

# INTUGRID HPA41 / 81

Paging Stations

RevA

## Welcome

Thank you for choosing INTUSONIC for your sound system. To make sure that this product meets your expectations and provides long-term, reliable performance, please read and follow this instruction manual carefully.

## Manual language

- UK** This user manual is written in English. For other languages, please use an auto-translation service of your choice.
- FR** Ce guide est écrit en anglais. Pour les autres langues, veuillez utiliser un service de traduction automatique de votre choix.
- DE** Diese Anleitung ist in Englisch verfasst. Für andere Sprachen verwenden Sie bitte einen automatischen Übersetzungsdienst Ihrer Wahl.
- ES** Este manual está escrito en Inglés. Para otros idiomas, utilice un servicio de traducción automática de su elección.
- PT** Este manual está escrito em Inglês. Para outros idiomas, use um serviço de tradução automática de sua escolha.
- IT** Questo manuale è scritto in inglese. Per altre lingue, utilizza un servizio di traduzione automatica a tua scelta.

## Important safety instructions

- Read these instructions and all markings on the product. Keep these instructions.
- Heed all warnings and instructions, both in this manual and on the product.
- Clean only with a dry cloth. Unplug the unit or its power adaptor/charger from AC supply before cleaning.
- Do not use this product near water and avoid any exposure to water.
- Before connecting this product to any AC supply (if any), make sure to check whether the AC mains voltage and frequency match the indication on the product and its packaging.
- Only connect this product or its power adaptor/charger to an AC supply (if any) with sufficient power handling, protective earth connection, ground-fault (earth-fault) protection and overload protection.

- Disconnect the product or its power adaptor/charger from the AC supply (if any) during thunderstorms or longer periods of being unused.
- Make sure any heat sink or other cooling surface, or any air convection slot, is exposed sufficiently to free air circulation and is not blocked.
- Do not operate this product in environmental temperatures exceeding 35 degrees Celsius and/or 85% relative humidity.
- Position the product in a safe and stable place for operation, out of reach of unauthorized persons.
- Make sure any cable connections to and from the product are neither subject to potentially destructive mechanical impact nor present any risk of stumbling or other accident risk to people.
- Audio equipment may generate sound pressure levels sufficient to cause permanent hearing damage to persons. Always start up at low volume settings and avoid prolonged exposure to sound pressure levels exceeding 90dB.
- Do not open this product for service purposes. There are no user-serviceable parts inside.
- Warranty will be void in any case of unauthorized service by the user or other not authorized persons.
- Take any precaution required by local law, applicable regulations or good business practice to avoid injury of people or material damage by use of this product.

## Symbols used in this manual



**DANGER!** Safety hazard. Risk of injury or death.



**ATTENTION!** Read manual before installation and operation.



**WARNING!** Hazardous voltage. Risk of severe or fatal electric shock.



**WARNING!** Fire hazard.

## Health Advice

This unit may produce and absorb electromagnetic radiation. The strength of radiation and the sensitivity for disturbing interference matches the CE and FCC requirements. A corresponding sign is printed on the backside of the unit. Any change or modification may affect the behavior of the unit

concerning electromagnetic radiation, with the CE and FCC requirements eventually not to be met any more. The manufacturer takes no responsibility in this case.

### ■ **Functional Advice (only for powered products)**

This unit is immune to the presence of electromagnetic disturbances – both conducted and radiated - up to a certain level. Under peak conditions, the unit is classified to show a “class C” performance criteria and may encounter temporary degradation or loss of function which may need manual help to recover. In such case, switch the unit off and back on to recover.

### ■ **Environmental Advice**

This unit is built to conform to the ROHS-2 standard according to directive 2011/65/EU and the WEEE directive 2012/19/EU of the European Parliament and of the Council of the European Union. Under these regulations, the product shall not be discarded into regular garbage at the end of its life, but shall be returned to authorized recycling stations.

### ■ **Battery Advice (only for battery-powered products)**

- Some products may contain a battery. Refer to the further chapters of this manual to determine whether this product contains a battery, and whether this is removable and/or rechargeable.
- Where applicable, adhere to the relative regulations in aviation transport.
- If the battery is rechargeable, the battery might not be fully charged or partly discharged at the time of purchase. Recharge before use. Only use recommended or included chargers with appropriate voltage/current rating.



**WARNING!** Fire hazard. Batteries might heat up during charging. Only charge in a place with sufficient air convection.

### ■ **Wireless Advice**

- Some products may contain a wireless transmitter, receiver or transceiver. Refer to the further chapters of this manual to determine whether this product contains a wireless function, and in which frequency this operates.

- Make sure the frequency of operation does not require a specific license in the territory you operate the product in. If it does, obtain such license prior to any operation.
- Certain wireless technologies are designed for short distance operation. The actual distance will depend on how jammed the frequency band is at the location of use. In adverse cases, operational distances might be as low as 5m. In normal circumstances, 10m can be assumed. Test the operational distance prior to relying on the wireless functionality in a specific application.

## Unpacking

Please check that the box contains the following items:

- 1 pc. main unit
- 1 pc. gooseneck condenser microphone
- 1 pc. user manual

If any part is missing, please contact your dealer immediately for replacement.

Please note this product requires an external power supply (model SPA12), which is an optional accessory. The packaging of the HPA41 / 81 contains a cavity for this PSU, and depending on the local arrangements of your supplier, the SPA12 PSU might be placed inside the HPA41 / 81 packaging already. If the SPA12 is not contained in your delivery, order an original SPA12 from your supplier. Do NOT operate the HPA41 / 81 with any other PSU but the SPA12.

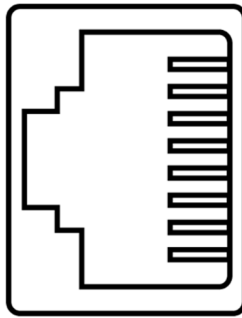
## About this product

The HPA41 / 81 are 4-zone (HPA41) and 8-zone (HPA81) paging stations for the IntuGrid™ family of configurable zoning products based on Intusonic's Intulink™ control bus system. They offer all-zone paging as well as selected-zone paging, whereby the selection can be cleared via a one-button function. An on-board chime player with exchangeable sound memory can be activated and will upon its activation play the chime sound first upon every invoked paging process. For extended user comfort, a microphone level indicator shows whether the distance to the microphone

is correct. Chime and microphone volumes are adjustable by separate rear-panel controls, The HPA41 / 81 is supplied with a gooseneck back electret condenser microphone, and are internally preconfigured with active phantom power and an 80Hz High-pass filter for this microphone.

## ■ The Intulink™ bus system

The HPA41 / 81 uses Intusonic's Intulink™ control bus system, which uses standard CAT5/CAT6 shielded cables and combines RS485 control lines with power supply lines and a mono balanced audio connection according to the following pinout:



1. TXD/RXD-
2. TXD/RXD+
3. Not Connected
4. GND
5. Power +12V
6. Power -12V
7. Audio Mono Balanced +
8. Audio Mono Balanced -

A documentation of the RS485 commands used for remotely controlling devices with the Intulink™ bus system is continuously updated and hence only available for download from [www.intusonic.com](http://www.intusonic.com).



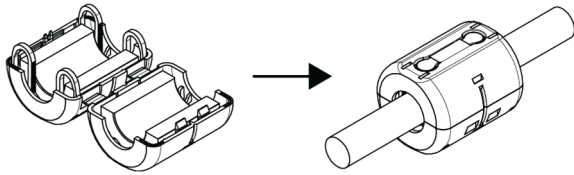
**WARNING!** Do not connect any other devices but Intusonic products with Intulink™ bus connection to the RJ45 ports of this unit. PC network connections or other manufacturer's RJ45-based interconnection systems are or may be incompatible, and the attempt of making such connection may result in damage of this unit or other equipment. The manufacturer accepts no claims towards damages evolving from incorrect connections.



**ATTENTION!** Do only use shielded CAT5/CAT6 cables with shielded connectors for better suppression of interference (EMI) in long cables runs.

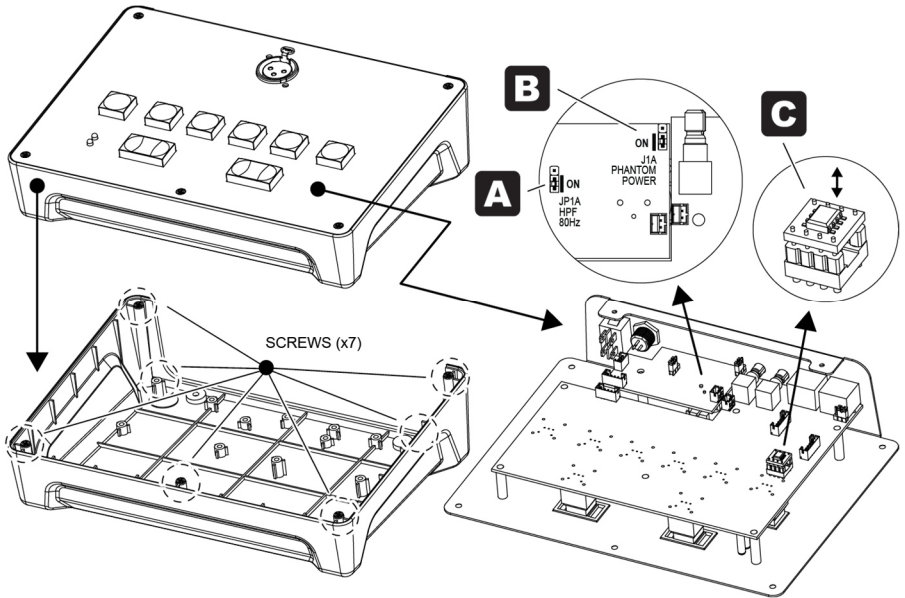


**ATTENTION!** To make sure that your installation complies with EMC requirements, you must attach snap-on ferrites to both ends or at least one end (recommended close to the main unit) of the CAT5/CAT6 cable(s).



## Configuration

The HPA41 / 81 can be configured to match other microphones than the supplied back electret microphone, or to play other chime sounds than the factory supplied gong. If the supplied microphone and the default chime sound are used, no configuration is necessary, and this chapter can be skipped. Likewise, if the chime sound is updated via the Intulink™ bus, the below procedure will not be required (see chapter “chime sounds”). The information described below is thus provided for reference only for the specified cases. For configuration, make sure the microphone is not mounted (remove when mounted) and the unit is switched off and disconnected from the SPA12 PSU. Proceed as below:

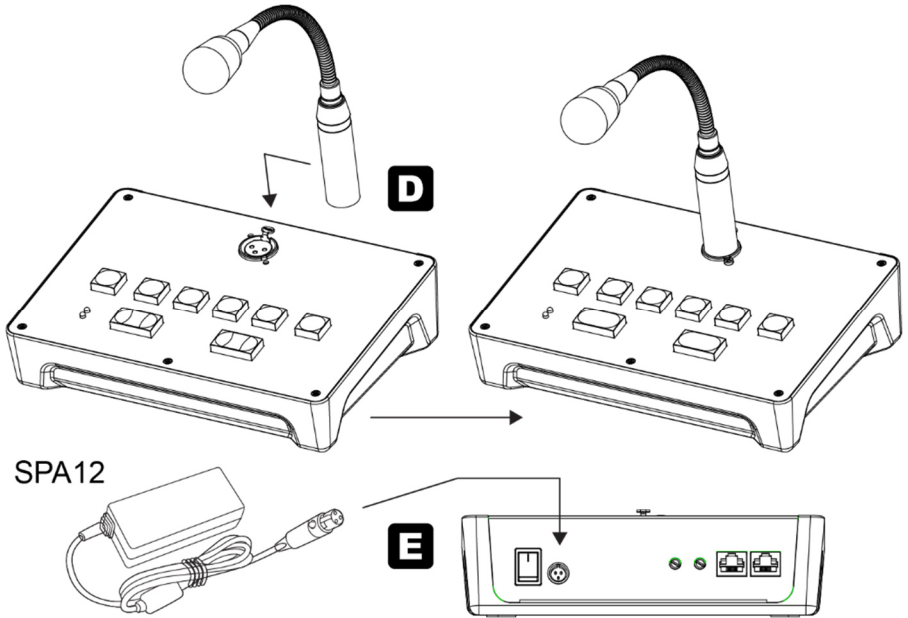


- Remove the 7 screws (5 top, 2 bottom) as indicated in the illustration and remove the bottom cover.
- Set Jumper JP1A to the required position for enabling or disabling the 80Hz high-pass filter (A) The factory default for this filter is ON.
- Set Jumper J1A to the required position for enabling or disabling 12V phantom power (B). The factory default for phantom power is ON.
- Unplug the chime memory module (C) for programming in an outside EEPROM programmer. Re-plug after programming. Do NOT use any but the original Intusonic™ EEPROM module.
- Re-assemble in inverse procedure.

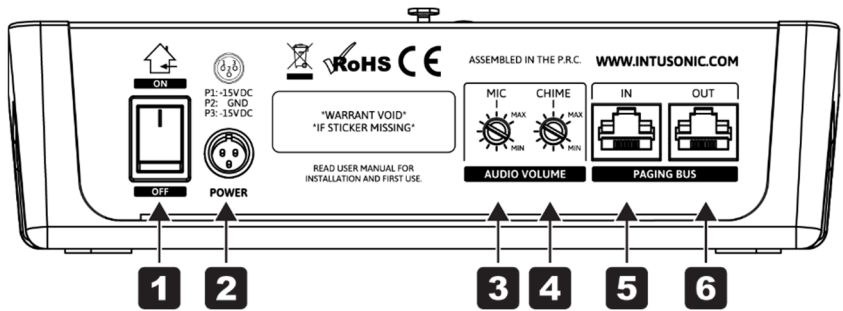
## Setting Up

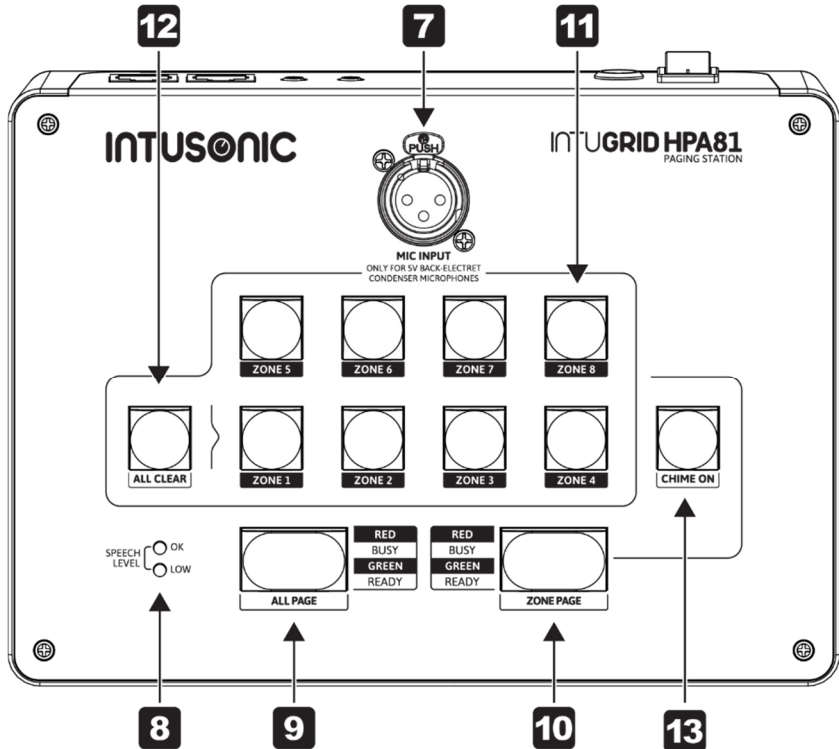
After – if required - configuring the HPA41 / 81, place the unit on a stable surface and prepare operation as follows:

- Insert the gooseneck microphone into the XLR Socket until you hear the lock to engage with a mechanical “click” sound (D).
- Insert the 3-pin mini XLR plug of a SPA12 PSU to the rear 3-pin mini XLR power socket until you hear the lock to engage with a mechanical “click” sound (E).
- Insert a matching power cord for your territory in the IEC-C8 socket of the SPA12 PSU and connect to an AC outlet.
- Make the required Intusonic’s Intulink™ control bus connections via the provided RJ45 connectors.
- The unit is now ready for operation. Turn the volumes down and switch on subsequent equipment.



## Controls and Connections





- 1** **Power On/Off switch.** This rocker switch toggles the unit between on and off status. The ON status will be indicated by the illumination of the top panel switches.
- 2** **Power supply input connection socket.** Connect a Intusonic™ SPA12 external PSU via this locking 3-pin Mini XLR socket.
- 3** **Microphone Volume Control.** Allows to adjust the microphone output level fed into the paging line of the IntuLink™ bus system. Note that this is only an attenuator. Leave this at maximum level unless there is a specific reason to reduce it, like the use of a different microphone other than the supplied one; or a low-volume chime sound other than the factory-programmed gong chime.
- 4** **Chime Volume Control.** Allows to adjust the chime output level fed into the paging line of the IntuLink™ bus system. Note that this is only an attenuator. Leave this at maximum level unless there is a specific reason to reduce it, like the use of a high low-volume chime sound other than the factory-programmed gong chime. If the balance between chime and microphone needs to be adjusted, always start

from the maximum of both the chime volume (4) and the microphone volume (3) and reduce the one which needs attenuation.

- 5** **Paging Bus Input.** This is a RJ45 jack for the connection of this paging station to the paging port of an Intusonic™ center unit. Note that this paging station can only be used with center units that have a paging port.
- 6** **Paging Bus Output (loop-through).** This is a RJ45 jack for the connection of further paging microphones to the paging bus of a center unit. Simply daisy-chain all paging microphones that are supposed to be used on the system by going from the center unit's paging port to the first paging station, from the first to the second paging station, and so on.
- 7** **Microphone socket.** This is a 3-pin female XLR socket with LOCK tab. The socket can be supplied with phantom power of 5V specifically catering for back-electret capsules. This feature is factory-enabled for the use of the supplied gooseneck microphone with back electret capsule and can be disabled via an internal jumper (see chapter "configuration"). For best performance, it is strongly suggested to use the supplied gooseneck microphone with back electret capsule only. Once the microphone is inserted and the LOCK tab engaged, press the LOCK tab before trying to pull the microphone out. Applying excessive pull force without pressing the LOCK tab may damage the socket.
- 8** **Speech Level Indicator.** This is a dual red/green LED indicator. Unlike a peak indicator, the red LED will be lit when the microphone level is too low, and the green LED will be lit when the microphone level is ok. Due to the internal microphone limiter, there is no user concern about excessive speech levels, the main concern is that the user stays too far away from the microphone, delivering a too low level and poor legibility. When the red LED is on, speak louder or decrease the distance to the microphone until the red LED goes off and the green LED comes on.
- 9** **All Page Button. Pressing** this button and speaking into the microphone will make your announcement audible in all zones of the system. The button is back-illuminated with a green and a red LED. When the button is back-lit in red, the paging bus is busy (someone else speaking through another paging station on the bus) and you cannot speak until the other person has finished speaking, upon which the paging bus will become available and this button will change the backlight color to green. Once this button is backlit in green, press and hold the button to start speaking. If the Chime player (13) is activated, the chime will play automatically once the paging bus is available and you press this button; you may then want

to wait to speak only after the chime replay is accomplished. Release the button after speaking to make the paging bus available for other participants.

**10 Zone Page Button.** The function is the same as the All Page button (9) with the exception that your announcement will only be audible in the zones preselected via the zone selector buttons (11).

**11 Zone Selector Buttons.** These are four (HPA41) or eight (HPA81) buttons backlit in yellow. Press the buttons of the zones you wish to make an announcement to via the Zone Page Button (10); the selected zones' button will be backlit in yellow. The buttons are additive and you can select as many as you desire. Note that this selection has no influence on the function of the All Page button (9). To ease de-selection, a dedicated All-Clear button (12) is provided which will deselect all selected zones.

**12 All Clear Button.** Pressing this button will clear all selection made via the Zone Selector Buttons (11).

**13 Chime Player Button.** Pressing this button will activate the internal Chime Player. The button is backlit in red and will be illuminated once the chime player is active. Once active the chime sound is played once you press and hold the All-Page button (9) or the Zone-Page button (10). The volume of the chime sound can be adjusted via the rear-panel control (4). Note that activating the chime player does not play any chime sound; this only occurs via the combination of the active chime player and pressing/holding the All-Page/Zone-Page button.

## Chime Sounds

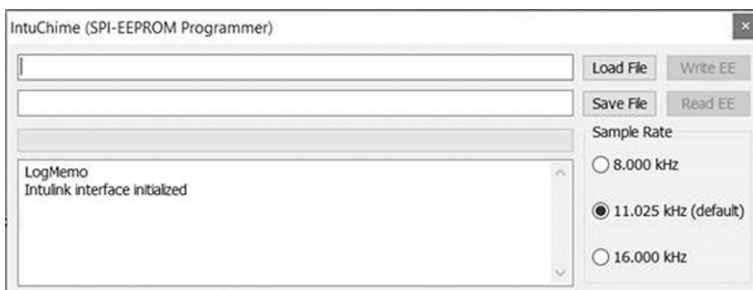
The HPA41 / 81 store the chime sound used by the chime sound player in a 512kBit SPI-Bus EEPROM of the 25x512 type. The content of this EEPROM can be overwritten with a custom sound file with the following characteristics:

- Raw Format, mono.
- 11.025kHz or 16kHz (relative to audio bandwidth < 5.5kHz / 8 kHz)
- Unsigned 8bit PCM
- Header-less
- Smaller than 64kB (about 3 seconds length)

Such files may e.g. be generated/converted via Audacity™. To program the file into the EEPROM, Intusonic™ provides a service software named

IntuChime™. This software is only available to authorized service personnel and as such the procedure of reprogramming the EEPROM shall here only be outlined to a general extent:

- Connect the HPA41 / 81 via an IntuLink™-to-USB interface to a PC as the only device connected to this interface.
- Start the IntuChime™ software.
- Load the file prepared as per above guidelines into IntuChime™
- Invoke “Write EE” in the IntuChime™ software and the file will be written to the EEPROM. In the background, this will send a relative command to the HPAx1 and then will transfer the data page-by-page (64Byte each). The first byte determines the sampling rate (1= 8kHz; 3= 16kHz; otherwise 11.025kHz), the last Byte is 0xFF.



## ■ Technical Data

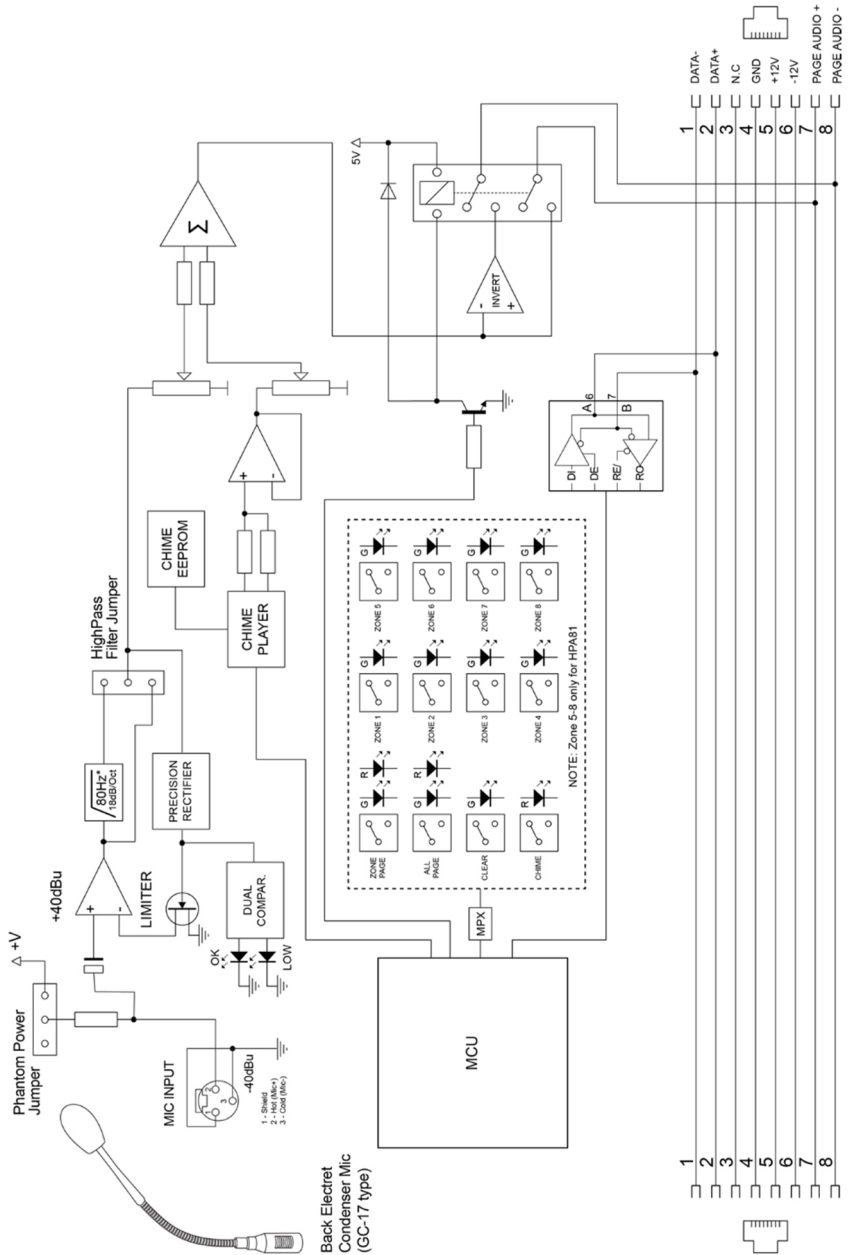
Number of addressable zones	.....4 (HPA41), 8 (HPA81)
Microphone type	.....Back electret, 5V
Microphone connector	.....Female XLR (locking)
Gooseneck length	.....275mm
Chime file format	.....8Bit PCM mono 11.025/16kHz
Chime memory	.....512kBit
Communication bus	.....IntuLink™
Power requirement	.....±15V DC
PSU Connector	.....3-Pin Mini XLR
Matching PSU	.....SPA12 (not included)
Dimensions WxDxH (/wo mic)	.....205x151.5x57mm
Weight	.....0.56 kg(/wo mic) 0.66kg (/w mic)

## Warranty

This product is guaranteed to be free of defects in material and workmanship at the time of purchase. Send-in warranty repair is granted for a period determined by

- A period of at least 6 months (from the date of purchase), or the minimum period required by law in the territory of sale, whichever is longer.
- A period of no longer (from the date of purchase) than the specified average lifetime of a component by the component's manufacturer.

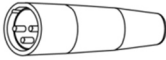
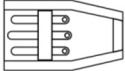


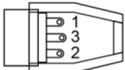

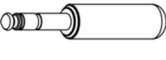
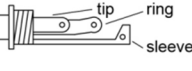
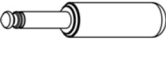
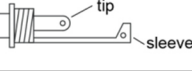
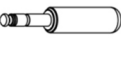
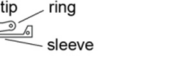




# Block Diagram



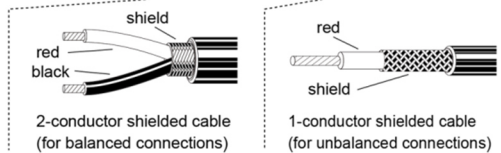
Back Electret Condenser Mic (GC-17 type)

## Cabling

This product may use all or a selection of the below connector types, for which the pin assignment must comply with the following specification. Always make sure to use good connectors and cables to ensure proper operation. Balanced connections are to be preferred over unbalanced connections where applicable and feasible. Avoid unbalanced connections exceeding 2m of cable length.

	Structure	Balanced connection	Unbalanced connection
<b>XLR male</b>	  	red = 2 black = 3 shield = 1	red = 2 shield = 1+3
<b>XLR female</b>	  	red = 2 black = 3 shield = 1	red = 2 shield = 1+3
<b>6.35mm TRS-stereo</b>	 	red = tip black = ring shield = sleeve	red = tip shield = sleeve+ring
<b>6.35mm TRS-mono</b>	 	red = tip black = sleeve shield = uncon.	red = tip shield = sleeve
<b>3.5mm TRS-stereo</b>	 	red = tip black = ring shield = sleeve	red = tip shield = sleeve+ring
<b>RCA</b>	 	red = tip black = sleeve shield = uncon.	red = tip shield = sleeve
<b>Terminal Plug</b>	 	red = 1 black = 2 shield = 3	red = 1 shield = 2+3

### CABLE Types



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