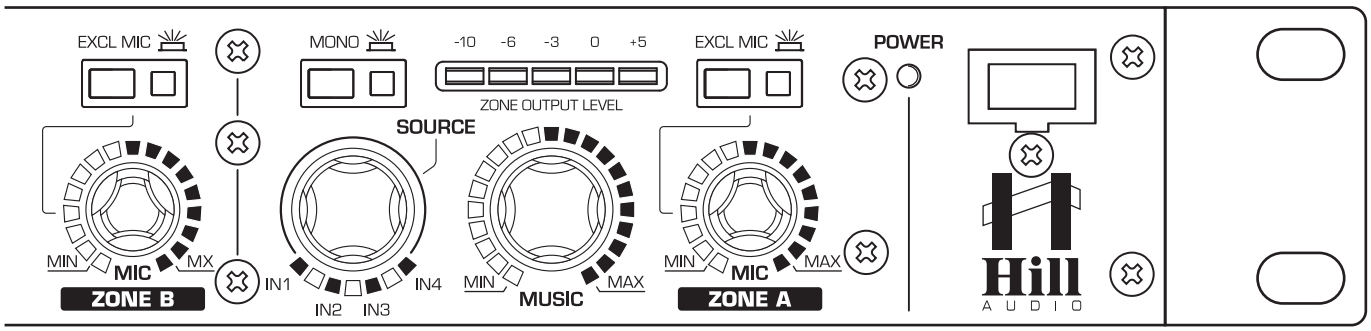
Hill
AUDIO



USER MANUAL

RevA 10-2015

ZPR-3520

3-ZONE PREAMP-MIXER

Welcome

Thank you for choosing Hill Audio 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, visit	www.hill-audio.com
FR	Ce guide est écrit en anglais. Pour les autres langues, visitez:	www.hill-audio.com
DE	Diese Anleitung ist in Englisch verfasst. Für andere Sprachen:	www.hill-audio.com
ES	Este manual está escrito en Inglés. Para otros idiomas, visite:	www.hill-audio.com
PT	Este manual está escrito em Inglês. Para outros idiomas, visite:	www.hill-audio.com
IT	Questo manuale è scritto in inglese. Per altre lingue, visitare:	www.hill-audio.com

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 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, make sure to check whether the AC mains voltage and frequency match the indication on the product and its packaging.
- Only connect this product to an AC supply with sufficient power handling, protective earth connection, ground-fault (earth-fault) protection and overload protection.
- Disconnect the product from the AC supply 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 90 dB.
- 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.

Explanation of symbols used in this manual and on the product:

ATTENTION!
Read manual before installation and operation.

DANGER!
Safety hazard.
Risk of injury or death.

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

WARNING!
Fire hazard.

Description

The ZPR3520 3-Zone Preamp-Mixer is a preamplifier with 2 microphone inputs, 6 stereo inputs, adjustable talk-over and three balanced zone outputs, two in stereo and one in mono configuration. The numerous installation-specific features make this unit a very versatile choice in any environment from leisure to commercial applications, where music zoning with different sources need to be combined with voice announcements.

Health advice

This unit produces and absorbs 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 requirements eventually not to be met any more. The manufacturer takes no responsibility in this case.

Functional advice

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, disconnect the AC power from the unit and reconnect it again to recover.

Environmental advice

This unit is built to conform to the ROHS standards and the WEEE directive 2002/96/EC 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.

Unpacking

Please check that the box contains the following items:

Main parts: 1 pc. ZPR3520 main unit
1 pc. Mains cable
1 pc. Operation manual

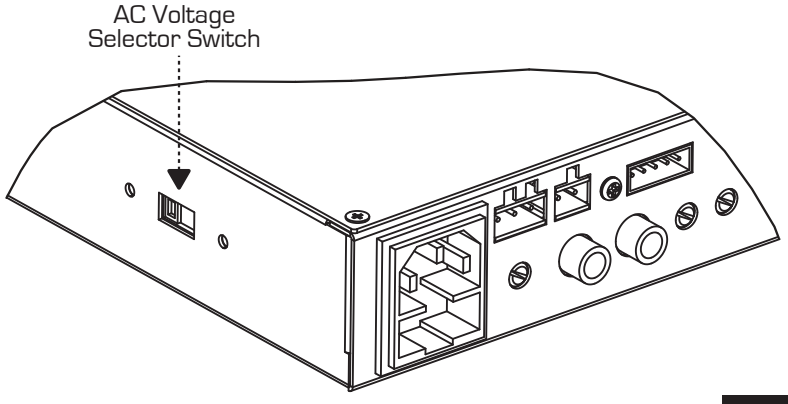
If any part is missing, please contact your dealer immediately for replacement.

Warning

After unpacking, and before plugging the AC cord in the wall outlet, check whether the AC mains voltage and frequency is the same as this product is specified for (see rear panel of product). Whenever the specified voltage or your AC plug should not match the local conditions, do NOT plug the AC cord into the wall outlet and contact your dealer immediately.

AC mains voltage setting

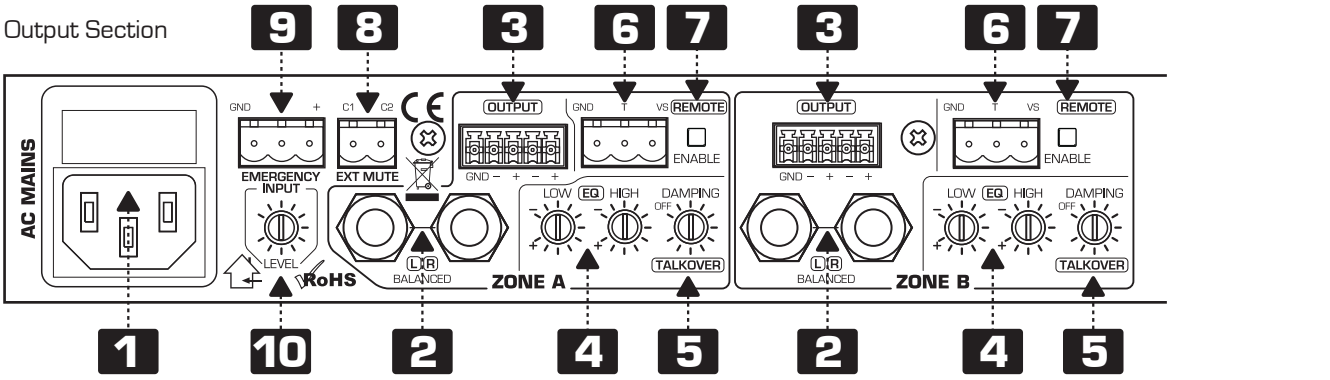
If the AC mains voltage of your power outlet and the setting of the AC supply voltage on your unit do not match, contact your dealer, contractor or a qualified service workshop to change the setting of the AC voltage selector. The AC voltage selector switch is located on the side panel of the unit, close to the AC inlet.



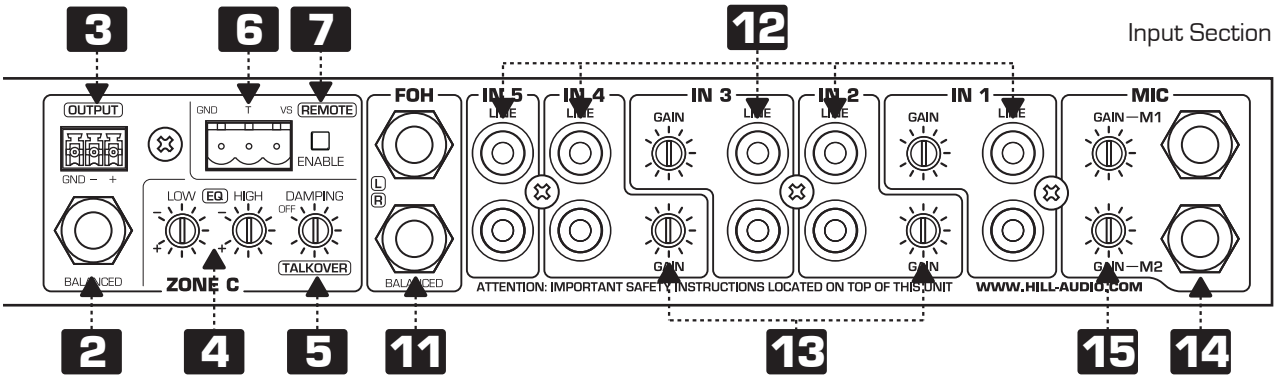
Controls and Connections

Connections - Rear

Output Section

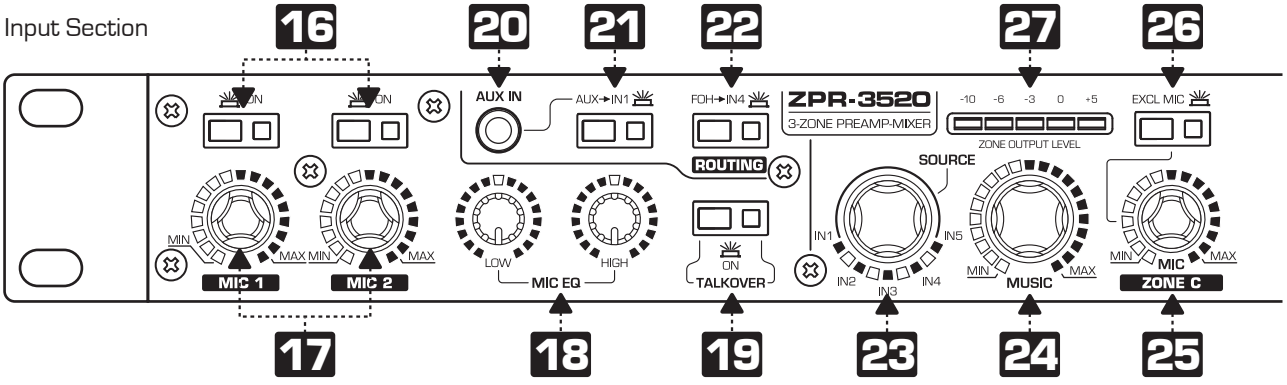


Input Section

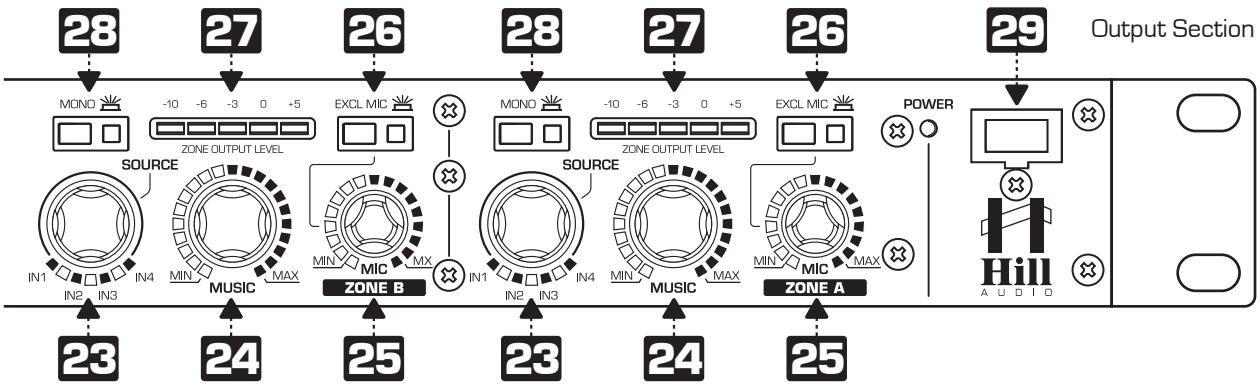


Controls - Front

Input Section



Output Section



Functional Description

The ZPR3520 is a zoning mixer which allows to connect up to two microphones and 6 stereo sources. The microphones have a dedicated equalizer and an automatic talkover function which provides microphone priority over program material if required. One of the stereo inputs is balanced, specifically catering for connections to the output of a stage mixer, thus making the ZPR3520 a perfect centre piece of a small hospitality venue sound system with occasional live music. The unit has three zone outputs to which any of the stereo inputs can be routed, and the microphones can be included or excluded from the zone output signals. Remote volume control is available via optional ZCP10A wall panels, and remote muting and emergency signal replay facilitate the use in installed sound systems.

1 AC inlet and fuse holder. Use the supplied AC cord to connect the unit to AC mains. Make sure voltage and frequency stated and set on the unit comply with your local AC supply. The fuse can be accessed by the small drawer at the AC inlet. To change the fuse, unplug the AC cord first, pull out the fuse drawer and replace the fuse ONLY with a fuse of SAME voltage and rating. If the fuse blows again after replacement, hand over the unit to qualified service personnel.

2 Zone outputs. These are balanced stereo ¼'' TRS outputs carrying the zone output signal controlled by the zone volume controls (24 & 25). The zone outputs are stereo for zone A and B, and mono for zone C.

3 Zone outputs. These are a balanced 3.5mm terminal block outputs carrying the same signal as output (2). The zone outputs are stereo for zone A and B, and mono for zone C.

4 Equalizer for Zone outputs. This is a 2-band stereo equalizer to adjust the frequency response of the output. Adjustments shall be made with a small screw driver. Note that the total angle is 300 degrees; do not apply excessive force with the screw driver.

5 Talkover adjustment for zone outputs. These controls allow to set the amount of damping which is applied to the zone's music signal when the microphone is spoken into - provided that the microphone is not excluded from the zone via the relative switches (26). Being fully turned clockwise, once speaking into the microphone, the program signal is completely suppressed. Being turned fully counter-clockwise, the talkover function is off. Adjustments shall be made with a small screw driver. Note that the total angle is 300 degrees; do not apply excessive force with the screw driver.

6 Volume remote control inputs. These are 5.0mm terminal block inputs for connecting external passive wall control panels of the ZCP-10 type. See chapter "remote volume control" for more information. Note that this input is only enabled when the remote-enable switch is pressed (7).

7 Remote Enable switches. Pressing these switches enables the relative volume control remote input (6).

8 Music Mute input. This is a terminal block input which allows to remotely mute all output signals by simply shortening the contacts.

9 Emergency input. This is an auto-sensing, balanced terminal block input which allows the connection to an emergency evacuation system. Once a signal is present on this input, all output signals (Stereo Master, Zone) will be muted and the emergency message/signal from this input will become audible instead. Please note that the unit can be set to include or exclude the microphone signals from this muting process, please see section "microphone routing setting".

10 Emergency volume control. This control allows to set the level with which the signal fed into the emergency input (9) will be replayed at the three zone outputs (2) and (3).

11 FOH input. This is a ¼'' TRS balanced stereo input specifically designed to allow the connection of the output of a stage mixer, in order to use the connected sound system for the replay of the stage mixer's signal. This is useful in applications where apart from stereo source replay also live music is performed over the same sound system. The FOH input is routed to input channel 6.

12 Line inputs. These RCA connectors provide inputs for line-level signals to the assigned channels.

13 GAIN control for input channels. This allows the sensitivity (input gain) for every line input to be adjusted, so that sources of different output level can be replayed at properly balanced levels.

14 Microphone inputs. These are balanced ¼" TRS connectors, which can be internally set to either carry phantom power or not, thus these inputs can be used both with condenser and dynamic microphones. Please see section "microphone phantom power setting". The signal of these inputs is controlled by the front panel controls (16)/(17)/(18)/(19).

15 GAIN control for microphone inputs. This allows the sensitivity (input gain) for every microphone input to be adjusted, so that microphones of different output levels can be used.

16 Microphone ON/OFF switches for MIC1 and MIC2. These switches enable/disable the relative microphone.

17 Level control for microphone inputs. Allow the individual adjustments of the levels for MIC1 and MIC2.

18 Microphone Equalizer. Allows the adjustment of the tonal balance for the microphone inputs in two voice-specific frequency bands with an adjustment range of ±12dB. Please note the setting will affect both microphone inputs simultaneously.

19 Talkover ON/OFF switch. Enables or disables the automatic microphone priority. Note the the amount of damping applied to the program material is determined by the rear-side damping controls (5), separately for each output zone. Dpending on the settings chosen on these rear-side controls, it may hence be possible that even if this switch is pressed ("ON"), no automatic microphone priority is applied to a zone, because the damping may be set fully counter-clockwise.

20 AUX Input for INPUT1. This is a 3.5mm Mini-TRS stereo socket which allows to connect sources like MP3 players etc. without removing the unit from its mounting position. Note that to route this input socket to INPUT1, the routing switch (21), must be pressed. To listen to any connected source, the INPUT1 must then be routed to the respective output zones via the switches (23).

21 ROUTING switch for AUX input. This switch decided whether the rear-side RCA socket (12) or the front-side TRS socket (20) are used as the source for INPUT1. In released position, the rear-side RCA socket is used, in pressed position the front-side TRS socket (2) is used.

22 ROUTING switch for FOH input. This toggles the INPUT4 between the relative rear-side RCA sockets (12) and the rear-side TRS sockets of the FOH input (11). In released position, the rear-side RCA socket is used, in pressed position the rear-side TRS sockets of the FOH input (11) are used.

23 Zone source selection switch. This rotary switch allows to use any of the individual source signals at the Inputs 1/2/3/4/5 to be used as a source signal for the relative Zone output. This may include the front-panel 3.5mm TRS AUX input (20) and the rear-panel TRS FOH input (11) depending on the setting of the routing switches (21) and (22).

24 Zone Music Level Control. This control determines the total volume of a relative zone output's program, including both the music program and the microphone signal if the latter is enabled. The microphone share in the total signal can be set independently by control (25).

25 Zone Microphone Level Control. This control determines the volume of the microphone part of the relative zone output's program, in relation to the music level set by (24), meaning the amount of microphone signal added to the music program is set by this control. Note that the microphone(s) will only be audible if not being excluded from the respective zone by the switch (26) and if the microphone settings made by the controls (16) & (17) in the microphone section provide a suitable signal.

26 Microphone Exclusion Switch. Pressing this switch will exclude the microphone signal(s) from the relative zone. The microphone volume control (25) is disabled in this case. Please note that since the automatic priority circuit works independently, the zone's music program level might still be affected when the microphone is spoken into, even if the microphone signal itself is excluded from the zone by pressing this switch. It is hence recommended that in case that the microphone signal(s) is permamently to be excluded from a zone output, that the respective damping control on the rear-panel is set to "off" (fully counterclockwise) for that zone.

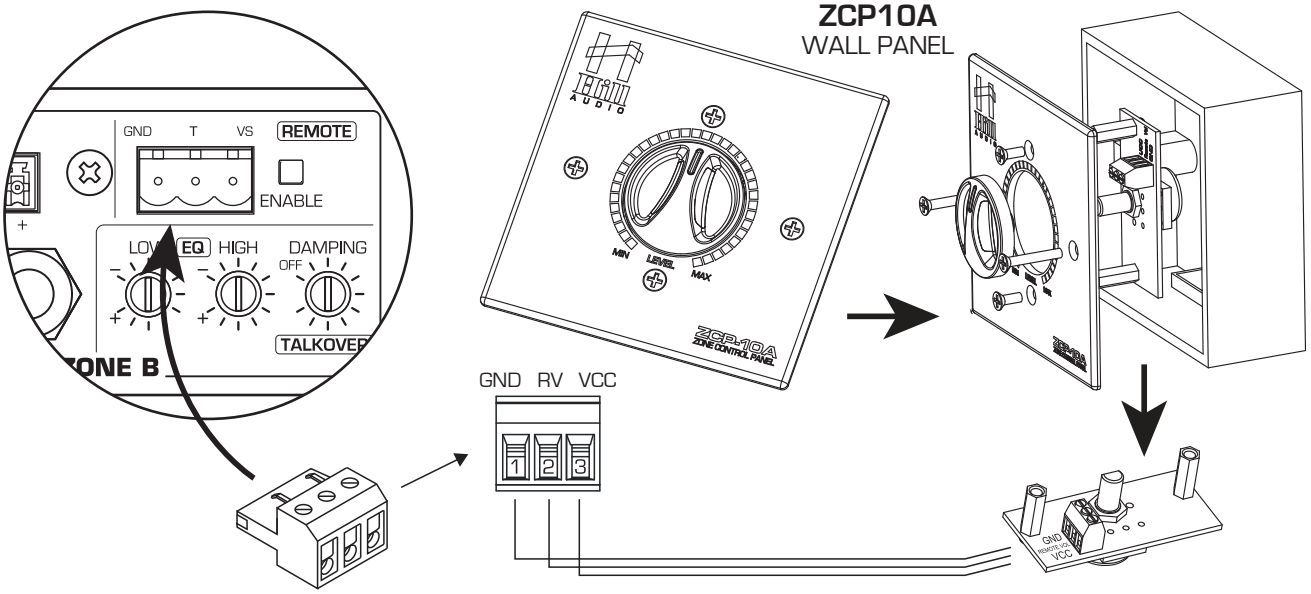
27 Zone Output Level Meter. Displays the output level of the respective zone output.

28 Zone Mono Switch (only for Zones A and B). Switches the stereo zone output to mono. Note that this switch is only available in the stereo zones A and B, since zone C is mono anyway.

29 Power switch. Switches the unit on and off respectively.

Remote Volume Control

The ZPR3520 allows to use an external wall-mounted passive volume controller to be used for remote volume control. These wall-mounted volume controllers shall be of the ZCP-10A type and need to be connected as per below wiring diagram to the remote volume control ports (6) on the unit's rear-panel. After correct wiring, pressing the remote volume enable switch on the rear panel (7) will enable the remote volume controller in lieu of the on-board volume control (24), which is then disabled.

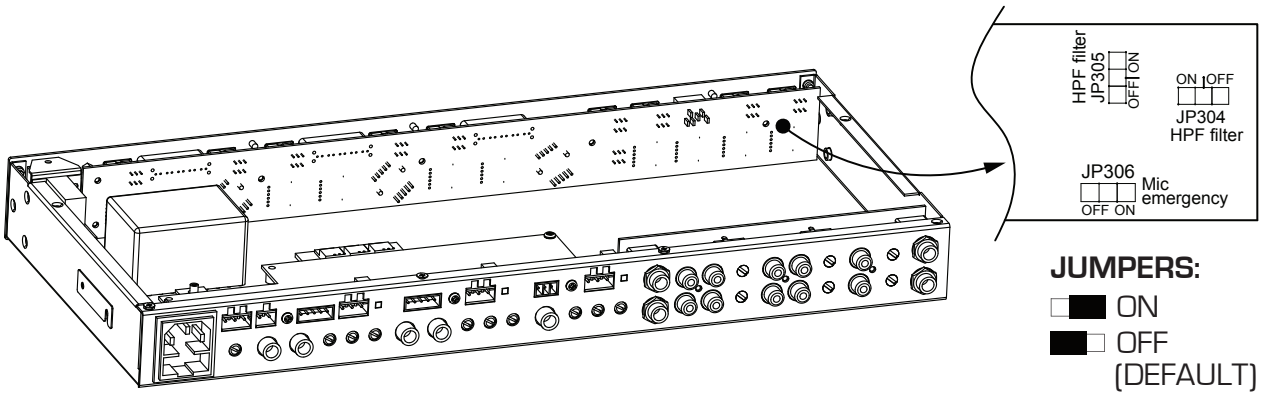


Internal Settings

WARNING - DANGER
Changing the internal settings requires to open the unit. Prior to opening the unit, the unit shall be disconnected from any AC supply. Any work on an open unit shall be expedited only by qualified, certified personnel.

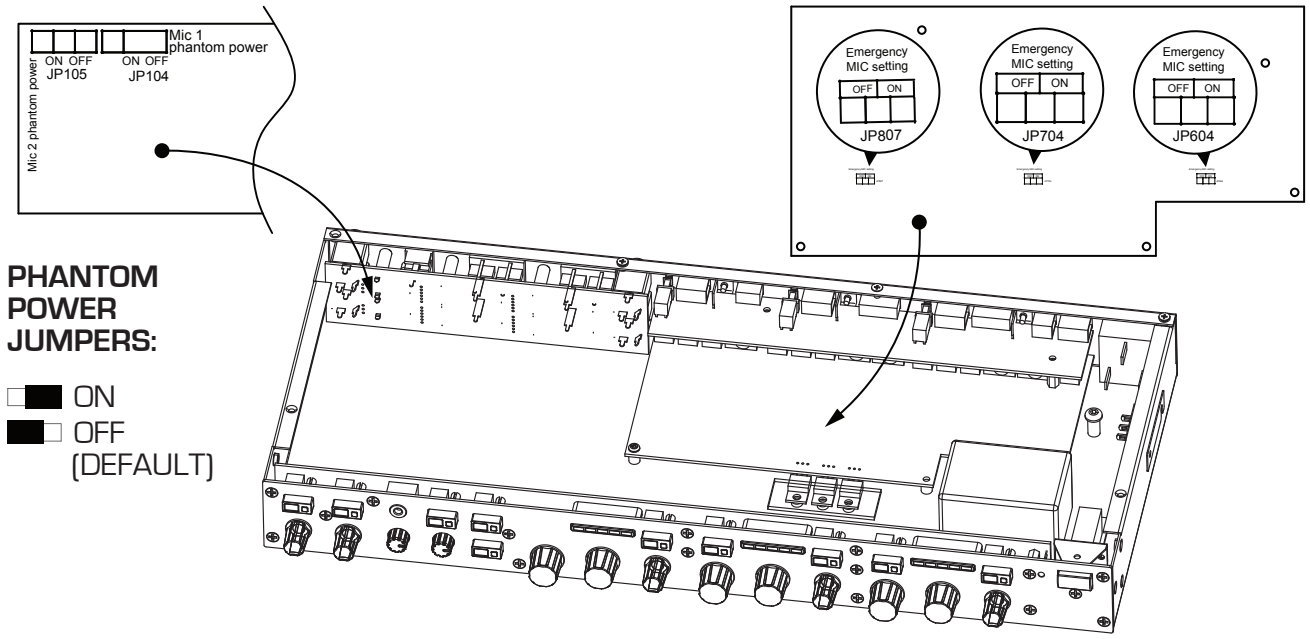
A. Microphone High Pass Filters and Microphone emergency setting

For each of the two microphone inputs, a 100Hz high pass filter can be optionally engaged. Further,the routing of connected microphones in the case of an external emergency signal muting the unit's outputs can be determined via an internal jumper, which can be set to either mute the connected microphones ("off") as well, or to to keep them active (so that aside of a emergency message broadcasted, additional instructions can be given by a local microphone - "on"). To make the setting, locate and set the jumpers on the front PCB as show below.



B. Microphone phantom power setting

In case condenser microphones are to be used instead of dynamic ones, the supply of phantom power to the microphones inputs might be required. This can be activated by setting the jumpers on the rear input PCB accordingly. There are further jumpers available inside the unit, labelled "emergency mic setting" on the main PCB. These need to remain set at the factory default position, "OFF".



Operation

A. Connections

For connecting this unit to AC mains, please note:

- Check whether the AC mains voltage and frequency is the same as this product is specified for (see rear panel of product). Whenever the specified voltage or your AC plug should not match the local conditions, do NOT plug the AC cord into the wall outlet and contact you dealer immediately.
- Do not operate this unit without the line cord earth ground connected. To do so may increase the risk of electric shock and increase line cord conducted emissions.

For making audio signal connections, always remember that good and reliable connections are a basic requirement for good sound and reliable operation. Bad soldering of cables can result in intermittent audio signals or temporarily lost ground connections, hence always use good cables. In case of doubt about making proper connections, please check the standard pin assignments required for proper operation in the following section of this manual.

B. Powering up

Following a proper power-up sequence protects your equipment – specifically speakers – and your ears. Follow the below procedure:

- Turn down all output volume controls of any equipment in your audio system.
- Switch on your audio sources first (Tuners, CD Players, PC's with soundcards, Tapedecks, etc.)
- Switch on the audio mixer
- Switch on any audio processor between the mixer and the amplifier(s) [if any].
- Switch on the amplifier(s).
- Turn up the audio level on your sources if such controls are provided.
- Set the audio output of your mixer to a low level.
- Set the audio output of any audio processor between the mixer and the amplifier(s) to a medium level [if any such processors].
- Turn up the volume controls of your amplifier(s) slowly.
- Make adjustments to all volume settings as needed.

For switching off, follow the inverse sequence – always switch off your amplifier(s) first, then any processors between mixer and amplifier(s), then the mixer, then the sources.

C. Use

Apart from using good equipment, good sound comes from using it correctly. Level setting mistakes are one of the common reasons why even good equipment may not perform as desired. For setting levels, please be reminded that two guidelines need to be followed:

- Avoid distortion by leaving some headroom. Never overrun any audio-equipment's inputs. Level meters and displays allow you to make sure that signals do not enter critical levels.
- Avoid unnecessary amplification by using as little attenuation as possible. For example, if you turn down the input gain of a mixer to minimum, and then increase the main output of the mixer to maxi mum to drive your amplifier properly, you will create unnecessary noise, as you first dispose of some already existing signal level, and then later apply amplification (tainted with noise) to make it up.

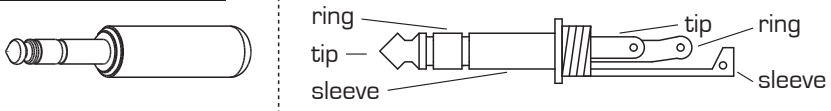
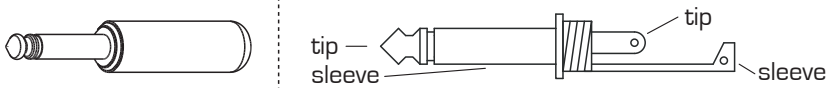
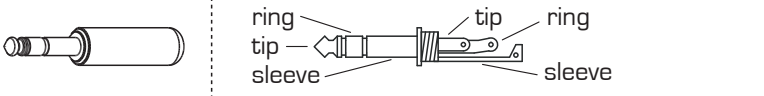
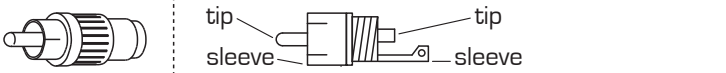
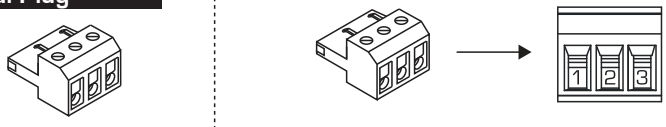
Obviously, these two requirements are marking a levelling window that the operator must match to achieve a good sound with as little distortion and noise as possible.

WARNING - HEALTH RISK

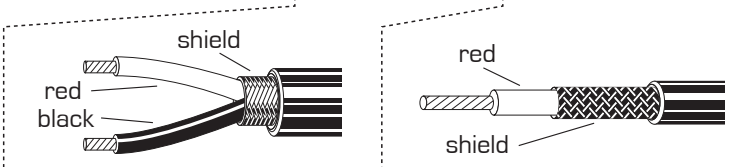
Excessive volume levels on headphones or other sound systems may cause hearing damage. Always turn the volume control to minimum when you switch the unit on, and avoid prolonged exposure to sound pressure levels exceeding 90dB.

Connections

The ZPR series mixers use 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
XLR male		red = 2 black = 3 shield = 1	red = 2 shield = 1+3
XLR female		red = 2 black = 3 shield = 1	red = 2 shield = 1+3
6.35mm TRS-stereo		red = tip black = ring shield = sleeve	red = tip shield = sleeve+ring
6.35mm TRS-mono		red = tip black = sleeve shield = uncon.	red = tip shield = sleeve
3.5mm TRS-stereo		red = tip black = ring shield = sleeve	red = tip shield = sleeve+ring
RCA		red = tip black = sleeve shield = uncon.	red = tip shield = sleeve
Terminal Plug		red = 1 black = 2 shield = 3	red = 1 shield = 2+3

CABLE Types



2-conductor shielded cable
(for balanced connections)

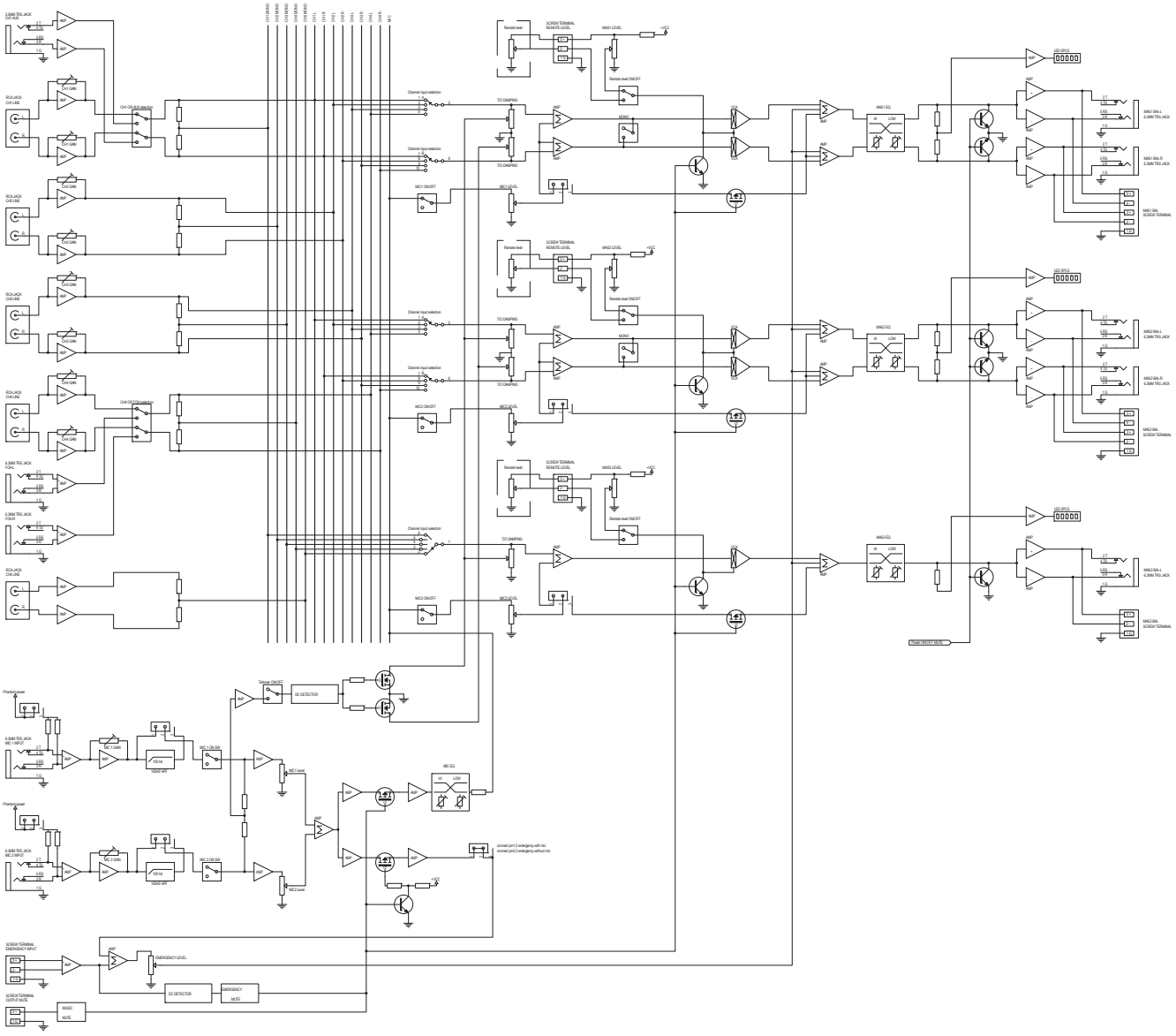
1-conductor shielded cable
(for unbalanced connections)

Technical Specifications

Signal/Noise.....>82dB (Line)
Crosstalk Damping.....>65dB (Line)
THD.....<0.05% (Line)
Frequency response.....20Hz – 20 kHz

AC IN (EU version).....AC220-250V~ 50Hz
Power consumption.....max. 18W
Dimensions.....W483xH44.5xD183.5mm
Weight..... 2.2 kg

Block Diagram



Maintenance and warranty

While we have chosen the best components to make this product as rugged and reliable as possible, some parts in audio products (potentiometers, faders, switches) are subject to wear which is a matter of operation cycles, and not of time. While providing a full time-based warranty according to the country's of purchase requirements on the function of the electronic circuitry, we hence have to limit the warranty on such electro-mechanical parts to 90 days from the date of purchase.

In many cases, malfunction of electro-mechanical parts occurs due to dust contamination, which may require cleaning of such parts. As the inside of such parts is not accessible, a common practice is to use cleaning fluids in the shape of sprays. Please be reminded that many of such fluids contain chemicals which may wash away the dust but at the same time corrode or damage contact surface and may cause cosmetic damage to other parts. We hence explicitly exclude any claims for exchange of damaged part due to mechanical or chemical impact.

EC Declaration of Conformity

Manufacturer: Adelto Technologies Limited
Address: Unit 2A Springfield Road, Springfield Industrial Estate
Burnham-on-Crouch, Essex CM08UA, England

We declare on our own responsibility, that the equipment

Hill Audio ZPR3520

is in conformity with the following directives and standards or regulations:

EMC Directive 2004/108/EC
EN55103-1:2009 (Emissions)
EN55103-2:2009 (Immunity)
EN61000-3-2:2006 + A1:2009 + A2:2009
EN61000-3-3:2008

LVD Directive 2006/95/EC
EN60065:2002 A1:2006 + A11:2008 + A2:2010

ROHS Directive 2002/95/EC

and is marked as follows: CE

Shoeburyness, 23. October 2015
Place and date of issuing

Authorized Signature