

RS100 Multizone PA Mixing Amplifier for 4 Zones 4 x 120w Output per Channel



PA Mixing Amplifier for 4 Zones

These instructions are intended for installers of PA systems (chapters 1–7) and for users without any specific technical knowledge (chapters 1–3 and chapters 6.2–6.4). Please read the instructions carefully prior to operation and keep them for later reference.

All operating elements and connections described can be found on the fold-out page 3.

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1 Operating Elements and Connections

1.1 Front panel

- 1 Tone controls TREBLE (high range) and BASS (low range); one each for the inputs CH 1 to CH 5
- 2 Controls GAIN for the input amplification; one each for the inputs CH 1 to CH 5
- 3 Level indicator for the signal of the monitoring speaker at the terminals MONITOR (16)
- 4 POWER LED
- 5 POWER switch
- 6 Volume controls for the corresponding input signal; one each for the inputs CH 1 to CH 5
- 7 Buttons ZONE SELECTOR Z 1 to Z 4 for switching the corresponding input signal to the desired PA zone(s); one each for the inputs CH 1 to CH 5
- 8 Buttons MUTE for muting the corresponding input; one each for the inputs CH 1 to CH 5
- 9 Volume control for headphones connected to the jack PHONES (10)

Here, the signals of the PA zones are available whose buttons MON (13) are

- 10 Connection PHONES for headphones
- 11 Volume control for a monitor speaker connected to the terminals MONITOR (16)
- 12 Level indicators for the corresponding PA zone; one each for the zones 1 to 4
- 13 Buttons MON for switching the corresponding signal of the PA zone to the headphone output PHONES (10), to the output MONITOR (16), and to the line signal output MIX OUT (15); one each for the zones 1 to 4
- 14 Volume controls of the corresponding PA zone; one each for the zones 1 to 4

1.2 Rear panel

- 15 Line signal output MIX OUT for connection of another amplifier or a recorder
 - 16 Terminal MONITOR for an 8 Ω monitor-speaker
- Here, the signals of the PA zones are available whose buttons MON (13) are pressed. The volume is adjusted with the control MONITOR (11).

- 17 Terminal PRIORITY for a switch: If the switch is closed, only the signals of the input CH 1 can be heard; the inputs CH 2 to CH 5 are muted.
- 18 Input TEL PAGING for a line level signal of highest priority – see chapter 5.5
- 19 Level selector switches for the inputs CH 1 to CH 3:

LINE	line level
PHANTOM	microphone level, the phantom voltage is available at the corresponding input jack (29)
MIC	microphone level, phantom voltage switched off

Caution! Only actuate the switch when the amplifier is switched off or the corresponding control LEVEL (6) is set to zero (switching noise).
With the phantom voltage switched on, do not connect a microphone with unbalanced output. The microphone may be damaged.

- 20 Outputs with line level for connection of another amplifier or a recorder; one each for the PA zones 1 to 4
- 21 Speaker terminals; one each for the PA zones 1 to 4
The maximum RMS power at each zone output must not exceed
40 W (PA-4040) or
120 W (PA-12040).

Caution! For each zone, connect low impedance speakers only (4 Ω, 8 Ω) or PA speakers only (25 V, 70 V, 100 V); otherwise, the amplifier will be damaged.

- 22 Air outlets for the temperature-controlled fan
- 23 Clamping screw for a possible ground connection
- 24 Mains fuse
Only replace a blown fuse by one of the same type.
- 25 Mains jack for connection to a socket (230 V/50 Hz) via the supplied mains cable
- 26 DIP switches ZONE
Set the switches of the zones to the lower position ON for feeding the signal at the terminals TEL PAGING (18) to the corresponding PA zone – also see chapter 5.5
- 27 RCA jacks for the inputs CH 4 and CH 5 for connection of audio units with line output (CD player, cassette recorder, radio, etc.)
- 28 Volume control for the signal at the terminal TEL PAGING (18)
- 29 Jacks for the inputs CH 1 to CH 3 (combined XLR/6.3 mm jack, bal.) for connection of microphones or audio units with line output

2 Safety Notes

The unit corresponds to all relevant directives of the EU and is therefore marked with $\text{C}\ \text{E}$.

WARNING The unit uses dangerous mains voltage.. Leave servicing to skilled personnel only and do not insert anything into the air vents.. Inexpert handling may result in electric shock..



During operation, there is a hazard of contact at the connections OUTPUT 70 V and 100 V (21) with a voltage of up to 100 V.. Always switch off the PA system before making or changing any connections..

- The unit is suitable for indoor use only.. Protect it against dripping water and splash water, high air humidity and heat (admissible ambient temperature range 0–40 °C)..
- Do not place any vessels filled with liquid, e. g.. drinking glasses, on the unit..
- The heat produced inside the unit must be carried off by air circulation; never cover the air vents (22) of the housing..
- Do not operate the unit or immediately disconnect the mains plug from the socket
 1. if the unit or the mains cable is visibly damaged,
 2. if a defect might have occurred after the unit was dropped or suffered a similar accident,
 3. if malfunctions occur..
 In any case, the units must be repaired by skilled personnel..
- Never pull the mains cable to disconnect the mains plug from the mains socket, always seize the plug..
- For cleaning only use a dry, soft cloth, never use chemicals or water..
- No guarantee claims for the unit and no liability for any resulting personal damage or material damage will be accepted if the unit is used for other purposes than originally intended, if it is not correctly connected, operated or not repaired in an expert way..



If the unit is to be put out of operation definitively, take it to a local recycling plant for a disposal which is not harmful to the environment..

3 Applications

The amplifier has especially been designed for setting up a PA system for general PA applications.. The different speaker outputs allow to connect various speaker combinations (see fig. 3).. The speakers can be distributed to four PA zones, and the volume of each zone can be adjusted independently of the others..

It is possible to connect microphones (CH 1–3) or units with line level output

(CH 1–5) to the five inputs which can be mixed with each other.. All inputs can be assigned to the four PA zones independently of each other.. An additional line level input is provided for emergency announcements or other important announcements.. With a separate switch it is possible to switch to this input..

For monitoring the zone signals, outputs for headphones and an 8 Ω monitor speaker are provided.. The zone signals may individually be fed via the outputs LINE OUT (20) or mixed via the output MIX OUT (15) to further amplifiers or to a recorder..

4 Setting up the Amplifier

The amplifier is provided for installation into a rack for units with a width of 482 mm (19"), but it can also be used as a table top unit.. In any case, make sure that air will circulate freely through all vents to provide sufficient cooling of the unit..

4.1 Rack installation

Prior to installing the amplifier into a rack, give priority to the inputs CH 1 and TEL PAGING, if required.. Open the amplifier for this purpose (chapter 6.1)..

For rack mounting 3RS (3 rack spaces = 133 mm) are required.. To prevent the rack from becoming top-heavy, the amplifier must be inserted in the lower section of the rack.. The front panel alone is not sufficient for fixing it safely.. In addition, lateral rails or a bottom plate must secure the unit..

The air heated by the amplifier must be able to leave the rack; otherwise, this will result in heat accumulation within the rack which may not only damage the amplifier but also other units in the rack.. In case of insufficient heat dissipation, install a ventilation unit into the rack..

5 Connecting the Amplifier

All connections should only be made by specialized personnel and always with the amplifier switched off!

5.1 Speakers

Fig. 3 on page 3 shows examples of different possibilities of connection of the speakers for each PA zone..

Caution! For each zone, connect low impedance speakers only (4 Ω , 8 Ω) or PA speakers only (25 V, 70 V, 100 V); otherwise, the amplifier will be damaged..

However, it is possible to connect low impedance speakers and PA speakers in different zones..

When connecting PA speakers, make sure that the RMS power at each of the four zone outputs will not exceed 40 W (PA-4040) or 120 W (PA-12040).. When interconnecting low impedance speakers, make sure that the impedance will not fall below the value stated at the terminal (4 Ω or 8 Ω)..

Connect the speakers to the terminal strips OUTPUT (21): the negative connections to the terminal "COM" and the positive connections to the corresponding terminal "4 Ω ", "8 Ω ", "25 V", "70 V", or "100 V".

5.2 Monitor speaker and headphones

To be able to monitor the signals of the PA zones, it is possible to connect an 8 Ω speaker to the terminals MONITOR (16) and headphones to the jack PHONES (10)..

5.3 Microphones

Up to three microphones with XLR plug or 6.3 mm plug may be connected to the inputs CH 1 to CH 3 (29).. Set the input level switches (19) to the corresponding position.. Only actuate the switches when the amplifier is switched off or when the corresponding control LEVEL (6) is set to zero (switching noise)..

MIC for microphones which do not require phantom power

PHANTOM for phantom-powered microphones

Caution! Do not connect any microphones with unbalanced output when the phantom power has been activated.. These microphones may be damaged..

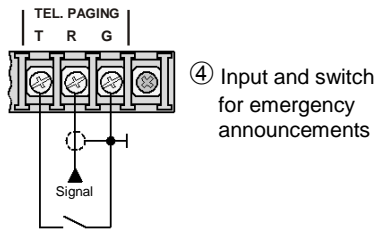
5.4 Units with line output

Up to five units with a line output (e. g.. CD player, cassette recorder, radio) may be connected to the inputs CH 1 to CH 5 (27 and 29).. For background music, it is best to use the inputs CH 4 and CH 5.. These inputs may be muted with a separate switch when e. g.. an announcement is made via the input CH 1 (see chapter 5.6).. The stereo signals fed to the jacks "L" and "R" of the inputs CH 4 and CH 5 are internally mixed to a mono signal..

When connecting to the inputs CH 1 to CH 3, set the corresponding input level switch (19) to the position LINE.. Only actuate the switch with the amplifier switched off (switching noise).. For connecting a stereo unit to the inputs CH 1 to CH 3, use one input each for the right stereo channel and the left stereo channel or use a stereo mono adapter (e. g.. SMC-1 from MONACOR); otherwise, the signals of the stereo centre will cancel each other out..

5.5 Connection for emergency announcements or a telephone system

For emergency announcements or for connection to a telephone system, the amplifier is provided with the input TEL PAGING (18)..



Feed the signal (line level, 40 mV – 1.5 V) via a shielded audio cable to the terminal “R”.. Connect the ground and the shield to the terminal “G”.. Connect a switch to the terminals “T” and “G”.. The switch is used to release the announcement, i. e.. the announcement signal may always be available at the terminal “R”, but it can only be heard when the switch is closed.. When the switch is closed, the signals of the inputs CH 2 – 5 can be muted at the same time, see chapter 6.1..

Set the DIP switches ZONE (26) for the zones where the emergency announcements are to be heard to the lower position ON.. The volume for these announcements is separately adjusted with the control VOLUME (28) on the rear side..

5.6 Switch for muting the inputs CH 2 to CH 5

The inputs CH 2 to CH 5 can be muted together with a single switch, e. g.. for making an important announcement via the input CH 1.. For this purpose, connect a switch to the terminals PRIORITY (17)..

Note: When an announcement is made via the input CH 1, the inputs CH 2 to CH 5 will be automatically muted if priority is given to the input CH 1, see chapter 6.1..

5.7 Line signal outputs for further amplifiers or a recorder

For connecting further amplifiers or a recorder, different line outputs are available:

LINE OUT (20)

The signals of the individual zones are present at these four balanced outputs.. The signal level depends on the position of the corresponding zone control LEVEL (14).. If the input of the unit to be connected is unbalanced, connect the input only to the terminals “+” (signal) and “G” (ground).. Use these outputs:

1. to connect further PA amplifiers if more speakers than permitted are required for each PA zone..
2. to connect a recorder for recording the signals of a zone..

MIX OUT (15)

Here the signals of the zones are present whose buttons MON (13) are pressed. If several zones are selected at the same time, the corresponding zone controls LEVEL (14) define the mixing ratio of the zone signals.. Use this output:

1. to connect an amplifier if e. g.. further monitoring speakers are required..
2. to connect a recorder for recording the signals of different zones..

5.8 Power supply

Finally connect the supplied mains cable to the mains jack (25) first and then to a socket (230 V/50 Hz).

6 Setting into Operation

6.1 Giving priority to the inputs CH 1 and TEL PAGING

In the factory, the inputs CH 1 and TEL PAGING (18) are adjusted in such a way that their signals will be mixed with the other input channels.. When the jumper S701 inside the amplifier is rearranged, the inputs CH 1 and TEL PAGING will take priority over the inputs CH 2 – 5.. When an announcement is made via the input CH 1 or TEL PAGING, the signals of CH 2 – 5 will be automatically muted during the announcement..

WARNING For rearranging the jumper S701, the unit must be opened.. Only skilled personnel may do this; inexpert handling may result in electric shock..



- 1) Disconnect the mains plug from the socket..
- 2) Unscrew the housing cover..
- 3) Rearrange the jumper S701 from OFF to ON (page 11, figure 5)..
- 4) Fasten the housing cover again..

6.2 Adjusting the volume and the sound, switching the input signals to the zones

- 1) To prevent switching noise, switch on all other units of the PA system first..
- 2) Prior to switching on the amplifier for the first time, set the four zone controls LEVEL (14) to zero to prevent an excessive volume at the beginning.. Then switch on the amplifier with the POWER switch (5).. The POWER LED (4) lights up..
- 3) For basic setting of the input channels
 - a) set all controls GAIN (2), TREBLE and BASS (1) to mid-position,
 - b) set all controls LEVEL (6, 14) to zero,
 - c) unlock all buttons MUTE (8) so that the red LEDs above the buttons do not light up,
 - d) unlock all buttons ZONE SELECTOR Z 1 to Z 4 (7)..
- 4) Turn up the control LEVEL (6) of the input which is to be heard at highest volume (e. g.. for announcements) to approx. 2/3 of the maximum value.. With the buttons ZONE SELECTOR (7), switch the input signal to the zones where it should be heard..
- 5) Adjust the desired volume for each zone with the zone controls LEVEL (14).. The level indicators (12) show the volume of the zones.. The top red LED lights up when

the integrated limiter limits the volume at the maximum level.. It should light up with passages of highest volume for a short time only.. If it lights up for a longer time, turn back the corresponding zone control LEVEL..

If the volume of the zones cannot be adjusted in an optimum way because the input signal is too low or too high, readjust the input level with the corresponding control GAIN (2) or LEVEL (6)..

- 6) Adjust the sound with the corresponding controls TREBLE and BASS (1).. If required, readjust the volume with the control LEVEL (6)..
- 7) For feeding further input signals to certain zones, press the corresponding buttons ZONE SELECTOR (7).. With these buttons the zones may be configured differently.. Example:
 - The announcements of input CH 1 are to be heard in all zones.
⇒ Press the buttons Z 1 to Z 4 of CH 1..
 - The announcements of input CH 2 are to be heard in zones 1 and 4 only.
⇒ Press the buttons Z 1 and Z 4 of CH 2..
 - The background music of CH 4 is to be heard in zones 1 and 2.
⇒ Press the buttons Z 1 and Z 2 of CH 4..
 - The background music of CH 5 is to be heard in zones 3 and 4.
⇒ Press the buttons Z 3 and Z 4 of CH 5..
- 8) Adjust the volume and the sound of further input signals with the controls LEVEL (6), TREBLE and BASS (1).. Turn the controls LEVEL of the inputs not used to zero..

6.3 Muting inputs

For muting an input, e. g.. for switching off the background music in case of an announcement, press down the corresponding button MUTE (8).. As an indication, the red LED above the button lights up.. To switch on the input again, unlock the button MUTE..

If a switch is connected to the terminals PRIORITY (17), the inputs CH 2 to CH 5 can be muted at the same time by closing the switch..

6.4 Monitoring the zone signals

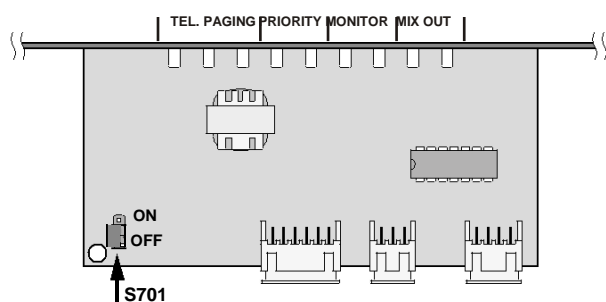
Press down the buttons MON (13) of the PA zones whose signals are to be monitored.. Adjust the volume for the monitor speaker connected to the terminals MONITOR (16) with the control MONITOR (11) and the volume for the headphones with the control PHONES (9).. The signal for the monitor speaker is shown by the level indicator (3)..

Notes:

- 1.. The volume for the headphones and the monitoring speaker also depends on the zone controls LEVEL (14).. When a control is set to zero, the signal of the corresponding zone cannot be monitored even if the button MON is pressed..
- 2.. The buttons MON are also used to switch the zone signals to the output MIX OUT (15) – see chapter 5.7..

7 Specifications

Model	PA-4040	PA-12040
Number of input channels	5	5
Number of zones	4	4
Output power		
Rated power	4 × 40 W	4 × 120 W
Music power	4 × 65 W	4 × 170 W
THD	< 1 %	< 1 %
Phantom power for Mic CH 1 – CH 3	15 V	46 V
Inputs	Input sensitivity/impedance; connection	
CH 1 – CH 3	5 mV/4 kΩ (Mic) switchable to 100 mV/10 kΩ (line); XLR/6..3 mm Jack, balanced	
CH 4, CH 5	100 mV/30 kΩ (line); RCA, unbal..	
Tel.. Paging	40 mV – 1. 5 V/5 kΩ; screw terminals, unbal.	
Speaker outputs	optionally 4 Ω, 8 Ω, 25 V, 70 V or 100 V	
Zone 1 – 4	8 Ω, 1 W	
Monitor		
Line outputs		
Zone 1 – 4	1. 70 V, bal.	
Mix Out	3..95 V, unbal..	
Frequency range	50 – 17 000 Hz (-3 dB)	
Tone control for the inputs CH 1 – 5		
Bass	±10dB/100Hz	
Treble	±10dB/10kHz	
S/N ratio		
Mic	< 65 dB	
Line	< 75 dB	
Ambient temperature	0 – 40 °C	
Power supply	230 V/50 Hz	230 V/50 Hz
Power consumption	450 VA max.	1200 VA max.
Dimensions (W × H × D)	482 × 133 × 310 mm, 3 RS	482 × 133 × 410 mm, 3 RS
Weight	15 kg	20. 5 kg



- ⑤ Jumper S701
Priority for the inputs CH 1 and TEL.. PAGING

Subject to technical modification..

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