-DG** station enables the delegate to take an active part in the discussion and to listen clearly to the contributions of the other speakers via the built-in loudspeaker or via an external headphone. Each unit is supplied with its own cardioid electret microphone mounted on a 43-cm long flexible stem and a ring that lights up to indicate that it has been activated. Each station also has a push-button for requesting to speak, a built-in loudspeaker that is automatically

excluded when the station is active and a volume control. Delegates can also listen to the discussion via headphones or earpieces to be connected to the sockets provided for this purpose (3.5 mm jack). As soon as a jack is connected, the built-in loudspeaker is muted. A double RJ45 socket (IN/OUT) on the rear panel enables cascade connection to the other stations or to the control unit, using CAT5e SF/UTP shielded cable.

**NB.**: a B2080-DG microphone station can be used with the CS2100 system to act as "non-voting" delegate or, if suitably configured, as a Secretary, with the possibility of stepping in directly without having to queue to speak.



#### **B2080-PG** Chairman unit for open conference

Each **B2080-PG** unit has the same features described above for B2080-DG delegate stations, plus the possibility, using the double key, to join in a conversation or to activate the Priority function. The Priority control excludes off all the other microphones.

Each unit is supplied with its own cardioid electret microphone mounted on a 43-cm long flexible stem and a ring that lights up to indicate that it has been activated. Each unit also has a push-button

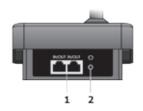
for requesting to speak, a built-in loudspeaker that is automatically excluded when the station is active and a volume control. The chairperson can also listen to the discussion via a headphone or an earpiece to be connected to the socket provided for this purpose (3.5 mm jack). As soon as the jack is connected, the built-in loudspeaker is muted. A double RJ45 socket (IN/OUT) on the rear panel enables cascade connection to the other stations or to the control unit, using CA-T5e SF/UTP shielded cable.



#### **ACCESSORIES**

**AC700** Fixing mounting kit for B2080, B2100 and CL2100-G units

#### B2080 - B2100



- 1. Input/output connectors
- 2. Socket for headset

| MODEL                         | CL2100-G  | B2100-DG  | B2100-PG                       | B2080-DG                     | B2080-PG      |
|-------------------------------|---|---|--------------------------------|------------------------------|---------------|
| Conference mode               | Conference and voting   |   |                                | Only open conference         |               |
| Unit type                     | Control console unit  | Delegate unit   | Chairman unit                  | Delegate unit                | Chairman unit |
| Suitable central control unit |   | CS2100  |                                | CS2100, CS2080               | CS2080        |
| Microphone                    | -   |   | 43-cm long stem flexible at th | ne base, electret microphone |               |
| Digital display               | 16 digits x 2 lines   |   |                                |                              |               |
| Headset output                | -   | Stereo jack type outlet (3.5 mm)  |                                |                              |               |
| Connecting plugs              | 2 x RJ45  |   |                                |                              |               |
| System connecting cables      |   | CV20xx cables with RJ45 connectors (not included) or 31/142-100 (CAT5e SF/UTP shielded cable, 100 m roll) |                                |                              |               |
| Mounting                      |   | Desktop (AC700 fixing mounting optional kit)  |                                |                              |               |
| Dimensions (W x H x D)        | 116 x 32 ÷ 60 x 200 mm 116 x 32 ÷ 60 (490 with microphone) x 200 mm |   |                                |                              |               |
| Colour                        | Light grey  |   |                                |                              |               |
| Weight                        | 0,5 kg 0,6 kg   |   |                                |                              |               |

## System accessories

#### CT2001 Conference-hall display panel



The conference-hall display shows the delegates and the public the main information concerning the conference being held. At the end of a voting session, it indicates the total number of people voting Yes, number voting No and number Abstaining. During the discussion (except in the case of 'OPEN' conferences), it shows the ID number of the microphone of the speaker that is currently enabled to speak, that of the next speaker in the queue and the total number of speakers queued to speak. The **CT2001** is an alphanumeric display with fixed fields and showing interchangeable texts. It has two RJ45 (IN/OUT) sockets for direct connection to the control unit or cascade connection to the other stations (using shielded CAT5e SF/UTP cable). With the CS2100 system it is possible to install up to four CT2001 units.

| MODEL                         | CT2001   |  |
|-------------------------------|--|--|
| Panel type                    | 3 fixed fields, 2 ½ digits each field  |  |
| Lamps                         | Red LEDs   |  |
| Suitable central control unit | CS2100   |  |
| Connecting plugs              | 2 RJ45   |  |
| System connecting cables      | CV20xx cables with RJ45 connectors or 31/142-100 (CAT5e SF/UTP shielded cable, 100 m roll) |  |
| Mains power supply            | 230 Vac - 50/60 Hz   |  |
| Dimensions (W x H x D)        | 1050 x 500 x 40 mm   |  |
| Mounting                      | Wall mounting (accessories non included)   |  |
| Weight                        | 20 kg  |  |

#### **CSIF2100** Remote interface to connect a PC

The **CSIF2100** interface can be used to connect a Personal Computer loaded with the control software at any point of the network connecting the microphone stations of the CS2100 system. It has a double RJ45 (IN/OUT) socket for direct connection to the control unit or cascade connection to the other stations (using shielded CAT5e SF/UTP cable). There is a DB9 socket enabling an RS232 serial link to the personal computer. All the electronics are contained in a small metal box screwed to the unit. The circuit board is powered directly from the network connecting the system to the control unit.

| MODEL                         | CSIF2100  |  |
|-------------------------------|---|--|
| Suitable central control unit | CS2100  |  |
| Connecting plugs              | 2 RJ45  |  |
| System connecting cables      | CV20xx cables with RJ45 connectors or 31/142<br>(CAT5e SF/UTP shielded cable, 100 m roll) |  |
| Serial data output            | RS232, DB9  |  |
| Mounting                      | Metal housing with screw fixing   |  |
| Dimensions (W x H x D)        | 136 x 26,5 x 95 mm  |  |
| Weight                        | 400 g   |  |

#### **CONNECTING CABLES**

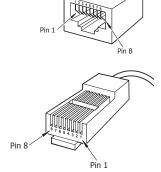
The connecting cables are not included in the supply of the stations and must be purchased separately, choosing from among the various available lengths: codes **CV2002** (length 2 m), **CV2005** (length 5 m) and **CV2010** (length 10m). It is possible to make connections of lengths other than these using only **31/142-100** type cable, available in 100-m bundles. All the connectors must be RJ45 connectors of the shielded type and the connecting cables must be CAT5e SF/UTP cables.

| CV2002     | CAT5e SF/UTP shielded cable, 2 m, RJ45 connectors  |
|------------|--|
| CV2005     | CAT5e SF/UTP shielded cable, 5 m, RJ45 connectors  |
| CV2010     | CAT5e SF/UTP shielded cable, 10 m, RJ45 connectors |
| 31/142-100 | CATSe SE/LITP shielded cable 100 m roll            |

#### **CS2000 SYSTEM CONNECTIONS**

#### Unit input (RJ45)

| Pin    | Description   |  |
|--------|---------------|--|
| 1      | Audio +       |  |
| 2      | Audio -       |  |
| 3      | GND           |  |
| 4      | AP line –     |  |
| 5      | AP line +     |  |
| 6      | + Vdc         |  |
| 7      | Serial line + |  |
| 8      | Serial line - |  |
| Shield | GND           |  |
|        |               |  |



All the connectors must be shielded RJ45 type



# System summary table

| CENTRAL CONTROL UNIT SYSTEM                        | CS2080  | CS2100  |
|--|---|---|
| Conference mode                                    | Only open conference  | Manual, Automatic, Open and Voting  |
| Chairman units                                     | 1   | 2   |
| Delegate units                                     | 79  | 98  |
| Chairman unit for open conference                  | B2080-PG  | -   |
| Delegate unit for open conference                  | B2080-DG  |   |
| Chairman unit with voting                          | -   | B2100-PG  |
| Delegate unit with voting                          | -   | B2100-DG  |
| Control console unit                               | -   | CL2100-G (min 1, max 4 units)   |
| Management by Personal Computer and dedicated SW   | -   | RS232 serial line connection with shielded cable  |
| Microphone unit connection lines                   | 4 RJ45  | 6 RJ45  |
| Maximum overall number of unit for each line       | max 20 units per line (max line length from the central unit to the last unit connected: 100 m) |   |
| Audio outputs                                      | 2 line outputs (for sound broadcasting in the conference hall and for audio recording)          |   |
| Audio inputs                                       | 1 microphone input and 2 line inputs (tape and aux)   |   |
| ACCESSORIES  | CS2080  | CS2100  |
| Conference-hall display panel                      | -   | CT2001 (max 4)  |
| Fixing mounting kit for microphone units           | AC700   |   |
| Remote interface to connect a PC with dedicated SW | -   | CSIF2100, to connect a Personal Computer at the network of the microphone units of the system |
| Cables with RJ45 connectors                        | CV2002 (2 m), CV2005 (5 m), CV2010 (10 m)   |   |
| 100 m roll cable                                   | 31/142-100, CAT5e SF/UTP shielded cable, 100 m roll   |   |





#### **EASY CATS CONNECTION**

One of the strong points of the PASO CS2000 system is the extreme simplicity with which it is installed and connected up. A single cable distributes power, data and the audio signal. Each station has a double RJ45 socket (INOUT) on the rear panel to enable easy cascade connection using **CAT5** shielded cables. There are no constraints of any kind in terms of the physical positions of the stations within the systems. The Delegate and Chairpersons Stations, the conference hall display and the interface for connecting a remote PC can be positioned anywhere in the network connecting them to the central control unit.



# **Public Address Systems**

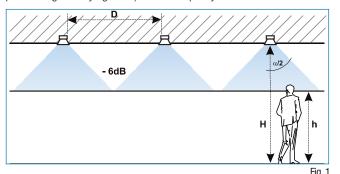
### A few rules

#### **FOREWORD**

When a room is designed from the acoustic point of view, it is advisable to consider, first and foremost, the speaker units. Following this, the power and the model of the amplifier have to be defined, and lastly the sources of sound and the most suitable system for connecting the loudspeakers have to be chosen.

It is possible to identify 6 basic steps to be followed:

- **1)** Determining the functions required of the system starting out from the user's needs (microphone messages, background music, emergency announcements, etc.)
- **2)** Analysing the environmental characteristics of the areas in which to broadcast sound: if they are outdoor areas, it is important to measure the existing noise and also to determine the highest level that the sound-broadcasting system can reach without disturbing neighbouring activities; if indoors, it is necessary to investigate the acoustic criticality of the rooms, e.g. by measuring reverberation.
- **3)** Choosing the speaker units on the basis of the type and size of the room involved, of the type of information to be broadcast (speech and/ or music), of the noise level in the room and of its acoustic characteristics. The type of speaker unit will differ depending on whether they are ceiling-mounted or wall-mounted: the sound level they must be able to reproduce must be a function of the ambient noise. In addition, the power output required of the amplifier in order to achieve a level able to ensure proper intelligibility of the message will depend on its efficiency. Attention also has to be paid to the directivity of the speaker units, which becomes particularly important if there is any reverberation in the rooms.
- **4)** Opting for a suitable amplifier for the speaker units as a whole, with a sufficient number of inputs to cater for all the sources of sound; if the system has to include emergency services, it will be necessary to use a system meeting the specifications indicated in the applicable standards according to the law.
- **5)** Defining the sources of sound such as the microphones, wireless microphones, microphone consoles, wireless tuners, CD players, MP3 players, and which of them must cater for emergency services.
- **6)** Evaluating the manner of connecting the speaker units, depending on whether they have a constant impedance (4, 8, 16  $\Omega$ ) or a constant voltage (100, 70, 50 V) and determining the cross-section and type of the cables. The great majority of installations require many loudspeakers and therefore constant-voltage systems offer undisputable advantages in terms of the cross-section of the leads (and therefore of purchasing and laying them) and of simplicity of installation.



#### **SPEAKER UNITS**

The environment is a fundamental link in the amplification chain, and it is therefore extremely important to investigate it in depth. The performance of the chosen speaker units, their number and their positions must be based on the environment in which they are to be installed, above all in order to ensure intelligibility of any announcements so as not to miss important instructions, e.g. in emergencies. To broadcast sound out-of-doors, it is necessary to use solely exponential horns or watertight sound projectors, while indoors it is possible to install box-type speakers, ceiling-mounted speakers and/or sound columns. Any architectural, functional or purely aesthetic constraints of the environment must be taken into consideration. In industrial areas or very noisy places, it can be advantageous for announcements or voice calls to use small exponential horns with directional characteristics, so as to concentrate the sound in certain points of the room. Following are some detailed suggestions referred to the way in which the loudspeakers should be positioned.

#### Multi-point broadcasting

This solution enables the best possible intelligibility of music/announcements as it ensures that the sound is broadcast more evenly, and is achieved using a suitable number of sound-output points, that must be correctly distributed (best if ceiling-mounted) and driven by lower power levels. In this way, even if the environment is reverberating, working with single low volume levels is the best way to avoid causing annoying acoustic resonance effects.

#### Broadcasting with ceiling-mounted fixtures

It is a known fact that ceiling-mounted loudspeakers (sound ceiling) are the best way of broadcasting sound for announcements and background music. In some circumstances this may not be feasible, due for example, to the height or particular structure of a ceiling. This type of system is more expensive than broadcasting via only a few points, however broadcasting from above has many advantages, and this type of broadcasting should always be considered before any other alternatives.

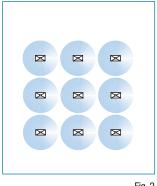
Once it has been decided what type of ceiling-mounted speaker units to install, and the angle of coverage of the single speakers units is known, calculating the number of speaker units to use, starting out from the height of the ceiling and the surface area of the room, is a simple matter.

The distance **D** between the centre of one loudspeaker and the next (see Fig.1), is obtained using the following formula:

#### $D = 2*(H-h)*tan(\alpha/2)$

where:  $\mathbf{H} =$  height of ceiling;  $\mathbf{h} =$  height of listening point;  $\mathbf{\alpha} =$  angle of dispersion of the speaker unit

The number of speaker units is obtained by dividing the surface area of the room in m2 by that of the single speaker unit at the listening point (D²).



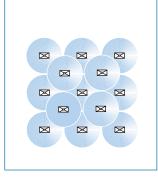


Fig. 2 Fig. 3

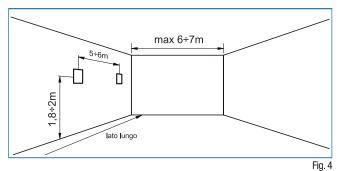
Figures 2 and 3 show the different coverage that can be obtained using different installation patterns and a larger number of speaker units.

For simplicity's sake, we may assume that the angle of dispersion of ceiling-mounted speaker units is  $90^{\circ}$  (tan=1) and that the average listening height for people is 1.5 m. Thus, in a room with a working height of **4 metres** a single speaker unit will cover approximately **25/30 m²**. Generally speaking, it is advisable to avoid installing the speaker units near corners, as this would lead to an intensification of the lower frequencies, an effect that is often detrimental for intelligibility. It is also obvious that the height of the ceiling affects the output power and the number of speaker units to be installed:

High ceiling: more power and less loudspeakers Low ceiling: less power and more loudspeakers

#### Wall-mounted speaker units

If the space of the room is such that it is not possible to install ceilingmounted speaker units, or it is decided to opt for wall-mounted installation, there are a few rules to be complied with in order achieve optimum quality of the sound. With this type of installation, the listener may be at a greater than critical distance from the speaker unit, with consequent deterioration of the intelligibility and quality of the sound. The size of the room, in particular its length and width, are of fundamental importance. In order to achieve good results, it is advisable to use this type of installation only in areas in which one of the layout dimensions measures less than 12 metres, otherwise the sound pressure will not be uniformly distributed, wherever the wall-mounted sources are positioned. If the smallest layout dimension of the room is not greater than 6 or 7 metres, good results are obtained by installing the speaker units along one of the longer sides, at a height somewhere between 1.8 and 2 metres. For an optimum distribution, the distance between any two adjacent speaker units may vary between 5 and 6 metres (Fig.4).



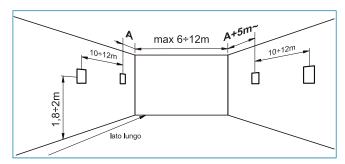


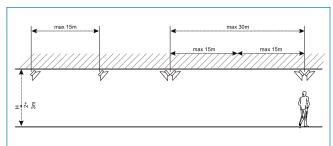
Fig. 5

When the shortest side is between 6 and 12 metres, it is advisable to install the speaker units along both longer sides, alternating them. In this case the recommended distance between adjacent speakers can even be doubled (Fig.5). In even larger rooms it will be necessary to install the loudspeakers in clusters on the load-bearing pillars inside the room. If there are none, it will be absolutely necessary to use sound ceiling or speakers hanging from the ceiling.

In the range of speaker units for wall mounting, special attention should be paid to sound columns, which feature a very narrow vertical dispersion, ideal for rooms with very high ceilings (domes) with a lot of reverberation (churches, large workshops, etc.). For optimum distribution of the units, apply the following rules: installation at a height of about 1.5 metres above floor level if the listeners are seated, or 1.70 metres if they are standing, possibly tilting the sound columns by a few degrees in the direction of the audience.

#### Sound-broadcasting along corridors and pathways

Generally speaking, sound-broadcasting in this type of environment is achieved by means of loudspeakers (sound projectors or horns) installed at regular distances from one another and turned in the same direction, whether in corridors or along outdoor paths (Fig. 6). They must be connected to one another observing their phases and positioned at a maximum distance of 15 metres from one another otherwise, in addition to the sound coming from the speaker unit closest to them, listeners moving along the line formed by the speakers will also hear the sound coming from the previous loudspeaker, with a delay in excess of 50 m/sec. This delay will cause deterioration of the intelligibility of the message being broadcast. An alternative to this type of installation consists of the use of "two-way" units pointing in both directions along the corridor. They may be either ceiling-mounted or wall-mounted, and the distance between one unit and the next should not exceed 30 metres, again so as to avoid the occurrence of reverberation or echoes. It is possible, of course, to use horn or other types of loudspeaker in pairs, installing each pair on a single support and pointing them in opposite directions. The distance between them is the usual 30 metres max. It should be remembered, in any case, that the best results are achieved using loudspeakers close to one another and featuring a lower output power. This applies above all to indoor applications.



Fia. 6

# **Public Address Systems**

## A few rules

#### SOUND PRESSURE LEVEL (SPL) MEASUREMENT

| ENVIRONMENTS       | Noise (dB) |
|--------------------|------------|
| Sports stadium     | 85÷95      |
| Railway station    | 70÷80      |
| Workshop           | 60÷70      |
| Gym                | 60÷70      |
| Beach              | 50÷70      |
| Swimming pool      | 50÷60      |
| Conference hall    | 50÷60      |
| Supermarket        | 50÷60      |
| Car park           | 50÷60      |
| Restaurant         | 45÷65      |
| Offices            | 45÷55      |
| Gardens            | 40÷50      |
| Hotel lobby        | 40÷50      |
| Schoolroom         | 30÷50      |
| Theatre            | 30÷50      |
| Church             | 30÷50      |
| Shop               | 30÷50      |
| Hotel room         | 30÷45      |
| Hospital side ward | 30÷45      |

One of the most important issues to be tackled when dealing with sound as a physical phenomenon is the calculation of its intensity. Sound pressure measured in free-field conditions is always expressed in dB SPL, (that is to say decibels calculated at a specific Sound Pressure Level. In order to ensure good intelligibility of speech, the average sound pressure level of the message must exceed the existing ambient noise level by at least 6 to 10 dB. In order to design the acoustics properly, therefore, it is essential to know the noise level in the area in which sound is to be broadcast. The table shown here provides the approximate average levels found in normal areas, both indoors and out of doors.

The sensitivity (or efficiency) of a loudspeaker is the sound pressure that the speaker unit produces at a distance of one metre when it absorbs a power equal to 1 Watt. The sound level produced by a speaker unit lowers as the distance from the listening point increases. Theoretically, if the absorption effect due to the environment is ignored, it can be stated that the effect of doubling the distance will contribute to attenuating the sound pressure level by -6 dB (Fig. 7). In any case, the sound pressure of a loudspeaker  $\mathbf{SPL_m}$  at a given distance  $\mathbf{D_m}$  is given by the following formula:

$$SPL_m = SPL_{max} - 20 \log (D_m)$$

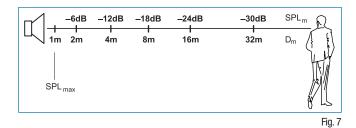
where  $\mathbf{SPL_{max}}$  is the sound pressure at a distance of one metre.

Another essential parameter of sound pressure is the power absorbed by the speaker unit. Again in this case, there is a proportional relationship that can be summarised as follows: each time the electrical power of the emitter doubles, the sound pressure increases by 3 dB (likewise, each time the sound pressure is halved, the sound pressure decreases by 3 dB). The exact formula for calculating the sound pressure **SPL**<sub>max</sub> of a speaker unit with a power **P** applied to it is as follows:

#### $SPL_{max} = S + 10 \log (P)$

where **S** is the sensitivity (efficiency) of the speaker unit.

To conclude, it can be said that the efficiency of a speaker unit is the most important parameter for sizing an audio system. The greater the efficiency, the less power has to be applied in order to achieve the same sound pressure, this being the aspect to be considered for achieving the required intelligibility.



#### **CONNECTION OF THE SPEAKER UNITS**

#### Constant-impedance system

This type of connection is normally used for systems based on a limited number of speaker units or for hi-fi systems, with distribution lines not longer than a few dozen metres. With this type of connection, in order for the amplifiers to drive the speaker units at their rated output power, the total power must be equal to the output power of the actual amplifier. Amplifiers normally have three standard output impedances, i.e. 4, 8 and 16  $\Omega$ , and these values are marked on the output terminals. It is therefore necessary that the technician be able to determine – sometimes by means of complex calculations – the total impedance of a number of units, regardless of how they are connected (parallel, serial or mixed serial and parallel connections).

#### Constant-voltage system

The advantages introduced by systems featuring constant-voltage connections are so many that it is the ideal system for sound-broadcasting systems of any size. This connecting system requires each speaker unit to have its own line transformer, which adapts the impedance of the loudspeaker (which is usually low: 4, 8 or 16  $\Omega$ ) to the far higher impedance of the actual line. Unlike constant-impedance connection systems, in which it is the loudspeaker that is the load for the amplifier, in a constant-voltage system it is the transformer (connected to the loudspeaker), with its high impedance, that constitutes an almost constant load for the booster. Each amplifier has its own transformer featuring constant-voltage outputs, which have now become standardised at 50, 70 and 100 V (high impedance). All the loudspeakers are connected in parallel to the output of the booster. Thus, should expansion of the system become necessary (and provided an amplifier with a higher than strictly necessary output power was chosen at the time of the original installation), this will be extremely simple to accomplish, branching out from any of the speaker units installed beforehand. It is assumed that both the amplifier (that is to say its output power) and the type of speaker unit, with its power absorption, have been defined. If this is so, the maximum number of speaker units that can be connected to the line units is determined according to the following formula:

number of loudspeakers = amplifier power / loudspeaker power

In more general cases, in which the speaker units are of several different types and/or are connected with different power outputs, it is always important to check that the overall power required by the speaker units (obtained simply by working out the sum of the power of the single units) is lower than the rated power output of the amplifier.

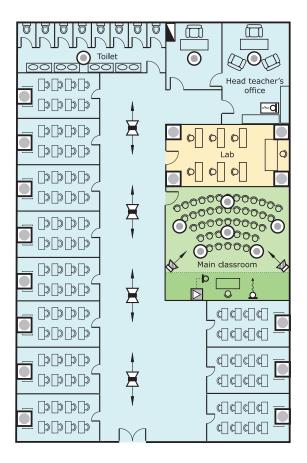
# Application examples



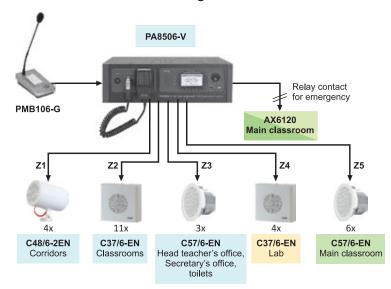
#### **SCHOOL**

#### **EVACUATION System**

- Announcement
- All-call and/or zone-call from microphone
- · Suitable for rooms with or without false-ceilings
- Independent audio system (School Hall)
- About 2.500 sq. Meters



#### Connection diagram



#### Independent system (Main classroom)

- · Reproduction of speech
- Wireless microphone for speaker
- USB player for \*.mp3 files
- About 400 sq. Meters



#### Products used

**D**--- 1 pc. **PMB106-G** 

Microphone station

9 pcs. C57/6-EN

6W ceiling speaker unit (VES)

15 pcs. C37/6-EN

6W wall-mounted speaker unit (VES)

2 pcs. C430-T

30W aluminium sound column

4 pcs. C48/6-2EN

6+6W two-directional sound projector (VES)

D → 1 pc. MA855/R850A

UHF wireless microphone

D 1 pc. M936 + B116-B

One-directional microphone + base

Amplification unit composed by:

1 pc. **PA8506-V** 

Integrated Voice Evacuation System

1 pc. W-MS24/4

Battery charger for secondary power supply

1 pc. **AX6120** 

Mixer/amplifier with USB player

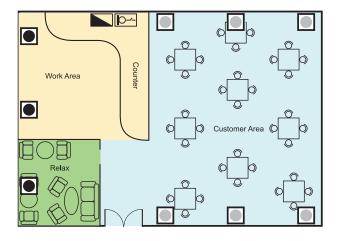
# **Public Address Systems**

# Application examples



#### **BAR, SHOP**

- Announcement
- All-call from microphone
- Playing out of background music
- · Suitable for rooms with or without false-ceilings
- From total 200 to 300 sq. Meters



#### **Products used**

Microphone station



6 pcs. C94/15-T

15W two-way speaker unit



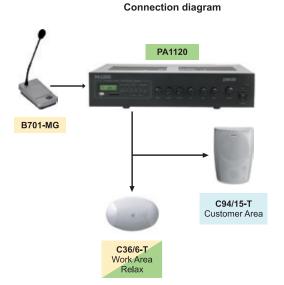
3 pcs. C36/6-T

6W «Candy» wall/ceiling-mounted speaker unit



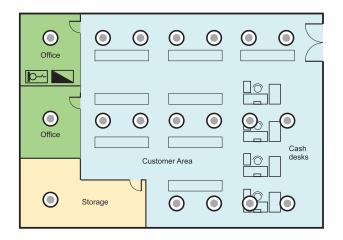
1 pc. PA1120

Tuner/120W amplified USB/SD card player



#### **MARKET**

- Announcement
- · All-call from microphone
- Calls from PABX
- Playing out of background music
- Suitable for rooms with false-ceilings
- From total 700 to 900 sq. Meters



#### **Products used**

**|**0-∕- 1 pc. PMB106-G

Microphone station

19 pcs. **C57-TB** 

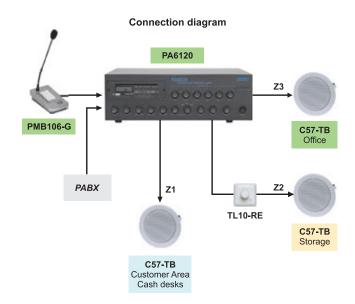
6W ceiling speaker

TL10-RE 1 pc.

10W volume controller

1 pc. PA6120

120W compact system





#### **SHOPPING CENTRE**

- Announcement, All-calls from microphone
- · Selective zone calls
- Playing out of background music
- · Suitable for rooms with or without false-ceilings
- Automatic message generator
- 2 floors (about 1.200 sq. Meters each)

#### **Products used**

**l**O-∕- 1 pc.

Pre-amplified microphone station with zone selection

15 pcs. C52/6-T

6W ceiling speaker unit

18 pcs. C53/10-T

10W ceiling speaker unit

4 pcs. C94/15-T

15W two-way speaker unit

回

2 pcs. **TR30-TW** 

30W horn-speaker unit

TL60-RE

60W volume controller

Main unit composed by:

P8083

Tuner&CD/mp3 player

P8036 1 pc.

6-zone voice/music control unit

1 pc. **DAG9300** 

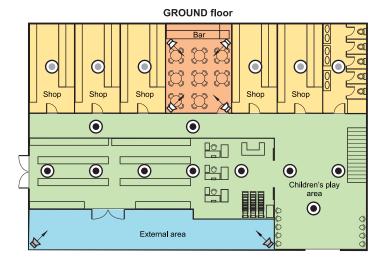
Message generator

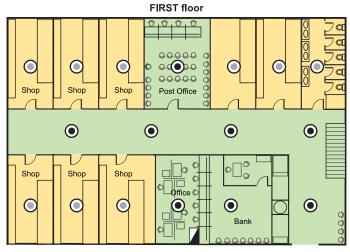
AW5624 1 pc.

240W booster (VOICE)

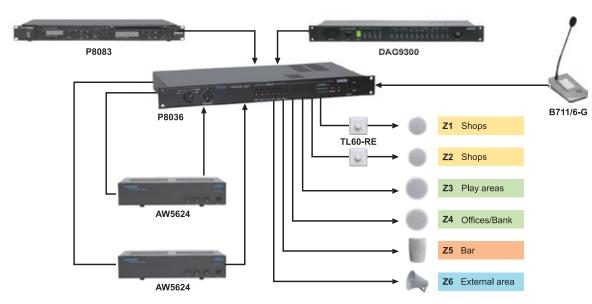
AW5624 1 pc.

240W booster (MUSIC)





#### Connection diagram



# **Public Address Systems**

# Application examples



#### SMALL COMPANY, WORKSHOP, CONCESSIONARY CAR

- Announcement
- Service all-call
- Playing out of background music
- · Suitable for rooms with false-ceilings
- From total 1.000 to 1.500 sq. Meters

#### **Products used**

**[**□--- 1 pc. **B701-MG** 

Microphone station

6 pcs. C58/6-TB

10W ceiling speaker unit

3 pc. **TR30-TW** 

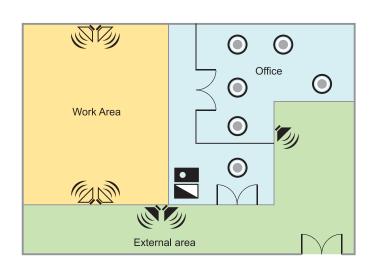
30W aluminium horn-speaker, connected at 10W

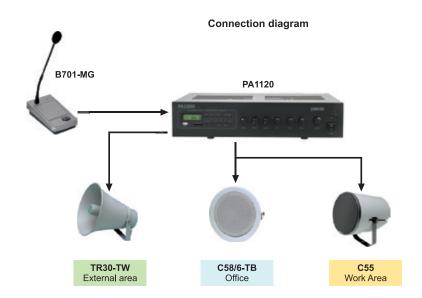
4 pc.

20W sound projector, connected at 10W

PA1120 1 pc.

Tuner/120W amplified USB/SD card player







#### **RESTAURANT**

- Announcement
- All-call from microphone
- Wireless microphone for entertainment
- Playing out of background music
- Suitable for rooms with false-ceilings
- From total 800 to 1.000 sq. Meters

#### **Products used**

**b**--- 1 pc. B711-G

Pre-amplified microphone station

21 pcs. **C53/10-T** 

10W ceiling speaker unit

**O**~→ 1 pc.

MA855/R850A

UHF wireless microphone

Amplification unit composed by:

P8083 1 pc.

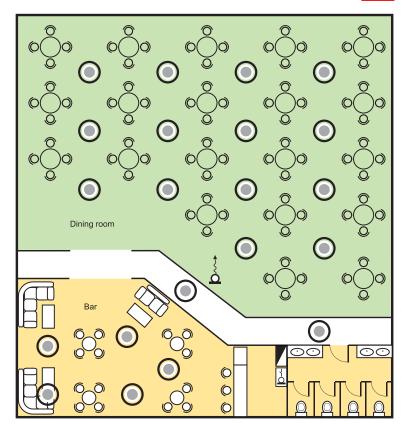
Tuner&CD/mp3 player

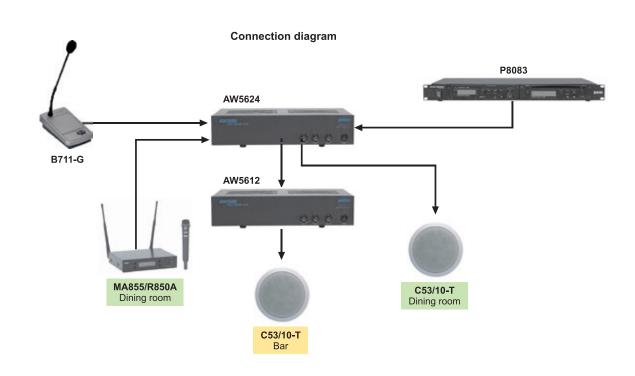
1 pc. AW5624

240W booster

AW5612 1 pc.

120W booster





# Always staying ahead!

PASO constantly strives to improve its product range and provide exclusive services. The technical up-dates to PASO's systems and all the sales novelties are available at www.paso.it and now also at www.facebook.com/paso.it





This new **catalogue** which includes totally innovative product lines, is intended to mark the Company's constant commitment. It is a useful tool for designing and creating sound amplification and conference systems for small and medium-sized applications. **PASO** also offers complete solutions for audio systems applied to emergency services and congress systems. For further information, please visit **www.paso.it**.

#### **Sound broadcasting system**

Sound-broadcasting installations, especially if they are complex and require high levels of safety and flexibility, must be combined increasingly frequently with sophisticated systems for managing and controlling the various components, for flexible selection of the inputs and outputs and for interfacing with external peripheral equipment. For these and other demanding applications, **PASO** offers several solutions such as, by way of example, the master/slave multizone units (P8136/P8236), an extremely versatile professional voice/music distribution "system" capable of meeting the most complex system specifications.

#### **Voice Evacuation Systems (VES)**

On premises featuring the presence of large numbers of people, it is essential to have a suitable sound-broadcasting system that, activated by the fire alarm control unit, is able to manage emergency situations, enabling guided and controlled evacuation of the building. The European standards now in force define specifically the design and installation terms required in order to meet the appropriate safety and reliability requirements. **PASO** can offer solutions that comply in full with the voice evacuation and safety standards (EN 54-16, EN 60849).

#### **Congress systems**

The secret of a successful conference depends on the use of congress systems able to guarantee clear and intelligible speech, together with evolved management tools enabling the use of advanced information and multimedia services. The **CS2000** and **AULA** conference systems are able to meet these requirements in a simply and orderly manner, offering an elegant solution "Made in Italy".











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