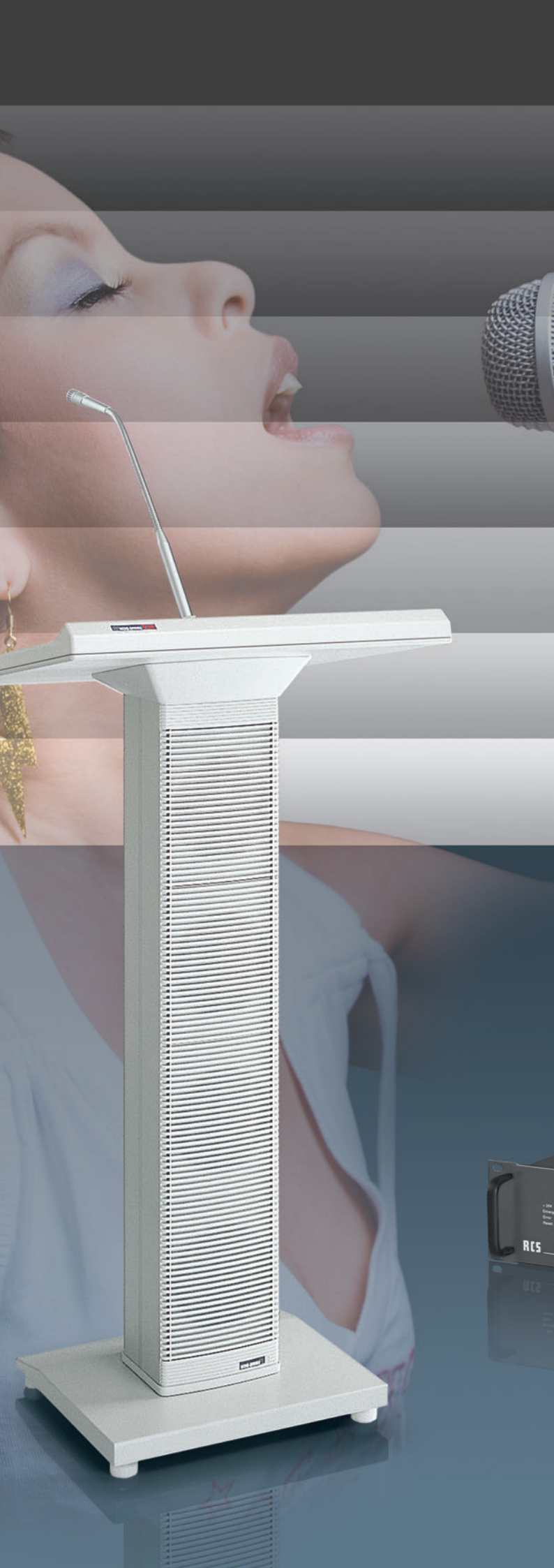


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IEC 60849

Desktop amplifiers, PA centers and Sound sources

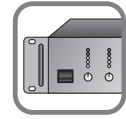


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Part 1

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19" PA devices



2

Part 2

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VARES EMERGENCY WARNING SYSTEM

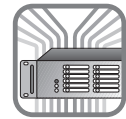


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Part 3

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PRO-LINE-SYSTEM AUDIO- AND ALARMMANAGEMENT

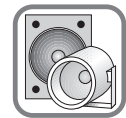


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Part 4

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Speakers for 100 V line systems



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Part 5

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Microphones, microphone stations and wireless UHF-systems



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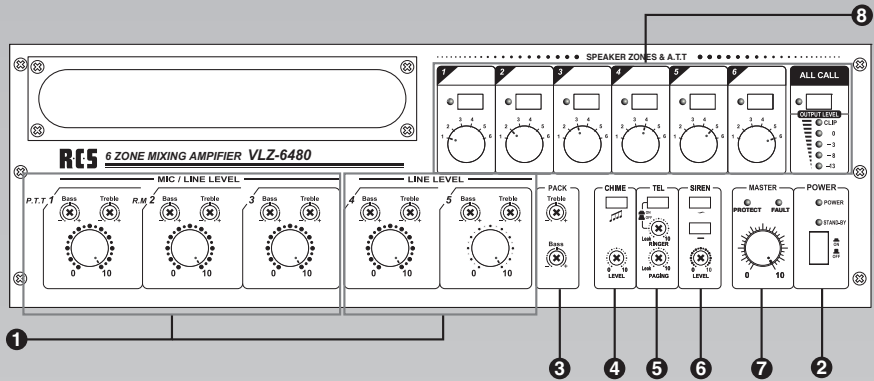
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**Desktop amplifiers, PA centers
and Sound sources**

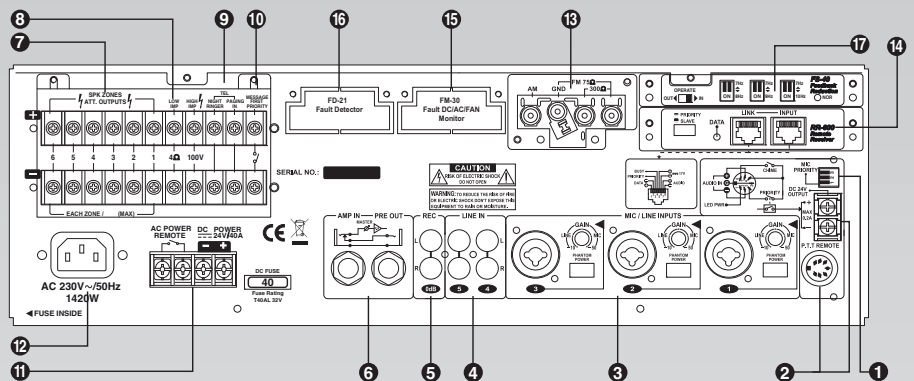


FRONT VIEW

- 1 Inputs for MIC / LINE control
- 2 Power switch
- 3 Bass/Treble control for embedded moduls
- 4 Chime switch and volume control
- 5 NIGHT-RINGER switch, volume control for RINGER and Paging-input
- 6 Siren switch, up-down tone / constant tone and volume control for siren
- 7 Master volume control
- 8 6 zones, all-call switch and control unit



- 1 MIC priority switch
- 2 MIC-1 with chime release for VLM-100 (7-pin)
- 3 MIC / LINE Inputs 1 – 3
- 4 LINE Inputs 4 + 5
- 5 REC output, unbalanced 0dB
- 6 AMP-IN and PRE-OUT, Jack 6,3 mm, unbalanced
- 7 100 V and 70 V speaker outputs, 6 separately controlled circuits
- 8 Low impedance outputs, 4 ohms
- 9 NIGHT-RINGER and PAGING-IN
- 10 Terminal for priority switch of the Digital text module DM-10
- 11 Terminal for 24V DC power supply and Power Remote
- 12 IEC power inlet (cold condition)
- 13 Antenna terminal (only with installed tuner module)
- 14 Terminal for remote microphone desks VLM-106/206
- 15 Shaft for optional Error Monitoring Module FM-30
- 16 Shaft for optional pilot tone Module FD-21
- 17 Shaft for optional Frequency Shift-Module FS-40



REAR VIEW

Technical Data	VLZ-6120 A	VLZ-6240 A	VLZ-6360 A	VLZ-6480 A	VLZ-6600 A
Output power	120 W RMS	240 W RMS	360 W RMS	480 W RMS	600 W RMS
Frequency resp., noise level	55 Hz – 16.000 Hz (better than -3 dB), MIC better than 70 dB, LINE better than 80 dB				
THD at 1 kHz	better than 1 % at 1kHz				
Inputs MIC – AUX/LINE	All Mic/Line-Inputs are electronically balanced. Input 1+2 with priority. All Inputs feature combo-females (Jack 6,3 mm, XLR) Mic: -50dB (2,45 mV), Line: -10dB (245 mV)				
Outputs, speakers	100 V, 70 V, low impedance 4 ohms,				
Additional input or output	AMP-IN: +4dB (1,23 V), PRE-OUT: 0dBu (775 mV)				
Chime and Siren	2- or 4-tone chime (switchable); siren with up-down or continuous tone (adjustable on the frontside)				
Power Supply AC/DC	AC 230 V (50/60 Hz), 24V DC				
Dimensions (WxHxD)/weight	483x133x350 mm; 13 kg	483x133x350 mm; 14 kg	483x133x350 mm; 19 kg	483x133x350 mm; 20 kg	483x133x350 mm; 22 kg



5 power classes
120-240-360-480-600 W



VLM -206

Supplied with
19" mounting brackets

- + 6 SPEAKER LINES
- + MONITORING OF THE BASIC FUNCTIONS
- + UP TO 600W (RMS) POWER

Description

The "VARIO-LINE" amplifier and microphone system permits the switching of up to **6 speaker zones** and of the all-call function as well as the setting of the desired volume for each zone from the central unit. The amplifier can be used with any microphone, but has been optimized for the use with the "VARIO-LINE" microphone stations VLM-100, VLM-106 (digital remote control of the speaker zones) and VLM-206 (digital remote control of the speaker zones and the DM-10 digital announcement module).

Please consider the following features:

- Inputs 1 - 3 can be switched to MIC or LINE. The respective volume as well as treble and bass are controlled separately and have always priority over LINE-IN.
- All MIC inputs have gain control and switchable phantom power. The priority switches define the priority of the inputs.
- The MIC inputs are balanced combo sockets. MIC-1 is additional on 7-pin DIN socket for VLM-100. The LINE inputs are RCA sockets.
- Optionally available are the Module FD-21 monitor the amplifier. Further available the Module FM-30 with fan/fuse fault relay contacts and the FS-40 Frequency-Shift-Module.
- The AMP-IN and PRE-OUT sockets allow cascading of further amplifiers. The 5 output circuits may also be used for this purpose after they have been modified (VLZ-SERVICE 01).
- The amplifier operates on mains power (230 V) or 24 V DC (emergency power supply).
- The unit is also equipped with an electronic 2- or 4-tone chime (switchable), an electronic siren (high-low, switchable to alarm sound) and a telephone paging input (Line-in with priority); all these signals can be controlled separately on the front panel.

- A special feature of all models is the option for integrating a sound source module. An empty compartment is provided for the installation of an additional module. The following modules are available:

FM/AM tuner module

12 x FM + 6 x AM memory stations

TP-10



Cassette player module

Autoreverse and pause function

CP-10



Cassette/tuner module

Functions of TP-10 and CP-10

CR-10



CD/MP3- player module

Repeat, Random, etc.

GDP-10 M



CD/MP3- tuner module

RDS-Tuner and MP3-/CD-Player

CDR-10 RDS



Digital text module

6 texts up to 4 min. 28 sec.

DM-10



For a detailed description of the modules see pages 20 and 21.

Model designations

- 6-ZONES „VARIO-LINE“, 120 W (3 RU)..... VLZ-6120 A**
- 6-ZONES „VARIO-LINE“, 240 W (3 RU)..... VLZ-6240 A**
- 6-ZONES „VARIO-LINE“, 360 W (3 RU)..... VLZ-6360 A**
- 6-ZONES „VARIO-LINE“, 480 W (3 RU)..... VLZ-6480 A**
- 6-ZONES „VARIO-LINE“, 600 W (3 RU)..... VLZ-6600 A**

VLM-100 | for all-call

Microphone desk (condenser) with pre-announcement chime, priority switching via 7-pin DIN connection.



Microphone desk **VLM-100**

VLM-106 | for 6 zones

Digital microphone desk to select and control 6 speaker zones. Pre-announcement chime and all-call.



Microphone desk **VLM-106**

For remote control of 6 Speaker zones and „all-call“

Microphone desk **VLM-106 WO**

as VLM-106 but without interface RR-60

VLM-206 | for 6 zones & text module

Digital microphone desk to select and control 6 separately speaker zones, further for remote control of the digital text module DM-10.



Microphone desk **VLM-206**

For remote control of 6 Speaker zones, „all-call“ and DM-10

Microphone desk **VLM-206 WO**

as VLM-206 but without interface RR-60

OPTIONAL | Pilotone-Module

FD-21

Description

This pilot tone module serves to monitor the performance of amplifiers.

The generator produces a 20 kHz test signal. Apart from the test of the power amplifier functioning, the speaker line is checked for short circuit faults.



Pilotone-Module **FD-21**

Extension-Module for the VLZ-Series

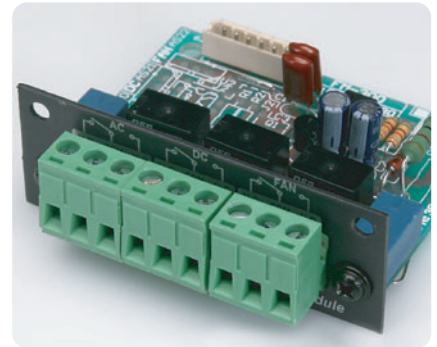
OPTIONAL | Error Monitoring-Module

FM-30

Description

The Error Monitoring-Module has three potential-free relay contacts (NO/NC).

Fault monitoring is operating if AC- or DC-fuse is blown and if AC- or DC-power is off or disconnected. Also the module reacts when fan fault or fan is disconnected.



Error Monitoring-Module **FM-30**

Extension-Module for the VLZ-Series

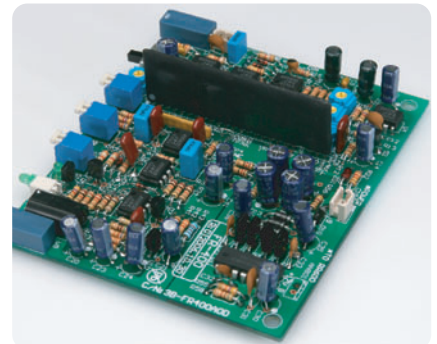
OPTIONAL | Frequency Shift-Module

FS-40

Description

Module for the reduction of feedback noise (takes only effect at Input 1 of VLZ).

The possible frequency shifts of 7 - 10 Hz make sense, even if background music in addition to microphone announcements take place.



Frequency Shift-Module **FS-40**

Extension-Module for the VLZ-Series

SPECIAL FUNCTIONS 6-ZONES „VARIO-LINE“ OPTIONAL

RCS

Example 1: 6 speaker lines, total power 2520 W

VL-SERVICE 01

Up to 5 speaker zones are adapted to LINE level for cascading with further amplifiers:

30 x BC-006



6 x PB-730



40 x RC-110



13 x DH-130S



30 x RC-110



BA-240 C



BA-240 C



BA-480 C



BA-480 C



BA-480 C



5x 0-dB adjustment
(internal)



VLZ-6600 A



4 x PB-1210



VLM-206



VLM-106



VLM-100

EXAMPLE 2: School with recess chime and alarm siren

VL-SERVICE 03

Additional input for the external control of chime, siren and All-Call:

Staff room

Corridors 1 & 2

Rooms 1-19

Sports field

Sports hall

School yard



FIRE DETECTION CENTER

SIREN

CHIME

DCF-RADIO CLOCK TIMER

Digital microphone stations



VLM -105

VLM -205

Description

The VLM-105 and VLM-205 digital microphone stations allow remote control of the "VARIO-LINE" central units.

- The RR-10 connection panel (digital interface) is included in the scope of supply of each unit.
- The microphone stations control the 5 speaker zones, all-call paging and the condenser microphone (cardioid polar pattern) with pre-announcement chime. With model VLM-205, the DM-10 digital announcement module can be remote-controlled in addition.
- With an overall cable length of up to approx. 100 m, up to 6 VLM-105/205 stations can be connected in series. With cable lengths of up to 250 m, however, only 3 VLM-105/205 stations can be connected up.
- The desired priority as well as the desired volume can be set on the rear of each unit.
- An AUX-IN (L+R, RCA) allows insertion of CD players, cassette players, etc.
- Each unit is supplied with a 3 m data cable with RJ-45 connectors (8-pin).

Microphone station **VLM-105**
(For remote control of 5 speaker zones and all-call)

Microphone desk **VLM-105 WO**
as VLM-105 but without interface RR-10

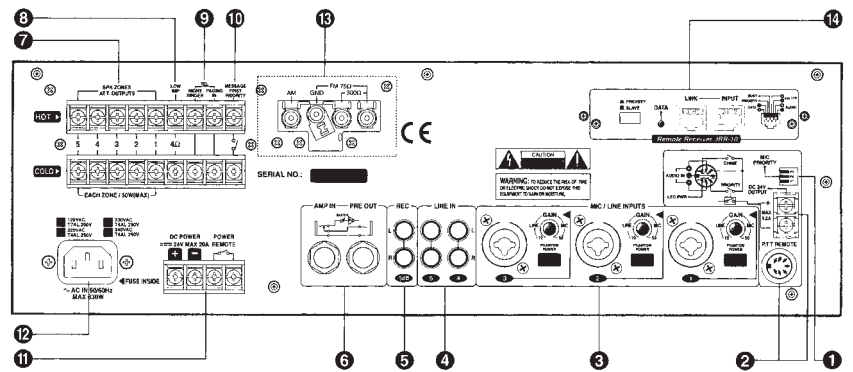
Microphone station **VLM-205**
(For remote control of 5 speaker zones, all-call and the DM-10 announcement module)

Microphone desk **VLM-205 WO**
as VLM-205 but without interface RR-10



Microphone station (condenser) with pre-announcement chime and priority switching via 7-pin DIN connector.

Microphone station **VLM-100**



- 1 Switch for microphone priority, controls the priority of MIC-1, 2 and 3 over the other inputs.
- 2 MIC-1 with chime enables for RCS microphone station VLM-100 with 24 V DC power supply terminal for obligation call relays.
- 3 MIC-LINE input 1 - 3 with gain control on balanced combo sockets (XLR and jack) and phantom power.
- 4 LINE input 4 + 5, unbalanced RCA sockets.
- 5 REC output, unbalanced 0 dB, on RCA sockets.
- 6 AMP-IN and PRE-OUT on 6.3 mm jack, unbalanced
- 7 100 V and 70 V speaker outputs divided into 5 circuits that can be controlled separately.
- 8 Low-impedance output, 4 ohms.
- 9 NIGHT-RINGER: Contacts for the clearing of the internal bell signal (8-12 V AC necessary).

Switch on frontside to activate or deactivate it.

PAGING-IN: Electronic balanced LINE input with priority function, e.g. for the feed of signals from telephone systems.

- 10 Terminal for priority switching of the DM-10 digital announcement module. The text of bank 6 can be activated separately, e.g. through the central fire alarm system.
- 11 Terminal for 24 V DC power supply (emergency power supply) and for switching on/off of amplifier.
- 12 IEC power inlet (cold condition)
- 13 Antenna connection cable for the use of TP-10 tuner modules, RC-10 cassette/ tuner modules or CDR-10 CD/tuner modules.
- 14 Connection panel for the VLM-105 and VLM-205 remote microphone stations with respective priority switches.

Technical data VLA-120C - VLA-240C

Output power	VLA-120: 120 W RMS (max. 180 W) - VLA-240C: 240 W RMS (max. 360 W)
Frequency resp., noise level	50 Hz - 18000 Hz (better than -3 dB), MIC: better than 70 dB, LINE: better than 80 dB
THD	better than 1 % at 1 kHz
Inputs	MIC/LINE 1- 3: -50 dBu (2.45 mV), 5 k ohms, balanced MIC/LINE 1-3: -10 dBu (245 mV), 5 k ohms, balanced LINE 4 - 5: -10 dBu (245 mV), 15 k ohms, unbalanced TELEPHONE PAGING: -50 dBu (245 mV), 5 kohms, elect. balanced REMOTE MIC: -10 dBu (2.45 mV), 10 k ohms, unbalanced AMP IN: 0 dBu (775 mV), 10 k ohms, unbalanced
Outputs	PRE OUT: 0 dBu (775 mV), 3 k ohms, unbalanced PRE OUT: 0 dBu (775 mV), 100 ohms, unbalanced
Outputs, speakers	100 V or 70 V and 4 ohms low-impedance Control steps: 100 V - 70 V - 50 V - 25 V - 12.5 V - 8.9 V on 5 zones and all-call
Two- or Fourtone chime	volume can be set on the front panel, chime type switchable by jumper
Siren	continuous tone or high-low, can be set on front panel
Telephone paging	can be set on the front panel (night ringer also adjustable)
Phantom power	on all MIC inputs (combo socket for XLR and 6.3 mm jack)
Treble and bass controls	on the front panel, separately for inputs 1 - 5 and audio source module
Gain	on the front panel for inputs 1 - 3
Priority	can be set separately for MIC 1 - 3 on the rear
Power supply	230 V mains (50/60 Hz) and 24 V DC (emergency power supply)
Power consumption	VLA-120 C: 350 W - VLA-240 C: 630 W VLA-120 C: 1/8-0.8 A - rated-1.8 A - VLA-240C: 1/8-1.6 A - rated-3.2A
Dimensions WxHxD, weight	483x133x352 mm, weight VLA-120 C approx. 13.0 kg, VLA-240 C approx. 14.5 kg

Ball-bearing fan ensures long life and quiet running



VLM - 100

VLM - 205

Supplied with 19" mounting brackets.

Description

The "VARIO-LINE" amplifier and microphone system permits the switching of up to 5 speaker zones and of the all-call function as well as the setting of the desired volume for each zone from the central unit. The amplifier can be used with any microphone, but has been optimized for the use with the "VARIO-LINE" microphone stations VLM-100, VLM-105 (digital remote control of the speaker zones) and VLM-205 (digital remote control of the speaker zones and the DM-10 digital announcement module).

Please consider the following features:

- Inputs 1 - 3 can be switched to MIC or LINE. The respective volume as well as treble and bass are controlled separately and always have priority over LINE-IN.
- All MIC inputs have gain control and switchable phantom power. The priority switches define the priority of the inputs.
- The MIC inputs are balanced on combo sockets. MIC-1 is additional on 7-pin DIN socket for PTT-MIC. The LINE inputs are via RCA sockets.
- The amplifier is equipped with an automatic DC fan as well as with all required protective devices such as overload and overheating protection as well as soft start.
- The AMP-IN and PRE-OUT sockets allow cascading of further amplifiers. The 5 output circuits may also be used for this purpose after they have been modified (0 dB control).
- The amplifier operates on mains power (230 V) or 24 V DC (emergency power supply).
- The unit is also equipped with an electronic 2-tone chime (4-tone chime optional), an electronic siren (high-low, switchable to alarm sound) and a telephone paging system (Line-in with priority); all these signals can be controlled separately on the front panel of the unit.

Small central unit „VARIO-LINE“, 120 W **VLA-120 C**

Small central unit „VARIO-LINE“, 240 W **VLA-240 C**

Special functions

Special functions such as ground fault detection, remote of chime, siren, deactivation of priority, all-call paging and 0-dB setting element for the power extension can be integrated in the unit. Please consider the options, shown in extracts on the next pages.

- A special feature of all the models of this series is the option for integrating a sound source module into the unit. An empty compartment is provided for the installation of an additional module. The following modules are available:

FM/AM tuner module

12 x FM + 6 x AM memory stations

TP-10



Cassette player module

Autoreverse and pause function

CP-10



Cassette/tuner module

Functions of TP-10 and CP-10

CR-10



CD/MP3- player module

Repeat, Random, etc.

CDP-10 M



CD/MP3- tuner module

RDS-Tuner and MP3-/CD-Player

CDR-10 RDS



Digital text module

6 texts up to 4 min. 28 sec.

DM-10



For a detailed description of the modules see pages 20 and 21.

Example 1: 5 speaker lines, total power 1680 W **VL-SERVICE 01**

Up to 4 speaker zones are adapted to LINE level for cascading with further amplifiers.:

30 x BC-006



6 x PB-730



40 x RC-110



13 x DH-130S



1 x PB-1210



BA-240 C



BA-240 C



BA-480 C



BA-480 C



4x 0-dB adjustment (internal)



VLA-240 C

VLM-105



VLM-105



VLM-100, since no DM-10



EXAMPLE 2: School with recess chime and alarm siren **VL-SERVICE 03**

Additional input for the external control of chime, siren and All-Call:

Staff room

Corridors 1 & 2

Rooms 1-19

Sports hall

School yard



FIRE DETECTION CENTER

SIREN

CHIME

DCF-RADIO CLOCK TIMER

VL-SERVICE 01

0-dB adjustment for power extension

The desired numbers of speaker zones are adapted to LINE level for cascading with further amplifiers.

1. Power extension up to 3000 W
2. Separate control- and switchable lines remain
3. 0-dB adjustment internal (please indicate desired number with the order)

0-dB adjustment, for power extension... **VL-SERVICE 01**

VL-SERVICE 02

Installation PCM-100

Installation PCM-100 special (7 chime types & DIN-siren)

1. Option from 7 different chime types (1-tone, 2-tone, 3-tone, 4-tone, from 2-tone up or down)
2. To be controlled separately via potential-free contacts
3. Siren compliant to DIN 33404

Installation PCM-100..... **VL-SERVICE 02**

VL-SERVICE 03

Input for the external control of 4-tone chime, siren and All-Call

Input for the external control of 4-tone chime, siren and All-Call:

1. For release of chime and siren via potential free contacts, e.g. by BMZ, clock timer, remote microphone etc.
2. Simultaneous release of All-Call
3. 2-tone chime as pre-chime of remote mic.

Input for the external control **VL-SERVICE 03**

VL-SERVICE 04

2 chime types

Input for the external control of 4-tone chime and 2-tone chime as pre-chime of remote microphone:

1. For release of 4-tone chime via potential free contacts, e.g. by clock timer (recess chime)
2. Simultaneous release of All-Call
3. 2-tone chime as pre-chime of remote mic.

2 chime types..... **VL-SERVICE 04**

VL-SERVICE 05

Potential free contacts

Input for potential free contacts for external control of the 5 or 6 speaker lines:

1. Easy activation of desired speaker lines, e.g. via substation, key pad or clock timer
2. 7-pin DIN-socket as interface

Potential free contacts..... **VL-SERVICE 05**

VL-SERVICE 06

Ground leak monitoring

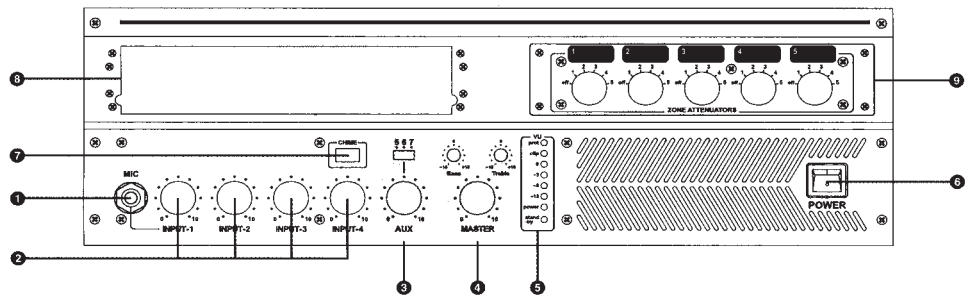
Module installation for ground leak monitoring:

1. Monitoring of the 100V-outputs for ground leak
2. Alarm tone at fault

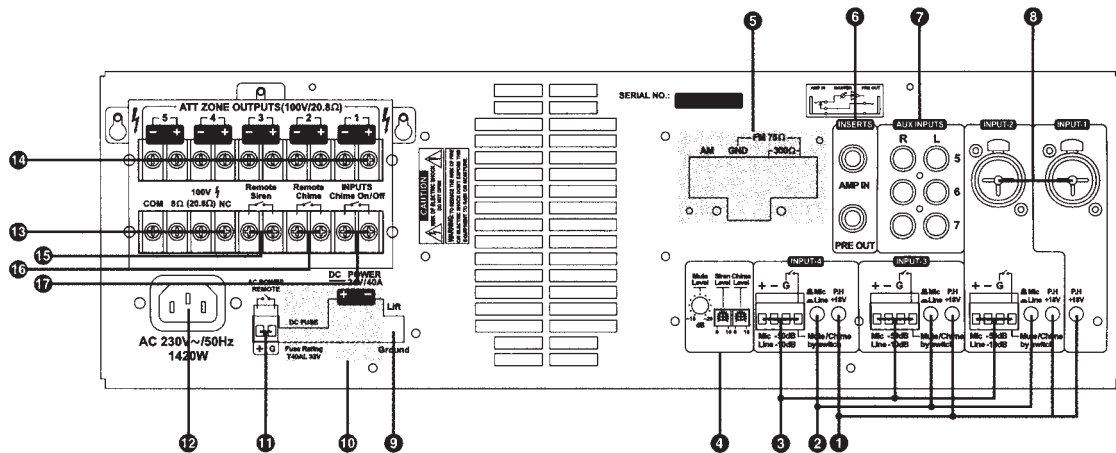
Ground leak monitoring..... **VL-SERVICE 06**

- 1 Input for Mic 1 (priority)
- 2 Controls for input 1-2-3-4
- 3 Control and switch for AUX 5-6-7
- 4 Master volume control and bass/treble controls
- 5 LED for operating status
- 6 Power switch
- 7 Chime switch to trigger chime
- 8 Empty compartment for installation of sound source modules
- 9 5-zone switch and control panel

Front view



Rear view



- 1 Phantom power switch for input 1-2-3-4
- 2 MIC/LINE selector switch for input 2-3-4
- 3 Balanced inputs on screw-type connectors (MS-050)
- 4 Controls for chime, siren and mute level
- 5 Blank panel for antenna of TP-10, CR-10 and CDR-10 RDS or remote control of DM-10 announcement module
- 6 AMP-IN and PRE-OUT on 6.3 mm jack, unbalanced
- 7 AUX input 5-6-7 on RCA sockets
- 8 Input 1 -2 on combo sockets (XLR and jack)
- 9 Ground lift switch
- 10 24 V DC connection
- 11 Remote switch-on via "Power Remote"
- 12 IEC power inlet (cold condition)
- 13 8 ohms and 100 V / 70 V outputs
- 14 5 Switchable and adjustable speaker outputs (100 V or 70 V)
- 15 Remote control for siren
- 16 Remote control for two-tone chime
- 17 Contact for pre-announcement chime input 2-3-4 (factory supplied with bridge)

Technical data	CPA-5120C	CPA-5240C	CPA-5480C
Output power	120 W (RMS)	240 W (RMS)	480 W (RMS)
Frequency response	Mic: -3dB (200Hz ~ 19 kHz) Line: -3dB (35Hz ~ 19 kHz)		
THD at 1 kHz	less than 0.5%		
Inputs	Input 1 Mic: -50dB (2.45mV) / 2 k ohms, balanced Input 2-4 Mic: -50dB (2.45mV) / 2 k ohms, balanced Line: -10dB (245mV), balanced Input 5-7 AUX: -10dB (245mV) / 5 k ohms, unbalanced Pack unit: -10dB (245mV) / 10 k ohms, unbalanced PRE OUT: 0dB (775mV) 100 ohms, unbalanced AMP IN: 0dB (775mV) 10 k ohms, unbalanced		
Outputs, speakers	70 V or 100V and low-impedance outputs (8 ohms)		
Treble and bass controls	Bass: ±10dB at 100Hz Treble: ±10dB at 10 kHz		
Signal-to-noise ratio	Mic: > 70 dB Line: > 80 dB		
Power consumption	max. 1.8 A	max. 3.2 A	max. 7.5 A
Power supply	230 V (AC - 50-60Hz) mains power and 24 V DC		
Dimensions WxHxD/weight	430 x 133 x 352 mm, 3 RU; approx. 14 kg	approx. 16.5 kg	approx. 20 kg

available in 3 power classes
120-240-480 W



MS-050P



Supplied with 19" mounting brackets.

Description

The PA center of the "CPA-5000 Series" is available in 3 power classes: **120 W**, **240 W** and **480 W**. The units include 5 100 V and 70 V speaker circuits, which can be switched and controlled separately.

They feature chime, siren, phantom power and priority switching and are well-suited for professional audio applications.

Please consider the following features:

- The PA center operates on mains power (230 V) or 24 V DC.
- The speaker outputs are available as 100 V and 70 V as well as 8 ohms (low-impedance) outputs.
- All models have 5 speaker circuits which can be controlled separately on the front panel.
- All models have 5 speaker circuits which can be controlled separately on the front panel.
- All microphone inputs are balanced and have switchable phantom power. Inputs 2, 3 and 4 can be switched to line.
- Mic input 1 has an adjustable electronic priority control.
- The AMP-IN and PRE-OUT sockets on the rear allow cascading of further amplifiers and insertion of other units such as equalizers.
- The two-tone chime and the siren can be remote-controlled and can be adjusted on the rear.
- Input 1 has voice-activated priority override, inputs 2-3-4 have contact-activated priority over AUX 5-6-7.
- The special **MS-050P** microphone station is connected through a 4-pin screw-type connector (a maximum of 3 microphone stations can be connected). It has a function to enable pre-announcement chime and priority.

- A special feature of all the models of this series is the option for integrating a sound source module into the unit. An empty compartment is provided for the installation of an additional module. The following modules are available:

FM/AM tuner module

12 x FM + 6 x AM memory stations

TP-10



Cassette player module

Autoreverse and pause function

CP-10



Cassette/tuner module

Functions of TP-10 and CP-10

CR-10



CD/MP3- player module

Repeat, Random, etc.

CDP-10 M



MP3

CD/MP3- tuner module

RDS-Tuner and MP3-/CD-Player

CDR-10 RDS



MP3 RDS

Digital text module

6 texts up to 4 min. 28 sec.

DM-10



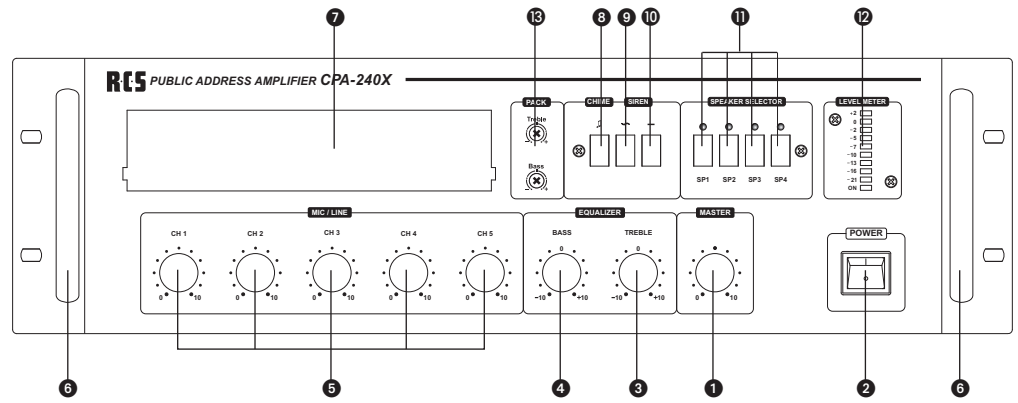
For a detailed description of the modules see pages 20 and 21.

Model designations

- Small central unit, 120 W** (3 RU)..... **CPA-5120C**
- Small central unit, 240 W** (3 RU)..... **CPA-5240C**
- Small central unit, 480 W** (3 RU)..... **CPA-5480C**

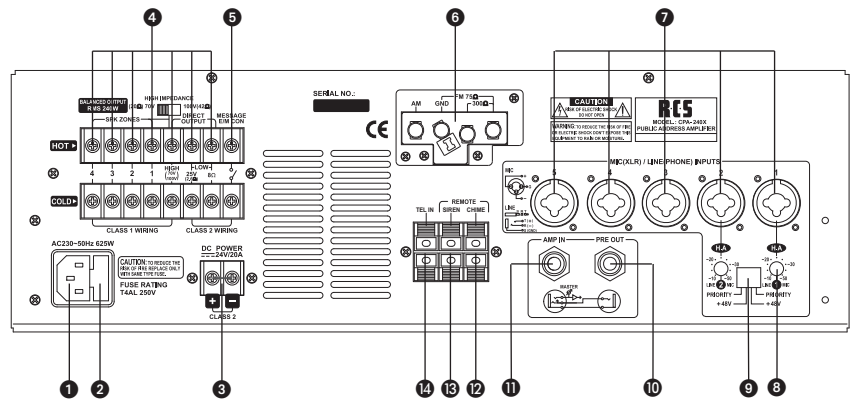
Desktop microphone station..... **MS-050P**
Screw-type connector, balanced, pre-announcement chime, priority

- 1 Master volume
- 2 Power switch
- 3 High frequency control
- 4 Low frequency control
- 5 CH 1-5 volume MIC / LINE
- 6 Handle
- 7 Accessory port
- 8 Chime switch
- 9 Siren switch up-down siren
- 10 Siren switch constant siren
- 11 Speaker selector
- 12 LED level meter
- 13 Tone controller for audio source module (pack)



Front view

- 1 AC inlet socket
- 2 AC fuse holder
- 3 DC power input terminals
- 4 Speaker terminal
- 5 Contact to activate priority if digital text module DM-10A is in use
- 6 Antenna terminals (only if tuner is installed)
- 7 MIC / LINE inputs 1 – 5
- 8 H.A Gain-Control
- 9 Switch phantom power / priority
- 10 PRE-OUT, jack 6,3 mm, asym.
- 11 AMP-IN, jack 6,3 mm, asym.
- 12 Chime remote contact
- 13 Siren remote contact
- 14 TEL-IN terminal, absolute priority



Rear view

Technical data	CPA-120X	CPA-240X
Output power	120 W RMS (max. 180 W)	240 W RMS (max. 360 W)
Frequency resp., noise level	80 Hz – 15000 Hz (± 3 dB), noise level MIC better than 60 dB, AUX/LINE better than 70 dB	
THD at 1 kHz	better than 1 %	
MIC – AUX/LINE inputs	All Mic/Line-Inputs are electronically balanced. Input 1+2 with priority. All Inputs feature Combo-females (Jack 6.3 mm, XLR) Mic: -50dB (2.45 mV), Line: -10dB (245 mV)	
Outputs, speakers	100 V – 70 V – 25 V, low impedance 8 ohms	
Additional input or output	AMP-IN: +4dB (1.23 V), PRE-OUT: +4dB (1.23 V)	
Two-tone chime and siren	Two-tone chime can be remote-controlled, siren optional with high-low or continuous tone.	
Power supply AC/DC	AC 230 V (50/60 Hz), DC 24 V	
Dimensions (in mm), weight	483 (B) x 133 (H) x 350 (T), 11 kg	13 kg

2 Power classes
120 W / 240 W



Description

The new PA centers CPA-120 X/240 X features 4 switchable 100 V or 70 V speaker lines. The amplifier power amounts 120 W/240 W. Further features, the external controllable chime, 2 different types of siren, the insertable phantom power as well as an integrated priority function. The device is in the best way suitable for professional application.

Please consider the following features

- The inputs 1 and 2 are switchable from Mic. to LINE. Both XLR and jack plug (6.3 mm) can be used.
- The inputs 3 - 5 can process both Mic. and LINE signals (XLR = Mic; jack = LINE).
- All Mic/Line inputs are electronically balanced, whereby priority and phantom voltage can be assigned to inputs 1 and 2.
- The amplifier can be operated with 230 V AC or with 24 V DC.
- Additionally to the 4 lines, one 100 V-, one 70 V- and one 8 ohms output are available as unswitched speaker outputs.
- For cascading with further amplifiers as well as for feeding in external tone sources, an AMP-IN and a PRE-OUT are featured.
- An additional TEL-IN enables feeding in line signals with priority.
- The 2-tone chime is remote-controlled and can be released e.g. by a school clock or a substation.

- This model offers the option to insert a sound source module into the unit.
The following modules are available:

FM/AM tuner module
12 x FM + 6 x AM memory stations
TP-10



Cassette player module
Autoreverse and pause function
CP-10



Cassette/tuner module
Functions of TP-10 and CP-10
CR-10



CD/MP3- player module
Repeat, Random, etc.
CDP-10 M



CD/MP3- tuner module
RDS-Tuner and MP3-/CD-Player
CDR-10 RDS



Digital text module
6 texts up to 4 min. 28 sec.
DM-10

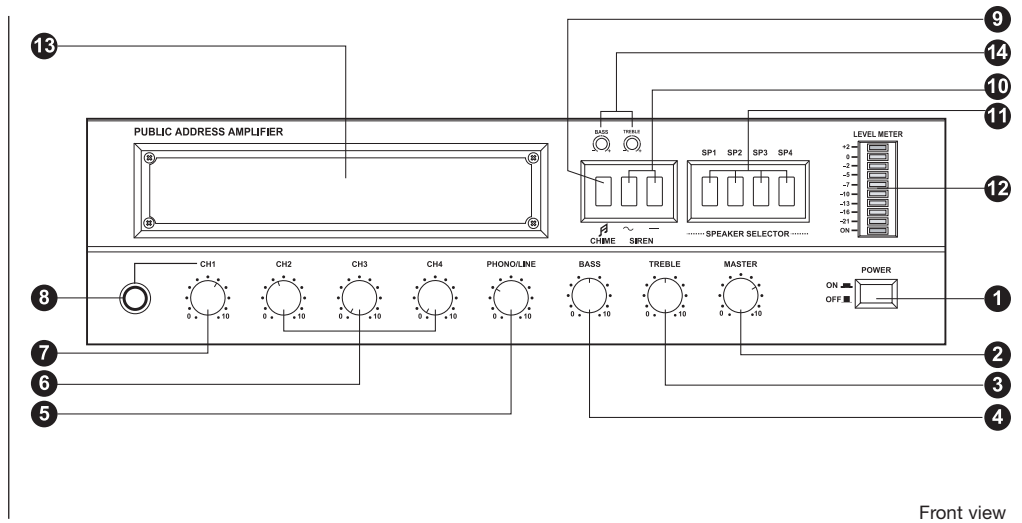


For a detailed description of the modules see pages 20 and 21.

Model designation

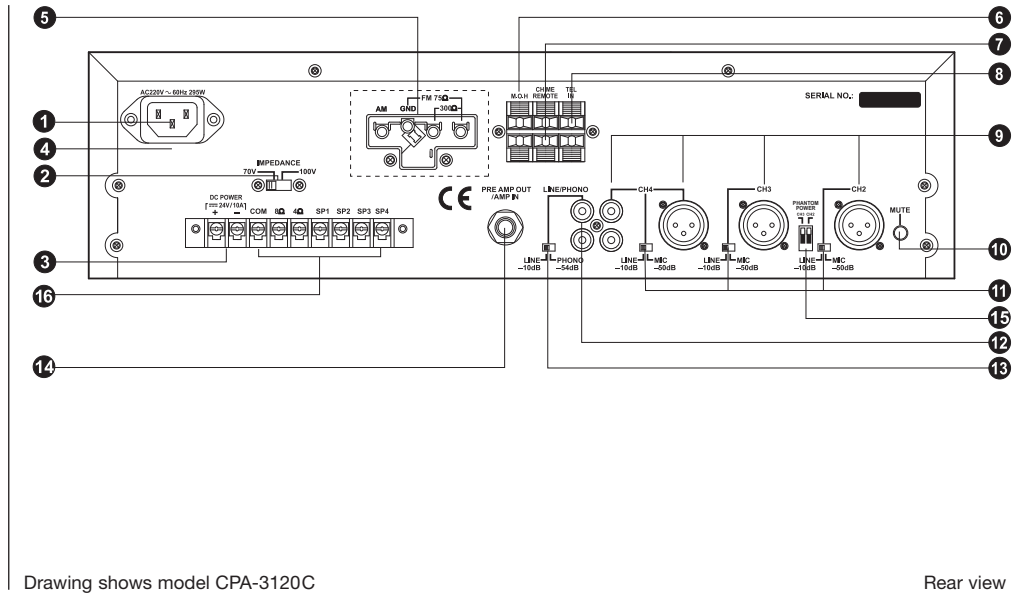
Small central unit, 120 W RMS, 3 RU **CPA-120 X**
Small central unit, 240 W RMS, 3 RU **CPA-240 X**

- 1 Power switch
- 2 Master control
- 3 Treble control
- 4 Bass control
- 5 PHONO / LINE control
- 6 Controls for MIC / AUX 2-3-4
- 7 Control for MIC 1
- 8 MIC 1 input
- 9 Two-tone chime button
- 10 Siren signal buttons
- 11 Buttons for speaker lines 1-4
- 12 Output indicator
- 13 Empty field for the sound source modules
- 14 Treble and bass control for the sound source modules



Front view

- 1 Power inlet
- 2 Impedance switch 100 V - 70 V
- 3 24 V DC power supply
- 4 Fuse holder (AC and DC)
- 5 Optional: Antenna inputs (only with modules TP-10 and CR-10)
- 6 Contact for the release of text 6 at DM-10
- 7 Remote control for two-tone chime
- 8 LINE-input with priority e.g. for telephone center
- 9 Inputs for MIC / LINE 2 - 3 - 4
- 10 Priority control for MIC 1
- 11 LINE selector switch for MIC / LINE
- 12 PHONO / LINE input
- 13 PHONO / LINE selector switch
- 14 Pre-amplifier OUT, amplifier IN
- 15 Phantom power switch for CH2 / CH3
- 16 Speaker terminal strip



Drawing shows model CPA-3120C

Rear view

Technical data	CPA-3060C	CPA-3120C
Output power	60 W RMS (max. 90 W)	120 W RMS (max. 180 W)
Frequency resp., noise level	50 Hz - 18000 Hz (± 3 dB), noise level MIC: better than 60 dB, AUX/LINE: better than 70 dB	
THD at 1 kHz	better than 1 %	
MIC - AUX/LINE inputs	All MIC and AUX / LINE inputs as well as CH-5 (LINE/PHONO) are electronically balanced, MIC-1 (CH-1) with priority override (adjustable) With all models, inputs 2, 3 and 4 (CH 2, 3 and 4) are balanced on 3-pin XLR-sockets, the other inputs are on jack (6.3 mm) or RCA	
Outputs, speakers	100 V - 167 ohms, 70 V - 83 ohms, 4 - 8 ohms	100 V - 83 ohms, 70 V - 41 ohms, 4 - 8 ohms
Additional input or output	Serves as pre-amplifier output or amplifier input.	
Two-tone chime and siren	Two-tone chime can be remote-controlled, siren optional with high-low or continuous tone.	
Power supply AC/DC	AC 230 V (50/60 Hz), DC 24 V	AC 230 V (50/60 Hz), DC 24 V
Dimensions (in mm), weight	420 (W) x 110 (H) x 320 (D), 10.0 kg	420 (W) x 110 (H) x 320 (D), 12.0 kg

available in 2 power classes
60 W - 120 W



Description

The "CPA-3000 PA-center Series" are available in 2 power classes: 60 W (RMS) and 120 W (RMS). They are short circuit and open circuit proof. They have been designed to the latest standards and meet the requirements of professional audio applications. All the devices of this series are equipped with an electronic two-tone chime (switchable to four-tone), a siren (continuous tone or high-low tone), a speaker control panel (4 zones).

Please consider the following features:

- All the devices of this series operate both on 230 V mains power and 24 V DC.
- The speaker outputs are available as 100 V and 70 V as well as 4 and 8 ohms low-impedance outputs.
- MIC input 1 has an adjustable electronic microphone priority override.
- All microphone inputs are electronically balanced. Inputs 2, 3 and 4 can be switched to LINE. The input 2 and 3 can be switched to phantom power.
- The unit also includes the following special features: CD input on RCA sockets, PHONO input on RCA sockets, pre-amplifier input and output, remote control for four-tone chime, input for central telephone system.
- To obtain the desired power, further 19" power amplifiers can be cascaded.
- With all models, the two-tone chime can be remote-controlled, e.g. by means of the MS-202 microphone station.



Figure shows RMK-10

- A special feature of all the models of this series is the option for integrating a sound source module into the unit. An empty compartment is provided for the installation of an additional module. The following modules are available:

FM/AM tuner module

12 x FM + 6 x AM memory stations

TP-10



Cassette player module

Autoreverse and pause function

CP-10



Cassette/tuner module

Functions of TP-10 and CP-10

CR-10



CD/MP3- player module

Repeat, Random, etc.

CDP-10 M



CD/MP3- tuner module

RDS-Tuner and MP3-/CD-Player

CDR-10 RDS



Digital text module

6 texts up to 4 min. 28 sec.

DM-10



For a detailed description of the sound source modules see the following pages.

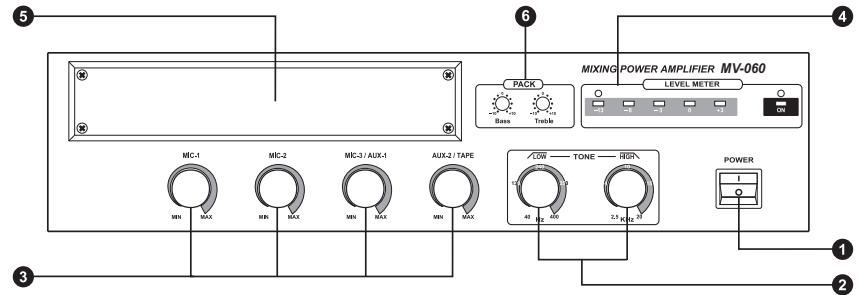
Model designations

Small central unit, 60 W RMS **CPA-3060 C**
Small central unit, 120 W RMS **CPA-3120 C**

19"- rack mounting kit, 3 RU **RMK-10**

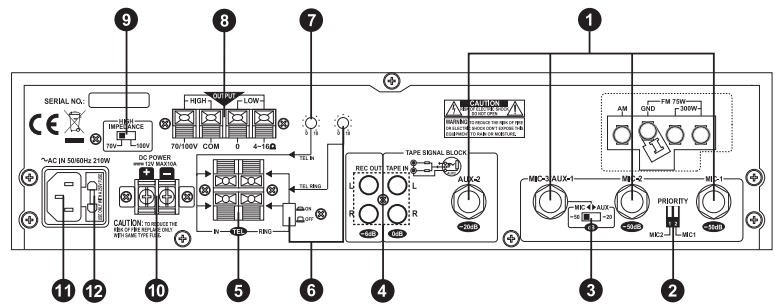
- 1 Power switch, power LED lit when switched on
- 2 Treble and bass controls; Bass control adjustable from 40 Hz - 400 Hz and treble control adjustable from 2.5 kHz - 20 kHz
- 3 Separate volume controls for Mic and Aux inputs
- 4 LED level meter for indication of signal level
- 5 Empty compartment for the installation of the sound source modules CP-10, TP-10, CDP-10, CDR-10, DM-10 or CR-10
- 6 Treble and bass controls for sound source module

Front view



- 1 Balanced MIC and AUX inputs
- 2 Switch for priority activation
- 3 MIC-AUX selector switch for input MIC3
- 4 RCA sockets for TAPE IN and REC OUT
- 5 Terminals for TEL IN and TEL RING
- 6 Volume control for "TEL RING" input
- 7 Volume control for "TEL IN" input
- 8 Speaker terminals
- 9 Impedance selector switch 100 V or 70 V
- 10 12 V DC power supply
- 11 IEC power inlet (cold condition)
- 12 AC fuse, DC fuse is inside the amplifier

Rear view



Technical data	MV-030	MV-060
Output power	30 W RMS (max. 48 W)	60 W RMS (max. 90 W)
Frequency response	150 Hz ~ 18 kHz	150 Hz ~ 18 kHz
THD at 1 kHz	less than 1 %	less than 1 %
Inputs	MIC: - 50 dB/2 kohms, balanced AUX1: -20 dB/60 kohms, balanced AUX2: -20 dB/15 kohms, balanced TAPE: 0 dB/3 kohms, balanced	MIC: - 50 dB/2 kohms, balanced AUX1: -20 dB/60 kohms, balanced AUX2: -20 dB/15 kohms, balanced TAPE: 0 dB/3 kohms, unbalanced
Outputs, speakers	100 V - 70 V and 4 ~ 16 ohms low-impedance outputs	100 V - 70 V and 4 ~ 16 ohms low-impedance outputs
Treble and bass controls	Bass: 40 Hz ~ 400 Hz, - 6 dB/Oct - Treble: 2.5 kHz ~ 20 kHz, - 6 dB/Oct	Bass: 40 Hz ~ 400 Hz, - 6 dB/Oct - Treble: 2.5 kHz ~ 20 kHz, - 6 dB/Oct
Signal-to-noise ratio	MIC: > 60 dB - AUX: > 70 dB	MIC: > 60 dB - AUX: > 70 dB
Current consumption	max. 0.55 A	max. 1 A
Power consumption	125 W	210 W
Power supply	230 V mains current and 12 V DC	230 V mains current and 12 V DC
Dimensions W x H x D / weight	375 x 88 x 260 mm - approx. 5.4 kg	375 x 88 x 260 mm - approx. 6.6 kg

available in 2 power classes
30 W – 60 W



Description

In spite of its small dimensions, this versatile desktop amplifier offers the option for installing additional audio modules in the empty compartment provided.

The device is available in 2 power classes: 30 W and 60 W (sine wave). It is perfectly suited for professional audio applications.

The unit operates on mains power (230 V) or DC (12 V).

- The amplifiers have 2 balanced MIC inputs with **switchable priority**, 2 balanced AUX inputs, of which one can be switched from AUX to MIC, and 1 unbalanced TAPE input.
- To compensate for the effects of noise, the inputs are electronically balanced, which ensures high immunity to interference.
- All inputs have a separate volume control. Additionally there are treble and bass controls (equalizer).
- The speaker outputs are available as 100 V and 70 V outputs or alternatively as 4 - 16 ohms low-impedance outputs.
- As the amplifier can operate both on 230 V AC and 12 V DC, a car battery may also be used for power supply.
- LEDs indicate the signal level. Operation in the clipping range of +3 dB (red diode) should be avoided.
- Via the TEL RING terminal a telephone buzzer can be activated. The TEL IN terminal provides the option for outputting announcements from the central telephone system via the amplifier.

- There is a blank field for the installation of an antenna terminal or the control output of the DM-10 digital announcement module.

- A special feature of all the models of this series is the option for integrating the following sound source modules into the empty slot.

FM/AM tuner module

12 x FM + 6 x AM memory stations

TP-10



Cassette player module

Autoreverse and pause function

CP-10



Cassette/tuner module

Functions of TP-10 and CP-10

CR-10



Digital text module

6 texts up to 4 min. 28 sec.

DM-10



For a detailed description of the sound source modules see the following pages.

Model designations

Desktop amplifier, 30 W	MV-030
Desktop amplifier, 60 W	MV-060



Digital text module

Technical data	DM-10
Inputs	MIC: -50 dB/600 ohms, unbalanced, switchable to LINE: -10 dB/10 kohms, unbalanced
Outputs	AUDIO-Out: -10 dB unbalanced., HEADPHONE-Out: 24 mV approx. 64 ohms
Remote control	10-pin connector, M1 - M6, start/stop, repeat/stop, busy
Power supply	15 V DC up to approx. 17 V DC, consumption 100 mA, 80 mA in stand-by mode
Frequency response	MIC: 300 Hz - 6.5 kHz, LINE: 100 Hz ~ -6.5 kHz
Dimensions and weight	194 mm (W) x 40 mm (H) x 125 mm (D), weight approx. 0.4 kg

Digital text module **DM-10**

Description

The DM-10 digital announcement module has been especially developed for installation in the compartment provided for this purpose on the PA centers. However, it matches very well with any other device such as amplifiers, central audio units, etc. The respective installation instructions are supplied with the device.

- 6 texts can be programmed at a total recording and playing time of 4 min. 28 s (16 Mbit) is available.
- The integrated back-up battery ensures data storage for up to 60 days.
- A 4-bit ADPCM sound LSI with a sampling frequency of 16 kHz provides best sound quality.



CD player module

MP3

Technical data	CDP-10 M
S/N - THD	Better than 85 dB - less than 0.03 % (1 kHz)
Frequency response	10 Hz - 20000 Hz (± 1 dB)
Digital filter	8 times over-sampling
Loading time	6 s
Dimensions and weight	194 mm (W) x 40 mm (H) x 215 mm (D), weight approx. 1.3 kg

CD/mp3 player module **CDP-10 M**

Description

The CDP-10M CD/mp3 player module has been especially developed for installation in the compartment provided for this purpose on the PA centers. However, it is possible to install the module in any other device such as amplifiers, central audio units, etc. The respective installation instructions are supplied with the device.

- The device features "repeat play" and "random play" functions.
- Other functions included are "intro scan play" and "cue review".
- The CD/mp3 player module can also be remote-controlled.
- **Playing mp3 CD's.**



CD player and tuner module

MP3 RDS

Technical data	CDR-10 RDS
Tuner section	Analogous to the TP-10 FM/AM tuner module described on the next page
CD player section	Analogous to the CDP-10 CD player module described above
Dimensions	194 mm (W) x 40 mm (H) x 215 mm (D)
Weight	approx. 1.4 kg

CD/mp3 player and tuner module (RDS) **CDR-10 RDS**

Description

The CDR-10RDS MP3/CD player and FM/AM tuner module has been especially developed for installation in the compartment provided for this purpose on the PA centers. However, it is also possible to install the module in other devices such as amplifiers, central audio units, etc. The respective installation instructions are supplied with the device.

- The features of the CD player section are identical with the CDP-10M module above.
- The features of the tuner section are the same as the ones of the TP-10 module described above.
- The module can be installed in any device such as audio amplifiers.

Description

The TP-10 FM/AM tuner module has been especially developed for installation in the compartment provided for this purpose on the PA centers. The modules can be installed very easily. The required fasteners and connectors as well as detailed installation instructions are supplied with the devices.

- The modules can also be installed in any other device (amplifier, central audio unit, etc.).
- The tuner has 18 presets, 2 x 6 for FM and 1 x 6 for AM.
- Tuning and programming is performed with the respective buttons.



FM/AM tuner module

Technical data TP-10

Wavebands	FM 87.5 to 108.0 MHz and AM 522 to 1.620 kHz
Antenna inputs	FM: 300 ohms balanced or 75 ohms unbalanced; AM: wire antenna
Sensitivity	FM: 2 μ V; AM: 4.5 μ V
S/N	FM: 60 dB; AM: 45 dB
Dimensions and weight	194 mm (W) x 40 mm (H) x 120 mm (D), weight approx. 0.6 kg

FM/AM tuner module **TP-10**

Description

The CP-10 cassette player module has been especially developed for installation in the compartment provided for this purpose on the PA centers. The modules can be installed very easily. The required fasteners and connectors as well as detailed installation instructions are supplied with the devices.

- The modules can also be installed in any other device (amplifier, central audio unit, etc.).
- The player features "AUTO REVERSE" and fast forward/rewind.
- Playback can be interrupted by means of a pause button.



Cassette player module

Technical data CP-10

S/N	60 dB
Wow & flutter	better than 0.35 %
Frequency response	100 Hz -7000 Hz (\pm 3 dB)
Tape speed	4.76 cm/s., fast forward/rewind approx. 180 s.
Dimensions and weight	194 mm (W) x 40 mm (H) x 150 mm (D), weight approx. 0.9 kg

Cassette player module **CP-10**

Description

The CR-10 cassette player/tuner module has been especially developed for installation in the compartment provided for this purpose in the PA centers. The modules can be installed very easily. The required fasteners and connectors as well as detailed installation instructions are supplied with the devices.

- The modules can also be installed in any other device (amplifier, central units, etc.).
- The features of the FM/AM tuner are identical with the ones of the TP-10 module described above.
- The features of the "AUTOREVERSE" cassette section are analog with the CP-10 module.



Cassette player/tuner module

Technical data CR-10

Tuner section	Analog to the TP-10 FM/AM tuner module described above
Cassette player section	Analog to the CP-10 "Auto Reverse" cassette player module described above
Dimensions	194 mm (W) x 40 mm (H) x 150 mm (D)
Weight	approx. 1.2 kg

Cassette player/tuner module **CR-10**



Supplied with 19" mounting brackets.

Description

The ME-2A modular preamplifier serves to transmit sound programmes by means of the modules that are shown on the right. For this purpose, the ME-2A can be extended by 1 or 2 modules, whereas the ME-4A can be extended by up to 4 modules. The individual modules can be installed very easily. All required connections are provided inside the unit or on the rear.

Please consider the following features:

- The ME-2A has 2 separate balanced XLR outputs (module 1 and 2) and 1 master output. The volume is controlled by means of a volume control of the respective module.
- The ME-4A has 4 separate balanced XLR outputs (module 1, 2, 3 and 4) and 1 master output. The volume is controlled by means of a volume control of the respective module.
- The device operates on 230 V AC mains power and 24 V DC (emergency power supply).

Technical data	ME-2 A	ME-4 A
Output impedance	max. 0.775 V (0 dBu), 600 ohms, unbalanced on XLR	
Frequency response	less than (-0.5 dB) 20 – 20000 Hz	
Signal-to-noise ratio	better than 68 dB	
Power supply	230 V AC (50/-60 Hz), 24 V DC	
Power consumption	approx. 25 W	approx. 55 W
Dimensions (W x H x D)	(2 RU) 483 x 88 x 350 mm	(3 RU) 483 x 133 x 350 mm
Weight	approx. 5.0 kg	approx. 6.0 kg

- Modular pre-amplifier, (2 RU) ME-2A**
- Modular pre-amplifier, (3 RU) ME-4A**

- The device can be used both as a 19" unit and as a desktop unit. The 19" mounting brackets are already fitted, but can be easily removed.
- The modular preamplifier can be connected directly to any mixer amplifier, but also to any power amplifier.
- The following sound source modules are available for installation in the ME-2 A and ME-4 A modular pre-amplifier.

FM/AM tuner module

12 x FM + 6 x AM memory stations

TP-10



Cassette player module

Autoreverse and pause function

CP-10



Cassette/tuner module

Functions of TP-10 and CP-10

CR-10



CD/MP3- player module

Repeat, Random, etc.

CDP-10 M



CD/MP3- tuner module

RDS-Tuner and MP3-/CD-Player

CDR-10 RDS



Digital text module

6 texts up to 4 min. 28 sec.

DM-10





Description

This 6-disc CD changer is a robust device that has been developed for demanding audio applications. The removable magazine simplifies the CD change.

The suspension with the oil/spring cushioning effect is very sophisticated. The device operates both on mains power and 24 V DC. It is supplied with 19" mounting brackets.

Please consider the following features:

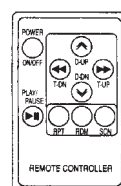
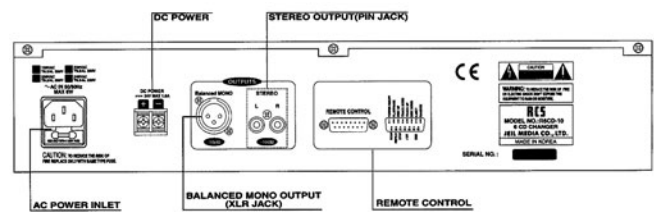
- The device has numerous operating functions such as repeat, disc repeat, random (track and disc), scan (track and disc), play/pause, stop, track up/down, disc up/down.
- The random function can be used for continuous playback, as with this function all the tracks of the CD magazine are continuously played in random order.
- A comfortable LCD on the front panel of the unit indicates the function currently performed as well as faults that may have occurred.
- On the rear is a mono output (XLR, balanced), a stereo output (RCA, unbalanced) and a 15-pin Sub-D connector for remote control of the most important operating functions.
- The mains fuse is located on the rear and can be accessed from the outside. It is integrated into the IEC power inlet socket.

*

Technical data

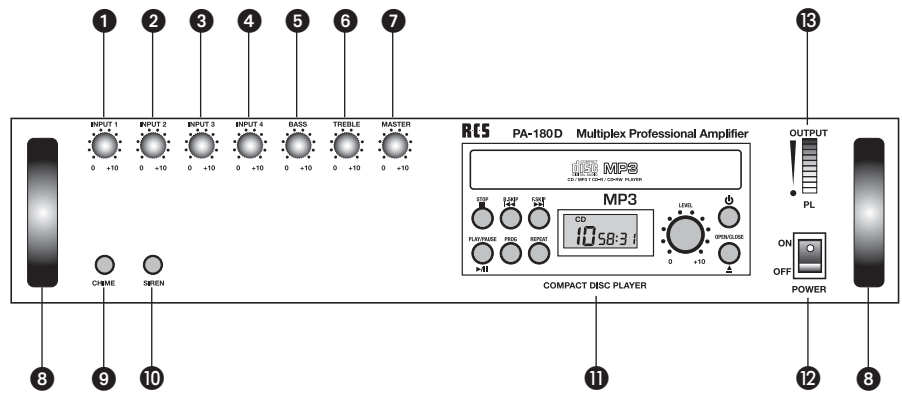
R6CD-10

Output level	Mono 0 dB (0.775 V) balanced, L- R 0 dB (0.775 V) unbal.
Digital filter	8 times over-sampling
THD	better than 0.03 % (JIS A) at 1 kHz
Signal-to-noise ratio	better than 85 dB (JIS A) at 1 kHz
Channel separation	better than 70 dB (JIS A)
Frequency response	20 -20000 Hz (± 3 dB)
Access time	long: max. 8 s, short: max. 2 s
Power supply	230 V AC (50 - 60 Hz), 24 V DC
Power consumption	approx. 6 W
Dimensions (W x H x D)	483 x 88 x 260 mm
Weight	approx. 7.5 kg



IR remote control with the most important operating functions such as: Power ON/ OFF, play-pause, disc up-down, track up-down, repeat, scan, random.

- 1 Control input 1
- 2 Control input 2
- 3 Control input 3
- 4 Control input 4
- 5 Bass control
- 6 Treble control
- 7 Master control "Master"
- 8 Handle
- 9 Switch chime (release via floating distance contacts)
- 10 Switch siren
- 11 CD/MP3 player
- 12 On / Off switch
- 13 Level indicator



front view

- 1 Power supply (cold device cable)
- 2 Contacts for external release of chime and siren
- 3 Speaker terminal strip
- 4 Tel. paging input / gain control / priority function
- 5 AMP-IN/PRE-OUT (RCA socket)
- 6 AUX-Input 1+2 (RCA socket)
- 7 MIC/LINE input 3 (combo socket)
- 8 MIC/LINE input 2 (combo socket)
- 9 MIC/LINE input 1 (combo socket)
- 10 Dip switch for inputs 1-4
- 11 Inputs 1-4 (screw plug connector)
- 12 TAPE Output (RCS socket)
- 13 Input 1 priority on / off

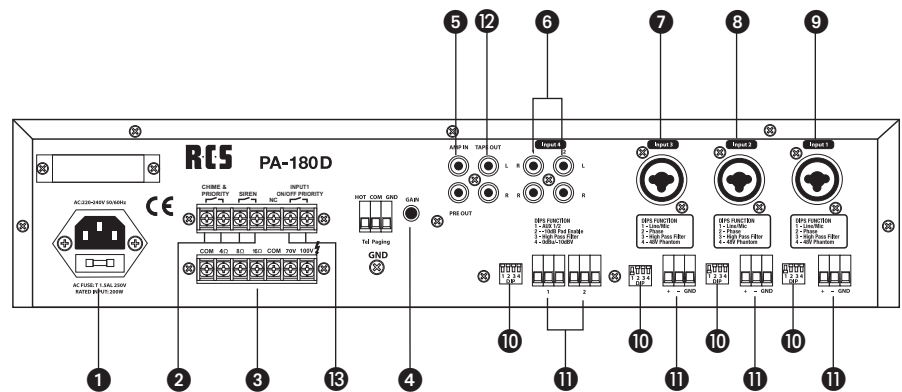


Figure shows model PA-180D

rear view

Technical Data	PA-180D
Output power	80 W RMS (max. 120 W)
Frequency response	50 Hz – 15000 Hz (± 3 dB), noise level MIC better than 60 dB, AUX/LINE better than 70 dB
THD at 1 W	< 0,5 %
Inputs MIC / LINE	Input 1-4: MIC -50dBV, 5 kohms/LINE -10dBV, 5 kohm, balanced, XLR plug, jack 6,3 mm and screw connector Input 4-5: AUX-IN -20dBV, 10 kohms, asymmetric, RCA socket screw connector
Priority	1. Siren/Paging-IN; 2. MIC/LINE 1 with priority opposite to inputs 2, 3, 4 and chime
Outputs speakers	70 V, 100 V, low impedance 4 ohms, 8 ohms and 16 ohms
Tone control	Bass +- 10 dB at 100 Hz, Treble +- 10 dB at 10 kHz
Power supply	Mains 230-240 V / 50 Hz
Dimensions; Weight; Colour	420mm (W) x 88mm (H) x 370mm (D), 2 RU; 10.7 kg; black

Player for data types:
CD/CD-R/CD-RW – MP3



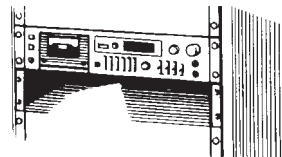
Description

The new desktop amplifier PA-180D is delivered with CD/MP3. Further equipment features are e.g. three switchable MIC/Line Inputs, to switch to phantom-power, external releasable chime as well as a controllable siren.

Due to the amplifiers numerous outputs it can be used in a low- as well as high impedance manner.

*

- The integrated player is able to play back the data types Audio-CD, CD-R, CD-RW and MP3. It meets most requirements by its long-life cycle and is therefore very well suitable for continuous use. It features all general functions such as PROGRAM and REPEAT. The large display shows all necessary information for the user in a clear structure.



supplied with 19" mounting brackets

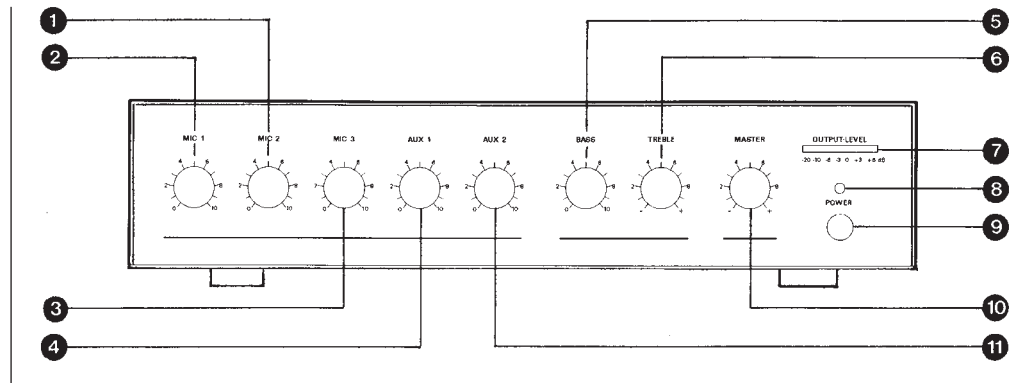
Please consider the following features:

- Inputs 1-3 feature Dip switches which enable following functions:
 Switching between MIC/LINE and balanced/unbalanced, switch on of the highpass filter as well as the 48-V phantom power.
- The AUX-Input 4 (RCA) features two channels which can be selected separately. The sensibility can be changed by a switch from -0dB to -10dB.
- A „PRE-OUT“ for cascading with additional amplifiers is featured as well as a „TAPE-OUT“ which enables the connection of a recorder.
- Input 1 has a priority circuit opposite to input 2, 3 and 4.
- The 2-tone chime and the siren can be externally controlled via floating distance contacts, they have priority across the inputs 2, 3 and 4.
- The power supply of the desktop amplifier takes place by mains (230 V AC).

Model designation

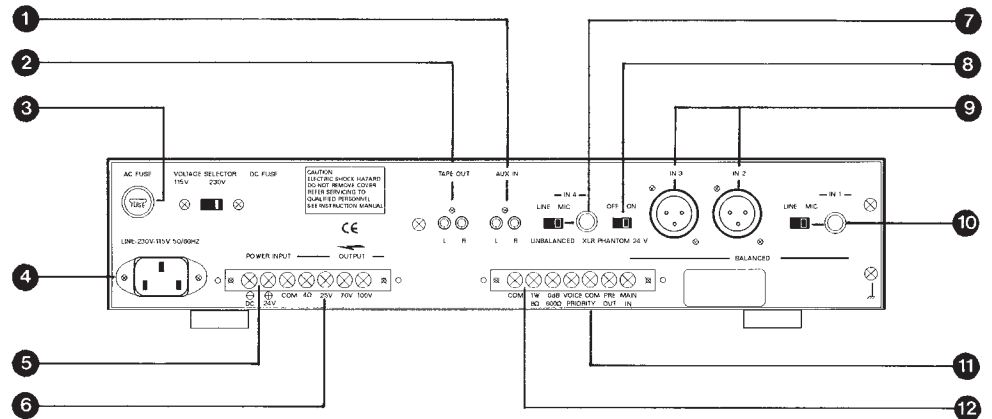
Desktop Amplifier 80 W RMS, with MP3 player **PA-180D**

- 1 Volume control MIC-2
- 2 Volume control MIC-1 (with priority)
- 3 Volume control MIC-3
- 4 Volume control MIC-4 / AUX-1
- 5 Bass control
- 6 Treble control
- 7 Output level indicator
- 8 Pilot lamp for power switch
- 9 Power switch
- 10 Master control
- 11 Volume control AUX-2



Front view

- 1 AUX-IN (RCA sockets) for CD player, tape deck, etc.
- 2 TAPE-OUT (RCA sockets), e.g. for recording, etc.
- 3 AC fuse, DC fuses inside the device
- 4 IEC power inlet (cold condition)
- 5 Terminals for 24 V DC, e.g. emergency power supply
- 6 Speaker terminal strip for high-impedance (100 - 70 - 25 V) and low-impedance (4 - 16 ohms) outputs
- 7 MIC input, unbalanced, 600 ohms on jack socket (6.3 mm), switchable to LINE-IN
- 8 Switch for phantom power + 24 V, effect on MIC 2 + 3
- 9 MIC 2 + 3 on XLR sockets, balanced, 600 ohms
- 10 MIC-1, balanced, 6.3 mm jack socket, 600 ohms, switchable to LINE-IN
- 11 Terminal strip for various inputs such as PRIORITY, MAIN-IN, 0 dB-OUT, PRE-OUT
- 12 Monitor output, 8 ohms, 1 W.



Drawing shows model of the "KX" series

Rear view

Technical data	TA-4030 KX	TA-4060 KX	TA-4120 KX
Output power	30 W RMS (max. 45 W)	60 W RMS (max. 90 W)	120 W RMS (max. 180 W)
Frequency response	50 Hz -18000 Hz (-3 dB)	50 Hz -18000 Hz (-3 dB)	50 Hz -18000 Hz (-3 dB)
THD at 1 kHz	better than 1 %	better than 1 %	better than 1 %
MIC - LINE inputs	MIC 1: balanced, 6.3 mm jack socket, 600 ohms/0.5 mV - LINE: 220 kohms/100 mV MIC 2 + 3, balanced XLR socket (model -KX), 600 ohms/0.5 mV - switchable phantom power (+24V) MIC 4, unbalanced 6.3 mm jack socket, 600 ohms/0.5 mV INPUT 5 (Line), unbalanced RCA sockets, 100 mV - MAIN-IN on terminal strip, 1 V/10 kohms		
Microphone priority	Voice-activated priority of INPUT 1, contact-activated priority of INPUT 1, 2 and 3		
Outputs, speakers	100 V, 70 V and 25 V line, 4 -16 ohms low-impedance outputs		
AUX outputs	PRE-OUT on terminal strip, unbalanced, 1 V/10 kohms - TAPE-OUT on RCA sockets, unbalanced, 650 mV/4.7 kohms MONITOR-LS 1 W/8 ohms - 0 dB output, 775 mV/600 ohms		
Bass and treble control	Bass: ± 10 dB at 100 Hz, Treble: ± 10 dB at 10 kHz		
AC power supply	220/240 V mains at 50/60 Hz, switchable to 110 V (110 - 127 V)		
DC power supply	24 V	24 V	24 V
Current consumption (DC)	2.5 A at rated power	4.5 A at rated power	8.0 A at rated power
Dimensions and colour	420 (W) x 88 (H) x 280 (D) mm, black/charcoal grey		
Weight	approx. 6.9 kg	approx. 7.8 kg	approx. 10.0 kg

Voice- and contact-activated MIC priority output for additional power amplifiers (cascading) 24 V phantom power. output for monitor

available in 3 power classes
30 W – 60 W – 120 W

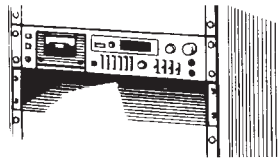


Description

The desktop amplifiers of the TA-4000 series have been designed for demanding audio applications. The unit operates on mains power (230 V) or DC (24 V). All devices of this series have separate treble and bass controls. The speaker outputs are available as 100 V, 70 V, 25 V and 4 ohms low-impedance outputs.

Please consider the following features:

- Inputs 1-3 are balanced, inputs 4-5 are unbalanced. Inputs 1 and 4 can be switched from MIC to LINE (6.3 mm jack socket), inputs 2 and 3 are via XLR sockets, input 5 is on RCA sockets.
- MIC-1 has an electronic voice-activated priority override. The contact-activated priority override (terminal strip) get the inputs IN 1-3 opposite to INPUT-4 and AUX-5.
- All models feature switchable phantom power (+ 24 V) on the MIC inputs 2 and 3.
- A PRE-OUT output serves to connect additional amplifiers (cascading). This output is subject to control by all the controls on the front panel. Another 0 dB output may also be used to connect further amplifiers or central telephone systems, etc.
- Furthermore there are the TAPE-OUT outputs, e.g. for recording, and an additional LS output (1 W - 8 ohms) for a monitor speaker.
- An LED chain (multi-colour) serves as a power on indicator and also indicates the current signal level.
- All terminal strips are covered in accordance with the applicable CE regulations. Power is supplied through an IEC power connector. The appropriate power cord is supplied with the unit. The amplifiers are easy to maintain and are suitable for continuous operation.



Supplied with 19" mounting brackets.



Rear view of model TA-4120 KX

Model designations

"4000 KX Series" microphone inputs 2 + 3 balanced on XLR sockets

Desktop amplifier, 30/45 W (2 RU)..... TA-4030 KX

Desktop amplifier, 60/90 W (2 RU)..... TA-4060 KX

Desktop amplifier, 120/180 W (2 RU)..... TA-4120 KX



Description

The TU-110B FM-AM tuner is incorporated in a stable 19" housing which is 1 RU high. The stations are indicated on a backlit digital display.

30 station presets (FM 3 x 6 and AM 2 x 6) are available. A station can be stored by pressing the respective button on the clearly designed control panel.

The tuner operates on 230 V mains power as well as on 24 V DC power (operation with emergency power supply).

The device has a balanced XLR output and an unbalanced RCA output. Both outputs can be controlled on the front panel.

Please consider the following features:

- 3 FM bands and 2 AM bands, each with 6 presets.
- Automatic and manual tuning.
- The device can be switched from stereo to mono to suppress noise, if reception is poor.
- 75 ohms FM antenna connection via F connector.

- The signal strength is indicated through 5 LEDs.
- The output volume can be adjusted on the front panel.
- Clear LCD.

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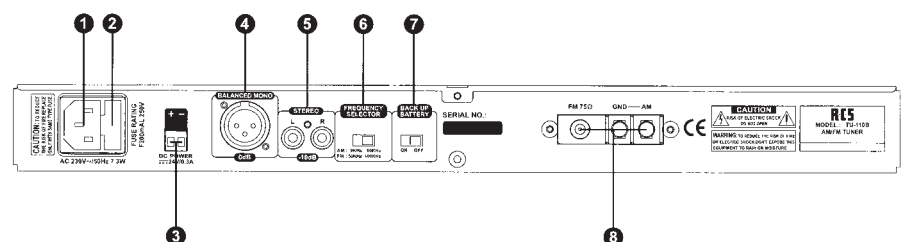
Technical data

TU-110B

Station presets	18 FM / 12 AM
Antenna input	FM: 75 ohms coax / AM: wire antenna
Signal-to-noise ratio	FM: 60 dB / AM: 45 dB
XLR output level	0.775 V (0 dBm) balanced (mono)
RCA output level	0.245 V (-10 dBm) unbalanced (stereo)
Power supply	230 V mains
	12 V emergency power supply
Dimensions in mm	483 (W) x 44 (H) x 120 (D), (1 RU)
Weight	3.2 kg

- 1 230 V power inlet
- 2 Fuse holder
- 3 Terminal for 24 V emergency power supply
- 4 Balanced XLR output.
- 5 Unbalanced RCA output
- 6 Frequency selector switch (America / Europe)
- 7 Enable / disable storage battery
- 8 Antenna connections

Rear view



19" Tuner, (1 RU)

TU-110B

19" CD/MP3-TUNER COMBINATION

RCS



Description

The TU-100D3 includes a PLL synthesizer tuner and a MP3-compatible CD player. The tuner module has 12 FM and 6 AM station presets.

Tuning can be performed manually or automatically. The device provides manual selection of mono to suppress noise, when the reception is poor. On the rear there is a 75 ohms coax connection for the included wire antenna or for an existing antenna splitter.

The CD module is capable of playing standard CDs as well as MP3 CDs.

Please consider the following features:

- On the priority output the CD module always has priority over the tuner module. The CD signal is present at the priority output as long as a CD is played. After CD playback has been stopped, the tuner signal is put out automatically.
- The device has additional separate audio outputs for tuner and CD player.
- The CD module can play standard CDs as well as CDs in MP3 format.

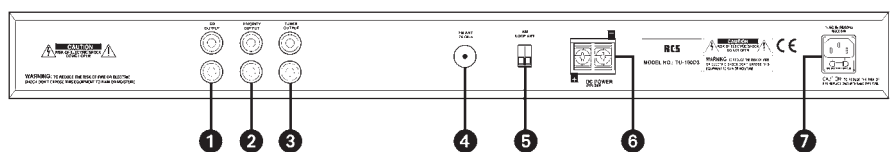
- The CD unit has numerous functions such as repeat, shuffle, program, pause.
- The 19" brackets can be removed easily. The device can then be used as a desktop unit.
- The device operates on 230 V AC mains power and 24 V DC power (emergency power supply).

*

Technical data	TU-100D3
Station presets	6 FM1 / 6 FM2 / 6 AM
CD formats	MP3 / standard
Power supply	230 V mains/24 V emergency power supply
Dimensions in mm	483 (W) x 43 (H) x 295 (D), (1 RU)
Weight	4.3 kg

- 1 CD stereo output (RCA)
- 2 Priority stereo output (RCA)
- 3 Tuner stereo output (RCA)
- 4 75 ohms coax antenna input
- 5 Terminal for AM antenna
- 6 24 V input for emergency power supply
- 7 IEC power inlet with fuse holder

Rear view





Description

The brand-new DVD-player DVD-200 X will be delivered in a 2 RU-cabinet and therefore it is perfectly suitable for 19" 100V power amplifier.

This device plays all of the well-established audio formats such as MP3, WMA, CD-R or CD-RW. Furthermore this DVD-player supports all standard operating functions, which can be found in premium CD/MP3-players. A serial remote control is included in the scope of delivery.

The multifunctional display provides continuous information via a progress-indicator, regarding the current replay status.

Please consider the following features:

- Multilingual user set-up
- Dolby digital, as well as 5.1 channel audio-output
- Fast forward and reverse function for WMA and MP3-files

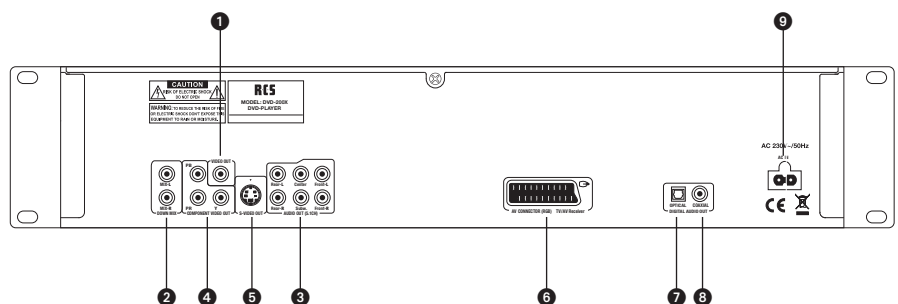
- The multi-format DVD-player plays the following formats: CD, CD-R/RW, MP3, VCD, SVCD, DVD, DVD+R/RW, WMA, Picture CD and XviD (DivX or MPEG-4)

*

Technical Data	DVD-200 X
Frequency range	20 – 20.000 Hz
THD	< 0,1 %
Signal-to-noise ratio	> 80 dB
Speed drop	not gaugeable
Audio output analogue	Cinch L/R; 5.1 Channel
Video output	Composite-Video Out; YPbPr Component Video Out S-Video Out; Scart-Output
Power supply	230 V 50/60 Hz
Dimensions W x H x D	483 x 88 x 370, 2 RU
Weight	approx. 4,5 kg

- 1 Video out: composite video
- 2 Audio out: down mix L/R
- 3 Audio out: 5.1 channel L/R front, L/R back, subwoofer, center
- 4 Video out: YPbPr component
- 5 Video out: s-video-output
- 6 Scart-output
- 7 Digital audio out: coaxial
- 8 Digital audio out: optical
- 9 230V AC 50/60 Hz

Rear view



5-FOLD 100 V LINE-OUTPUT-ATTENUATOR

RCS



Description

This ATT-100 is connected at the backside of a 100 V PA centre (e.g. VLA-240 C or VLZ-6600 A). The device can be mounted directly to the rear of the PA centre.

The 100 V-signal of the amplifier will be transferred via the ATT-100 into a LINE-signal. It will be possible to cascade the output lines 1 to 5.

Please consider the following features:

- Conversion of 100 V-signal into a LINE-signal at 5 lines.
- Direct mounting to the backside of the PA centre.

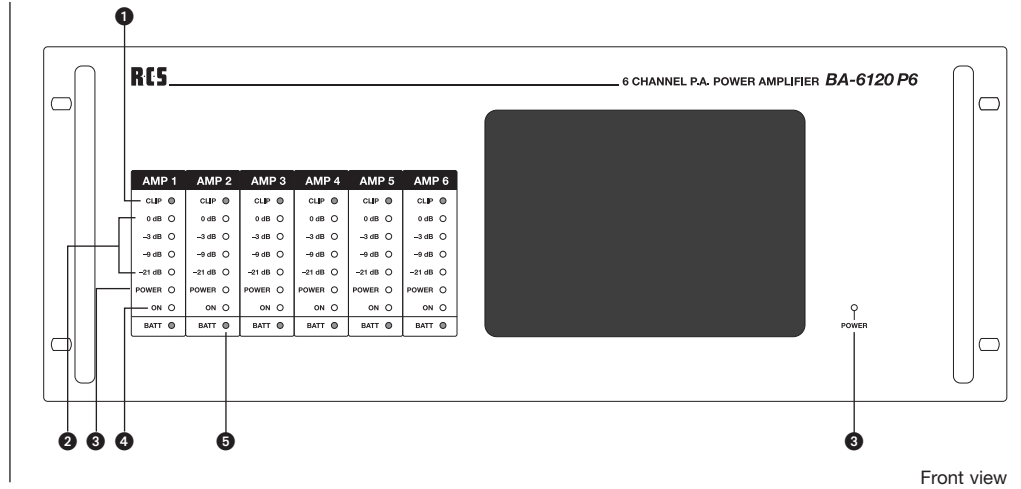
Technical data	ATT-100
Frequency	15 – 30.000 Hz
Input impedance	20 kohms
Output impedance	200 ohms
Dimensions (W x H x D)	119 x 65 x 60 mm
Weight	0.5 kg

Line-Output-Attenuator, 5-fold for VLA- / VLZ-Series . . **ATT-100**

19" PA devices

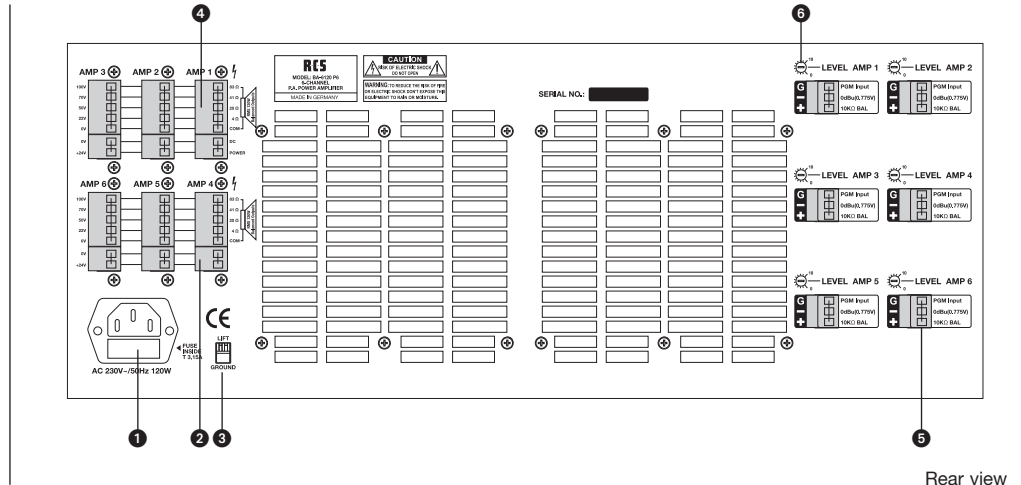


- 1 Clip Indicator
- 2 LED VU-Meter
- 3 Power LED
- 4 Amp-ON-LED
- 5 LED indication at DC operation



Front view

- 1 IEC power inlet (cold condition)
- 2 6x 24 V DC power supply terminal
- 3 Ground / Lift switch
- 4 Speaker outputs: 100V, 70V or 50V (and 4 ohms)
- 5 INPUT on Phoenix Screw-type connectors
- 6 Volume controller for program inputs



Rear view

Technical data	BA-6060 P6	BA-6120 P6
Output power	6x 90/60 W (Program/RMS)	6x 180/120 W (Program/RMS)
Input sensitivity	6x 0 dB (0,775 V), 10 kOhms, electr. balanced	
Output voltage/impedance	6x 100V, 70V, 50V, 22V / 83 Ohms, 41 Ohms, 20 Ohms, 4 Ohms	
Frequency response	6x 30 ~ 20.000 Hz (better than -3 dB)	
Signal-to-noise ratio	6x better than 100 dB	
THD at 1 kHz	6x better than 1%	
Input filter	6x 40 Hz / -12 dB	
Current consumption no-load/full-load	27 VA / 780 VA	45 VA / 1200 VA
AC power supply	230 V, 50 ~ 60 Hz	
DC power supply	6x 24 V (emergency power supply)	
Dimensions (W x H x D in mm)	483 x 178 x 440; 4 RU	
Weight	approx. 21,5 kg	approx. 24,5 kg

6-CHANNEL POWER AMPLIFIER (100 V, 70 V, 50 V)

RCS

BA-6060 P6
360 W
 6 x 60 W

According to VDE 0828 (DIN EN 60849) from IEC 268-3

MADE IN GERMANY

NEW

BA-6120 P6
720 W
 6 x 120 W



Description

These fully monitored 6-channel 19"-Power Amplifier according to IEC 268-3 are perfectly suitable for application in professional 100 V devices with 100 V, 70 V, 50 V or 4 Ohm technology.

The amplifier has 6 individually separated, very low leaking power supplies with a ring core transformer. They are produced according to the latest assembly methods with high-quality components.

These Power Amplifiers are absolutely short circuit and engine idling proof with all relevant safety arrangements. They are therefore especially appropriate for continuous operation.

Please consider the following features:

- Each device of this „P6“-series has more than six electronic symmetrical audio inputs. 6 NF-input transformers can optionally be soldered as a refit under ex-works conditions. (i.e. TSE-101)
- The electronic symmetrical inputs are designed for phoenix screw-type connectors. Due to balancing per input (refit TSE-101 is ungrounded) buzzing interspersion via ground loops is avoided.
- The input signals may be separately regulated via six gauge controls, which are attached on the rear panel.
- 6 LED-VU meters are attached on the front panel of the device give continuous information about the modulation state of the individual Amplifiers. Additionally installed LED-indicators provide a signal on the maybe appearing state of integrated protective functions.

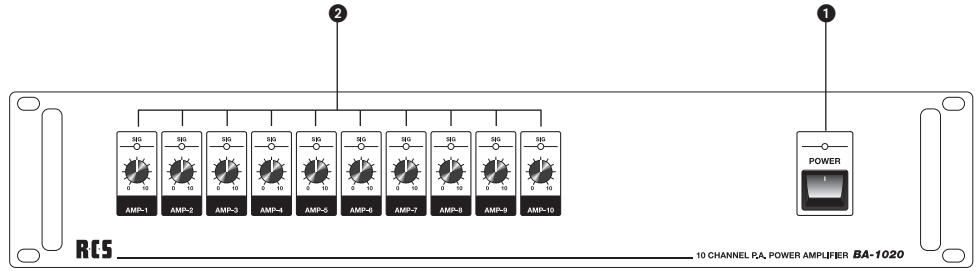
- Six special circuits suppress any unwanted switch on noises. Additionally all models are equipped with a „SOFT-START“ (net switch on limitation).
- A ground/lift switch used to separate the connection of frame ground / signal ground (screening) helps to avoid hum loops.
- Each of the built-in Power Amplifiers has a 24V DC voltage supply unit clamp for emergency power usage.
- Heat flow is carried out via two ball pivoted thermally controlled DC-ventilator with minimum running noise and high service life.
- Optional available:
High quality 1:1 NF input transmitter can be soldered under ex-works conditions. For input 1 – 6 a TSE-101 can be ordered.

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Model designations

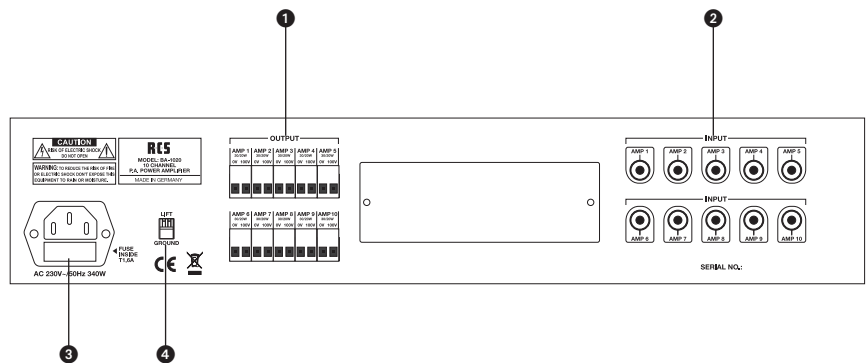
- 6-Channel Power Amplifier**, **BA-6060 P6**
 6 x 60 W RMS, (4 RU)
- 6-Channel Power Amplifier**, **BA-6120 P6**
 6 x 120 W RMS, (4 RU)
- Transformer-balanced input**, **TSE-101**

- 1 Power switch with LED indicator
- 2 Level controller for CH1 - CH10, with signal LED each



Front view

- 1 Screw-type connectors for speaker outputs 100 V (70V or 50V internal switchable)
- 2 Cinch-socket inputs 1-10
- 3 IEC power inlet (cold condition)
- 4 Ground / Lift switch



Rear view

Technical data	BA-1020
Output power	10x 30/20 W (Programm/RMS)
Input sensitivity	10x 0 dB (0,775 V), 10 kOhms, unbalanced
Output voltage/impedance	10x 100 V, 70 V, 50 V (70 V, 50 V internal switchable) / 500 Ohms, 250 Ohms, 125 Ohms
Frequency response	10x 30 ~ 20.000 Hz (better than -3 dB)
Signal-to-noise ratio	10x better than 100 dB
THD at 1 kHz	10x better than 1%
Current consumption no-load/full-load	17 VA / 340 VA
AC power supply	230 V, 50 - 60 Hz
Dimensions (W x H x D in mm)	483 x 88 x 440; 2 RU
Weight	approx. 12,5 kg

10-CHANNEL POWER AMPLIFIER (100 V, 70 V, 50 V)

RCS

BA-1020
200 W
10 x 20 W

MADE IN GERMANY



Description

This 10-Channel 19" Power Amplifier (2 RU) is perfectly suitable for professional usage for multichannel 100 V systems and 100 V application techniques (70 V, 50 V internally switchable), e.g. solariums, sauna facilities, thermal springs, etc.

Due to fanless cooling, this device is especially suitable for soundless environment requirements.

The 10-Channel Power Amplifier has a very low induction toroidal transformer.

The most modern manufacturing methods with high quality components ensure a high service life.

These 10-Channel Power Amplifiers are absolutely short circuit and engine idling proof with all relevant safety arrangements. They are therefore especially appropriate for continuous operation.

Please consider the following features:

- Each of these Amplifiers of this series has 10 unsymmetrical audio inputs for the program.
- This device has over 10 high-quality output transmitters, which are designed for phoenix screw-type connectors.
- The screw-type connectors substantially facilitate the wiring for signal input. Time consuming fitting of cables with XLR connectors is eliminated.
- The input signals may be regulated exactly via ten level controls, which are attached on the rear panel.
- The device is equipped with a „SOFT-START“ mode (net switch on limitation).

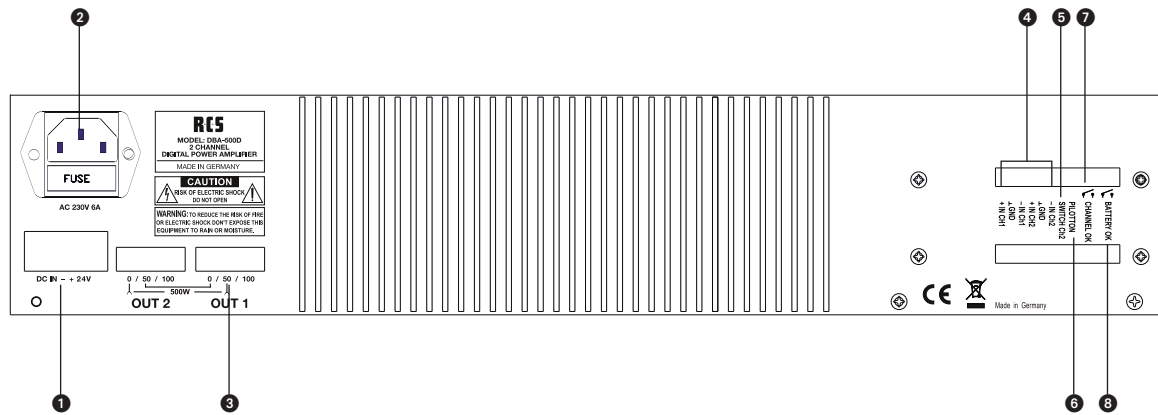
- The LED indicators attached on the front panel of the device give ongoing information regarding the initial gauge of the particular Amplifier.
- A ground/lift switch used to separate the connection of frame ground / signal ground (screening) helps to avoid hum loops.

*

Model designation

10-Channel Power Amplifier,..... BA-1020
10x 20 W RMS, (2 RU)

Rear view



- ❶ 24 V DC power supply terminal
- ❷ IEC power inlet (cold condition)
- ❸ Speaker outputs, 50 and 100 V, at DBA-500 D for 500 W operation - Output 1 and 2 turn into series
- ❹ Balanced inputs, at 500 W operation (DBA-500 D) actuate Input 1 and 2 combined
- ❺ Switch CH2: switch input 2 to input 1 with 12 V, e.g. to give the signal at input 2 priority against input 1
- ❻ Input for pilot tone signal
- ❼ Failure indication output if notice of malfunction or defect of the amplifier
- ❽ Failure indication output if emergency power supply is missing

Technical Data	DBA-250 D	DBA-500 D
Output power	375 W/250 W (Programm/RMS)	750 W/500 W (Programm/RMS) or 2x375 W/2x250 W (Programm/RMS)
Input sensitivity	1 V, 10 kOhms, balanced	
Output voltage	50 V or 100 V	
Frequency response	70 ~ 20.000 Hz (better than -3 dB)	
Signal-to-noise ratio	better than 91 dB	
THD at 1 kHz	better than 0,29%	better than 0,2%
External voltage distance	85 dB 1kHz	
Power consumption	Sine signal-380 W; no-load-18 W; standby-3 W	Sine signal: 770 W; no-load: 35 W; standby: 5 W
Current consumption (230 V AC)	Sine signal-1,7 A; active 0 W Out-0,09 A; standby-0,034 A	Sine signal: 4 A; active 0 W Out-0,15 A, standby: 0,048 A
Current consumption (24 V DC)	Sine signal-14 A; active 0 W Out-0,3 A; standby-0,06 A	Sine signal: 27 A; active 0 W Out-0,5 A, standby: 0,12 A
AC power supply	230 V, 50 – 60 Hz	
DC power supply	24 V (emergency power supply)	
Dimensions (W x H x D in mm)	483 x 88 x 256; 2 RU	
Weight	approx. 12 kg	approx. 13,5 kg

DIGITAL 100V POWER AMPLIFIER (100 V AND 50 V)

RCS

DBA-250 D

250 W

DBA-500 D

500 W

MADE IN GERMANY



Digital 100V Power Amplifier according to IEC 268-3
with over 90% degree of efficiency



Description

With this **Digital 100 V Power Amplifier** we do contribute to the protection of our climate and therefore the protection of our natural habitat. This device uses energy in a sensible manner and is part of an advanced technology development.

The advantages of digital power amplifiers can be found regarding a much improved degree of efficiency of over 90 % compared to other analogue amplifiers with approx. 70 %.

The out come of that the lost heat is way less, which is positive for the durability of the amplifiers and also for the complexity of the cooling of 19" racks. An additional cooling of the technics room is not necessary.

Please consider the following features:

- Pilot tone inputs and malfunction message contacts for emergency power and the power amplifier predestine this amplifier for 100 V technology according to **VDE 0828 / EN 60849**.
- In case no signal is present, the amplifier automatically switches to standby and then only spends **4 W**, if the signal is pending, e.g. in case of an emergency the amplifier will be ready for operation within 30 ms.
- These amplifiers are manufactured according to the latest assembly methods with high-quality components and are therefore perfectly suitable for professional continuous operation in 100 V alarming systems.
- The battery capacity for emergency power operation is notably less than with analogue amplifiers.
- Special protective circuits preventing engine idling, short circuit, over heating and an input delay are a matter of course.

- The LED indicators on the front panel give information on important signal and operation status.
- Output power and protection circuits according to IEC-268-5.
- Cooling takes place maintenance free without ventilation, which means that there will be no pollution and no follow-up costs. This device is therefore especially suitable for noise sensitive environments (offices, churches, conference rooms, etc.).
- Other distinctive features: low installation depth of only 260 mm and countersunk volume controls.
- The devices have loudspeaker outputs and symmetrical inputs on screw-type connectors, whereby the wiring complexity is reduced significantly.
- The inputs can be optionally equipped with input transformers. In this case please order as option the TSE-203.

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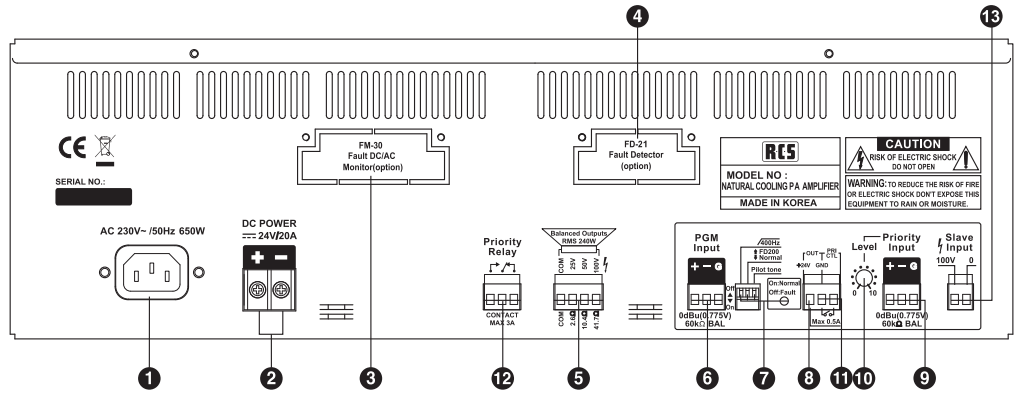
- + Degree of efficiency of over 90 %
- + Energy saving
- + Automatic standby mode
- + Low heat waste
- + Low battery capacity necessary

Model designations

1-Channel Power Amplifier,	DBA-250 D
250 W RMS, (2 RU)	
1- or 2-Channel Power Amplifier,	DBA-500 D
500 W or 2x 250 W RMS, (2 RU)	
Transformer-balanced input	TSE-203

REAR VIEW

- 1 IEC power inlet (cold condition)
- 2 24V DC power supply terminal
- 3 Slot for Error Monitoring-Module FM-30
- 4 Slot for Pilotone-Module FD-20
- 5 High-impedance speaker outputs (25, 50, 100V)
- 6 Input on screw-type connectors
- 7 400 Hz filter - FD-20 pilot tone on/off
- 8 Relay contact (NO/NC) to switch 24V DC (500mA).
- 9 Balanced Input for priority signal
- 10 Volume control for priority signal
- 11 connectors for priority activation
- 12 change-over contact controlled by priority
- 13 100V signal input from an existing 100V system (volume control at external PA-center)




Technical data	BAN-120	BAN-240
Output power	120 W RMS	240 W RMS
Frequency response	35-20000 Hz (better than -3 dB)	
THD at 1 kHz	better than 0,5 %	
Signal-to-noise ratio	better than 95 dB	
Input sensitivity	0 dB (0,775 V), 60 kOhms, balanced for PGM and PRIO	
Power consumption	328 W	735 W
Output impedance	25 V, 50 V, 100 V	
Input filter	400 Hz, -3 dB HPF	
Power Supply AC/DC	AC 230 V (50/60 Hz), DC 24 V	
Dimensions (WxHxD)/weight	483 x 133 x 379 mm; 15,5 kg	483 x 133 x 379 mm; 16,5 kg

OPTIONAL | Pilotone-Module FD-20

Description

This pilot tone module serves to monitor the performance of amplifiers. The generator produces a 20 kHz test signal. Apart from the test of the power amplifier functioning, the speaker line is checked for short circuit faults.

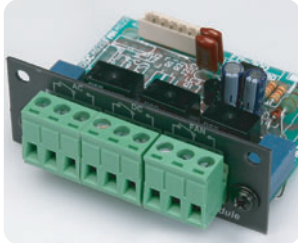


Pilotone-Module **FD-20**
Extension-Module for the BAN-Series

OPTIONAL | Error Monitoring-Module FM-30

Description

The Error Monitoring-Module has three potential-free Relay contacts (NO/NC). Fault monitoring is operating if AC- or DC-fuse is blown and if AC- or DC-power is off or disconnected. Also the module reacts when fan fault or fan is disconnected.



Error Monitoring-Module **FM-30**
Extension-Module for the BAN-Series

FANLESS 1-CHANNEL POWER AMPLIFIER



BAN-120

120 W

BAN-240

240 W



Description

These 19" power amplifiers are ideal for the use in areas which are sensitive to noise because they work with a **fanless cooling circuit**. (Offices, Churches, Seminar rooms, etc.).

They have been designed for continuous operation. They are absolutely short circuit and open circuit proof and are equipped with all relevant protection devices.

Please consider the following features:

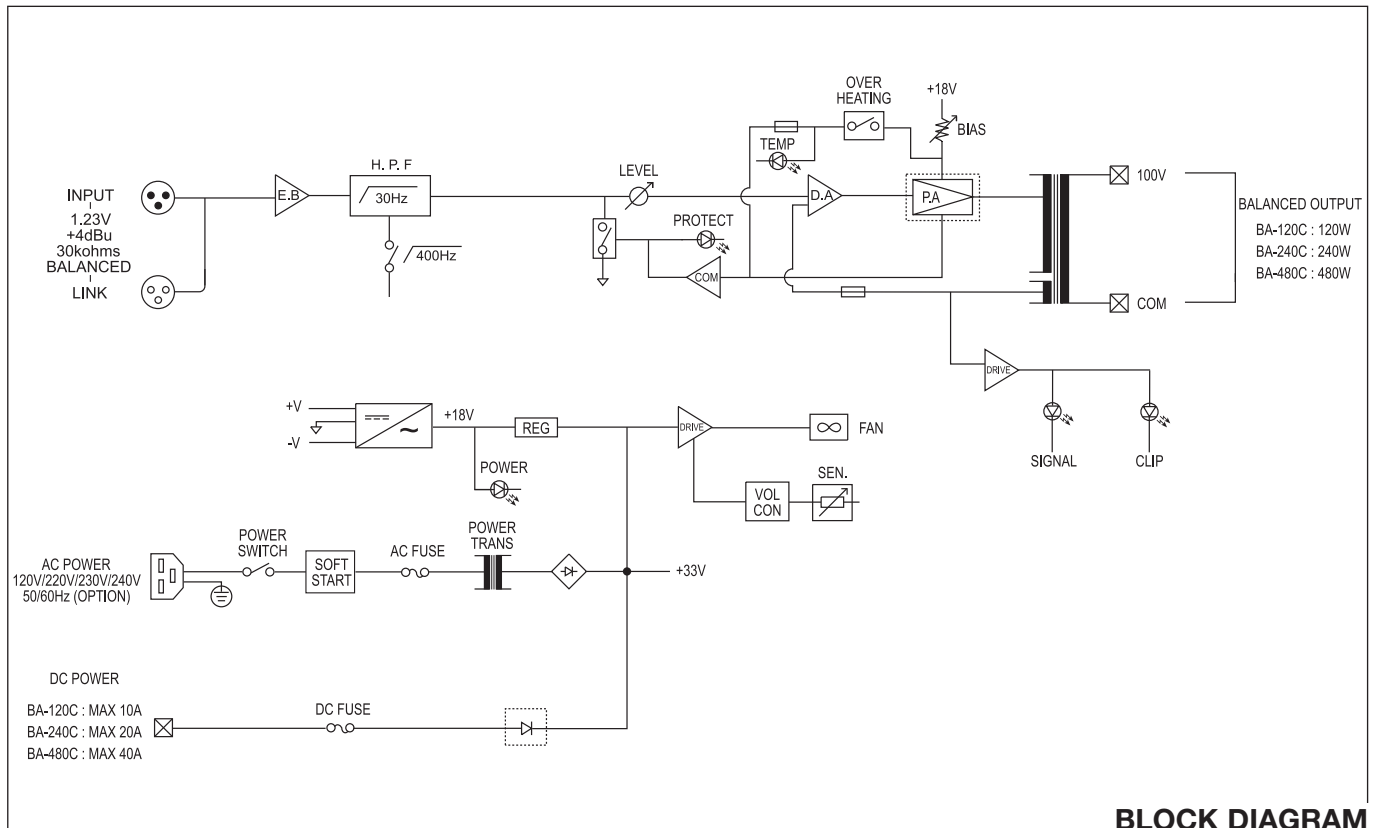
- These amplifiers have two electronically balanced audio inputs, of which one is suitable for programs and the other (with **priority**) for announcements, etc.
- Optionally available are the Module FD-20 and FM-30. They are monitor the amplifier basic functions.
- The high-pass filter (400 Hz), which can be activated on the rear, reduces internal resonances and additionally increases the sound quality.
- Relay contact (NO/NC) to switch 24V DC (500mA) i.e. Emergency call relay
- The additional 100V slave input is used to insert the signal directly from a 100V Line.
- The multicoloured LED indicators located on the front panel continuously indicate the operating status of the amplifier including protection functions and possible dangers.

- The amplifiers have electronically balanced inputs on screw-type connectors. Possible hum pick-up from ground loops is avoided through the balanced inputs and outputs.
- All models feature "SOFT START" and a special circuit which suppresses unpleasant switch-on noise.

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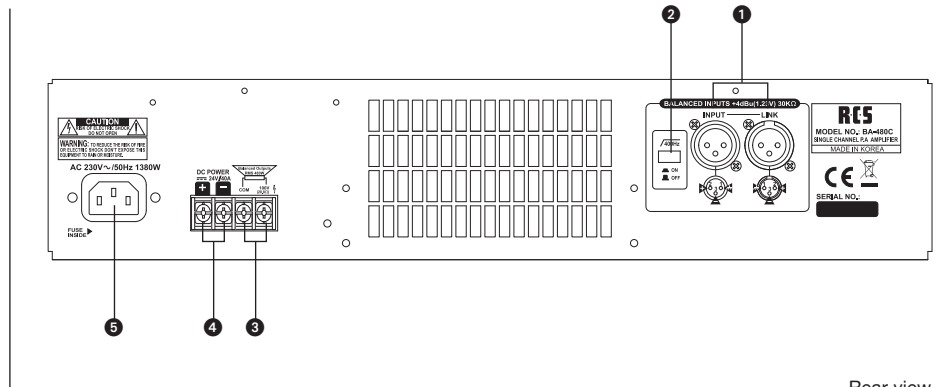
Model designations

- Power Amplifier**, (120 W sine, 3 RU)..... **BAN-120**
- Power Amplifier**, (240 W sine, 3 RU)..... **BAN-240**



BLOCK DIAGRAM

- 1 Input on XLR-sockets
- 2 Switch for high-pass filter 400 Hz
- 3 Screw-type connectors speaker outputs
- 4 24 V DC power supply terminal
- 5 IEC power inlet (cold condition)



Rear view

Technical data	BA-120 C	BA-240 C	BA-480 C
Output power	120 W (RMS)	240 W (RMS)	480 W (RMS)
Input sensitivity	+4 dB (1,23 V), 30 kohms, balanced		
Output impedance	100 V		
Frequency response	35 ~ 20.000 Hz (better than -3 dB)		
Signal-to-noise ratio	better than 100 dB		
THD at 1 kHz	better than 1%		better than 2%
Input filter	400 Hz /-3 dB		
Power consumption	335 W	650 W	1380 W
Current consumption (230 V)	0.7 A at 1/8 power current draw 1.7 A at rated power current draw	1.4 A at 1/8 power current draw 3.3 A at rated power current draw	3 A at 1/8 power current draw 6.7 A at rated power current draw
AC power supply	230 V, 50 – 60 Hz		
DC power supply	24 V (emergency power supply)		
Dimensions (W x H x D in mm)	483 x 88 x 374, 2 RU		
Weight	approx. 10,5 kg	approx. 12,5 kg	approx. 15,5 kg

1-CHANNEL POWER AMPLIFIER (100 V)

RCS

BA-120C

120 W

BA-240C

240 W

BA-480C

480 W

High-quality ball-bearing fan ensures quiet running and long service life.



Description

These 19" 1-channel power amplifiers are ideal for the use in professional audio applications with 100 V line systems. The devices are manufactured in state-of-the-art production processes using high-quality components such as toroidal transformers.

They have been designed for continuous operation. They are absolutely short circuit and open circuit proof and are equipped with all relevant protection devices.

The power supply is raised by AC 230 V mains or by DC 24 V (emergency power supply). The multicoloured LED indicators located on the front panel continuously indicate the operating status of the amplifier including protection functions and possible dangers.

Please consider the following features:

- The amplifiers are equipped with a ball-bearing fan which minimizes running noise and ensures maximum service life.
- Although the devices have different output power ratings (120, 240, 480 W), they all have the same design and identical dimensions.
- The amplifiers have electronically balanced inputs on screw-type connectors. Possible hum pick-up from ground loops is avoided through the balanced inputs and outputs.
- All models feature „SOFT START“ and a special circuit which suppresses unpleasant switch-on noise.

- The multicoloured LED indicators located on the front panel continuously indicate the operating status of the amplifier including protection functions and possible dangers.
- The speaker outputs are designed for 100 V lines.

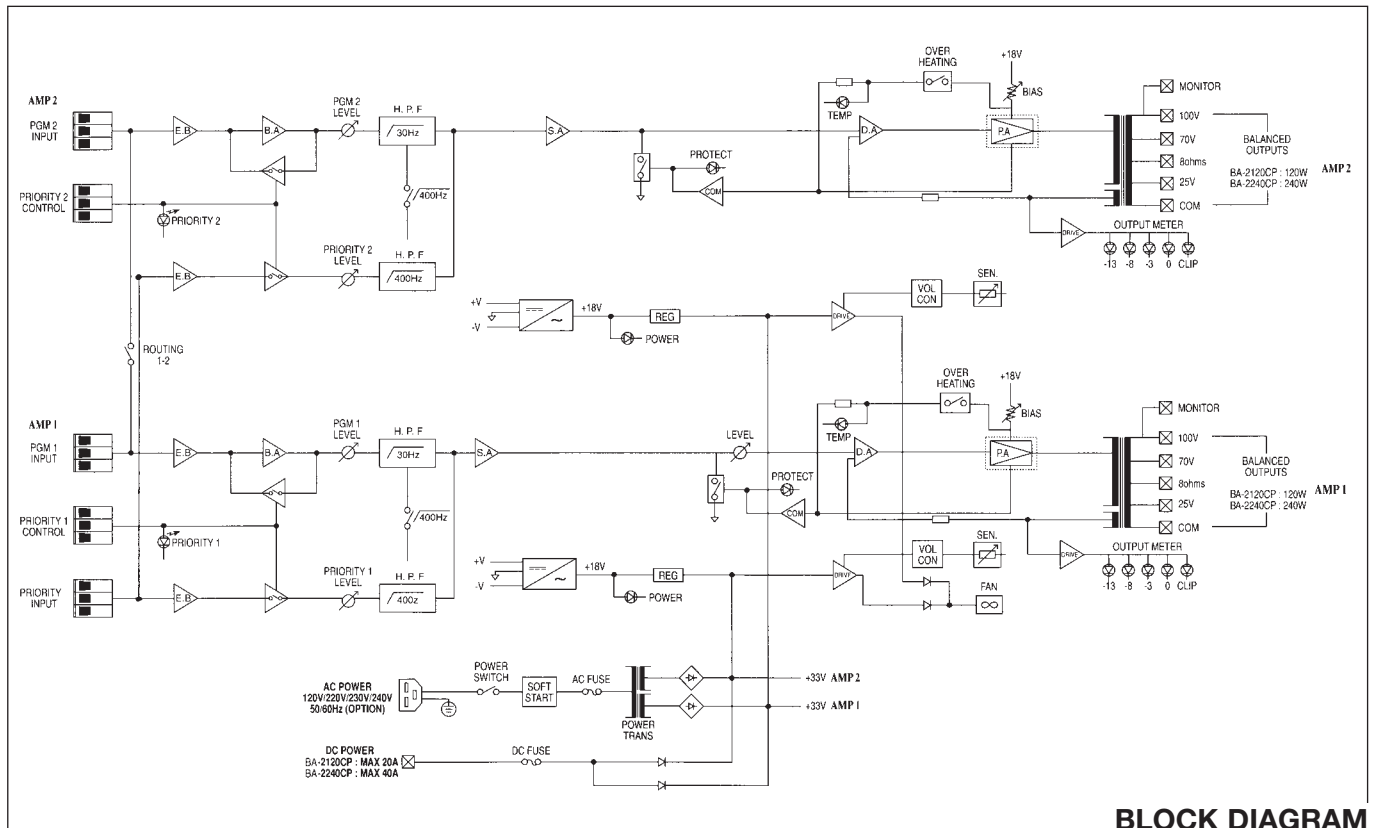
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Model designations

1-Channel Power Amplifier, (120 W RMS, 2 RU). **BA-120 C**

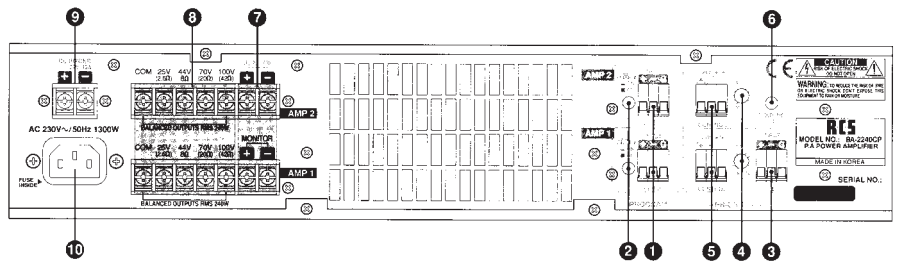
1-Channel Power Amplifier, (240 W RMS, 2 RU). **BA-240 C**

1-Channel Power Amplifier, (480 W RMS, 2 RU). **BA-480 C**



BLOCK DIAGRAM

- 1 Input on screw-type connectors
- 2 Switch for high-pass filter 400 Hz
- 3 Input for priority signal
- 4 Volume control for priority signal independent of program control
- 5 Screw-type connectors for priority activation via 24 V or switch
- 6 ROUTING SWITCH for parallel operation
- 7 Terminals for monitor output
- 8 High-impedance and low-impedance speaker outputs
- 9 24 V DC power supply terminal
- 10 IEC power inlet (cold condition)



Rear view

Technical data	BA-2120CP	BA-2240CP
Output power	2 x 120 W (RMS)	2 x 240 W (RMS)
Input sensitivity	+4 dB (1.23 V), 30 kohms, balanced	+4 dB (1.23 V), 30 kohms, balanced
Output impedance	25 V, 70 V, 100 V and 8 ohms	25 V, 70 V, 100 V and 8 ohms
Frequency response	35 ~ 20000 Hz (better than -3 dB)	35 ~ 20000 Hz (better than -3 dB)
Signal-to-noise ratio	better than 100 dB	better than 100 dB
THD at 1 kHz	better than 1 %	better than 1 %
Input filter	400 Hz /-3 dB	400 Hz /-3 dB
Power consumption	670 W	1300 W
Current consumption (230 V)	1.4 A at 1/8 power current draw 3.4 A at rated power current draw	2.8 A at 1/8 power current draw 6.6 A at rated power current draw
AC power supply	230 V, 50 - 60 Hz	230 V, 50 - 60 Hz
DC power supply	24 V (emergency power supply)	24 V (emergency power supply)
Dimensions (W x H x D in mm)	483 x 88 x 374; 2 RU	483 x 88 x 374; 2 RU
Weight	approx. 15 kg	approx. 18 kg

2-CHANNEL POWER AMPLIFIER (100 V AND 70 V)



BA-2120CP

240 W

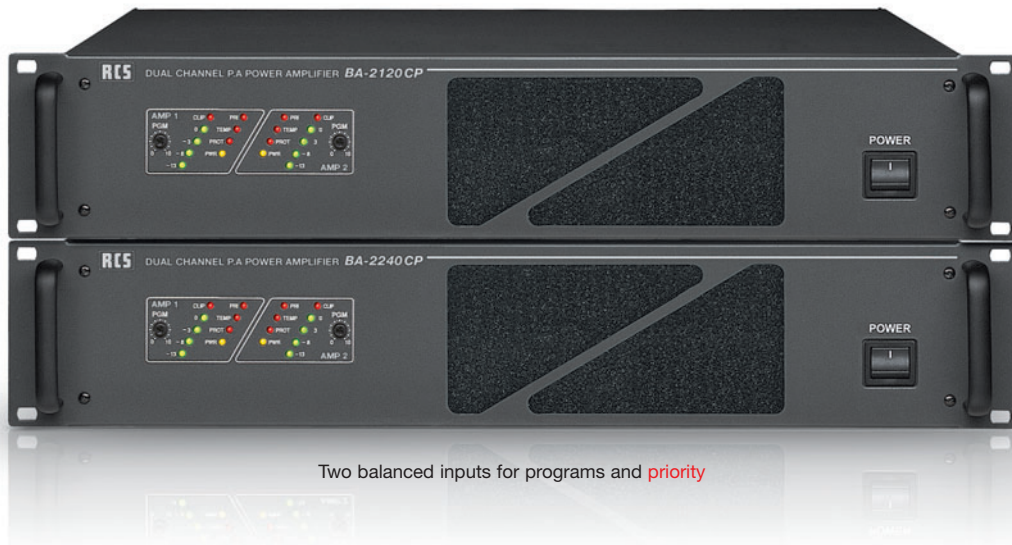
2 x 120 W

High-quality ball-bearing fan ensures quiet running and long service life.

BA-2240CP

480 W

2 x 240 W



Two balanced inputs for programs and **priority**

Description

These 19" 2-channel power amplifiers are ideal for the use in professional audio applications with 100 V, 70 V and 25 V line systems. They also provide low-impedance outputs (8 ohms). The devices are manufactured in state-of-the-art production processes using high-quality components such as toroidal transformers.

They have been designed for continuous operation. They are absolutely short circuit and open circuit proof and are equipped with all relevant protection devices.

Please consider the following features:

- All the 2-channel amplifiers of the "CP" series have 2 electronically balanced audio inputs for programs and one input (with **priority**) for priority announcements, etc.
- The amplifiers are equipped with a ball-bearing fan which minimizes running noise and ensures maximum service life.
- Although the devices have different output power ratings (240, 480 W), they all have the same design and identical dimensions.
- The amplifiers have electronically balanced inputs on screw-type connectors. Possible hum pick-up from ground loops is avoided through the balanced inputs and outputs.
- The screw-type connectors substantially facilitate the wiring for signal input. Time consuming fitting of cables with XLR connectors is eliminated.
- A monitor output permits program monitoring.

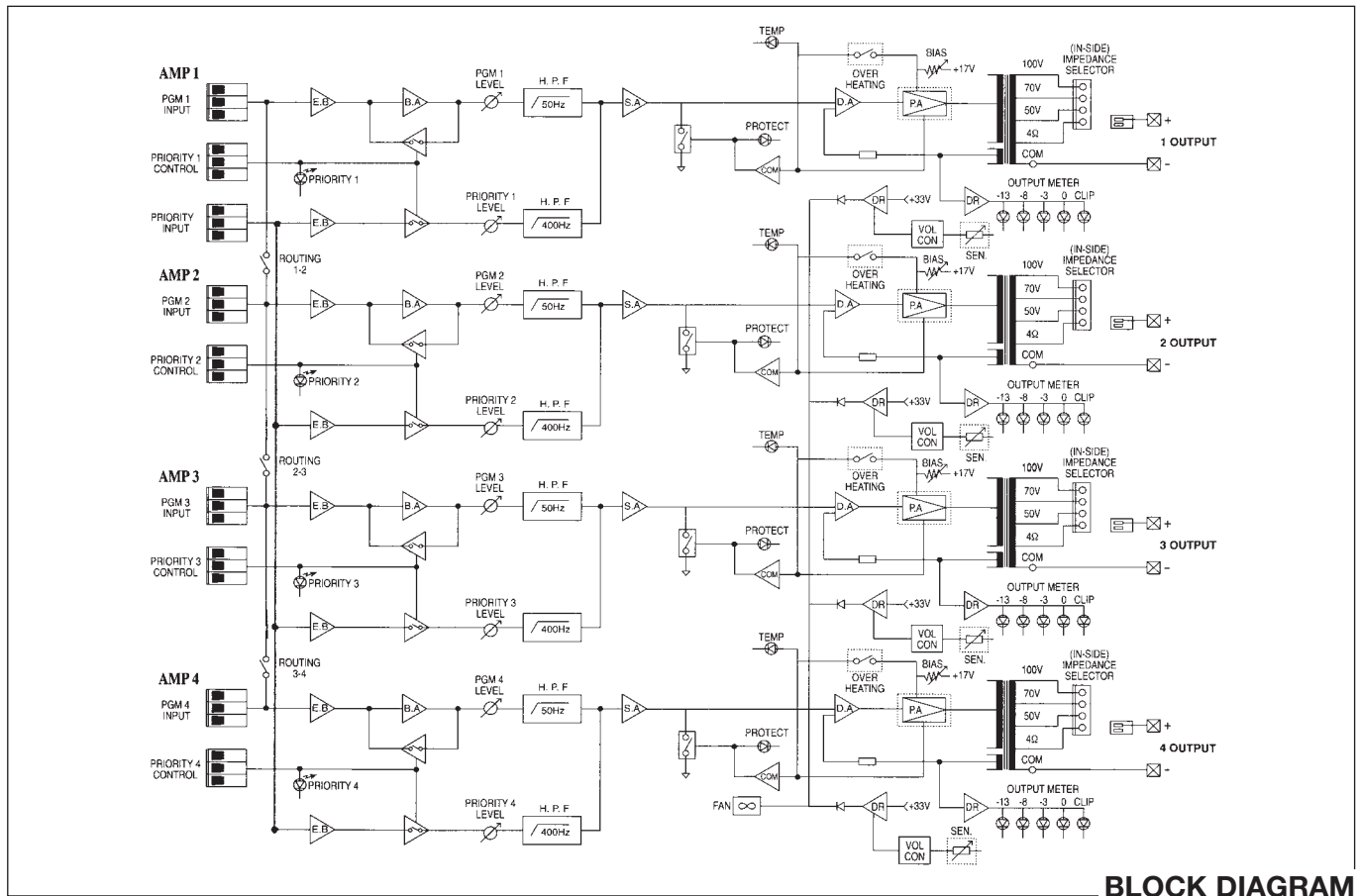
- The multicoloured LED indicators located on the front panel continuously indicate the operating status of the amplifier including protection functions and possible dangers.
- The two high-pass filters (400 Hz), which are located on the rear and which can be activated separately for each channel, reduce internal resonances and additionally increase the sound quality.
- All models feature soft start and a special circuit which suppresses unpleasant switch-on noise.
- A „ROUTING SWITCH" located on the rear allows parallel input operation of the two amplifier channels.

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Model designations

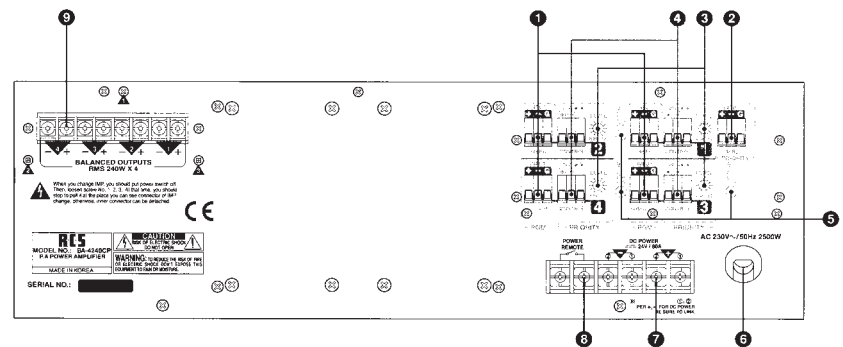
2-Channel Power Amplifier, **BA- 2120 CP**
2 x 120 W RMS, 2 RU, 2 inputs for programs and 1 input for paging with priority

2-Channel Power Amplifier, **BA- 2240 CP**
2 x 240 W RMS, 2 RU, 2 inputs for programs and 1 input for paging with priority



BLOCK DIAGRAM

- 1 Input on screw-type connectors
- 2 Input for priority signal
- 3 Volume control for priority signal independent of program control
- 4 Screw-type connectors for priority enable via 24 V or switch
- 5 ROUTING SWITCH for parallel operation
- 6 AC power cord
- 7 24 V DC power supply terminals
- 8 Remote switch-on via "Power Remote"
- 9 Speaker output panel, can be removed for changing the output impedance



Rear view

Technical data	BA-4120 CP	BA-4240 CP
Output power	4 x 120 W (RMS)	4 x 240 W (RMS)
Input sensitivity	+4 dB (1.23 V), 30 kohms, balanced	+4 dB (1.23 V), 30 kohms, balanced
Output impedance	50 V, 70 V, 100 V and 4 ohms	50 V, 70 V, 100 V and 4 ohms
Frequency response	55 ~ 17000 Hz (better than -3 dB)	55 ~ 17000 Hz (better than -3 dB)
Signal-to-noise ratio	better than 100 dB	better than 100 dB
THD at 1 kHz	better than 1 %	better than 1 %
Remote switching-on	"Power Remote" contact	"Power Remote" contact
Power consumption	1300 W	2500 W
Current consumption (230 V)	3 A at 1/8 power current draw 6.8 A at rated power current draw	5 A at 1/8 power current draw 11.8 A at rated power current draw
AC power supply	230 V, 50 - 60 Hz	230 V, 50 - 60 Hz
DC power supply	24 V (emergency power supply)	24 V (emergency power supply)
Dimensions (W x H x D in mm)	483 x 133 x 377; 3 RU	483 x 133 x 377; 3 RU
Weight	approx. 25 kg	approx. 28 kg

4-CHANNEL POWER AMPLIFIER (100 V, 70 V, 50 V)



BA-4120CP

480 W

4 x 120 W

Four balanced inputs for programs and **priority**

BA-4240CP

960 W

4 x 240 W



Description

These 19" 4-channel power amplifiers are ideal for the use in professional audio applications with 100 V, 70 V and 50 V line systems. They also provide low-impedance outputs (4 ohms). The devices are manufactured in state-of-the-art production processes using high-quality components such as toroidal transformers.

They have been designed for continuous operation. They are absolutely short circuit and open circuit proof and are equipped with all relevant protection devices.

Please consider the following features:

- All the 4-channel amplifiers of the "CP" series have 4 electronically balanced audio inputs for programs and one input (with **priority**) for priority announcements, etc.
- The screw-type connectors substantially facilitate the wiring for signal input. Time consuming fitting of the input cables with XLR connectors is eliminated.
- Although the devices have different output power ratings (480, 960 W), they all have the same design and identical dimensions.
- The amplifiers have electronically balanced inputs on screw-type connectors.
Possible hum pick-up from ground loops is avoided through the balanced inputs and outputs.

- The multicoloured LED indicators located on the front panel continuously indicate the operating status of the amplifier including protection functions and possible dangers.
- By means of a "Power Remote" contact the amplifier can be switched on, even if the power switch is in the off position.
- All models feature soft start and a special circuit which suppresses unpleasant switch-on noise.
- By means of the three ROUTING SWITCHES located on the rear the inputs can be combined, so that the power amplifiers can be used as 1-,2-,3- or 4-channel systems.

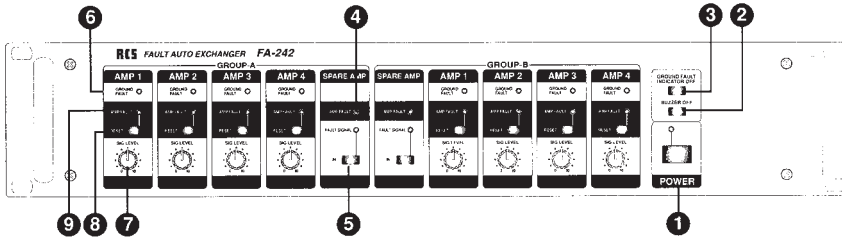
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Model designations

4-Channel Power Amplifier, **BA-4120 CP**
2 x 120 W RMS, 3 RU, 4 inputs for programs and 1 input for paging with priority

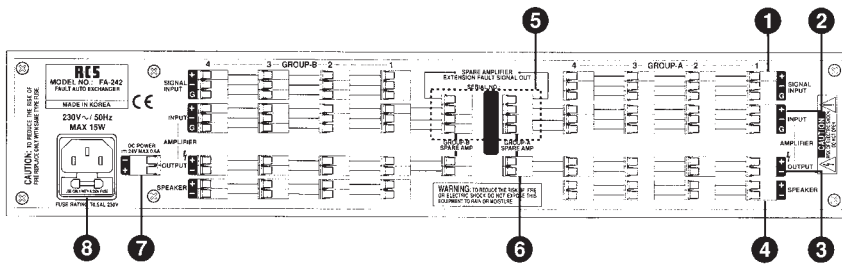
4-Channel Power Amplifier, **BA-4240 CP**
2 x 240 W RMS, 3 RU, 4 inputs for programs and 1 input for paging with priority

Front view



- ❶ Power switch with "POWER LED"
- ❷ Switch for deactivating the error signal tone
- ❸ Switch for deactivating the ground fault monitoring
- ❹ Fault LED for the backup amplifiers
- ❺ Pilot tone signal disable switch for backup amplifiers
- ❻ This LED indicates a ground fault
- ❼ Volume control for connected amplifiers
- ❽ Switches the pilot tone to the main amplifier
- ❾ Fault LED for the main amplifier

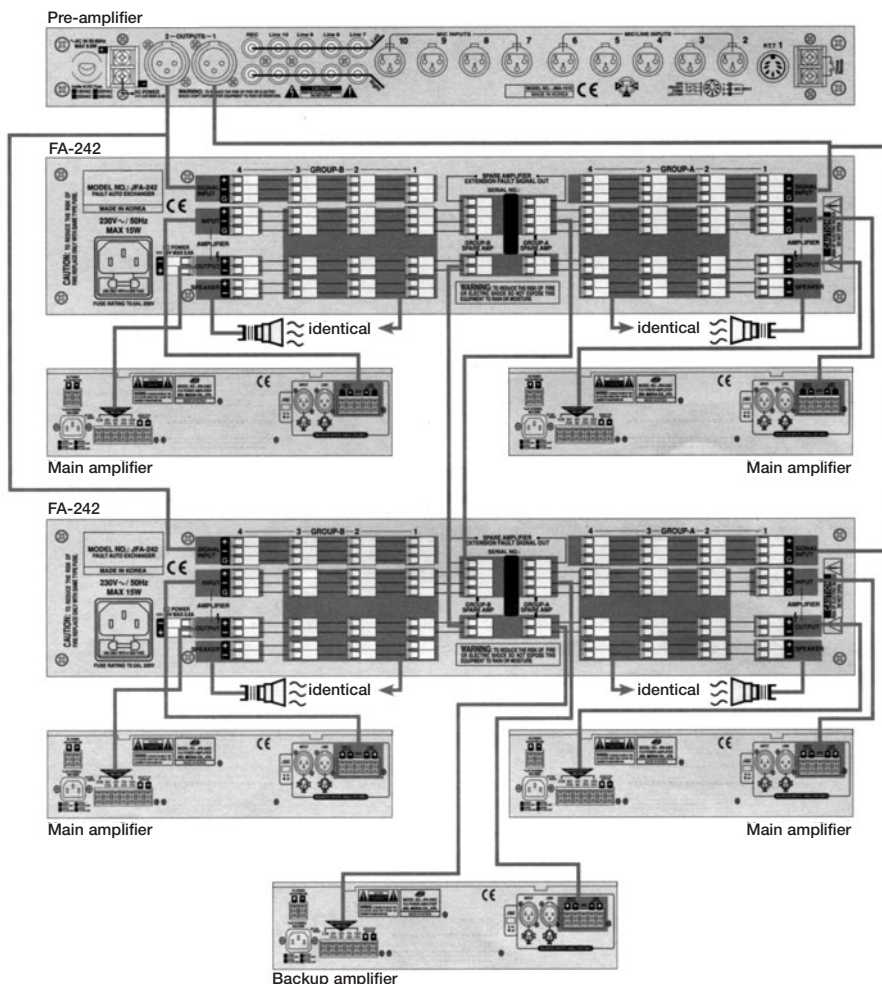
Rear view



- ❶ Balanced audio input
- ❷ Balanced terminal for connection to the audio input of the amplifier
- ❸ Terminals for connection to the 100 V output of the amplifier
- ❹ Speaker connection
- ❺ Terminals for connection to the input of the backup amplifier and the collective fault signal output
- ❻ Terminals for the output of the backup amplifier
- ❼ Inlet for 24 V emergency power supply
- ❽ IEC power inlet (cold condition)

Wiring example

(for 16 main amplifiers with 1 backup amplifier)



- The example on the left shows the wiring of 16 amplifiers with 1 backup amplifier.
- In the example shown, 2 automatic FA-242 monitoring devices are used with 16 240 W main amplifiers, 1 MA-1410 mixer preamplifier and 1 240 W backup amplifier.
- As can be seen in the figure, the backup amplifier terminals of both FA-242 devices are connected. Thus correct fault indication is ensured.

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The FA-242 is the ideal amplifier monitoring and backup switching device for your central 19" rack units.

For main amplifiers and 2 backup amplifiers (pilot tone and ground fault)



Description

The FA-242 Fault Auto Exchanger permits automatic monitoring of up to 8 amplifiers. This includes the monitoring of the actual function of the amplifier with pilot tone and, at the same time, the monitoring for ground faults. If an amplifier fails, the device automatically switches over to a backup amplifier. After the fault has been eliminated, the amplifier monitoring device automatically switches back to the main amplifier.

Please consider the following features:

- Ground faults are indicated through LEDs and an audible signal (can be disabled).
- The failure of an amplifier is also indicated through LEDs and an audible signal, which may also be switched off.
- The amplifier monitoring device is equipped with a pilot tone generator (22 kHz).
- The audio inputs and outputs have been designed with balanced connections.
- Only amplifiers with output transformers can be monitored, as otherwise the ground fault LED flashes.
- In the case of an amplifier failure, an additional connection supplies 7 V for the switching of external devices.
- Speaker and control cables are connected by means of screw-type connectors.
- When 2 FA-242 devices are used, 16 amplifiers can be connected to a backup amplifier.
- The amplifier monitoring device operates on mains power (230 V) or 24 V DC (emergency power supply).
- It is possible to switch 8 amplifiers to 1 backup amplifier or to set up 2 groups with 4 amplifiers each, which then can be switched to 2 backup amplifiers.

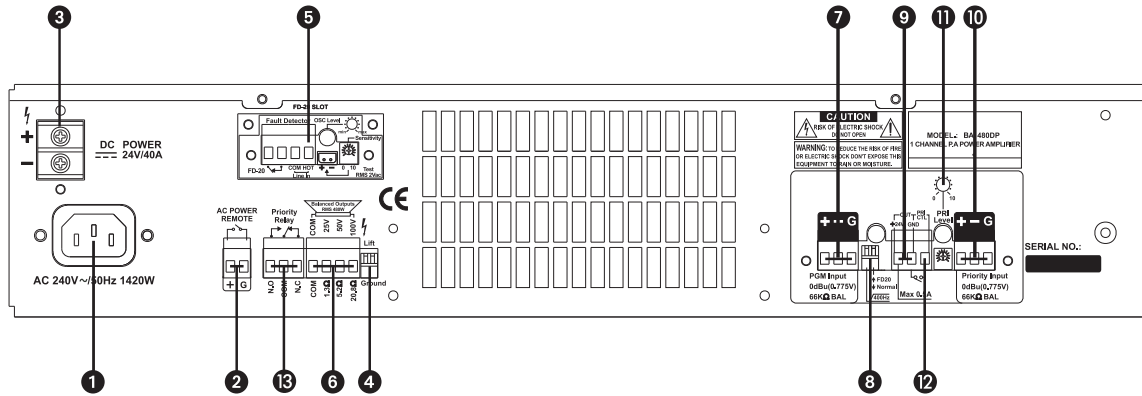
- The ground fault detection function may also be deactivated, if required.
- The device has a volume control for each main amplifier.
- With terminals which are not used, the RESET button of the respective input must be pressed.

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Technical data	FA-242
Input/output signal ratio	1:1 (level variable)
Maximum input level	+18 dB
Frequency response	less than -0.5 dB (20 Hz - 20 kHz)
Signal-to-noise ratio	better than 86 dB
THD	less than 0.005 %
Crosstalk	better than 80 dB
Power consumption	20 W
Power supply	230 V mains current and 24 V DC
Dimensions (W x H x D) in mm	483 x 88 x 200, 2 RU
Weight	4.2 kg

Amplifier monitoring device, (2 RU) **FA-242**

Rear view



- 1 IEC power inlet (cold condition)
- 2 Remote switch-on via "Power Remote"
- 3 24 V DC power supply terminal
- 4 Groundlift switch
- 5 Integrated pilot tone module FD-20 (optional)
- 6 Speaker outputs, 25 V, 50 V and 100 V
- 7 Input on screw-type connectors
- 8 Switches for high-pass filter (400 Hz) and FD-20 module
- 9 24 V (500 mA) output for switching external relays or similar units
- 10 Balanced input for priority signal
- 11 Volume control for priority signal
- 12 Contact for priority enable
- 13 Change-over contact for priority

Technical data	BA-120 DP	BA-240 DP	BA-480 DP
Output power	120 W (RMS)	240 W (RMS)	480 W (RMS)
Input sensitivity	0 dB (0.775 V), 66 kohms, balanced	0 dB (0.775 V), 66 kohms, balanced	0 dB (0.775 V), 66 kohms, balanced
Output impedance	25 V, 50 V, 100 V	25 V, 50 V, 100 V	25 V, 50 V, 100 V
Frequency response	35 - 20000 Hz (better than -3 dB)	35 - 20000 Hz (better than -3 dB)	35 - 20000 Hz (better than -3 dB)
Signal-to-noise ratio	better than 100 dB	better than 100 dB	better than 100 dB
THD at 1 kHz	better than 0.5%	better than 0.5%	better than 0.5 %
Input filter	400 Hz /-3 dB	400 Hz /-3 dB	400 Hz /-3 dB
Power consumption	328 W	735 W	1420 W
Current consumption (230 V)	0.77 A at 1/8 power current draw 1.77 A at rated power current draw	1.6 A at 1/8 power current draw 3.75 A at rated power current draw	3.1 A at 1/8 power current draw 7.4 A at rated power current draw
AC power supply	230 V, 50 - 60 Hz	230 V, 50 - 60 Hz	230 V, 50 - 60 Hz
DC power supply	24 V (emergency power supply)	24 V (emergency power supply)	24 V (emergency power supply)
Dimensions (W x H x D in mm)	483 x 88 x 374; 2 RU	483 x 88 x 374; 2 RU	483 x 88 x 374; 2 RU
Weight	approx. 12.5 kg	approx. 14.5 kg	approx. 18.5 kg

Description

This pilot tone module serves to monitor the performance of amplifiers. It is installed in the slot provided on power amplifiers of the "DP" series. The generator produces a 20 kHz test signal. Apart from the test of the power amplifier functioning, the speaker line is checked for short circuit faults.

Evaluation and switching to a backup amplifier is performed by the FS-381 amplifier switcher.

FD-20 Pilot Tone-Module



Pilot Tone-Module for power amplifiers of the "DP" series **FD-20**

1-CHANNEL POWER AMPLIFIER WITH PILOT TONE



BA-120DP
120 W

BA-240DP
240 W

BA-480DP
480 W

Balanced inputs for programs, **priority** and **pilot tone module**



Description

These 19" 1-channel power amplifiers are **fully monitored** and ideal for the use in professional audio applications with 100 V, 70 V and 25 V line systems.

The devices are manufactured in state-of-the-art production processes using high-quality components such as toroidal transformers.

They have been designed for continuous operation. They are absolutely short circuit and open circuit proof and are equipped with all relevant protection devices.

Please consider the following features:

- All the amplifiers of the "DP" series have one electronically balanced audio input for programs and one input (with **priority**) for priority announcements, etc.
- Each power amplifier can be equipped with 1 **pilot tone module** (FD-20) which monitors the performance of the amplifier.
- The amplifiers have electronically balanced inputs and outputs on screw-type connectors. Possible hum pick-up from ground loops is avoided through the balanced inputs and outputs.
- The screw-type connectors substantially facilitate the wiring for signal input. Time consuming fitting of the input cables with XLR connectors is eliminated.
- The multicoloured LED indicators located on the front panel continuously indicate the operating status of the amplifier including protection functions and possible dangers.

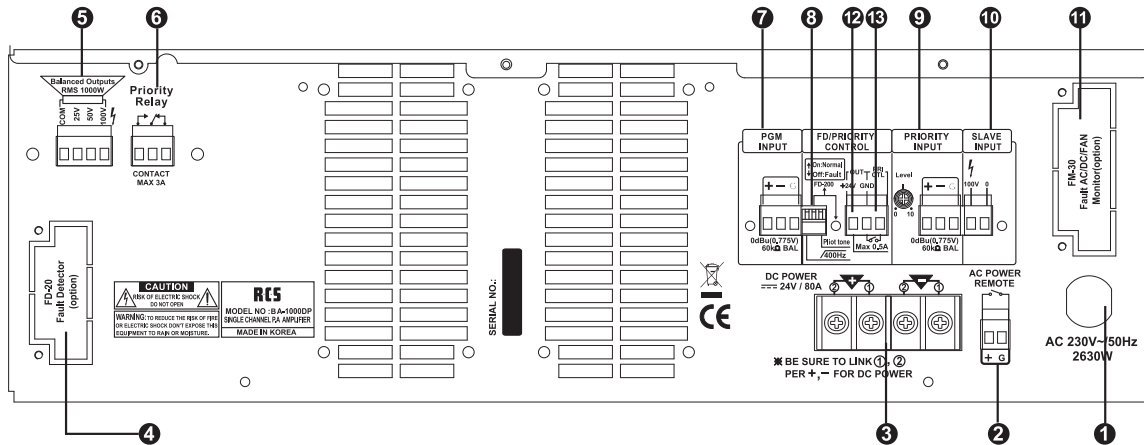
- By means of a "Power Remote" contact the amplifier can be switched on, even if the power switch is in the off position.
- All models feature soft start and a special circuit which suppresses unpleasant switch-on noise.
- A groundlift switch is provided to disconnect signal ground from chassis ground (shielding), in order to avoid any hum pick-up.

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Model designations

1-Channel Power Amplifier,	BA-120 DP
120 W RMS, 2 RU, prepared for FD-20	
1-Channel Power Amplifier,	BA-240 DP
240 W RMS, 2 RU, prepared for FD-20	
1-Channel Power Amplifier,	BA-480 DP
480 W RMS, 2 RU, prepared for FD-20	

Rear view



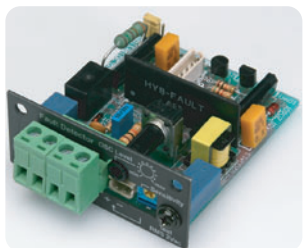
- ① IEC power inlet (cold condition)
- ② Remote switch-on via "Power Remote"
- ③ 24 V DC power supply terminal
- ④ Slot for pilot tone module FD-20 (optional)
- ⑤ Speaker outputs, 25 V, 50 V and 100 V
- ⑥ Change-over contact for priority
- ⑦ Input on screw-type connectors
- ⑧ Switches for high-pass filter (400 Hz) and FD-20 module
- ⑨ Balanced input for priority signal
- ⑩ Input for 100 V speaker signal
- ⑪ Slot for Error Monitoring-Module FM-30 (optional)
- ⑫ 24 V (500 mA) output for switching external relays or similar units
- ⑬ Contact for priority enable

Technical data	BA-720 DP	BA-1000 DP
Output power	1x 720 W (RMS)	1x 1.000 W (RMS)
Input sensitivity	0 dB (0,775 V), 60 kOhm, balanced	
Output impedance	25 V, 50 V, 100 V	
Frequency response	35 ~ 20.000 Hz (better than -3 dB)	
Signal-to-noise ratio	better than 100 dB	
THD at 1 kHz	better than 0,4%	
Input filter	400 Hz / -3 dB	
Power consumption	1.890 W	2.630 W
Current consumption (230 V)	3,8 A 1/8 power current draw	5,4 A 1/8 power current draw
	9,0 A at 1/1 rated power current draw	12,0 A at 1/1 rated power current draw
AC power supply	220-230 V, 50 ~ 60 Hz	
DC power supply	24 V (emergency power supply)	
Dimensions (W x H x D)	483 x 88 x 374 mm; 3 RU	
Weight	approx. 12,5 kg	approx. 14,5 kg

OPTIONAL | Pilotone-Module FD-20

Description

This pilot tone module serves to monitor the performance of amplifiers. The generator produces a 20 kHz test signal. Apart from the test of the power amplifier functioning, the speaker line is checked for short circuit faults.

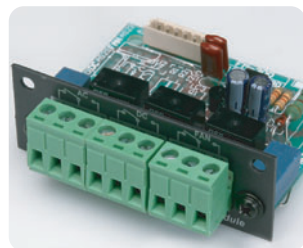


Pilotone-Module FD-20
Extension-Module for the „DP“ series

OPTIONAL | Error Monitoring-Module FM-30

Description

The Error Monitoring-Module has three potential-free Relay contacts (NO/NC). Fault monitoring is operating if AC- or DC-fuse is blown and if AC- or DC-power is off or disconnected. Also the module reacts when fan fault or fan is disconnected.



Error Monitoring-Module FM-30
Extension-Module for the „DP“ series

1-CHANNEL POWER AMPLIFIER WITH PILOT TONE

RCS

BA-720 DP
720 W

BA-1000 DP
1000 W



Balanced inputs for programs, **priority and pilot tone module**



Description

These 19" 1-channel power amplifiers are **fully monitored** and ideal for the use in professional audio applications with 100 V, 70 V and 25 V line systems.

The amplifiers have malfunction message contacts for all relevant functions in case of emergency.

The devices are manufactured in state-of-the-art production processes using high-quality components such as toroidal transformers.

They have been designed for continuous operation. They are absolutely short circuit and open circuit proof and are equipped with all relevant protection devices.

Please consider the following features:

- All the amplifiers of the "DP" series have one electronically balanced audio input for programs and one input (with **priority**) for priority announcements, etc.
- Each power amplifier can be equipped with 1 **pilot tone module** (FD-20) which monitors the performance of the amplifier.
- The amplifiers have electronically balanced inputs and outputs on screw-type connectors. Possible hum pick-up from ground loops is avoided through the balanced inputs and outputs.
- The screw-type connectors substantially facilitate the wiring for signal input. Time consuming fitting of the input cables with XLR connectors is eliminated.
- By means of a "Power Remote" contact the amplifier can be switched on, even if the power switch is in the off position.

- The multicoloured LED indicators located on the front panel continuously indicate the operating status of the amplifier including protection functions and possible dangers.
- All models feature soft start and a special circuit which suppresses unpleasant switch-on noise.

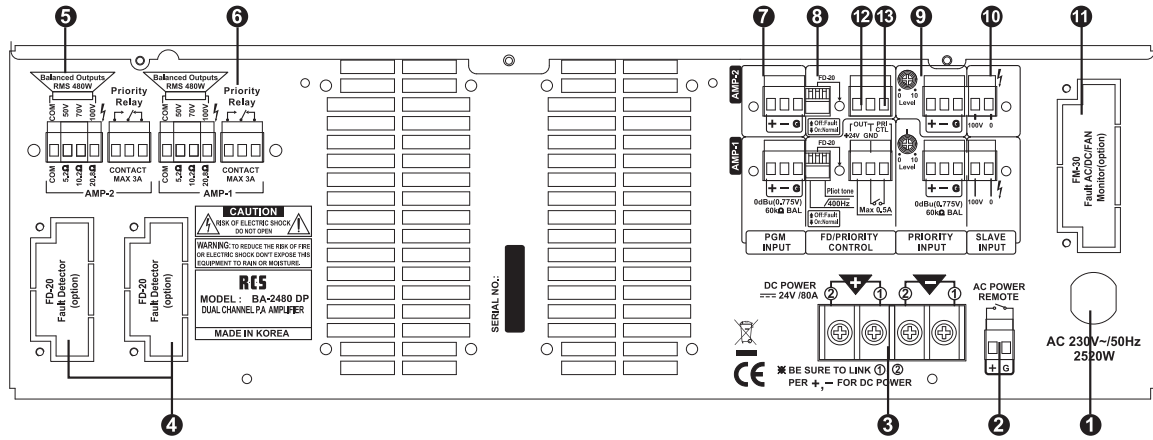
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Model designations

1-Channel Power Amplifier, **BA-720 DP**
1x 720 W RMS, 3 RU, prepared for FD-20 and FM-30

1-Channel Power Amplifier, **BA-1000 DP**
1x 1.000 W RMS, 3 RU, prepared for FD-20 and FM-30

Rear view



- 1 IEC power inlet (cold condition)
- 2 Remote switch-on via "Power Remote"
- 3 24 V DC power supply terminal
- 4 Slot for pilot tone module FD-20 (optional)
- 5 Speaker outputs, 25 V, 50 V and 100 V
- 6 Change-over contact for priority
- 7 Input on screw-type connectors
- 8 Switches for high-pass filter (400 Hz) and FD-20 module
- 9 Balanced input for priority signal
- 10 Input for 100 V speaker signal
- 11 Slot for Error Monitoring-Module FM-30 (optional)
- 12 24 V (500 mA) output for switching external relays or similar units
- 13 Contact for priority enable

Technical data

BA-2480 DP

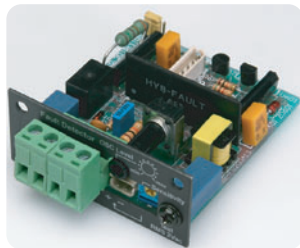
Output power	2x 480 W (RMS)
Input sensitivity	0 dB (0,775 V), 60 kOhm, balanced
Output impedance	25 V, 50 V, 100 V
Frequency response	35 ~ 20.000 Hz (better than -3 dB)
Signal-to-noise ratio	better than 100 dB
THD at 1 kHz	better than 0,4%
Input filter	400 Hz / -3 dB
Power consumption	2.520 W
Current consumption (230 V)	3,1 A 1/8 power current draw 11,8 A at 1/1 rated power current draw
AC power supply	220-230 V, 50 ~ 60 Hz
DC power supply	24 V (emergency power supply)
Dimensions (W x H x D)	483 x 88 x 374 mm; 3 RU
Weight	approx. 18,5 kg

OPTIONAL | Pilotone-Module

FD-20

Description

This pilot tone module serves to monitor the performance of amplifiers. The generator produces a 20 kHz test signal. Apart from the test of the power amplifier functioning, the speaker line is checked for short circuit faults.



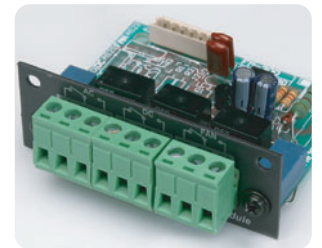
Pilotone-Module **FD-20**
Extension-Module for the „DP“ series

OPTIONAL | Error Monitoring-Module

FM-30

Description

The Error Monitoring-Module has three potential-free Relay contacts (NO/NC). Fault monitoring is operating if AC- or DC-fuse is blown and if AC- or DC-power is off or disconnected. Also the module reacts when fan fault or fan is disconnected.



Error Monitoring-Module **FM-30**
Extension-Module for the „DP“ series

2-CHANNEL POWER AMPLIFIER WITH PILOT TONE

RCS

BA-2480 DP
960 W
2x 480 W



Balanced inputs for programs, **priority and pilot tone module**



Description

These 19" 2-channel power amplifiers are **fully monitored** and ideal for the use in professional audio applications with 100 V, 70 V and 25 V line systems.

The amplifiers have malfunction message contacts for all relevant functions in case of emergency.

The devices are manufactured in state-of-the-art production processes using high-quality components such as toroidal transformers.

They have been designed for continuous operation. They are absolutely short circuit and open circuit proof and are equipped with all relevant protection devices.

Please consider the following features:

- All the amplifiers of the "DP" series have one electronically balanced audio input for programs and one input (with **priority**) for priority announcements, etc.
- Each power amplifier can be equipped with 2 **pilot tone module** (FD-20) which monitors the performance of the amplifier.
- The amplifiers have electronically balanced inputs and outputs on screw-type connectors. Possible hum pick-up from ground loops is avoided through the balanced inputs and outputs.
- The screw-type connectors substantially facilitate the wiring for signal input. Time consuming fitting of the input cables with XLR connectors is eliminated.
- By means of a "Power Remote" contact the amplifier can be switched on, even if the power switch is in the off position.

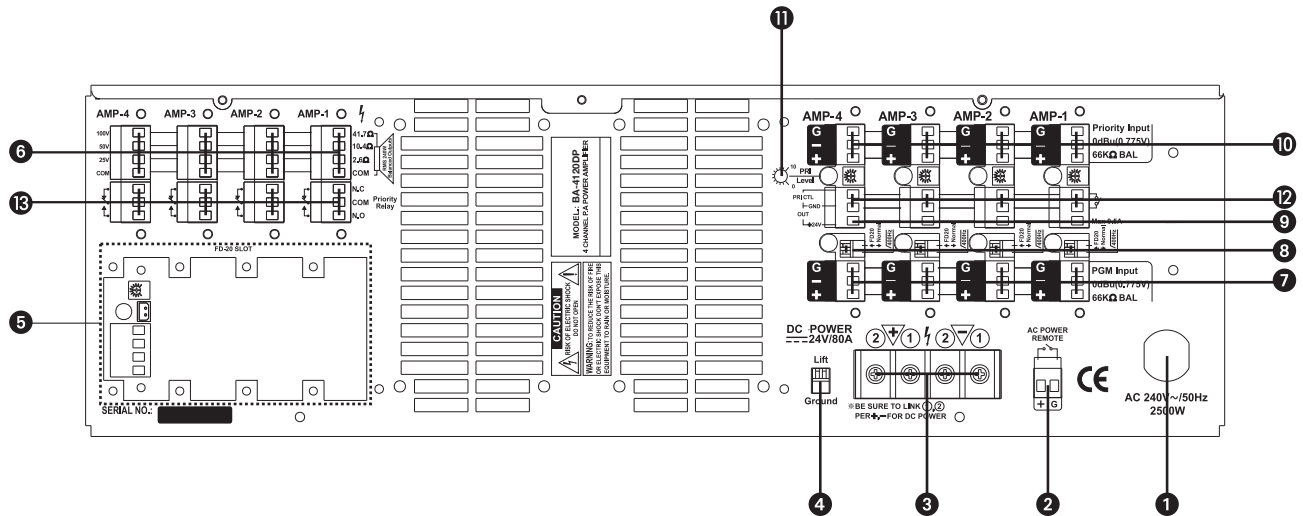
- The multicoloured LED indicators located on the front panel continuously indicate the operating status of the amplifier including protection functions and possible dangers.
- All models feature soft start and a special circuit which suppresses unpleasant switch-on noise.

*

Model designation

2-Channel Power Amplifier, BA-2480 DP
2x 480 W RMS, 3 RU, prepared for FD-20 and FM-30

Rear view



- 1 IEC power inlet (cold condition)
- 2 Remote switch-on via "Power Remote"
- 3 24 V DC power supply terminal
- 4 Groundlift switch
- 5 Integrated pilot tone module FD-20 (optional)
- 6 Speaker outputs, 25 V, 50 V and 100 V
- 7 Input on screw-type connectors
- 8 Volume control for program
- 9 Switches for high-pass filter (400 Hz) and FD-20 module
- 10 24 V (500 mA) output for switching external relays or similar units
- 11 Balanced input for priority signal
- 12 Volume control for priority signal
- 13 Mute level control -8 dB to -20 dB
- 14 Contact for priority enable
- 15 Change-over contact for priority

Technical data	BA-4120 DP	BA-4240 DP
Output power	4 x 120 W (RMS)	4 x 240 W (RMS)
Input sensitivity	0 dB (0.775 V), 66 kohms, balanced	0 dB (0.775 V), 66 kohms, balanced
Output impedance	25 V, 50 V, 100 V	25 V, 50 V, 100 V
Frequency response	35 - 20000 Hz (better than -3 dB)	35 - 20000 Hz (better than -3 dB)
Signal-to-noise ratio	better than 100 dB	better than 100 dB
THD at 1 kHz	better than 0.5%	better than 0.5%
Input filter	400 Hz /-3 dB	400 Hz /-3 dB
Power consumption	1300 W	2500 W
Current consumption (230 V)	3 A at 1/8 power current draw 6.8 A at rated power current draw	5 A at 1/8 power current draw 11.8 A at rated power current draw
AC power supply	230 V, 50 - 60 Hz	230 V, 50 - 60 Hz
DC power supply	24 V (emergency power supply)	24 V (emergency power supply)
Dimensions (W x H x D in mm)	483 x 133 x 440; 3 RU	483 x 133 x 440; 3 RU
Weight	approx. 26.5 kg	approx. 29.6 kg

Description

This pilot tone module serves to monitor the performance of amplifiers. It is installed in the slot provided on power amplifiers of the "DP" series. The generator produces a 20 kHz test signal. Apart from the test of the power amplifier functioning, the speaker line is checked for short circuit faults.

Evaluation and switching to a backup amplifier is performed by the FS-381 amplifier switcher.

FD-20 Pilot Tone-Module



Pilot Tone-Module for power amplifiers of the "DP" series

FD-20

4-CHANNEL POWER AMPLIFIER WITH PILOT TONE

RCS

BA-4120DP
480 W
4 x 120 W

BA-4240DP
960 W
4 x 240 W

Balanced inputs for programs, **priority** and **pilot tone module**



Description

These 19" 4-channel power amplifiers are **fully monitored** and ideal for the use in professional audio applications with 100 V, 70 V and 25 V line systems.

The devices are manufactured in state-of-the-art production processes using high-quality components such as toroidal transformers.

They have been designed for continuous operation. They are absolutely short circuit and open circuit proof and are equipped with all relevant protection devices.

Please consider the following features:

- All the amplifiers of the "DP" series have four electronically balanced audio inputs for programs and four further inputs (with **priority**) for priority announcements, etc.
- Each power amplifier can be equipped with 4 **pilot tone modules** (FD-20) which monitor the performance of the amplifier.
- The amplifiers have electronically balanced inputs and outputs on screw-type connectors. Possible hum pick-up from ground loops is avoided through the balanced inputs and outputs.
- The screw-type connectors substantially facilitate the wiring for signal input. Time consuming fitting of the input cables with XLR connectors is eliminated.
- The multicoloured LED indicators located on the front panel continuously indicate the operating status of the amplifier including protection functions and possible dangers.

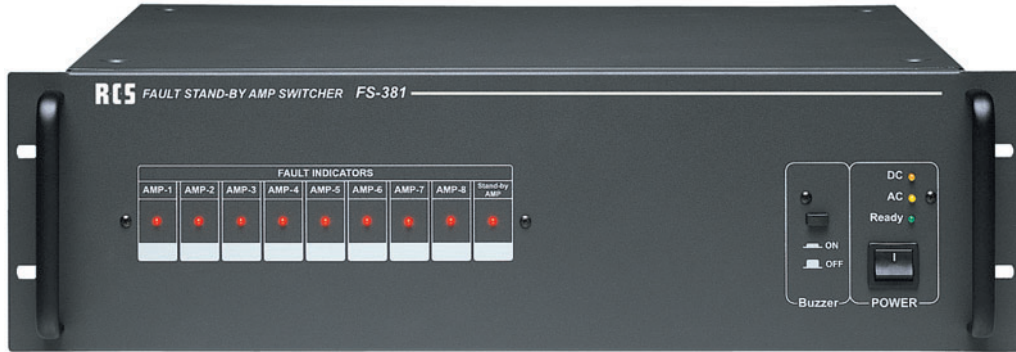
- By means of a "Power Remote" contact the amplifier can be switched on, even if the power switch is in the off position.
- All models feature soft start and a special circuit which suppresses unpleasant switch-on noise.
- A groundlift switch is provided to disconnect signal ground from chassis ground (shielding), in order to avoid any hum pick-up.

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Model designations

4-Channel Power Amplifier, **BA-4120 DP**
4 x 120 W RMS, 3 RU, prepared for FD-20
4-Channel Power Amplifier, **BA-4240 DP**
4 x 240 W RMS, 3 RU, prepared for FD-20

By means of this unit and the FD-20 module, up to 8 "DP" series amplifiers can be switched to a backup amplifier in the case of a failure.



Description

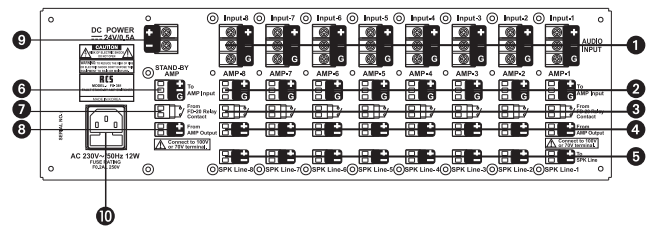
The FS-381 amplifier switcher serves to monitor up to 8 power amplifiers of the new "DP" series. In the case of a failure, the line signal and the associated 100 V circuit of the defective power amplifier is routed to the backup amplifier. Additionally, the defective power amplifier is indicated through an LED and an internal buzzer. The fault indication contact for power amplifier failure is provided by the FD-20 pilot tone module.

Please consider the following features:

- The failure of an amplifier is indicated through LEDs and an audible signal, which may also be switched off.
- The audible alarm can be disabled on the front panel, if not required.
- The audio inputs and outputs have been designed with balanced connections.
- After the fault has been eliminated, the FS-381 automatically switches back to the main amplifier.
- Speaker and control cables are connected by means of screw-type connectors.
- The FS-381 amplifier switcher operates on 230 V mains power or 24 V emergency power supply.
- With all these functions the FS-381 is the ideal amplifier monitoring device for central 19" racks.

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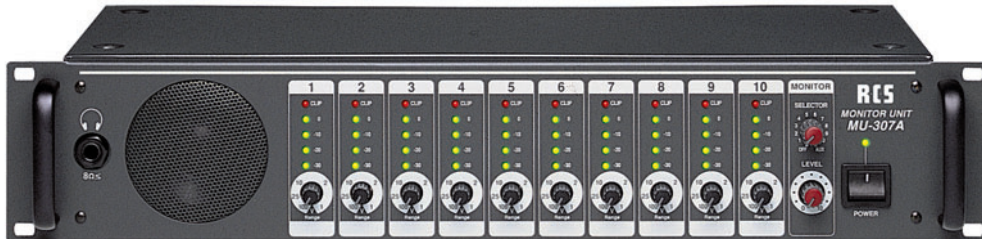
Rear view



- 1 Balanced audio input
- 2 Balanced terminals for connection to the audio inputs of the amplifiers
- 3 Fault indication input from FD-20 modules
- 4 Terminals for connection to the 100 V outputs of the amplifiers
- 5 Outputs to the speaker lines
- 6 Balanced terminal for connection to the audio input of the backup amplifier
- 7 Fault indication input of the backup amplifier
- 8 Terminal for connection to the 100 V output of the backup amplifier
- 9 Terminal for 24 V DC emergency power supply
- 10 230 V mains power inlet

Technical data	FS-381
Input/output signal ratio	1:1
Monitored power amplifiers	8 power amplifiers + 1 backup amplifier
Power consumption	12 W
Power supply	230 V mains/24 V emergency power supply
Dimensions (W x H x D) in mm	483 x 133 x 380, 3 RU
Weight	7 kg

Backup Amplifier Switcher, (3 RU)..... FS-381



Description

The MU-307A monitor unit serves for the audible and visual monitoring of amplifiers as well as of pre-amp outputs. The system is incorporated in a stable 19" housing (2 RU) and can be used with 100 V line systems as well as for low-impedance applications. A high-quality full range speaker and a headphone output facilitate continuous monitoring. The monitor speaker and the headphone output have separate volume controls. The line volume is set through controls located on the front panel. Level indication is also on the front panel through multicoloured LED chains.

Please consider the following features:

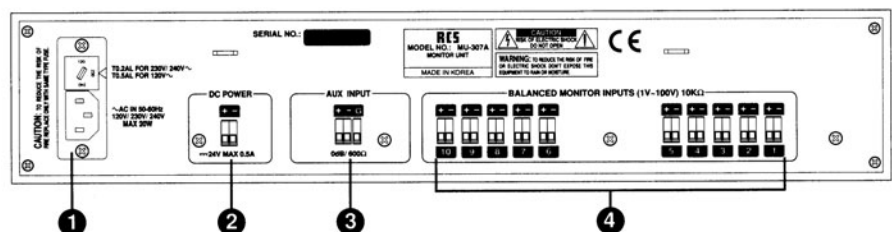
- Up to 10 programmes can be monitored. Channel selection is performed by means of the multi-position selector switch. A 5-segment level indicator LED is provided for each line.
- The volume of the monitor speaker or the headphone is continuously variable.
- Each of the 10 monitor inputs can be set to the required input voltage (1 – 100 V) by means of a special control on the front panel.

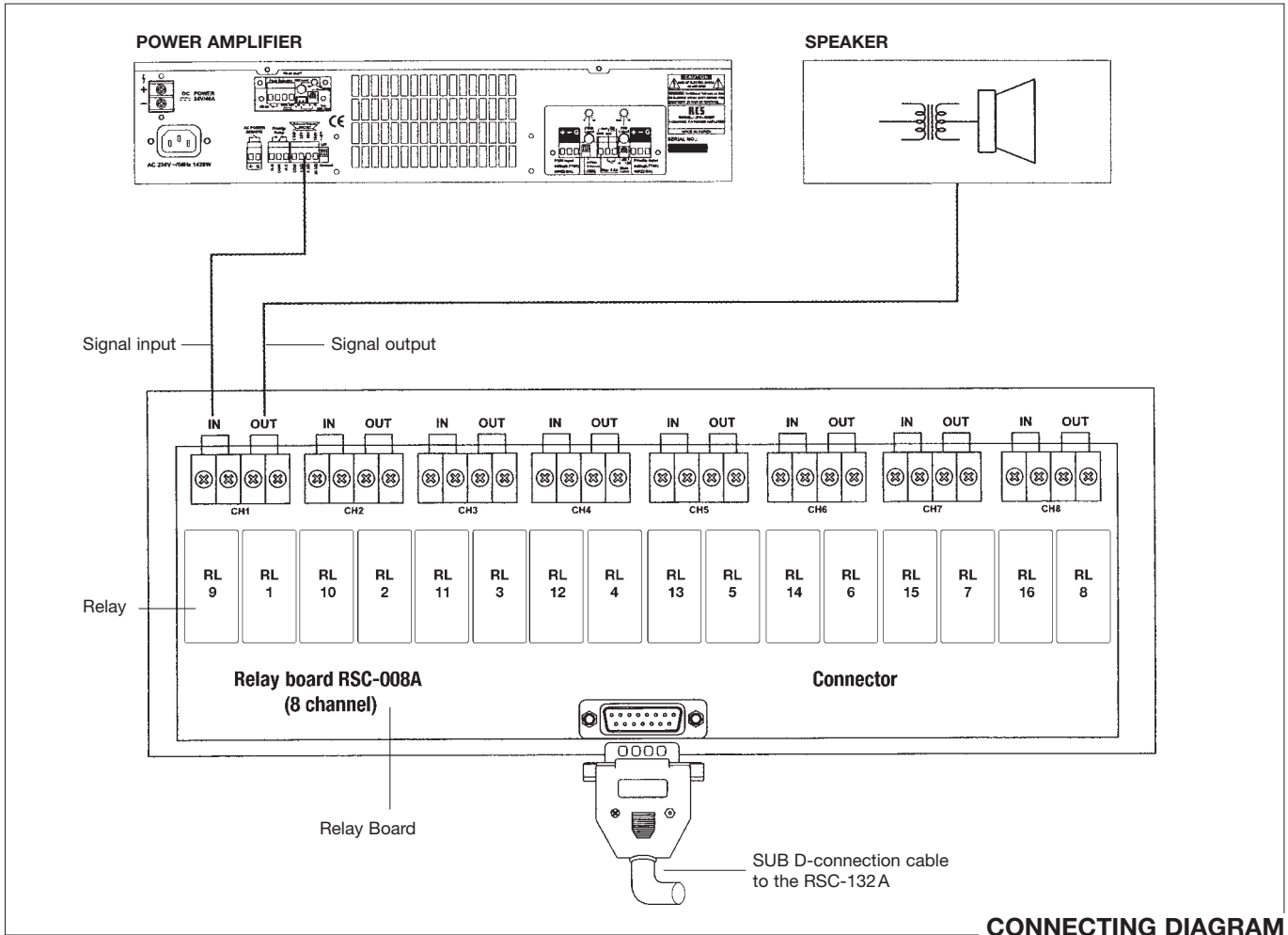
- The unit operates on mains power (230 V AC) as well as on DC power (24 V DC), for example, in the case of a power failure (emergency power supply).

Technical data	MU-307A
Speaker	Full range chassis, 2 W with volume control
Headphone output	max.: 1.0 W min. 8 ohms, with volume control
Input voltage	1 V - 100 V (continuously variable)
AUX input	0 dB, 10 kohms, balanced
Monitor channels	10, can be switched separately
Power consumption	max. 12 W
Power supply	AC: 120 V, 220 V, 230 V, 240 V (50 - 60 Hz), DC: 24 V
Frequency response	better than -3 dB (100 Hz - 20 kHz)
Dimensions (W x H x D) in mm	483 x 88 x 200, (19" 2 RU)
Weight	approx. 4.7 kg

- 1 IEC power inlet (cold condition)
- 2 Terminal for 24 V DC (emergency power supply)
- 3 Monitor input of preamplifier
- 4 Monitor input of amplifier lines (1 V - 100 V)

Rear view

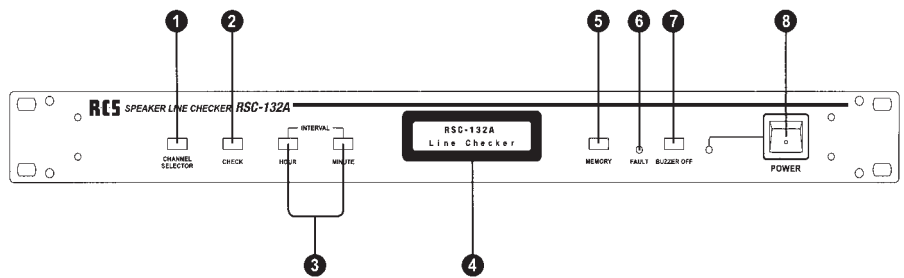




CONNECTING DIAGRAM

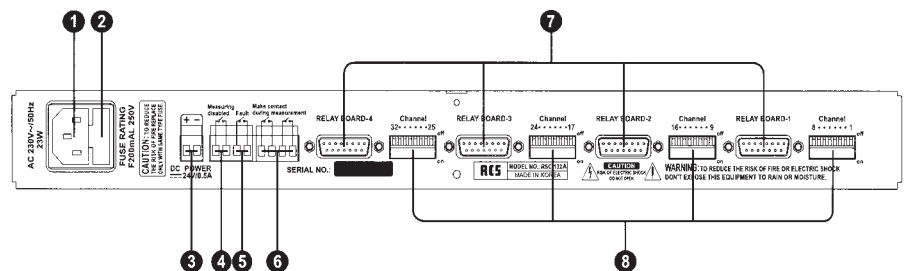
- 1 Line selector button
- 2 Check button for checking the respective line
- 3 Setting of the measuring intervals (hour/minute)
- 4 LCD
- 5 Button for saving the measured values
- 6 LED for visual fault indication
- 7 Button for deactivating the buzzer
- 8 Power switch

Front view



- 1 230 V power inlet
- 2 Fuse holder
- 3 Terminal for 24 V emergency power supply
- 4 Contact for interrupting the measurement
- 5 Make contact in the case of faults
- 6 Make contact during measurement
- 7 Connections for the relay boards
- 8 Line switch for activation of lines

Rear view



Line monitoring for up to 32 lines



Description

The RSC-132A is a microprocessor controlled line monitoring device. Up to 32 speaker lines can be monitored fully automatically.

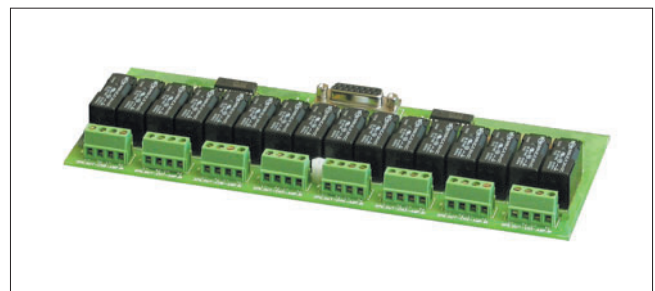
Faults are indicated through a buzzer incorporated in the device, an LED located on the front panel and a potential free contact on the rear. Through the use of external relay boards, connected via a 5 m SUB D cable, the unit is only 1 RU in height. The only preparatory measure for putting the device into operation is to insert the RSC-008 A relay boards into the speaker lines. To complete the installation, the relay boards only have to be connected to the base unit and have to be measured.

- Integrated Watchdog circuit.
- By measuring the impedance, the device detects missing speakers, short circuits on the line or line breaks.
- When the measurement is performed, the line is checked for ground faults at the same time.
- If the measured values are above or below the permissible range, the device indicates "over" or "under range".
- The measuring intervals can be set from 1 minute to 24 hours.
- The configuration is stored in a non-volatile E²PROM.
- With 4 relay boards (for 8 circuits) one RSC-132A unit can monitor up to 32 circuits.
- In the event of an emergency or when an important announcement has to be made, the measurement can be interrupted by means of a potential free contact.
- When a fault is detected, the unit issues an audible alarm. Additionally, the LED on the front panel is lit. At the same time a contact is closed to activate external units.

- The 2-digit LCD constantly indicates the time remaining until the next measurement is taken or, in the case of a fault, the type of fault and the affected line.

RSC-008 A Relay Board

The relay board has been designed for the connection of the speaker lines. Up to 4 boards (32 circuits) can be connected up to a RSC-132A monitor unit. The card provides one additional relay per line, which disconnects the affected line from the 100 V output after measurement.



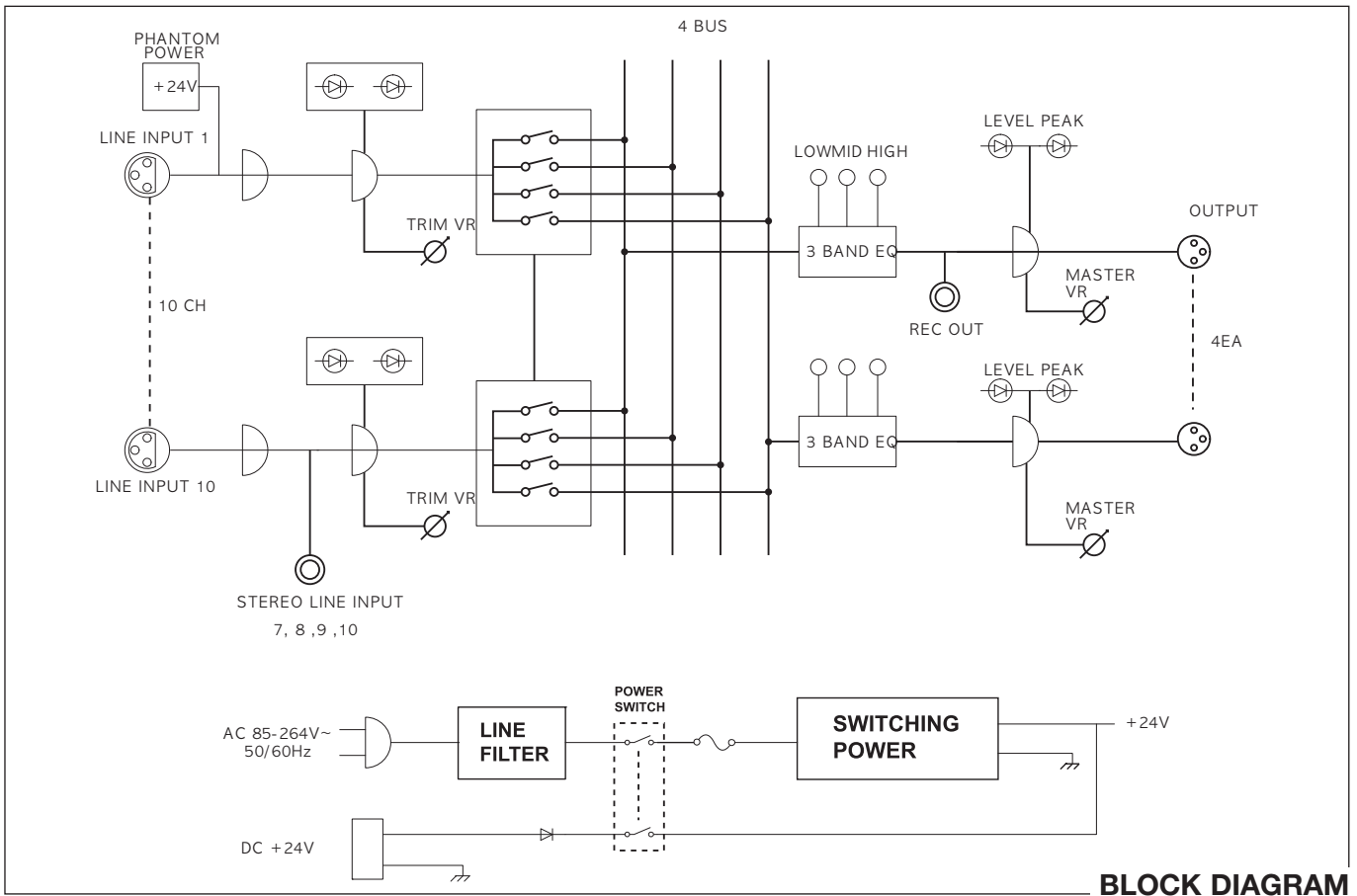
Technical data

Technical data	RSC-132 A/RSC-008 A
Speaker circuits	8 (can be extended to up to 32)
Measuring time	100 ms per circuit
Measuring range	25 ohms – 1.6 kohms (6 W - 400 W)
Power consumption	23 W
Power supply	230 V AC/24 V DC
Dimensions in mm (H x W x D)	483 x 44 x 200, 1 RU
Weight	3.0 kg

Model designations

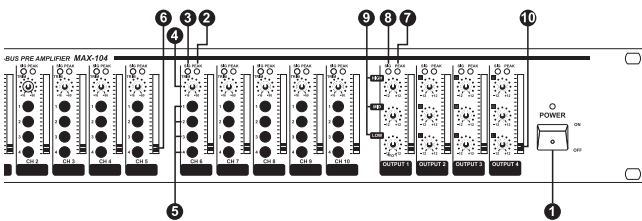
Speaker Line Monitoring Unit, **RSC-132 A**
with matching relay boards for up to 32 lines

Relay Board, **RSC-008 A**
each for 8 lines



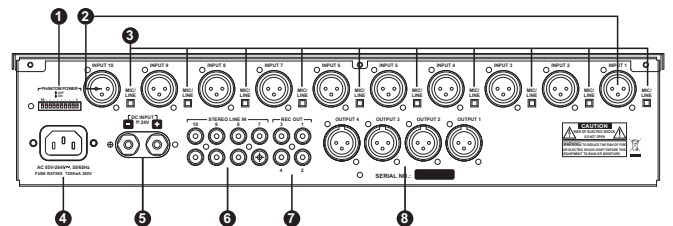
BLOCK DIAGRAM

Front view



- 1 Power switch with power LED
- 2 Input signal clip display
- 3 Input signal indicator
- 4 Trim control
- 5 Master output selector
- 6 Input channel fader
- 7 Output signal clip display
- 8 Output signal indicator
- 9 Output 3-Band Equalizer for treble, mid and bass
- 10 Output channel fader

Rear view



- 1 Phantom power switch
- 2 XLR Inputs 1-10
- 3 MIC/LINE switch
- 4 IEC power inlet (cold condition)
- 5 Terminal for 24 V DC power supply
- 6 Connection for sound source devices: CD-Player, Tuner, Tape, etc.
- 7 REC outputs to RCA sockets
- 8 XLR outputs for master output 1 - 4

MATRIX-MIXER PRE-AMPLIFIER

RCS



MATRIX 10 IN - 4 OUT



Description

The MAX-104 with matrix functions is a professional 10-channel mixer preamplifier for general sound reinforcement. It also comes with 10 audio inputs and a gauge controller and an output selector switch for 4 outputs (output 1 – 4). Additionally, all 10 input channels have a MIC-LINE selector switch.

The device operates both on 230 V AC mains power and on 24 V DC power (e.g. emergency power supply)

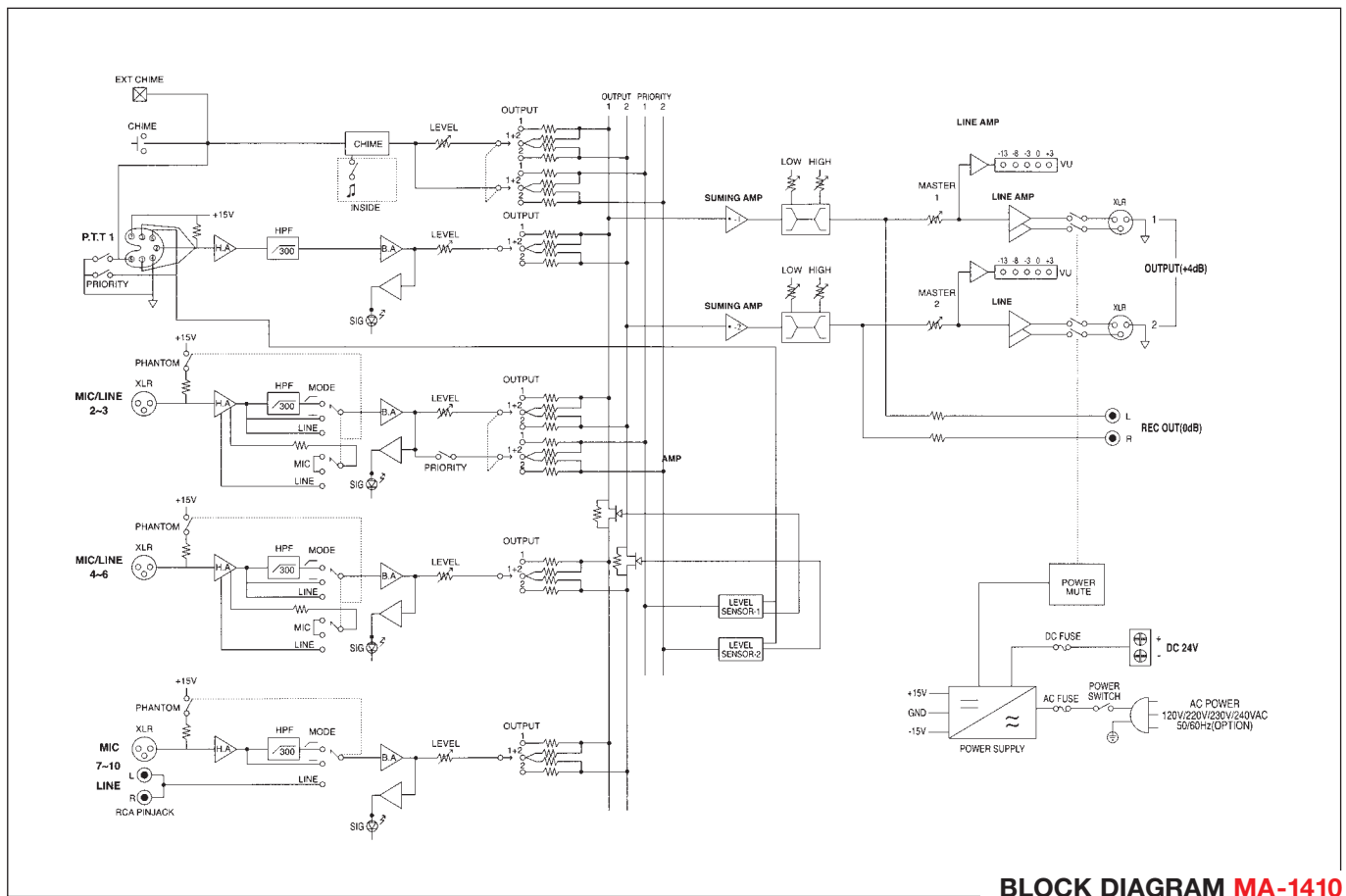
Please consider the following features:

- All input channels have 4 switches on the front panel to route the signals on to 4 outputs.
- Each input channel has a separate signal LED indicator as well as a blasting control.
- All input channels have XLR sockets. Inputs 7 – 10 are additionally equipped with RCA sockets for line signals.
- All MIC inputs have phantom power (+24 V DC). This means that both electret condenser microphones and balanced dynamic microphones can be connected to the XLR MIC inputs.
- Each input has a MIC/LINE switch for impedance adjustment purposes.
- All 4 output-channels can be controlled individually on the front panel of the device and are equipped with 3-band output-equalizer. Additionally 4 outputs (REC-OUT) with RCA sockets are available.
- Each output channel has an individual signal LED indicator and a blasting control.

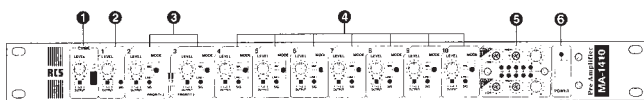
- The device operates with a low-current switching power supply.
- Apart from the numerous features such as balanced inputs and outputs, the 10-channel mixer preamplifier offers excellent sound characteristics, ease of installation and operation

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Technical data	MAX-104
Inputs	MIC: -60 dB / 600 Ohm, balanced
	LINE: -10 dB / 10 kOhm, balanced
Outputs	MASTER: +4 dBu / 600 Ohm, balanced
	REC: -10 dBu / 10 kOhm, unbalanced
Frequency	20 – 20,000 Hz, better than -3 dB
Signal-to-noise ratio	better than 80 dB
Cross Talk	better than 75 dB
THD at 1 kHz	better than 0.1%
Power Supply	AC 230 V, (50 – 60 Hz), DC 24 V
Power Consumption	15 W
Dimensions (W x H x D)	483 x 88 x 280 mm, (2 RU)
Weight	5 kg



Front view



- 1 Chime section with button for 2-tone chime (switchable to 4-tone chime), volume control and sliding switch for master output 1, 1 + 2, 2.
- 2 P.T.T. input section with volume control and selector switch for master output 1, 1 + 2, 2.
- 3 Input 2 – 3 section with priority switch, volume control, selector switch for master output 1, 1 + 2, 2 and selector switch for Mic/Line low-cut filter.
- 4 Input 4 -10 section with volume control, selector switch for master output 1, 1 + 2, 2 and selector switch for Mic/Line low-cut filter.
- 5 Master output section with output volume controls, dual-band equalizer and multicoloured 5-segment LED chains for output level.
- 6 Power switch with power LED.

Rear view



- 1 Remote control connection for two-tone chime signal.
- 2 7-pin. DIN P.T.T. socket for connecting the VLM-100 microphone station with pre-announcement chime and priority.
- 3 Balanced XLR input sockets 2 to 6 with signal assignment for mic or line level.
- 4 Balanced XLR input sockets 7 to 10 for mic signal.
- 5 Unbalanced RCA sockets 7 to 10 for line signal.
- 6 REC output to RCA sockets.
- 7 Balanced XLR outputs for master output 1 and 2.
- 8 Terminal for 24 V DC power supply
- 9 Power cord for 230 V AC.

10-CHANNEL MIXER PREAMPLIFIER



Description

The MA-1410 is a professional 10-channel mixer preamplifier for general sound reinforcement applications. It has 10 audio inputs with level control and output selector switches for master 1, master 2, master 1 + 2 outputs. Additionally, all 10 input channels have a MIC-LINE selector switch.

The device operates both on 230 V AC mains power and on 24 V DC power (e. g. emergency power supply).

Please consider the following features:

- The unit includes an electronic 2-tone chime (selection can be made on the device). The chime can be activated manually on the front panel or automatically as pre-announcement chime via the VLM-100 desktop microphone station (P.T.T. DIN socket input).
- The chime type is switchable with jumper to 4 chime tone inside the device.
- The chime volume can be adjusted on the front panel. Additionally, there is another contact terminal on the rear which permits chime remote control.
- All input channels (10 + chime) have a selector switch on the front panel for switching the signal to master output 1, 1 + 2 or 2.
- The input channels 1 (P.T.T.), 2 and 3 (2 and 3 switchable) as well as the electronic chime automatically have priority (voice recognition) over input channels 4 - 10, which then are attenuated.
- Input channels 2 - 10 have a 3-position switch on the front panel which serves for the signal routing to LINE-MIC and the low-cut filter (300 Hz).
- Each input channel has a separate signal LED indicator.
- All input channels have XLR sockets. Inputs 7 - 10 are additionally equipped with RCA sockets for line signals.

- All MIC inputs have phantom power (+15 V DC). This means that both electret condenser microphones and balanced dynamic microphones can be connected to the XLR MIC inputs.
- Both master output channels have a dual-band equalizer and can be controlled separately on the front panel. Additionally, there is another output (REC-OUT) with RCA sockets.
- Multicoloured 5-segment master output level LED chains indicate the level for each channel.
- Apart from the numerous features such as balanced inputs and outputs, the 10-channel mixer preamplifier offers excellent sound characteristics, ease of installation and operation.

*

Technical data	MA-1410
Inputs	MIC: -50 dBu (2.45 mV)/ 5 kohms, balanced, phant. power
	LINE: -10 dBu (245 mV)/ 5 kohms, balanced
	LINE IN RCA: -10 dBu (245 mV)/ 10 kohms, unbalanced
Outputs	MASTER 1 + 2: NOR +4 dBu (1.23 V)/200 ohms, balanced
	REC: NOR 0 dBu (0.775 V)/10 kohms, unbalanced
Frequency response	20 -20000 Hz, better than -0.5 dB
Signal-to-noise ratio	MIC: better than 60 dB, LINE: better than 75 dB
Crosstalk	MIC: better than 60 dB, LINE: better than 75 dB
THD	MIC: better than 0.05 %, LINE: better than 0.03 %
Power supply	230 V AC (50/-60 Hz), 24 V DC
Power consumption	9.9 W
Dimensions (W x H x D)	483 x 44 x 200 mm, (19," 1 RU)
Weight	approx. 3.9 kg



EP-352 RM

+ Integrated reverse charge protection in order to protect the lead-accumulator.

+ Automatic activation (changeover) of the 24 V emergency power in case of an AC power failure.

Description

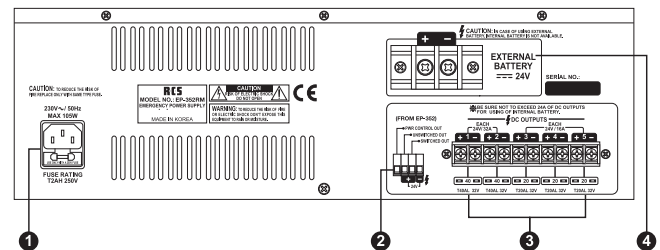
This emergency power management is built into a stable 19" cabinet (3 HE). All of the utilized components are of superior quality to ensure that even 100 V Power Amplifiers operate precisely despite ongoing carrying capacity. This device takes charge of charging the 24 V emergency power batteries whilst an electronic control circuit protects the battery from overcharging.

The fact that it automatically switches over to emergency power and the built in reverse charge protection (only for EP-352 RM) enables the user to expand the utilization of this device considerably.

- Charging status display and LED with division into a percentage. (optional lead-accumulators, see below)
- Protection against polarity reversal and overcharging and excess voltage regarding the charging batteries.
- 24V emergency power supply in case of AC power failure, either via switching contact of the power distributor PD-322 A (EP-352) or automatically (EP-352 RM).
- Integrated reverse charge protection (only EP-352 RM) for 24 V charging batteries (in case the storage battery voltage drops below the given minimum value with regard to DC operation, the automatic DC commutation will be deactivated).
- Two 24 V outputs with each 32 A and three 24 V outputs with each 16 A.

Technical Data	EP-352	EP-352 RM
End-of-charge voltage	approx. 27,3 V DC	
Charging current	2,5 A	
Power consumption	105 W	
Power supply	230 V AC	
Dimensions (W x H x D)	483 x 133 x 350 mm, 3 RU	
Weight	11,6 kg	11,8 kg

Rear view



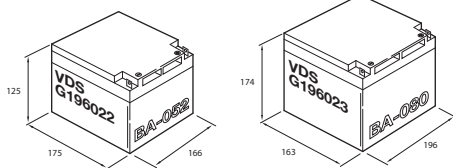
- 1 Power- and low power jack
- 2 Power control unit (here a deactivation of an automatic commutation to DC power is possible for maintenance purposes)
- 3 24V DC connecting clamp for emergency power supply of the amplifier
- 4 Screw terminal in order to connect any external battery

Charger, (3 RU)..... EP-352
without integrated reverse charge protection and automatic activation

Automatic Charger, (3 RU) EP-352 RM
incl. emergency power management

VDS-No. G196022

VDS-No. G196023



These lead-accumulators are maintenance free. The operation of the EP-352 is either possible with a built-in (BA-052) or with an external (BA-052 or BA-080) lead-accumulator set.

Technical Data	BA-052	BA-080
Nominal voltage	24 V (12 V per battery)	24 V (12V per battery)
Capacity	27 Ah	42 Ah
Connections	M5 screws	M6 screws
Dimension (W x H x D)	166 x 125 x 175 mm	196 x 174 x 163 mm
Weight	9 kg per battery	14,3 kg per battery
VDS-Nr.	G196022	G196023

Lead Acid Battery-Set, for internal operation (27 Ah) BA-052

Lead Acid Battery-Set, for external operation (42 Ah) BA-080

EMERGENCY POWER MANAGEMENT

RCS

COMPLIANT TO IEC 60849

IEC 60849



RCS
modified

Description

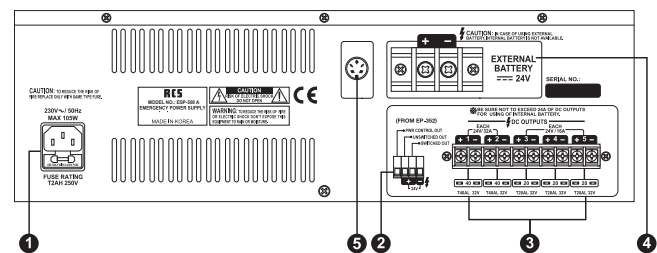
This emergency power management ESP-500 A was developed for danger alarm devices, which have to be in accordance with the international standard IEC 60849. Any kind of error will be indicated and announced via a signal buzzer, a buzzer or LED.

Please consider the following features:

- Output-fuse monitoring with notice of malfunction in order to ensure automatic alarm in case of emergency power usage.
- Monitoring of the accumulator connection to signal in case an accumulator is missing or disconnected.
- Acoustic and optical error message directly on the device in addition to the accumulative alert output.
- Charging status display and LED with division into a percentage.
- Protection against polarity reversal and protective circuit against overcharging and excess voltage regarding the charging batteries.
- Integrated reverse charge protection for 24 V charging batteries (in case the storage battery voltage drops below the given minimum value with regard to DC operation, the automatic DC commutation will be deactivated).
- Two 24 V outputs with each 32 A and three 24 V outputs with each 16 A.

*

Rear view



- 1 Power- and low power jack
- 2 Power control unit (here a deactivation of an automatic commutation to DC power is possible for maintenance purposes)
- 3 24 V DC connecting clamp for emergency power supply of the amplifier
- 4 Screw terminal in order to connect any external battery
- 5 Failure announcement contact

Technical Data	ESP-500A
End-of-charge voltage	approx. 27,3 V DC
Charging current	2,5 A
Power consumption	105 W
Power supply	230 V AC
Battery capacity	27 Ah (BA-052); 42 Ah (BA-080)
	possible power with BA-080 e.g:
	4x 240 W or 2x 480 W
Dimensions (W x H x D)	483 x 133 x 350 mm, 3 RU
Weight	12 kg

Automatic Charger , (3 RU) with emergency power management compliant to IEC 60849	ESP-500A
Lead Acid Battery-Set , for internal operation (27 Ah)	BA-052
Lead Acid Battery-Set , for external operation (42 Ah)	BA-080



Description

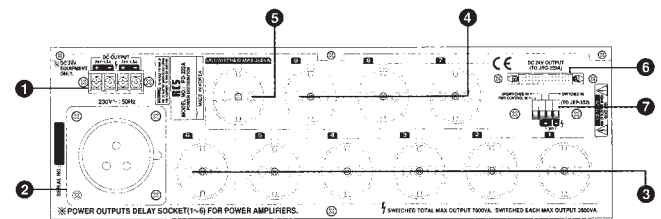
The AC/DC power distributor is incorporated in a stable housing (3 RU). The use of high-quality components ensures that the continuous load required for audio systems are met. The device serves as a power supply and power distribution in the central 19" rack. It supplies and distributes both 230 V mains power and 24 V DC power.

In the case of a power failure, the EP-352 automatic battery charger provides emergency power supply, after it has been activated through a switch contact of the PD-322 power distributor.

Please consider the following features:

- 1 integrated DC power supply units (24 V) with 1.5 A for the connection of 24 V devices.
- The 24 V line is protected against short circuit.
- All fuses can be accessed through a panel on the front.
- In order to limit the turn-on current, circuits 1 – 6 are equipped with a turn-on delay.
- To ensure that an emergency announcement can be made, even when the PD-322 A is switched off, a switch-on can be done via a potential free contact, when simultaneously terminal 7 (see manual) is supplied with 24 V.
- There are 6 switched sockets with an overall maximum rating of 230 V/7000 W/30 A. Furthermore the PD-322 A provides 3 switched power outlets with 115 W/230 V each and one none switched 230 V power outlet.

Rear view



- ① 2 connections only for 24 V devices with max. 1.5 A each
- ② Screw terminal for main power supply
- ③ 6 switched power supply sockets with total max. 230 V/ 7000 W/ 30 A
- ④ 3 switched power supply sockets with 115 W/230 V each
- ⑤ Unswitched 230 V output
- ⑥ 24 V output
- ⑦ Control and switch contact to be connected with EP-352

Technical data	PD-322 A
DC power distribution	2 x 24 V/1.5 A max.
AC power distribution	1 ~ 6: 230 V/7000 W/30 A (switched)
	7 ~ 9: 230 V/ max. 115 W each (switched)
	1x: 230 V/ max. 360 W each (unswitched)
Power consumption	AC: 120 W DC: 24 V/3 A
Power supply	230 V mains power
Dimensions (W x H x D)	483 x 133 x 380 mm, 3 RU
Weight	8 kg

Power Distributor (AC/DC), (3 RU) PD-322 A



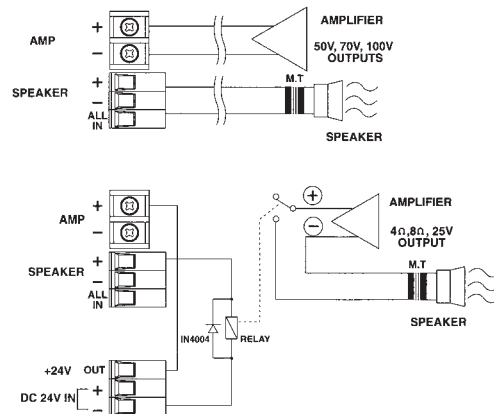
Description

The SS-220 P passive speaker selector enables routing of the amplifier output signal for up to 20 speaker zones, which can be activated individually, in groups or with the ALL-CALL function.

Please consider the following features:

- A total of 22 LEDs located on the front panel provide a very clear indication of the operating status of the device and of each active circuit.
- The speaker circuits can be activated selectively through switches on the front panel or ALL-IN inputs for control devices such as central fire alarm systems or control clocks.
- The device is incorporated in a 19" housing with an overall height of 2 RU.
- The device is powered with 24 V from the central rack system.
- Apart from the numerous features, the device is characterized by an extremely easy installation and operation.

Connection example



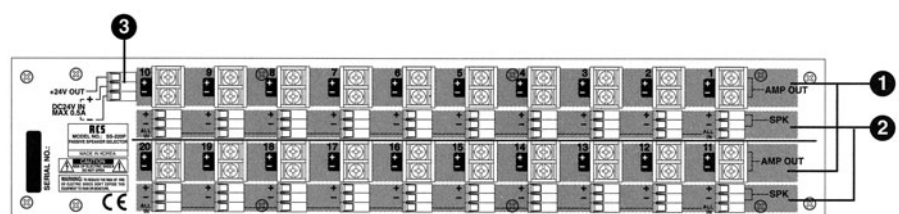
Technical data

SS-220 P

Number of circuits	20 lines
Inputs	20 x amplifier IN, 20 x LS-OUT, 20 x ALL-IN
Power consumption	approx. 12 W
Power supply	24 V DC
Dimensions (W x H x D)	483 x 88 x 200 mm (19", 2 RU)
Weight	approx. 4.0 kg

- 1 Signal input sockets, AMP-OUT.
- 2 Signal output sockets, LS-IN.
- 3 Terminal for DC power supply and DC output for ALL-IN inputs.

Rear view





Description

The CS-110A four-tone chime and siren unit is used as an alarm (siren) and signal (chime) module in central units of audio systems. It can be controlled and activated simply through the buttons on the front panel or by means of logic controllers.

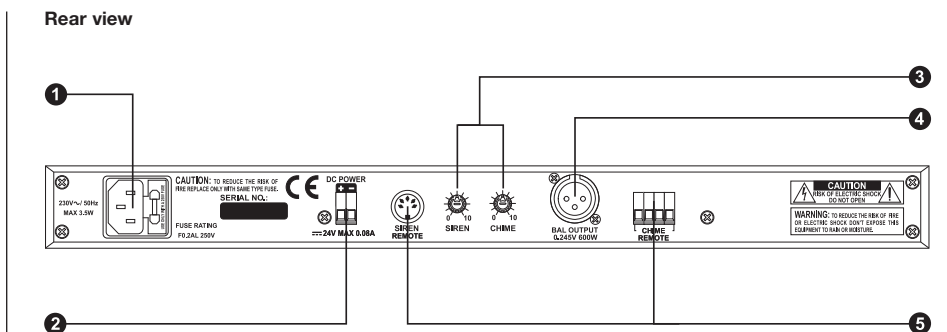
Please consider the following features:

- The use of high-quality digital electronics makes the device suitable for continuous operation as it is required for audio systems.
- Chime and siren can be activated by means of remote control. The device operates on mains power (230 V AC) as well as on DC power (24 V DC), for example, in the case of a power failure (emergency power supply).
- The alarm siren can sound a continuous tone, a manually modulated siren tone or a high-low tone. It is equipped with an automatic stop function, which means that it is switched off after the respective time has elapsed (continuous tone 1 minute, high-low 3 minutes).

- The pleasant and melodious chime can be played in four-tone, three-tone or two-tone mode .
- The volume of the siren and the chime can be adjusted separately on the front panel. The power switch has an LED. The device has a balanced XLR output.

Technical data	CS-110 A
Chime frequencies	440 Hz, 554 Hz, 655 Hz, 880 Hz
Siren frequencies	800 Hz
Audio output	more than 0.245 V (-10 dBm), 600 ohms, bal. on XLR
Signal-to-noise ratio	better than 80 dB
Power consumption	3.5 W
Power supply	AC: 120 V, 220 V, 230 V, 240 V (50 - 60 Hz), DC: 24 V
Remote control	Potential free contacts
Dimensions (W x H x D)	483 x 44 x 200 mm (19", 1 RU)
Weight	approx. 2.5 kg

- 1 IEC power inlet (cold condition)
- 2 Terminal for 24 V DC (emergency power supply)
- 3 Volume control for siren and chime.
- 4 XLR signal output socket
- 5 Remote control for siren and chime.



19" AUDIO DISTRIBUTION AMPLIFIER



Description

The AD-125 A audio distribution amplifier is, so to speak, the central unit of the extremely flexible line level distribution system. The system serves to route line signals from mixer preamplifiers, sound source devices, etc. of up to 10 output channels (power amplifier, with 1-channel operation) or 2 x 5 output channels (with 2-channel operation).

Please consider the following features:

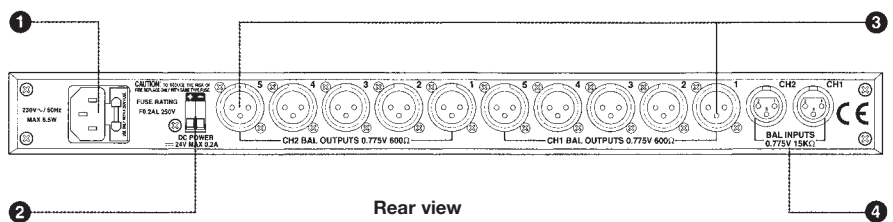
- Each of the 10 outputs can be controlled separately. An LED overmodulation indicator is provided for the two input channels.
- The device is incorporated in a 19" housing with an overall height of 1 RU.

- Apart from the numerous features such as balanced inputs and outputs, the audio distribution amplifier offers excellent sound characteristics. It is also distinguished by its extreme ease of installation and operation.

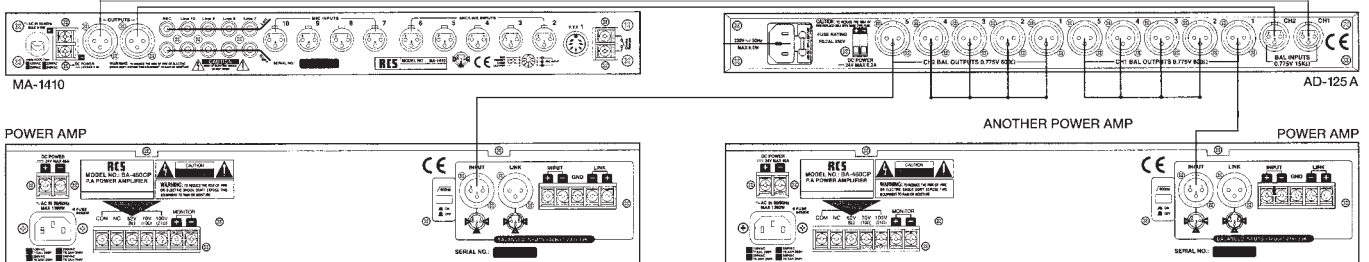
Technical data

Technical data	AD-125 A
Input impedance	0.775 V (0 dB), 15 kohms, balanced on XLR
Output impedance	0.775 V (0 dB), 600 ohms, balanced on XLR
Frequency response	better than -0.5 dB (20 Hz - 20 kHz)
Signal-to-noise ratio	better than 75 dB
THD	less than 0.05 % (20 Hz - 20 kHz)
Crosstalk attenuation	better than 108 dB
Power supply	230 V AC (50/-60 Hz), 24 V DC
Power consumption	6.5 W
Dimensions (W x H x D)	483 x 44 x 200 mm, (19", 1 RU)
Weight	approx. 2.9 kg

- 1 IEC power inlet (cold condition)
- 2 Terminal for 24 V DC (emergency power supply)
- 3 XLR signal output sockets
- 4 XLR signal input sockets



Connection example



Audio distribution amplifier, (1 RU)

AD-125 A



Description

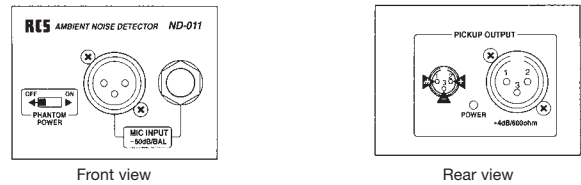
By means of the NC-111 Ambient Noise Controller, the ratio of the desired signal (speech or background music) to unwanted extraneous signal (unwanted noise) can be considerably improved, e.g. in airports, railway stations, hotels, etc.

Please consider the following features:

- The device is supplied with the ND-011 Ambient Noise Detector, which is equipped with an XLR or jack socket for connection of an electret or dynamic sense microphone.
- An adjustable reference level is used to set a lower limiter to the output level. A level that is below the reference level is not accepted.
- Filter performance (-width) is adjustable.
- The LED chain (-9 dB to +18 dB) on the front panel indicates the output level. There is also a clipping LED.
- The device includes an adjustable measuring band-pass filter with a range of 30 Hz to 15 kHz and a bypass switch for disabling the NC-111.

- The noise detector has a phantom power switching option and can be connected by means of an AF cable with a maximum length of 500 m.

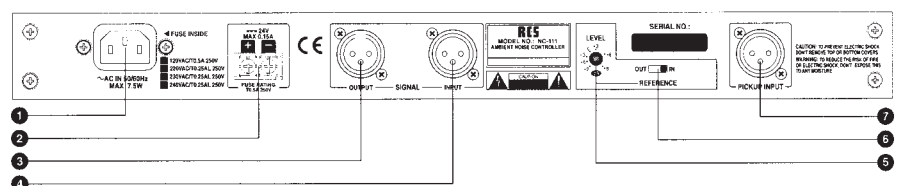
Figure shows ND-011 Ambient Noise Detector (supplied with the device)



Technical data	NC-111
Input impedance	0.775 V (0 dB), 30 kohms, balanced, on XLR
Output impedance	0.775 V (0 dB), 600 ohms, balanced, on XLR
Pick up impedance	0.775 V (0 dB), 200 ohms, balanced, on XLR
Signal-to-noise ratio	better than 60 dB (DIN AUDIO)
Frequency response	20 - 20000 Hz (-1 dB)
THD	better than 0.3 %
Width / Q control	0.5 to 3.5
Bypass	30 - 15000 Hz
Phantom power	20 V DC
Power supply	230/240 V AC / 24 V DC
Power consumption	7.5 W /24 V DC, 0.15 A
Dimensions (W x H x D)	NC-111: 483 x 44 x 200 mm (1 RU)
Dimensions (W x H x D)	ND-011: 81 x 60 x 179 mm
Weight	NC-111: approx. 2.7 kg ND-011: approx. 0.5 kg

- 1 IEC power inlet (cold condition)
- 2 Terminal for 24 V DC (emergency power supply)
- 3 Balanced signal output socket.
- 4 Balanced signal input socket.
- 5 Control for reference level limiter
- 6 Switch for disabling the reference level limiter.
- 7 Balanced input for ambient noise detector.

Rear view





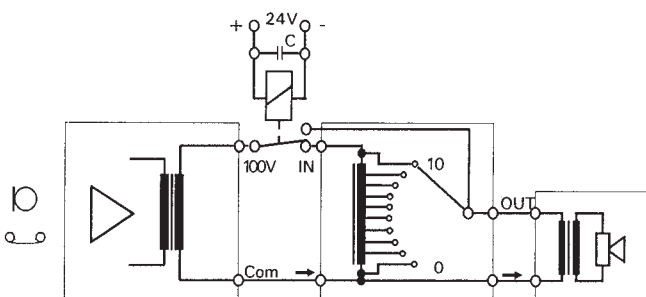
Description

These volume control panels have been designed as 19" rackmount units. Using 6 100 V transformers, they provide central control for up to 6 speakers or speaker groups. Each control has 11 steps (10 control steps and 1 zero position). The first 7 steps provide an attenuation of 3 dB each, and the last two steps provide an attenuation of 6 dB each. Therefore, the maximum overall attenuation is -33 dB.

Please consider the following features:

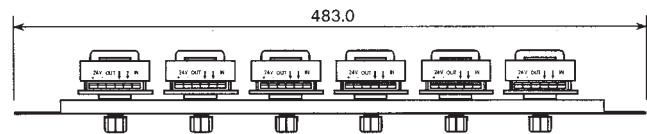
- Three models are available with 6 x 30 W, 6 x 60 W and 6 x 120 W.
- The individual controls with 100 V transformer are mounted on a stable 19" panel (extruded aluminium). The speaker volume control panels are suitable for installation in 19" racks.
- Additionally, 6 priority override relays (24 V) are provided. They ensure that emergency announcements can be made, even if the respective control is in the zero position.
- The individual control knobs are robust and can be operated easily.
- Screw-type terminal strips facilitate wiring.

Schematic diagram



- The 100 V matching transformers have an excellent efficiency and frequency ranges between 50 Hz in the bass range and 18000 Hz in the treble range.

Top view



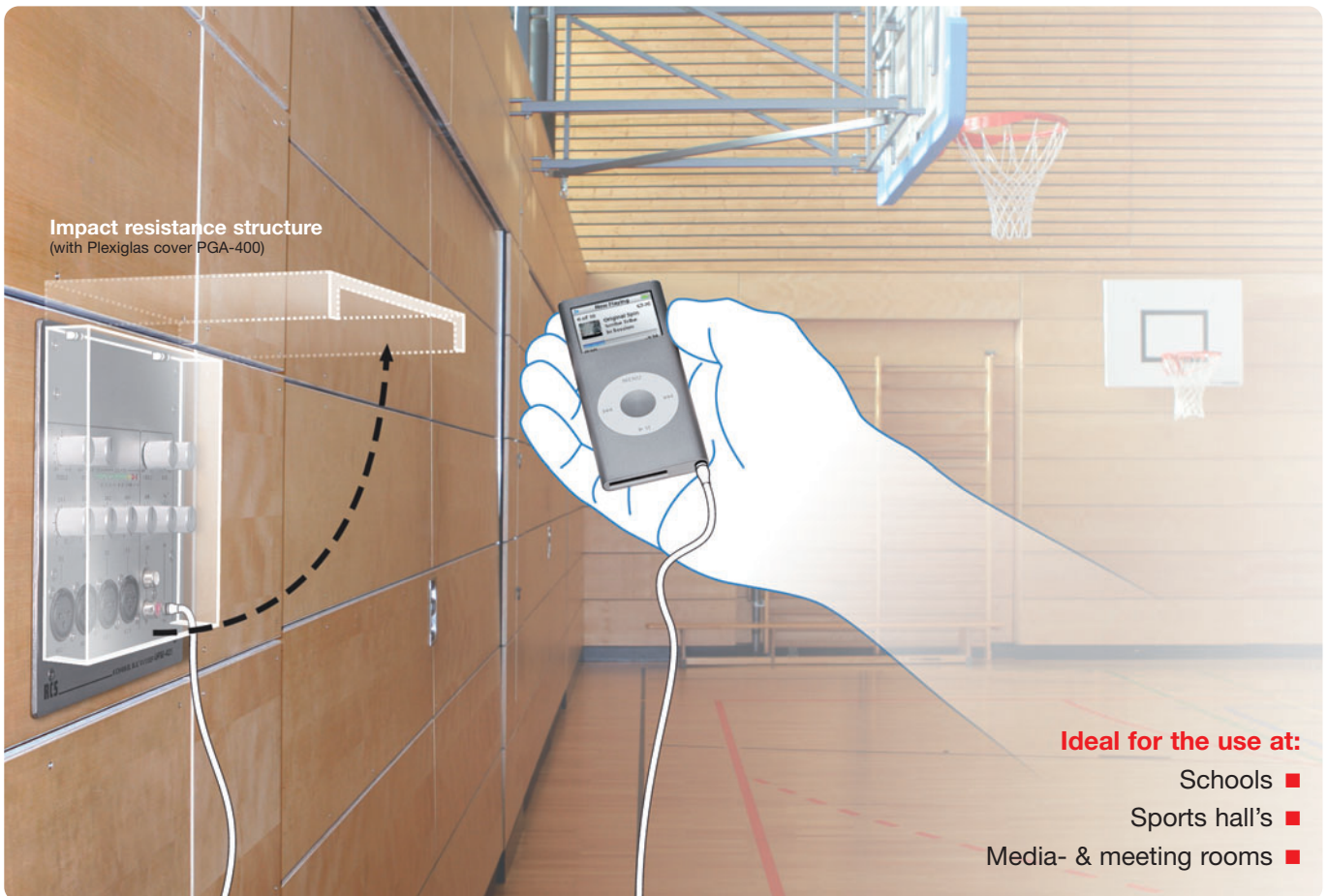
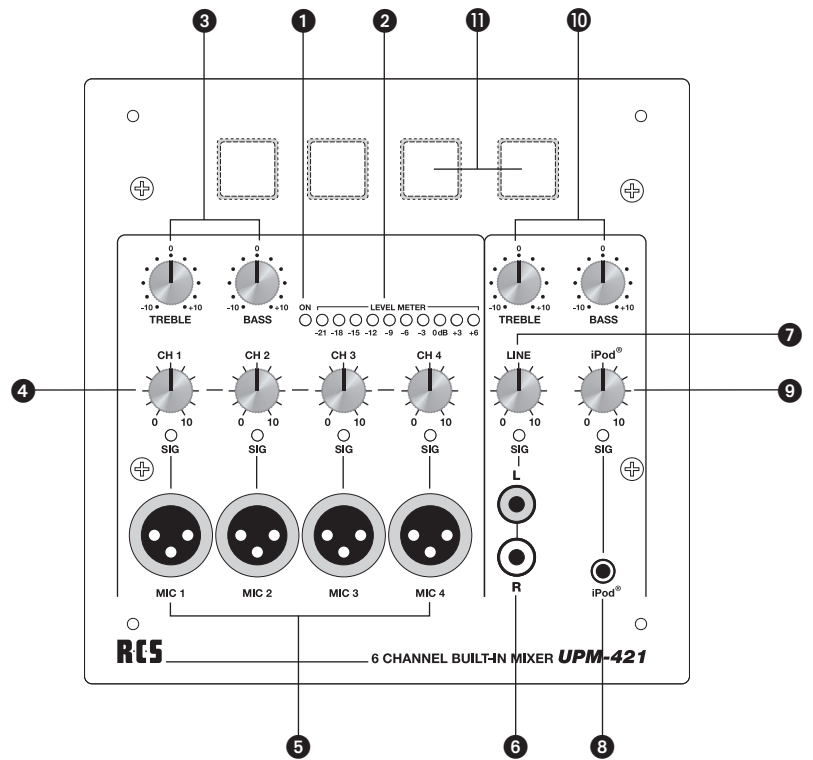
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Technical data	LR-6030	LR-6060	LR-6120
Control power (100 V)	6 x 30 W	6 x 60 W	6 x 120 W
Priority override relays	6 (24 V)	6 (24 V)	6 (24 V)
Control steps	10 + 0 position	10 + 0 position	10 + 0 position
Control type	100 V transformer	100 V transformer	100 V transformer
Dimensions (WxHxD)	483 x 88 x 68 mm	483 x 88 x 68 mm	483 x 88 x 68 mm
Colour	black	black	black
Weight	approx. 1.9 kg	approx. 2.2 kg	approx. 2.5 kg

- 19" Speaker Control Panel, (2 RU) **LR-6030**
- 19" Speaker Control Panel, (2 RU) **LR-6060**
- 19" Speaker Control Panel, (2 RU) **LR-6120**

- ❶ Operation display
- ❷ LED modulation display of the buzzing signal
- ❸ High and Low regulator for microphone signals 1 – 4
- ❹ Input-level-control for microphone input 1 – 4 with signal-LED
- ❺ XLR microphone inputs 1 – 4
- ❻ Cinch Line-input
- ❼ Input-level-control for LINE
- ❽ iPod® (AUX) input on catch
- ❾ Input-level-control for iPod®/AUX
- ❿ High and low control for LINE and iPod®/AUX signal
- ⓫ 4 functional switches (optional)

Front view of the control panel



6-CHANNEL OPERATOR CONTROL PANEL

RCS

MADE IN GERMANY



Description UPM-421

This brand-new 6-channel operator control panel, which was especially developed for professional usage, provides induction opportunities for up to 4 microphones, one stereo-sound carrier as well as one iPod®-input.

A very high-quality sound pattern results in the separation of the signal path. Due to the exceptional feature, it is possible to regulate the Mic- and Line inputs separately regarding the highs and the lows.

Each channel has one individual signal-LED, which helps to monitor the incoming signal.

Optional accessories

The front panel of the UPM-421 is equipped with one empty housing for up to 4 optional switches **DSB-400**. For example in a multi-gymnasium, these switches enable individual gym parts to be operated combined or individually. The switches are illuminated and the supply results from the internal connection-board.

Switch, illuminated in green **DSB-400**

The UPM-421 can optionally be purchased with an ungrounded 1:1 NF output transformer **TSA-101**. The assembly of the transmitter is done by the manufacturer.

NF-Output Transformer, build into UPM-421 **TSA-101**

In connection with the Plexiglas-cover **PGA-400**, this operating control panel can be applied e.g. in schools or sports halls, as it has a impact resistance structure.

Plexiglas Cover, ball-throwing proof **PGA-400**

The UPM-421 can optionally be used as flush-mount **APG-400** as well as surface-mount housing **UPG-400**.

Flush-Mount Housing **UPG-400**

Surface-Mount Housing **APG-400**

Please consider the following features:

- 6 channels for 4 microphones, AUX and iPod®.
- Separated signal-ways for Mic and Line with own high and low regulation.
- Each input has an assigned LR-control with a signal-LED.
- Calibrated, ten-digit buzzing-VU-meter.
- Phantom-supply 18 V or all Mic-inputs.
- Output-gauge can be switched from 0dB to +6dB.
- Empty housing for up to 4 illuminated, optional switches.
- Impact resistance structure in connection with the Plexiglas-cover PGA-400.

*

Technical Data	UPM-421
Power supply	24V DC
Power consumption	90 mA
Output level (bal.)	0dB or +6dB
Output impedance (bal.)	600 ohms
Sensitivity Mic	-63dB
Sensitivity LINE	-20dB
Sensitivity IPOD	-24dB
Equalizer (H/D)	±12dB
Frequency range	40 – 20.000 Hz
Dimensions WxHxD, weight	182 x 182 x 55 mm; 195 g

Model designation

6-Channel Control Panel **UPM-421**

**VARES
EMERGENCY WARNING SYSTEM**



VARES



IEC 60849

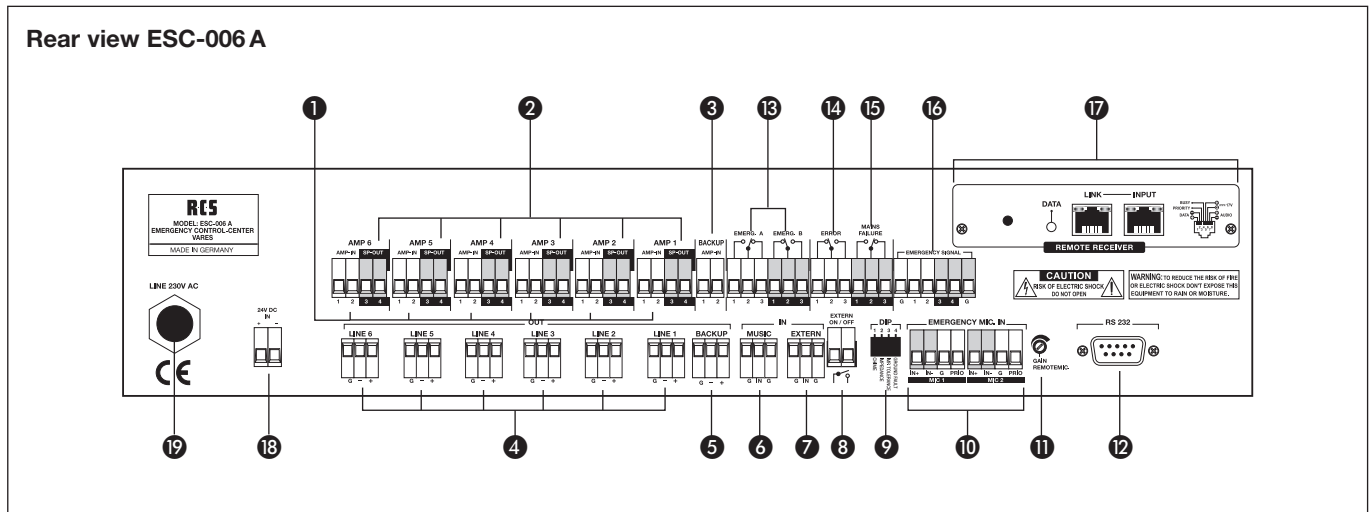
RCS[®]

AUDIO-SYSTEMS



Electroacoustic EMERGENCY WARNING SYSTEM

for a maximum of system security



- 1 Input speaker lines 1-6 (from amplifiers)
- 2 Output speaker lines 1-6
- 3 Input backup amplifier
- 4 Signal outputs for amplifiers 1-6
- 5 Signal output for backup amplifier
- 6 Signal input „music“
- 7 Signal input „external“
- 8 Activation signal input „external“
- 9 Dip switch for pre-announcement chime, impedance measurement, impedance tolerance and ground fault
- 10 Connection for Fire brigade call station 1 and 2
- 11 Volume adjustment of the digital microphone stations (VLM-106)
- 12 RS-232 PC connection
- 13 Output „Emergency“ A and B (equal)
- 14 Output „Error“
- 15 Output „Power failure“
- 16 Input for annunciator 1-4
- 17 Terminal area RR-10 for digital microphone stations (VLM-106)
- 18 Input 24V-DC emergency power supply
- 19 Power supply input 230 Volt

Technical data

VARES ESC-006A

Speaker lines	6 lines, max.480 W each (6 lines with VLM-106)
Fire Brigade call stations	2x ESM-100D suitable for connection
Digital microphone stations	up to 5 devices VLM-105 (not monitored)
Signal outputs	7x NF 0dB; transformer balanced; 6 x 100V
Signal inputs	2x NF 0dB; unbalanced (music and external) 7x 100V; 4x supervised switching inputs for text or alarm activation (Input 4 has a special function to analyse external errors)
Switching outputs (max. 120V AC; max. 2A AC)	2x „Emergency“ (break or open contact) 1x „Error“ (break or open contact) 1x „Power failure“ (break or open contact)
PC-interface	RS-232
Voice memory	EPROM, max. 240 sec.
Display	2-line Display; LEDs
Power supply	230V AC, 24V DC
Power consumption	< 25W
Dimensions (WxD), weight	483 x 89 x 340 mm, 2 RU; 6,5 kg

Digital Microphone Station



Description

The digital microphone station VLM-106 allows remote control of the Vares Control-Center ESC-006A for background music and voice announcements.

- The RR-10 connection panel (digital interface built-in unit for Vares ESC-006A) and a 3 m data cable with RJ-45 connector (8-pin) is in the scope of supply with each unit.
- The microphone stations control 5 speaker zones and all-call.
- With an overall cable length of up to approx. 100 m, up to 5 VLM-106 stations can be connected in series. With cable lengths of up to 250 m, however, only 3 VLM-106 stations can be connected.
- The desired sound level can be adjusted on the rear of each unit.

IEC 60849

MADE IN GERMANY



Lifesaving in the case of an emergency!

In the case of an alarm, an electroacoustic emergency warning system may avoid panic by understandable speaker announcements, which are, contrary to the howling of a siren, a much more efficient way of initiating the evacuation of a building.

Certainly, the availability and safe working of such systems has to be guaranteed at any time by monitoring the complete signal path. The standard IEC 60849 defines the requirements for such systems.

Description Control-Center ESC-006A

The VARES Control-Center ESC-006A is used in public-address systems to prompt persons in emergency situations - inside or outside a building - to leave the danger zone quickly and orderly.

Our new system monitors all necessary components for a safe operation compliant to IEC 60849. The system is particularly suitable for small and middle sized projects. Easy installation as well as easy handling provide for a fast and safe device adjustment locally.

All necessary components for the electroacoustic emergency warning system setup are provided by us.

In the following the device with the basic data is described, whereby not all parameters, determined in the standard, are repeated.

General specifications

- Simple installation and compact design with only 2 RU.
- Easy configuration due to an automatic installation routine that recognises all connected devices.
- The speakerlines are monitored for short circuit, interruption, ground fault and impedance.

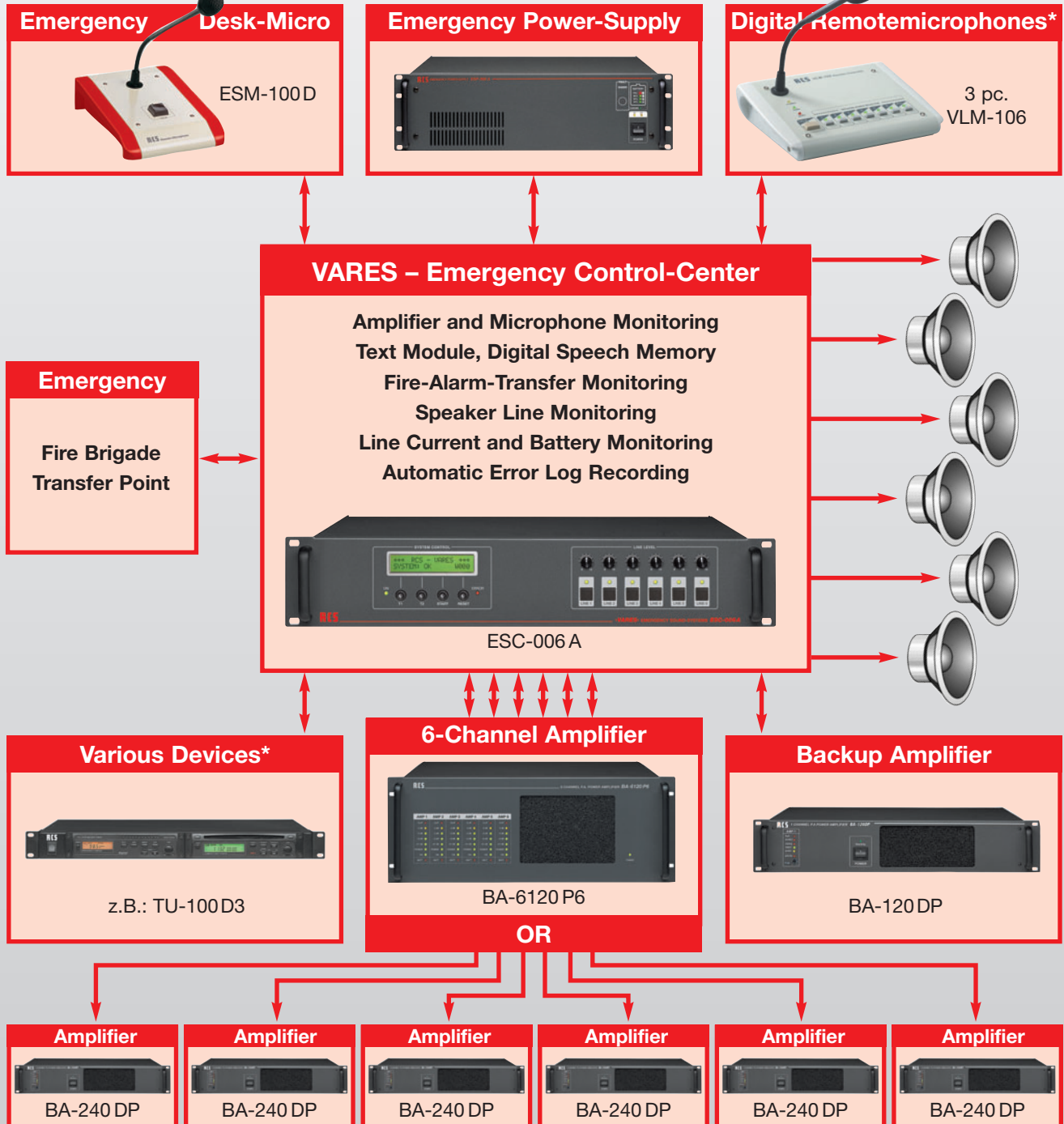
- **NEW:** optimal application with 6-Channel Power Amplifier BA-6060 P6 or BA-6120 P6 (3 RU each) to build up the 6 lines.
- Up to 6 power amplifiers and one backup amplifier can be connected. The VARES Control-Center ESC-006A monitors the amplifiers and switches the speakerlines to the backup amplifier in the case of a failure.
- It is possible to connect 2 secured fire brigade microphone stations ESM-100D.
- The impedance measurement has a 10% or 20% tolerance.
- All devices, which do not require monitoring, can be installed and used as before. These are switched off automatically in the case of emergency and battery operation.
- The secured digital voice memory contains a text for evacuation and a siren, compliant to DIN 33404. Additionally two chime types are available (4 tone chime upwards or Westminster). If you wish, special warning text messages can be programmed for you.
- Log recording via PC and integrated Watchdog with error counter.
- Error messages are prompted by display in clear text with additional signal lights and an acoustic warning signal.
- 6 speakerlines for backgroundmusic and announcements are directly adjustable and switchable at the VARES Control-Center ESC-006A.
- The ESC-006 A acts as a monitoring device compliant to IEC 60849 and as a pre-amplifier. To reach the required power please use the power amplifiers out of our RCS-program.
- Up to 5 units digital microphone stations VLM-105 can be connected to the ESC-006A.

Model designation

VARES Control-Center, 2 RU.....ESC-006A

IEC 60849

Example of an emergency warning system compliant to IEC 60849



- In “normal operation”, our modified VARIO-LINE can be used with all its functions, without restrictions.
- Disconnection of all non safety-relevant components when in battery operation.

- Disconnection of all non safety-relevant components when in emergency announcement operation.
- 2 monitored emergency call stations.

* unsupervised devices

„VARES“ EMERGENCY WARNING SYSTEM

RCS

Fire Brigade Call Station

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In addition to the monitored microphone, the station VLM-106 can be used.

Description

The call station is electronically monitored compliant to **IEC 60849**. Measured values of the microphone cap, the entire signal path and the press-to-talk bar are detected and analysed. The direct connection with VARES is made by a 4-pin shielded cable. The stable “slim” desktop housing has a functional design. It is suitably coloured for the specially targeted application.

VARES Fire Brigade Call Station..... **ESM-100D**

Fire Brigade Handheld Mic

MADE IN GERMANY



Description

The handheld microphone is electronically monitored compliant to **IEC 60849**. Measured values of the microphone cap, the entire signal path and the press-to-talk bar are detected and analysed. The direct connection with VARES is made by a 4-pin shielded cable. The handy, coloured housing with its lateral press-to-talk bar is optimized for its special purposes.

VARES Fire Brigade Handheld Mic..... **ESM-010H**

RCS
modified



Description

The emergency power supply ESP-700A is developed for emergency warning systems, which must be compliant to standards like e.g. **IEC 60849**. All faults announced through a fault indication contact, a buzzer and an LED indicator.

Please consider the following features:

- Output protection control with fault announcement to secure the alarming in the case of emergency power supply.
- Monitoring of accumulator-connections and announcements in the case of missing or disconnected accumulators.

Technical data

ESP-700A

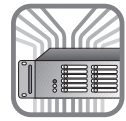
End-of-charging voltage	approx. 27,3 V DC
Max. charging current	2,5 A
Current consumption	105 W
Power supply	230 V AC
Accumulator capacity	27 Ah (BA-052); 42 Ah (BA-080) possible power output with BA-080 e.g.: 7x 120 W
Dimensions (W x H x D)	483 x 133 x 350 mm, 3 RU
Weight	12 kg

*

Model designations

VARES Emergency Power Supply, 3 RU **ESP-700A**
 Lead Acid Battery-Set internal, for internal use (27 Ah) **BA-052**
 Lead Acid Battery-Set external, for internal use (42 Ah) **BA-080**

PRO-LINE-SYSTEM
AUDIO- AND ALARMMANAGEMENT



4

Page
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Part 4

PROLINE COMPLETE 08

IEC 60849

RCS[®]

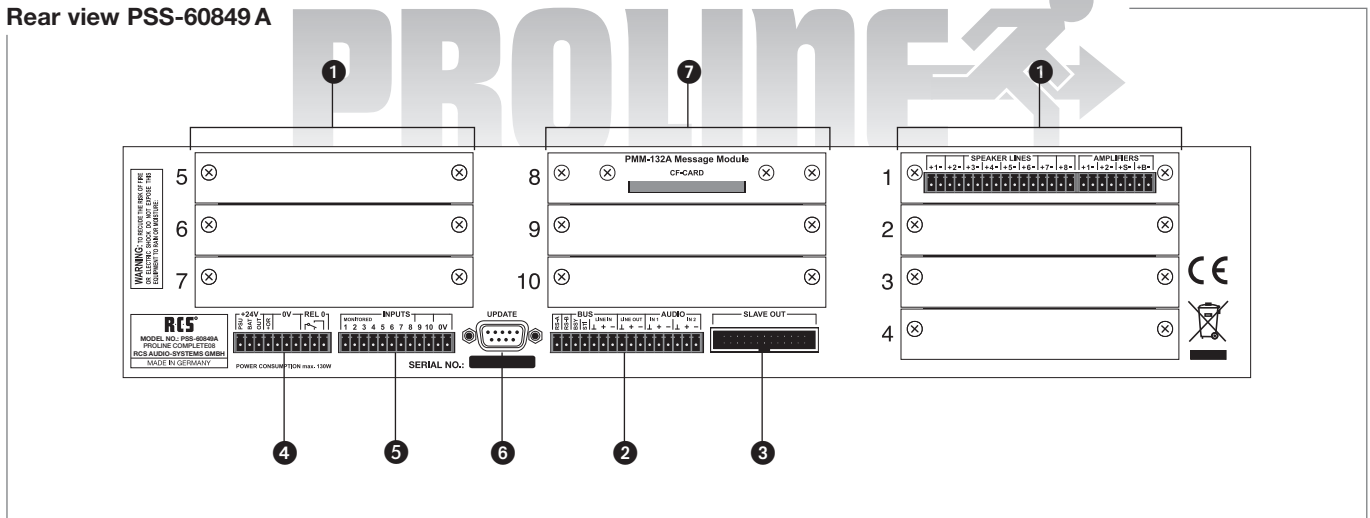
AUDIO-SYSTEMS



Electroacoustic EMERGENCY WARNING SYSTEM

for a maximum of system security

Rear view PSS-60849 A



- ❶ 7 empty slots for mounting the relay cards PRC-008 B, PRC-108 A or PRC-408 A.
- ❷ Bus connector RS-485, 3 symmetrical audio inputs, input 1 also programmable as output, 1 symmetrical audio output.
- ❸ Extension connector for further slave devices in order to upgrade up to 224 lines and for connection with the music switch panels PMS-024.
- ❹ Power supply connector 24 V and emergency power input, relay 0 for special functions.
- ❺ 8 isolated alarm inputs, 2 isolated switch inputs, freely programmable.
- ❻ Connector for firmware update.
- ❼ 3 optional module slots for installment of additional modules, e.g. text- and signal memory PMM-132 A.

Technical Data

PSS-60849 A

Speaker lines	8 line, max. 600 W each
Fire brigade call stations	PFM-308 A (table microphone), PFM-330 A (wall microphone)
Digital microphone stations	PDM-208 A, PRM-108 A (monitored with PMO-400 A)
Signal inputs	3x LINE IN: 0dB / 775 mV, balanced
Signal outputs	1x LINE OUT: 0dB / 775 mV, balanced
Switching output	1x switchable max. 2 A (relay 0)
Text memory	MP3 to CompactFlash-Card, 32 text or siren, monitored
Display	2-line display; LEDs
Power supply inputs	24 V and 24 V-emergency power supply monitored
Power consumption	approx. 8 W
Dimensions (WxHxD); Weight	483 x 89 x 270 mm, 2 RU; approx. 3,3 kg

Fire Brigade Microphone Station



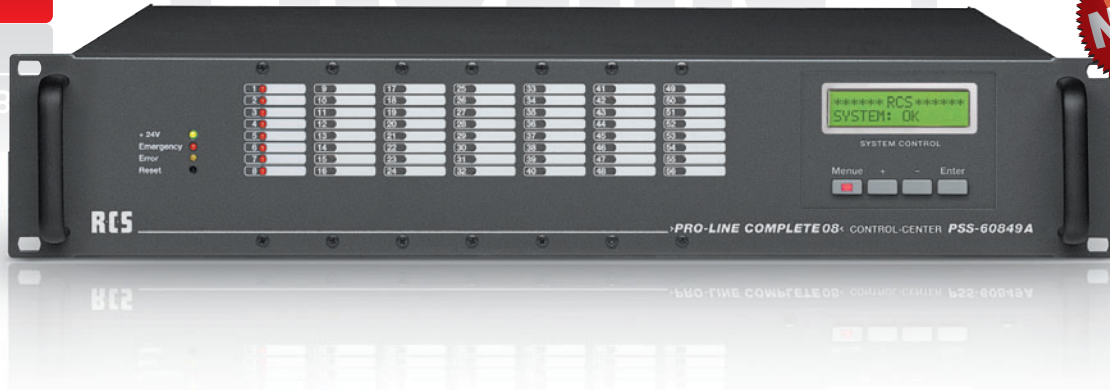
Description

Various monitored microphones are available, according to IEC 60849:

- **PFM-308 A** is a fire brigade table microphone with integrated monitoring, 8 buttons amongst which speaker lines, texts or siren 33404 can be selected according to the text or chime module.
- **PFM-330 A** is a fire brigade wall microphone with integrated monitoring in one lockable steel cabinet. It has illuminated buttons for the text module, reset and all-call announcements.
- **PRM-108 A** is a digital system microphone, which can be expanded through various module buttons. It is possible to optionally monitor it with a PMO-400 A.
- **PDM-208 A** is a digital microphone with an LCD-display, which can be expanded through various module buttons. It is possible to optionally monitor it with a PMO-400 A.

Fire Brigade Microphone Station

PFM-308 A



Description Control-Center

The PRO-LINE control center is applied in acoustic sounding devices, which are used for alarming purposes and therefore need to perform according to the **IEC 60849**.

This readily configured and programmed PRO-LINE complete system monitors all components needed for secure operation according to **IEC 60849**. This system is especially suited for small and medium-sized property sizes up to 8 speaker lines. For any larger scale demands we will be pleased to arrange any matching component selection for you. Individual requirements from the PRO-LINE products you will see on the following pages.

The easy installation and self-explanatory programming (standard programming available) via the computer software "ProLineConfig" ensures a quick and safe system setup.

All devices needed to assemble an electroacoustic alarming detection system is supplied by us.

In the following the PSS-60849A will be described with all key data, in which not all determined parameter norms will be repeated.

General Information

- Optionally an A/B cable connection for 8 lines is possible by using a further relay card.
- Easy installation and compact assembly with just 2 RU.
- Possibly up to 2 alarming amplifiers with a max. of 600 W each, 1 background music amplifier and 1 spare amplifier can be connected. The PSS-60849A monitors the amplifiers and in case of a breakdown of one of the alarming amplifiers the according speaker line will switch to the spare amplifier.
- Up to 2 fire brigade microphones and 22 optional monitored system microphones can be connected.
- Control and monitoring of 8 speaker line groups.
- Indication of an error message in form of a text, LED and audio signal.
- Monitored chime and alarm module PCM-100 B.

Lifesaving in the case of an emergency!

In the case of an alarm, an electroacoustic emergency warning system may avoid panic by understandable speaker announcements, which are, contrary to the howling of a siren, a much more efficient way of initiating the evacuation of a building.

Certainly, the availability and safe working of such systems has to be guaranteed at any time by monitoring the complete signal path. The standard **IEC 60849** defines the requirements for such systems.

- On the ex works basis, it will be delivered with one clearing message, the chime and the alarm module on the message module, as well as a siren according to DIN 33404.
- Monitored, digital text and signal memory with 32 individual announcement messages or attention signals in the mp3-format. A CompactFlash memory card serves as a memory medium.
- 8 isolated monitored inputs and 2 isolated unmonitored switch inputs.
- Monitored 24 V power supply- and emergency power inputs.
- Relay 0 special functions or error contact.
- Priority output 24 V 2 A.
- 3 symmetrical ground free audio inputs, input 1 programmable as input or output, one symmetrical ground free audio output.
- Bus connector RS-485.
- Integrated quartz clock for exact monitoring intervals, which can be synchronized via the DCF-receiver module PRR-077A.

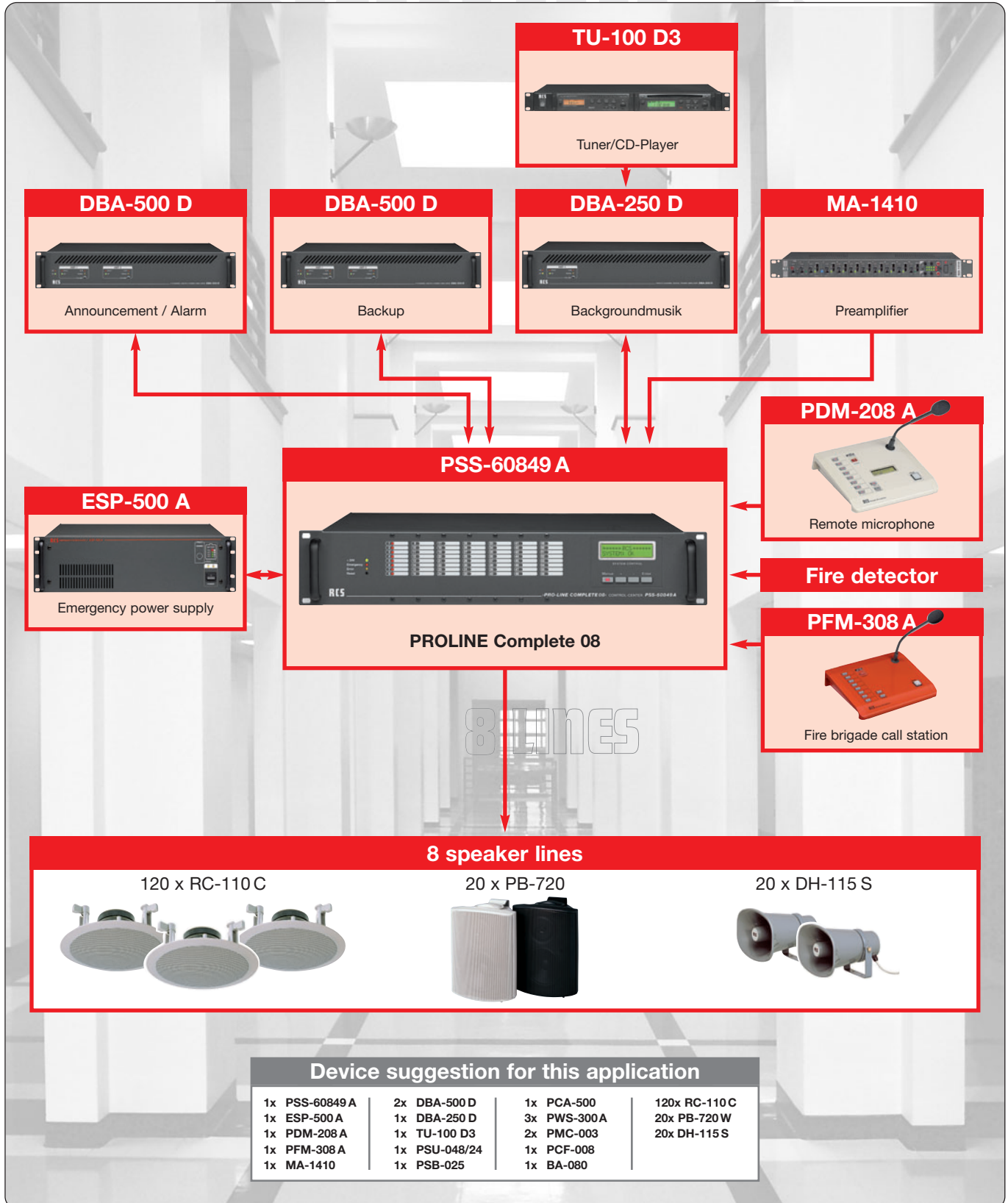
Model designation

„PRO-LINE“ **COMPLETE 08** **PSS-60849 A**



EXAMPLE OF USE: SHOPPING MALL

with 8 speaker lines, background music, announcements and alarming according to IEC 60849



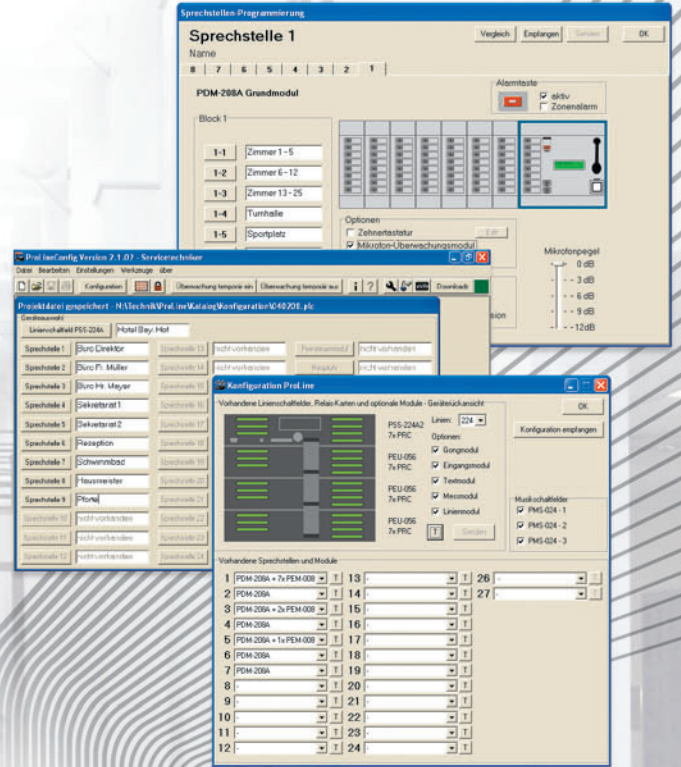
PROLINE

AUDIO- AND ALARMMANAGEMENT

Modular expandable from 8 to 224 speaker lines

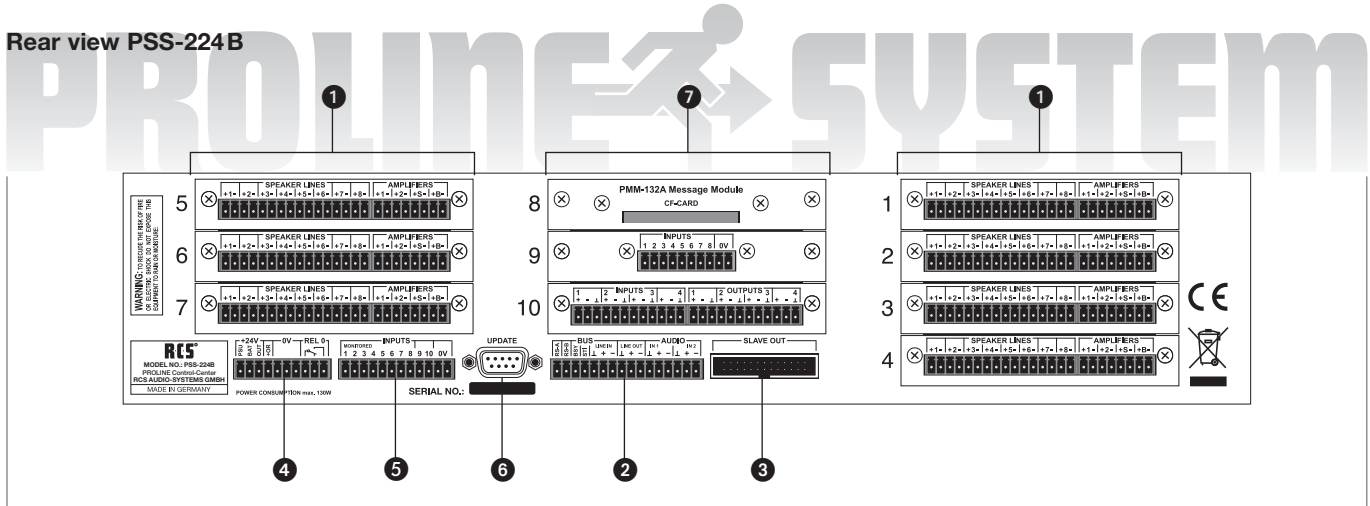
RCS®

AUDIO-SYSTEMS



- Compliant to IEC 60849 ■
- Expandable in steps of 8 up to 224 speaker lines ■
- Configuration by Windows™ software ■
- Settings storable on disk ■
- Up to 24 remote microphones ■
- Each speaker zone individually programmable ■

Rear view PSS-224 B



- 1 7 empty slots for mounting the relay cards PRC-008 B, PRC-108 A or PRC-408 A.
- 2 Bus connector RS-485, 3 symmetrical ground free audio inputs, input 1 as symmetrical ground free audio input or output, 1 symmetrical ground free audio output.
- 3 Extension connector for further slave devices in order to upgrade up to 224 lines and for connection with the music switch panels PMS-024.

- 4 Power supply connector 24 V and emergency power input, relay 0 for special functions.
- 5 8 isolated alarm inputs, 2 isolated switch inputs, freely programmable.
- 6 Connector for firmware update.
- 7 3 optional module slots for installment of additional modules, e.g. text- and signal memory PMM-132 A.

Extension Unit PEU-056 B



The control center PSS-224 B can manage a maximum of 224 different speaker lines or relay contacts.

Through the modular assembly even the extension unit can be adapted to the particular requirements. The basic version of the PEU-056 B will be delivered without relay cards. It can be extended with up to 56 line outputs in various designs. Very new regarding this is the use of the monitored relay card PRC-408 A according to IEC 60849.

The power supply and control comes from the center PSS-224 B. Therefore the relay cards PRC-008 B, PRC-108 A and PRC-408 A will be used just like for the PSS-224 B.

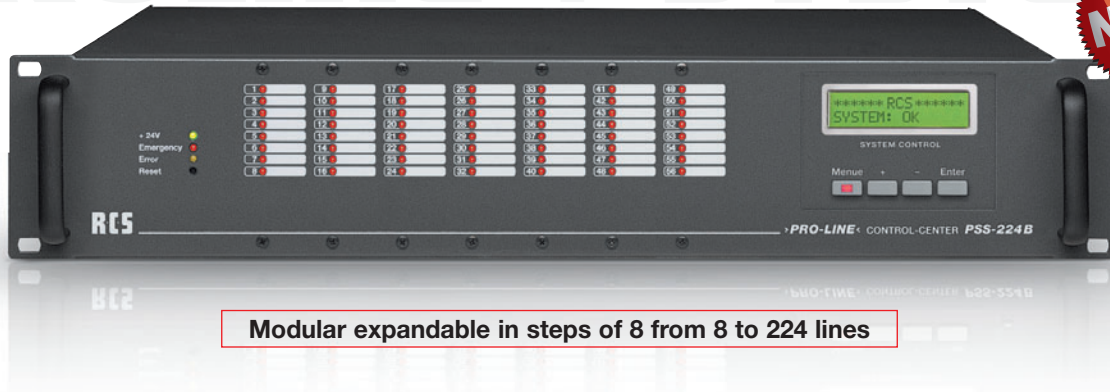
Description of Extension Unit

This digital extension unit PEU-056 B for further 56 speaker lines, is connected through the extension cable PFK-200 to the speaker selector PSS-224 B. A maximum of 3 extension units can be used per PSS-224 B.

Model designations

- „PRO-LINE“ Extension Unit, **PEU-056 B**
for PSS-224 B, 2 RU
- „PRO-LINE“ Extension Cable, **PFK-200**
connecting cable for PEU-056 and Music selector

Technical data	PSS-224 B Control-Center	PEU-056 B Extension Unit for PSS-224 B
Speaker lines	8 (max. 56)	8 (max. 56)
Bus connection	RS 485	-
Audio output level	0 dB / 775mV	-
Module slot	3 Module slot	3 Module slot
Power supply	24 V DC / max. 800 mA	24 V DC / max. 750 mA
Power source	Switching power supply / Battery	from PSS-224 B
Dimensions	483 x 89 x 270 mm, 2 RU	483 x 89 x 270 mm, 2 RU
Weight	3.3 kg (fully equipped 5.5 kg)	3.2 kg (fully equipped 5.1 kg)



Modular expandable in steps of 8 from 8 to 224 lines

Description Control Center

The digital, easy programmable and flexibly expandable center PSS-224 B of the PRO-LINE system takes over the audio- and alarm management for devices with up to 224 speaker lines, or switching contacts.

In connection with the extension unit PEU-056 B, of which a total of 3 units can be operated on one PSS-224 B, the project specific extension from 8 up to 224 lines in eight intervals is easily possible.

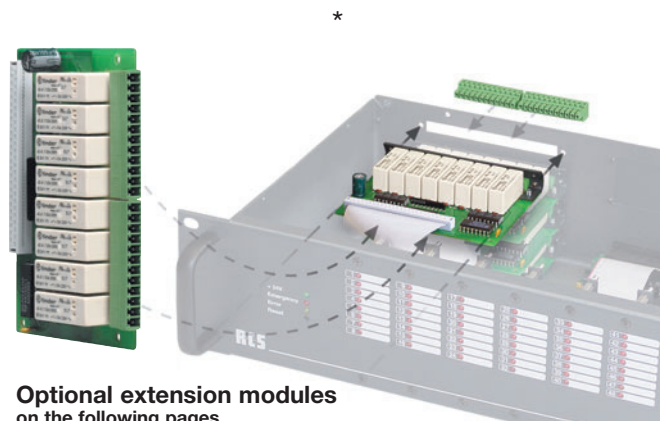
The basic device PSS-224 B and PEU-056 B are offered without a relay card, but depending on the requirements 3 different types are available. As an innovation the relay card PRC-408 A including the evaluation of the amplifier and loudspeaker monitoring according to IEC 60849.

8 monitored and 2 unmonitored isolated inputs enable a remote regulator of the PRO-LINE center. The easy programming of the center PSS-224 B is carried out via the computer software "ProLineConfig", as in all devices of the "PRO-LINE-system".

The most important characteristics combined:

- Monitoring of all system components according to IEC 60849.
- Activation and monitoring of up to 224 speaker lines (in connection with 3x PEU-056 B).
- Flexible usage of the relay cards PRC-008 B, PRC-108 A and PRC-408 A.
- Connection and monitoring of up to 112 power amplifiers (in connection with 3x PEU-056 B)
- 8 monitored and 2 unmonitored isolated inputs.
- Additional 8 isolated inputs with optional input module PIC-208 B.

- Monitored 24 V power supply- and emergency power inputs.
- Relay 0 for special functions.
- Obligatory call output 24 V 2 A.
- 3 symmetrical ground free audio inputs, input 1 as symmetrical ground free audio input or output, 1 symmetrical ground free audio output.
- Relay card 1 programmable for special functions such as alarm, error or obligatory call.
- Bus connector RS-485
- Integrated quartz clock for exact monitoring intervals, which can be synchronized via the DCF-receiver module PRR-077 A.
- Time related remoting of the PSS-224 B according to the main clock PTC-240 A.
- Optional module: display and button module, text- and chime module, measuring- and monitoring module, audio-matrix-module for audio routing and speaker line monitoring.

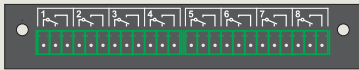


Optional extension modules on the following pages...

Model designation

„PRO-LINE“ Control-Center, 2 RU PSS-224 B

Relay card 8 lines

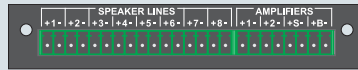


Relay card for 8 speaker lines, to be built into the PSS-224 B and PEU-056 B.

The relays of the cards are equipped with AgCdO-contacts and are prior-ranking with regard to switching off middle inductive demands up to 600 VA.

Relay Card **PRC-008 B**

Relay card 8 lines + 4 amplifiers



Monitored relay card for 8 speaker lines, to be built into the PSS-224 B and PEU-056 B.

It is possible to connect 2x 4 speaker lines each with one speaker amplifier as well as one spare and one background music amplifier for all 8 lines. This card realizes the routing of the line and amplifier monitoring and the spare amplifier according to the IEC 60849.

Relay Card **PRC-408 A**

Relay card 8 lines gold contacts

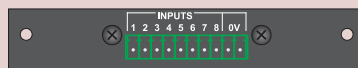


Relay cards for 8 switching options, to be built into the PSS-224 B and PEU-056 B.

The relays of the PRC-108 A are equipped with AgNi and 5 µm gold plating and are perfectly suitable for switching signals and small loads.

Relay Card, with gold contacts **PRC-108 A**

Input module

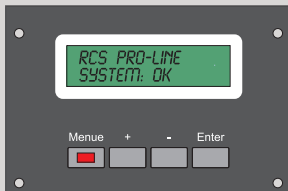


The PIC-208 B enables 8 different allocations via contacts of programmed line conditions including chime- or text selection, provided that the according modules are installed.

Each single input can be configured as background- or normal input, each being the opener or closer.

Input Module **PIC-208 B**

Display- and button module



With this display module actual operating conditions, system- and error messages

can be directly displayed on the PRO-LINE center PSS-224 B via a 16x2 LCD as well as the setting of some important parameters directly on the device. The module has to be handled with 4 buttons on the front side of the module.

Display- and Button Module **PLC-400 A**

Audio matrix

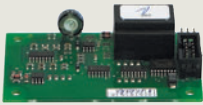


This audio-matrix module is being built into the partial back side of the center PSS-224 B as an optional module. This enables the routing of 4 symmetrical audio- or control signals onto 4 symmetrical outputs simultaneously.

Switching over results from e.g. a tenner key pad of a microphone as program selector switch of the background music.

Audio Matrix **PAX-404 A**

Measuring and monitoring module



The measuring module is able to measure the levels of various audio- and test signals for line-, microphone- and amplifier monitoring according to the **IEC 60849**.

Measuring and Monitoring Module... PMO-200 A

Chime and Alarm



Internal module in order to assembly into the PSS-224 B below the PMO-200 A and PMO-300 A.

Seven kinds of chime (1-sound, 2-sound up or down, 3-sound up or down, 4-sound up, 4-sound Westminster), 4 measuring frequencies of 200Hz, 1kHz, 15kHz and 20kHz and a siren according to DIN 33404 are available.

Chime and Alarm Modul PCM-100 B

Line monitoring



Internal module to be built into the PSS-224 B on top of the PCM-100 B and the PMO-200 A

The line- and earth connection monitoring according to **IEC 60849** goes through the relay card PRC-408 A. These are routed on to the speaker lines of the measuring bus.

Line Monitoring Module PMO-300 A

Microphone monitoring

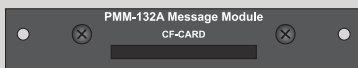


The microphone monitoring module according to **IEC 60849** can be built into one of the following optional modules: **PRM-108 A, PDM-208 A**

The microphones according to **IEC 60849**, PFM-208 A (fire brigade table-microphone) and the PFM-330 A (fire brigade wall-microphone) this module is integrated in series already.

Microphone Monitoring Modul PMO-400 A

Text- and Signal memory



The text and signal speaker is built into the rear panel of the center PSS-224 B and enables playing 32 individual announcements texts or attention signals in mp3 format.

Monitoring according to **IEC 60849** is carried out through the module PMO-200 A.

The memory medium is a CompactFlash-Memory-card.

Message-Module PMM-132 A

TCP/IP telecommunication module



This module enables telecommunication, remote maintenance and error transmission via intra- or internet. Configuration and maintenance can be done via a computer with "ProLineConfig" from any location.

TCP/IP Telecommunication Module... PRS-500 A

PROLINE SYSTEM



PMS-024 music switch panel

The PMS-024 music switch panel enables to select up to 24 different background music zones manually, which were configured by software beforehand.

The switch panel is connected to the PSS-224B as an extension unit. Up to 3 music switch panels can be combined.

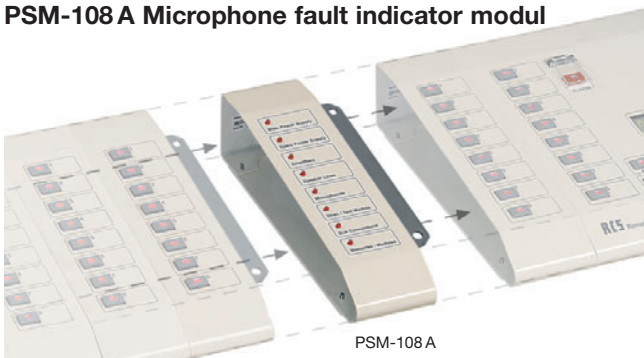
Technical data

PMS-024

Music zones	24 zones
Current consumption	15 mA
Power supply	24 V DC (from PSS-224B)
Dimensions (W x H x D)	483 x 44 x 200 mm, 1 RU
Weight	2,3 kg

„PRO-LINE“ Music Selector, music switch panel (1 RU)	PMS-024
„PRO-LINE“ Extension Cable, connecting cable for PEU-056 B and Music Selectors	PFK-200

PSM-108 A Microphone fault indicator modul



This microphone fault indicator modul displays selectively numerous appearing errors according to IEC 60849 directly on one selected microphone. The module is mounted to the microphone as extension unit.

The following malfunctions are signalled:

- ❶ Failure of main power supply
- ❷ Failure of emergency power supply
- ❸ Failure of an amplifier
- ❹ Change of impedance of a speaker line
- ❺ Failure of a microphone or its cable
- ❻ Failure of the siren or text module
- ❼ Bus interruption or failure of a device
- ❽ Memory error or failure of a module

„PRO-LINE“ Mic Fault Indicator Module ... **PSM-108 A**
Substation extension unit for PRM-108 A or PDM-208 A

PZM-310 ten keys pad



Ten keys pad as extension unit of the substation PDM-208 A, for selection of single or less used zones. By the use of the PZM-310, the substation remains compact and clear.

All speaker lines are separately selectable. Similarly speaker groups can be configured.

„PRO-LINE“ Microphone Extension Unit, ... **PZM-310**
Substation extension unit ten keys pad

PROLINE SYSTEM

PDM-208A with 7 PEM-008A units.



Remote microphones description

With the basic version of the digital remote microphone PRM-108 A or PDM-208 A, 8 loudspeaker groups or speaker lines can be controlled.

The module for the extension of remote microphones (PEM-008 A) increases the switching possibility for 8 further buttons in order to enable extension by 64 memory buttons.

Alternatively it can be expanded by a tenner keyboard PZM-310 (only for PDM-208 A)

The remote microphone PDM-208 A is additionally equipped with a LCD-display with plain text, via which diverse information can be displayed.

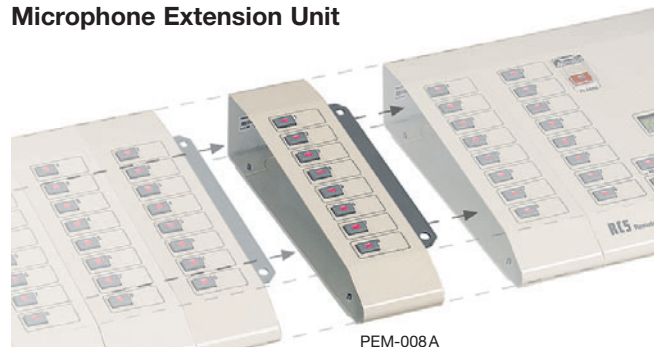
- Each tact switch function is individually programmable. This means every tact switch can be dedicated to every speaker line or speaker group. In addition different chimes and alarm functions are possible.
- The Microphone amplifier has a built-in gate to reduce background noise and a built-in compressor to improve speech transmission.
- Big talk button with busy light, All Call button with indicator and covered alarm button with light.
- A standard Cat. 5 cable can be used as bus cable, which enables a bus length up to 1 km without additional amplification, an easy and low priced installation. Additional cable for bus feed depends on current consumption, only at longer distances.

- Power supply for remote microphones via bus cable (25 pin D-sub connector PBA-, PWS-, PAS-300A).
- Configuration of the remote microphones is possible by the software „Pro-Line Config“ via every bus connection.
- Firmware update by connecting remote plug.

*

Technical data	PRM-108A / PDM-208A
Frequency response	100 ~ 15000 Hz
Characteristics	Cardioid (Electret)
Power supply	24 V DC / 55 mA
Power source	from PSS-224B (via bus cable)
Dimensions	211 x 42 x 181 mm
Weight	1.1 kg

Microphone Extension Unit



Model designations

- „PRO-LINE“ Remote Microphone, with 8 switches **PRM-108A**
- „PRO-LINE“ Display Remote Microphone, with 8 switches and LCD **PDM-208A**
- „PRO-LINE“ Microphone Extension Unit, with 8 switches **PEM-008A**
- „PRO-LINE“ Extension Cable, Microphone Extension Unit connecting cable **PFK-101**

Fire Brigade remote microphone



MADE IN GERMANY

All call remote microphone



Description

This fire brigade remote microphone PFM-308 A with a red cabinet is monitored electronically according to **IEC 60849**. Up to 8 speaker line groups can be switched on via these memory buttons as well as prepared texts from the text module PMM-132 A of the PSS-224 B. In case of an alarm a building can be evacuated effectively. Easy installation and intuitive operation is self explanatory.

- Remote microphone with integrated monitoring module PMO-400 A for microphone monitoring according to **IEC 60849**.
- The pre amplifier for the microphone is equipped with a gate in order to blank side tones, a compressor for improved comprehensibility and blasting.
- Large speak button with integrated busy-indicator, all call button as well as a covered alarm button.
- Freely programmable configuration of each individual memory button, which means that any speaker line or group can be assigned to a button simultaneously.
- Additionally a variety of chime and alarm functions are to be assigned.
- Configuration of the remote microphones via „ProLineConfig“ software possible from each bus connector.
- Update of the firmware via remote connector on the device.

Technical data	PFM-308 A
Power supply	from PSS-224B (via bus cable), DC 24V
Frequency range	100 - 15.000 Hz
Bus connections	25-pin. sub-D cable, Bus connectorsocket PBA-, PWS-, PAS-300 A
Memory buttons	8
Characteristics	Cardioid
Dimensions (W x H x D)	221 x 42 x 181 mm,
Weight	1,1 kg

„PRO-LINE“ Fire Brigade Remote Mic..... **PFM-308 A**

Description

This addressable all call remote microphone is suited for building the intercommunication system with up to 200 participants.

The remote microphone has a busy LED and integrated in a parallel way into the PRO-LINE bus. In case you speak on a PTM-101 A, a BUSY-LED lights up and the busy line will be occupied for all other remote microphones.

The electret condenser microphone, with cardioid characteristic, and the built-in microphone amplifier with gate and compressor function guarantees perfect speaker comprehensibility without blasting.

*

Technical data	PTM-101 A
Power supply	from PSS-224 B (via bus cable), DC 24V
Frequency range	100 - 15.000 Hz
Bus connections	25-pin. sub-D cable, Bus connectorsocket PBA-, PWS-, PAS-300 A
Microphone level	0dB to -12dB internal switchable
Characteristics	Cardioid
Dimensions (W x H x D)	131 x 42 x 181 mm,
Weight	850 g

„PRO-LINE“ All Call Remote Microphone... **PTM-101 A**

PROLINE SYSTEM



Description of the remote microphone

This fire brigade wall remote microphone PFM-330 A in a red, lockable sheet steel housing with a viewing window is in accordance with the norm ÖNORM F 3033 and is electronically monitored according to IEC 60849. Five alarm announcements can be called in five freely configurable zones, via illuminated buttons from the text module PMM-132 A of the PSS-224 B. Through this, in case of an emergency, a directed evacuation can be initiated.

The device was especially developed for its intended use and was optimized for the operator (rescue worker). Easy installation and intuitive operation are a matter of course.

Please consider the following features:

- Device is in accordance with **ÖNORM F 3033**.
- 5 standardized illuminated buttons for emergency announcements.
- Standardized illuminated button for clear.
- Standardized, covered illuminated button for reverse, switching off the active alarm announcement.
- Visual signal of the operating condition of the PFM-330 A (operation, failure, bus busy)
- Pre-amplifier for the microphone with gate to blank side noise and compressor for better comprehensiveness and blasting.

- Monitoring of the microphone, (module PMO-400 A integrated on main board) the signal ways and the speak button according to **IEC 60849**.
- Easy mounting, caparison- and flush-mounting are possible.
- Robust, lockable sheet steel housing with Plexiglass.
- Easy programming / allocation of the alarm announcements via the "ProLineConfig" software.
- Program interface for firmware updates.
- Exchangeable lock in a standard half cylinder format.

*

Technical data	PFM-330 A
Frequency range	300Hz – 6kHz
Characteristics	cardioid
Power supply	from PSS-224 B (via bus cable), DC 24V
Bus connection	8-pin. system plug
Microphone	dynamic hand microphone with talk button
Dimensions	300 x 200 x 70 mm
Weight	1,7 kg

Model designation

„PRO-LINE“ fire brigade wall remote microphone..... **PFM-330 A**

PROLINE SYSTEM



MADE IN GERMANY



Description

This latest process-controlled Conversation-Unit provides an expansion to our already successful “PRO-LINE” system. It offers further interesting as well as important application possibilities.

This “PRO-LINE” Conversation-Unit PWM-101 processes an integrated, controllable electret-condenser-microphone on the front, shaped in the cardioid characteristic. The line allocation results from the input-card PIC-208 B of the PSS-224 B, and is being activated via a status line through a certain speaking condition. This Conversation-Unit possesses excellent speaking comprehensibility through a broadband 5”-speaker-chassis.

Once it is being spoken via a PWM-101, the “Busy”-LED will light up and the busy line will be occupied for all other desktop-microphones. At the same time the internal speaker will be turned off, for as long as the speaking-button remains pushed.

Please consider the following features:

- integrated pre-amplifier with voice-operated gate function.
- high-quality compressor for equal microphone sound level.
- 3-stage microphone amplifier input gain switch and a microphone amplifier volume trim pot.
- 6 W 5”- loudspeaker including 100 V transformer.
- up to 200 PWM-101 can be used parallel on a BUS.
- Transformer symmetrical NF-output.
- Can be connected directly via BUS-line (Cat 5).

- Programmable line allocation for PSS-224 B via module PIC-208 B.
- Built on power-coated, perforated steel plate front panel equipped with a red “busy”-LED.
- Available as surface or flush-mounting.

*

Examples of use:

- Calling patients in hospitals, nursing homes, etc.
- Conversation-Unit for class rooms, offices, etc.
- Department-Store information point
- Speaking device for workstations


Technical data

PWM-101 A/101 U

Power rating (music power handling)	6 W (10W)
Adjustments at 100 V (in Watt)	6 – 3 – 1,5 W
Power Supply	24V / 50mA
Microphone capsule / Characteristic	Electret; Cardioid
Sound pressure at 1W/1m	95 dB
Nominal gauge	775mV
Nominal impedance	600 ohm
Dimensions (W x H x D); Weight; Colour	180 x 180 x 65 mm; 1 kg; white

Model designations

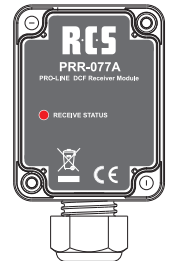
„PRO-LINE“ Conversation-Unit, for surface mounting **PWM-101 A**
 „PRO-LINE“ Conversation-Unit, for flush mounting **PWM-101 U**

PROLINE  **SYSTEM**

MADE IN GERMANY



DCF-Receiver module
PRR-077 A



Description

This master clock makes it possible to drive and control up to 130 side clocks on 2 side clock lines. These operate independently from each other in impulse operation, and control up to 240 switching contacts dependent on time (in connection with PRO-LINE center PSS-224 B).

The PTC-240 A is equipped with the relay card PTC-008 B and can additionally be expanded with one further relay card (PTC-008 B or PTC-108 B) with up to 16 relay switching outputs.

Operation of this device is carried out through 4 buttons on the front panel. The LCD-display with clear text allows the setting of important parameters directly on the device. The computer software "ProLineConfig" makes easy programming of the master clock possible.

Please consider the following features:

- Monitoring of the NU-lines regarding overload or short circuit.
- Monitored 24 V emergency power input and 24 V power supply input.
- Freely programmable allocations of all relay contacts for up to 253 orders of events.
- Card 1 can be used for special functions (error, chime).
- The DCF-receiver module PRR-077 A is a compact, independent additional module. It synchronise all devices at the bus, which need a correct system time. Mounting is possible on any position of the PRO-LINE bus within 1 km. Power supply of the module results from the bus as well.

- Time and date of the internal quartz clock can be synchronized optionally through the external DCF-receiver module PRR-077 A in configurable cycles.
- The PRR-077 A can be mounted in outside areas as well for better reception, because the housing equivalent protection class IP 65.

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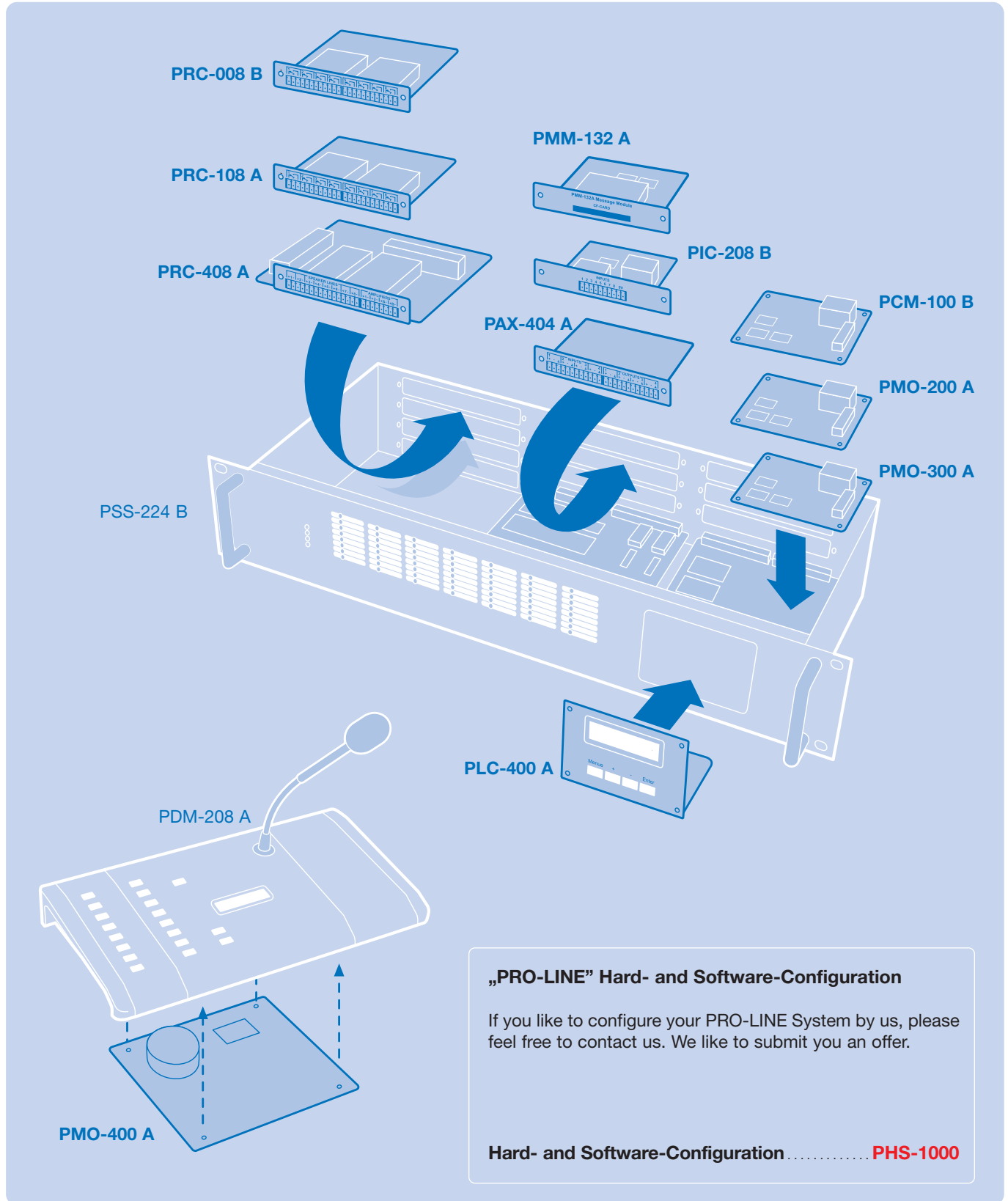
Technical data	PTC-240 A
Display	2-line LCD-Display, cleartext
Power reserve	10 years
Capacity / Number of NU-Lines	0,5 A/linie; 65 auxiliary clocks per line
Operation mode NU-Lines	sec./half min./min. pulse/0,3-2s
Pulse repetition	Normal: 1/min. adjust: 10/min.
Relay contacts	8 (max. 16), changer
Pulse length	1 – 59 seconds (digital switchable)
Contact capacity	6A/160 V each channel
Interfaces	RS-485-Bus
Memory capacity	253 (events)
Time base	Quarz, optional DCF-77
Power supply	DC 24V / max. 2 A
Dimensions / Weight	483 x 44 x 171 mm, 1 RU / ca. 2 kg

Model designations

„PRO-LINE“ DCF-receiver module, dimensions 68x45x21 mm	PRR-077 A
„PRO-LINE“ Main Clock	PTC-240 A
„PRO-LINE“ Relay Card, for Main clock PTC-240 A	PTC-008 A
„PRO-LINE“ Relay Card Gold Contacts, for Main clock PTC-240 A	PTC-108 A

PROLINE SYSTEM

EXAMPLE: Expand a PRO-LINE System with installation of optional Modules

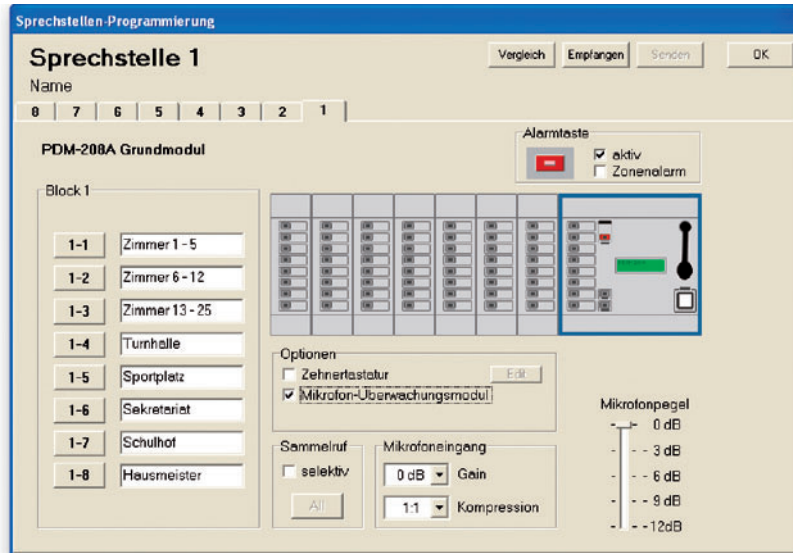


„PRO-LINE“ Hard- and Software-Configuration

If you like to configure your PRO-LINE System by us, please feel free to contact us. We like to submit you an offer.

Hard- and Software-Configuration PHS-1000

PROLINE SYSTEM



MADE IN GERMANY

PRO-LINE software description

With this new and improved „ProLineConfig“ software, the entire system can be clearly configured in a comfortable way within a minimum amount of time.

The software is adaptable to any computer with a USB-slot (Windows software) and is connected via the „Configuration-Program-Adapter“ PCA-500.

Each speaker line can be labeled clearly and then be selected in groups for background music, all call and main alarm.

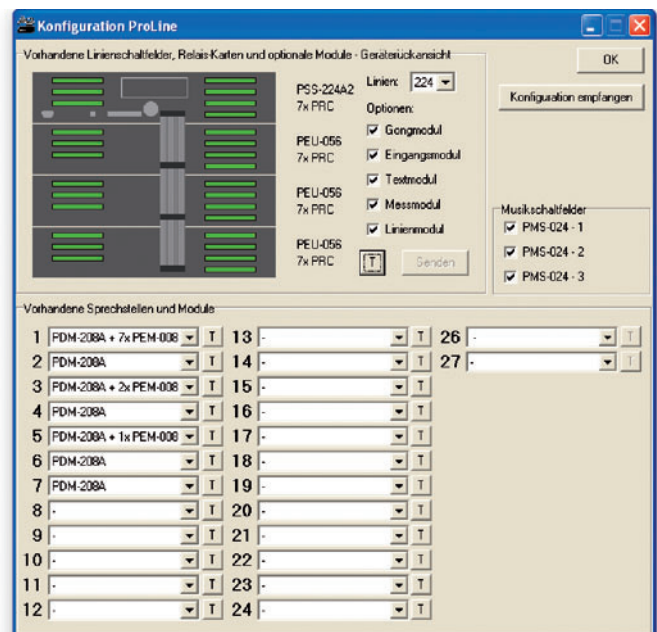
Regarding the speaker line configuration, each button can be allocated to any number of lines. For each single remote microphone, microphone level, compressor gain and pre gain can be set up separately.

Please consider the following features:

- As the user, administrator or service technician with various authorizations login via a password.
- Archiving the setting data of each connected device and labeling options of the remote microphones, speaker lines and single buttons.
- Global programming of the chime and text levels.
- The readout of existing configurations and copying the remote microphone configurations is possible.
- Allocation of special functions such as alarm, error and obligatory call on relay 0 to 8.
- Programming a button as direct button with impulse or switching function.

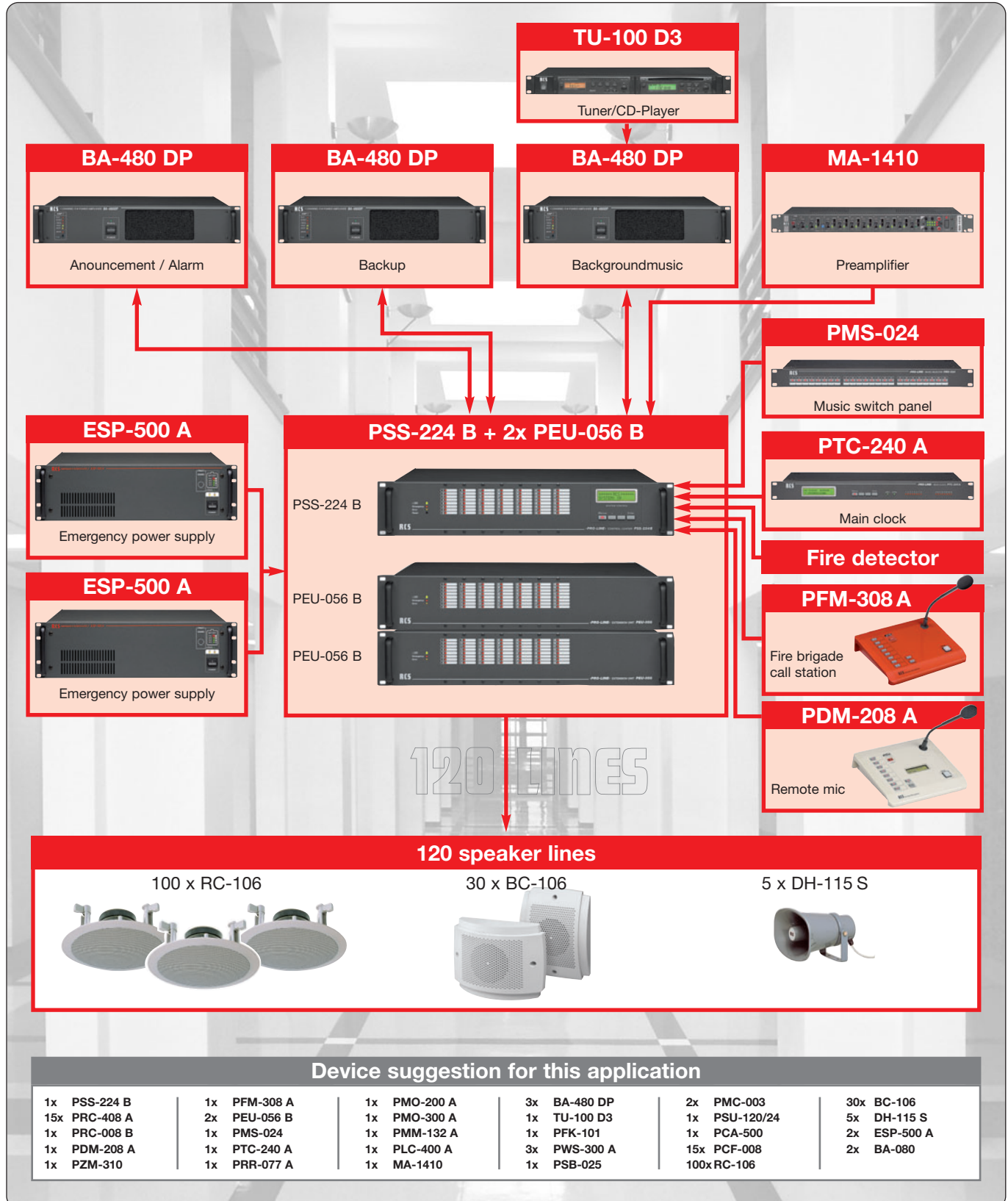
- Service menu with error statistics, relay and button control.
- Alarm button for each remote microphone can be deactivated.
- A significant test function of the individual components is possible.
- Calibrating the speaker lines and testing the amplifier is possible as well as calibration of the additional module (measuring module, text module, chime module, line module).
- Configuration of master clock.

*



PROLINE SYSTEM

EXAMPLE OF USE: SCHOOL with 120 speaker lines,
Background music, break-time chime, announcements and alarm compliant to IEC 60849.



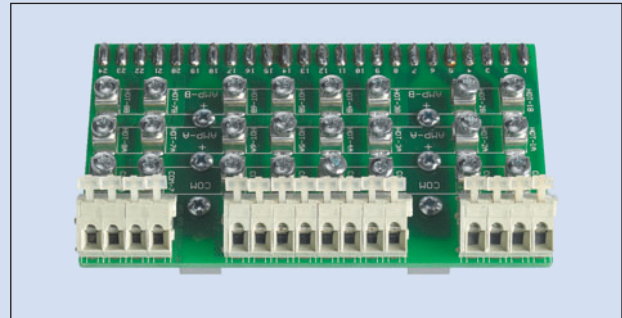
PROLINE SYSTEM MADE IN GERMANY

„PRO-LINE“ Accessories

PCF-008 Speaker connection panel

The PCF-008 is a click-on DIN rail speaker connection panel. It simplifies to connect and bridge through up to eight speaker lines as well as power amplifier outputs.

The connection cable to the relay cards of the PSS-224 B has to be connected with the added 12-pin connector. The wiring in this way is very clear, time saving, flexible and service friendly at the same time.



„PRO-LINE“ Speaker connection panel, PCF-008
(L x W x H) 108 x 64 x 40 mm; Length connection cable 2 m

PBA-300 A



PWS-300 A



PAS-300 A



Easy to install Sub-D 25 socket for connecting remote microphones with the bus.

„PRO-LINE“ Bus Connector, PBA-300 A
25-pin connecting socket

„PRO-LINE“ Flush Mount Socket, PWS-300 A
25-pin connecting box for in-wall mounting

„PRO-LINE“ Surface Mount Socket, PAS-300 A
25-pin connecting box for on-wall mounting

„PRO-LINE“ Short Bridge Connector PSB-025
„Short Bridge “ for PBA/PWS/PAS-300A, to bridge unassigned bus connector females

„PRO-LINE“ Terminating Plug PRB-025
„Terminating Plug“ for PBA/PWS/PAS-300A, to check the data bus

„PRO-LINE“ Microphone Cable, 3 m PMC-003
for substations

„PRO-LINE“ Microphone Cable, 5 m PMC-005
for substations

„PRO-LINE“ Microphone Cable, 10 m PMC-010
for substations

Power supply for the current supply of the appropriate PRO-LINE systems.

„PRO-LINE“ Power Supply, 48 VA PSU-048/24
24 V power supply

„PRO-LINE“ Power Supply, 120 VA PSU-120/24
24 V power supply

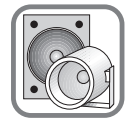
„PRO-LINE“ Power Supply, 240 VA PSU-240/24
24 V power supply

Firmware Programming Adaptor PPA-001
Cable to update the Firmware

Configuration Programme Adaptor PCA-500
Device for configuration

Technical data	PSU-048/24 Power Supply	PSU-120/24 Power Supply	PSU-240/24 Power Supply
Input voltage	85-264V AC	88-132V AC / 176-264V AC	88-132V AC / 176-264V AC
Output voltage	24V DC	24V DC	24V DC
Output current	2A DC	5A DC	10A DC
Tolerance	± 1%	± 1%	± 1%
Ripple & noise	480 mV	80 mV	80 mV
Efficiency	80%	84%	84%
Can be used for	1x PSS-224 B +15x PRM-108 A	1x PSS-224 B + 2x PEU-056 B +15x PRM-108 A + 7x PEM-008 A	1x PSS-224 B + 3x PEU-056 B +15x PRM-108 A + 7x PEM-008 A
Weight	0.31 kg	0.79 kg	1.20 kg

**Speakers for
100 V line systems**



The Pro-Sound Speaker series PRO with high speaking and syllable understanding is also in the best way suitable for Hi-Fi music performance.

These speakers are universally applicable, as they are made of high-quality components, are of small weight and compact dimensions.

Description

These 100V speakers have a high-quality scratch resistant and shockproof plastic housing. For mounting, three threaded inserts are used.

The Pro-Sound speakers of the series PRO are in the best way suitable in the stationary as well as in the mobile acoustic irradiation sector, because of their small weight and the compact dimensions.

Please consider the following features:

- The high-quality 100 V matching transformer avoids almost any loss of sound pressure and playback quality.
- A stable unscrewable metal grille completes the robust structure.
- A laterally integrated hand grip with PRO-1210/1220 increases the transport comfort and the convenience of use.
- The speaker contains a 8" or 12" bass woofer of high quality and a 25 mm or 34 mm tweeter of the same standard.
- The outstanding sound is influenced also by the acoustically professionally designed housing. Adapted frequency switches provide for a high efficiency and an accurate sound characteristic in the various speaker.

Access. PB-1210/20



Wall Mounting Bracket PWB-100



Wall Bracket QWH-035



Floor Stand QST-185

- As input terminal of the speaker boxes serve high-quality speaker sockets. For slaving the signal through the boxes a second parallel switched speaker socket is available.

Accessories PB-806/810

- For the attachment of the speaker box PB-806/810, a mounting bracket is in the scope of supply. The active speaker can be swivelled around 180° inside of the mounting bracket. By using this bracket, the box can be attached in a vertical or horizontal position to the wall or ceiling.
- The speaker can be mounted onto the speaker stand PST-100, using an adapter flange (scope of supply PST-100).

Accessories PB-1210/1220

- The speaker stand QST-185 is suitable for the speaker box PB-1210/1220. The extremely stable floor stand is variable in height (109 - 185 mm) and easy to set up or fold up.
- The special optionally available wall bracket QWH-035 is suitable for our PB-1210/1220 as well as for all boxes with a 36 mm stand flange. The bracket is swivel- and tiltable and provides a relocatable and removable retaining carriage.

Technical data	PB-806	PB-810	PB-1210	PB-1220
Load rating	60 W (sine)	100 W (sine)	100 W (sine)	200 W (sine)
Bass-Speaker / Tweeter	1 x 8" / 25 mm	1 x 8" / 25 mm	1 x 12" / 34 mm	1 x 12" / 34 mm
SPL at 1 W/1 m – SPL Pmax/1m.	93 dB – 110 dB	93 dB – 113 dB	96 dB – 116 dB	96 dB – 119 dB
Frequency range	60 – 20000 Hz	60 – 20000 Hz	55 – 20000 Hz	55 – 20000 Hz
Speaker Ø (mm) and Impedance	203, Tweeter 25 / 8 ohms	203, Tweeter 25 / 8 ohms	305, Tweeter 34 / 8 ohms	305, Tweeter 34 / 8 ohms
Transformer tapings at 100 V	60 W	100 W	100 W	200 W
Socket adapters	2 x Speaker	2 x Speaker	2 x Speaker	2 x Speaker
Dimensions HxWxD (mm)	410 x 285 x 250	410 x 285 x 250	650 x 420 x 330	650 x 420 x 330
Weight	7.2 kg	8.6 kg	20,4 kg	20,7 kg

100V PRO-SOUND SPEAKER

RCS

100 V



QST - 185
(Stand for PB-1210/1220)

PST - 100
(Stand for PB-806/810)

PB-1210/1220

PB-806/810

Model designations

100 V Pro-Sound Speaker, (60 W)	PB-806
100 V Pro-Sound Speaker, (100 W)	PB-810
Accessories:	

Floor Stand, black, for PB-806/810 **PST-100**

Model designations

100 V Pro-Sound Speaker, (100 W)	PB-1210
100 V Pro-Sound Speaker, (200 W)	PB-1220
Accessories:	

Floor Stand, black, for PB-1210/1220 **QST-185**

Wall Bracket, black, for PB-1210/1220 **QWH-035**

Mounting Bracket, black, for PB-1210/1220 **PWB-100**

20 W Impedance selector
20 – 10 – 5 – 2.5 W – 8 ohms



PB-720 W

PB-720 S

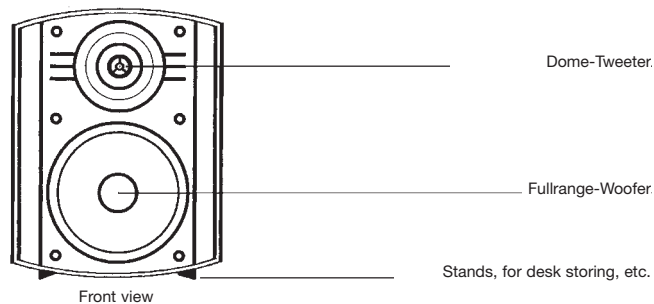
Description

These professional cabinet speakers, series PB-720 and PB-730 are perfect for sophisticated PA systems. Excellent speech and music reproduction are achieved. These speakers have a 2-way system, a full range woofer and a dome tweeter which are fitted into a professionally created case ensuring perfect acoustics.

Please consider the following features:

- The trapeze form allows mounting in various angles and corners. Little feet on the case bottom make it possible to place the speaker on a table, etc.

Figure shows PB-720 and PB-730



Front view

Technical data	PB-720 S / PB-720 W
Load rating (Music power)	20 W (50W)
Transformer tapings at 100 V	20 – 10 – 5 – 2,5 W
Frequency range	90 – 20000 Hz
Sound pressure at 1W/1m	90 dB
Sound pressure SPL Pmax/1m	103 dB @8kHz
Angle of refl. beam (-6dB) 1/4/8 kHz	150°/ 105°/ 100°
Speaker ø (mm) and impedance (ohms)	100 mm, tweeter- ø 52 mm, 8 ohms
Dimensions HxWxD (mm)	195 x 130 x 105 mm (without bracket)
Weight (kg) colour	approx. 1.5 kg, S – black, W - white

Pro Sound Speaker, 20 W black **PB-720 S**
with 100 V matching transformer (20–10–5–2,5 W) and 8 ohms

Pro Sound Speaker, 20 W white **PB-720 W**
with 100 V matching transformer (20–10–5–2,5 W) and 8 ohms

30 W Impedance selector
30 – 15 – 10 – 5 W – 8 ohms

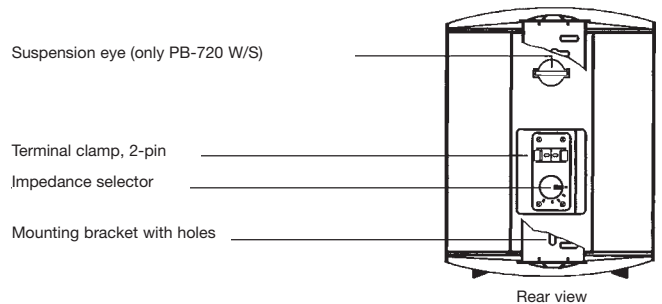


PB-730 W

PB-730 S

- The model PB-720 S/W has an additional swivel bracket and a pull out eyebolt.
- Speaker mounting possible in- and outdoors.
- There is a hidden impedance selector on the back panel with 4 x 100 V and an 1 x 8 ohms position. A built-in high quality 100 V matching transformer, ensures full quality of sound pressure and playback.
- The speakers can be mounted horizontally or vertically. The grille can be taken off.

Figure shows PB-720 and PB-730



Rear view

Technical data	PB-730 S / PB-730 W
Load rating (Music power)	30 W (80 W)
Transformer tapings at 100 V	30 – 15 – 10 – 5 W
Frequency range	90 – 20000 Hz
Sound pressure at 1W/1m	90 dB
Sound pressure SPL Pmax/1m	105 dB @4,5kHz
Angle of refl. beam (-6dB) 1/4/8 kHz	130°/ 70°/ 100°
Speaker ø (mm) / impedance (ohms)	130 mm, tweeter ø 52mm, 8 ohms
Dimensions HxWxD (mm)	240 x 181 x 140 (without bracket)
Weight (kg) colour	approx. 2,5 kg S - black, W- white

Pro Sound Speaker, 30 W black **PB-730 S**
with 100 V matching transformer (30 – 15 – 10 – 5 W) and 8 ohms

Pro Sound Speaker, 30 W white **PB-730 W**
with 100 V matching transformer (30 – 15 – 10 – 5 W) and 8 ohms

100V PRO-SOUND SPEAKER

RCS

60 W Impedance selector
60 – 30 – 15 – 10 W – 8 ohms



PB-760 W

PB-760 S



Description

These professional and high volume PB-series cabinet speakers are ideal for PA systems. They offer an attractive design, best speech reproduction and perfect music performance.

The speakers have a 8" full range woofer, a 25 mm Dome Tweeter, and a bass pipe, which is integrated into a professionally fitted cabinet.

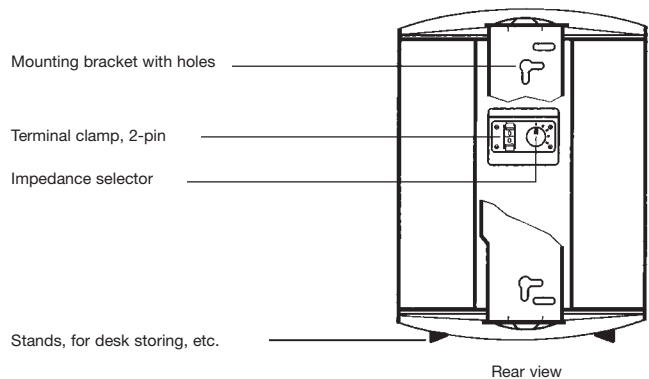
The speakers can be used in- and outdoors as they have a "Butyl Rubber Suspension." They are an excellent component for sound systems in assembly halls, congress and dance halls, gymnasiums, events, etc.

Please consider the following features:

- The trapeze shape allows mounting in corners and at various angles. Small feet on the case bottom make it possible to stand this speaker on a table etc.
- The speaker-leads connection is very easy with 2 clamp clips.
- The speakers can be mounted in- and outdoors.
- There is a hidden impedance selector on the back panel with 4 x 100 V and a 1 x 8 ohms position. As there is a fitted high quality 100 V matching-transformer, there is no reduction of the sound pressure or playback quality.
- The grille can be taken off.
- The speaker's shape and construction are excellent for the use in sound hanging lamps.



PB-760 S without grille



Stands, for desk storing, etc.

Rear view

Technical data	PB-760 S/PB-760 W
Load rating (Music power)	60 W (150 W)
Transformer tapings at 100 V (in W)	60 – 30 – 15 – 10 W
Frequency range	90 – 20000 Hz
Sound pressure at 1W/1m	92 dB
Sound pressure SPL Pmax/1m	110 dB @1kHz
Angle of refl. beam (-6dB) 1/4/8 kHz	120° / 145° / 115°
Speaker Ø (mm) and Impedance	165 mm, Tweeter-Ø 65 mm, 8 ohms
Dimensions HxWxD (mm)	365 x 272 x 210 (without bracket)
Weight (kg), Colour	appr. 6,0 kg, S – black, W – white

Pro-Sound Speaker, 60 W black..... **PB-760 S**
with 100 V matching transformer (60 – 30 – 15 – 10 W) and 8 ohm

Pro-Sound Speaker, 60 W white..... **PB-760 W**
with 100 V matching transformer (60 – 30 – 15 – 10 W) and 8 ohm

MADE IN GERMANY

in 2 power classes
6 Watt and 10 Watt
sine



- optional
- optional
- Relay**
24V DC
optional
- optional
-

Description

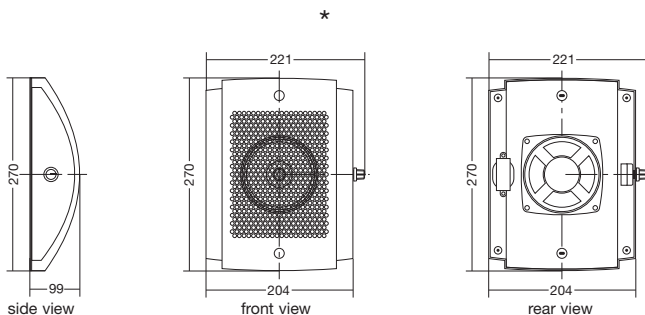
This cabinet speaker captivates by its remarkable innovative design. The symmetrical shape adapts to all premises in the best way. It can also be used as a ceiling speaker.

Whilst developing this speaker, we put great effort into the functionality and stability. Therefore it is offered in many variations, optionally moisture proof impregnated.

Excellent playback quality and sound fidelity.

Please consider the following features:

- Easy assembly.
- Option moisture proof impregnated available.
- Available in all desired colours.
- Impact and scratch-proof housing.
- Supplied with high-quality broadband chassis.

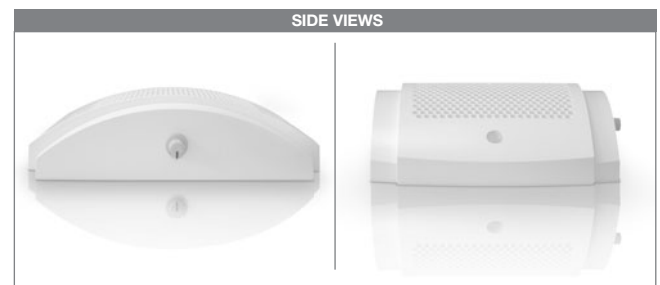


Models with inserted control:

These cabinet speakers are also available with an inserted volume control.

The control is laterally attached and is adjusted by turning the installed knob.

*



Technical data	BC-006 (R)	BC-010 (R)
Load rating (Music power)	6 (15) W	10 (15) W
Transformer tapings at 100 V	6 – 3 – 1.5 W	10 – 5 – 2.5 W
Frequency range (Hz)	150 – 20000 Hz	150 – 20000 Hz
Sound pressure at 1W/1m	94 dB	94.5 dB
Sound pressure SPL Pmax/1m	103 dB @1.3kHz	105 dB @1.3kHz
Angle of refl. beam (-6dB) 1/4/8 kHz	180°/ 70°/ 40°	180°/ 60°/ 50°
Speaker Ø (mm) and Impedance	130/ 8 ohms	130/ 8 ohms
Dimensions HxWxD (mm)	270 x 204 (221) x 66	270 x 204 (221) x 66
Weight (kg)	appr. 1.0	appr. 1.0

Model designations

Model designations

- Design-Cabinet Speaker 6 W** with 100 V transformer . . . **BC-006**
- Design-Cabinet Speaker 10 W** with 100 V transformer . . . **BC-010**

- Design-Cabinet Speaker 6 W**, 100 V transf., control . . . **BC-006R**
- Design-Cabinet Speaker 10 W**, 100 V transf., control . . . **BC-010R**

„Design“-CABINET SPEAKER (with rear panel)

RCS

in 2 power classes
6 Watt and 10 Watt
sine

MADE IN GERMANY



Description

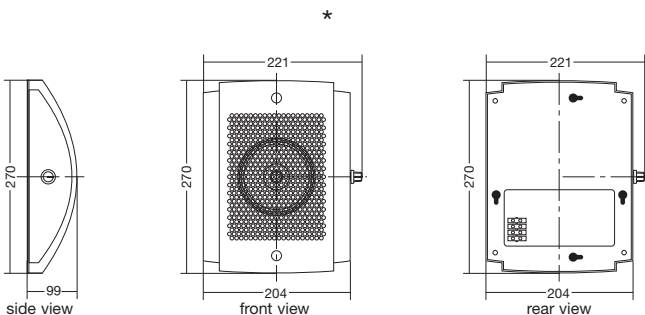
This cabinet speaker captivates by its remarkable innovative design. The symmetrical shape adapts to all premises in the best way. It can also be used as a ceiling speaker.

Whilst developing this speaker, we put great effort into the functionality and stability. Therefore it is offered in many variations, optionally moisture proof impregnated.

Excellent playback quality and sounding truth.

Please consider the following features:

- The BCR series is supplied with a rear panel.
- Supplied with high-quality broadband chassis.
- The speaker can be installed both horizontally and vertically.
- Easy attachment of the 100 V-line by external screw-type terminal.



Model designations (with rear panel)

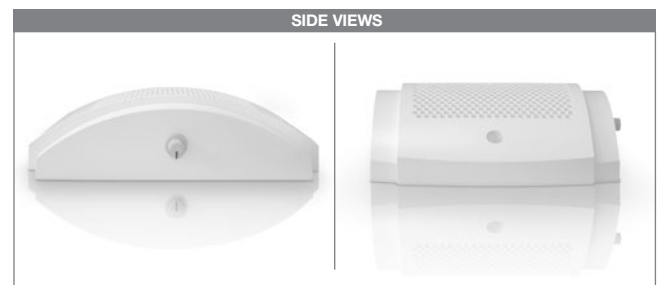
- Design-Cabinet Speaker 6 W**, 100V transf., rear panel **BCR-006**
Design-Cabinet Speaker 10 W, 100V transf., rear panel **BCR-010**

Models with inserted control:

These cabinet speakers are also available with an inserted volume control.

The control is laterally attached and is adjusted by turning the installed knob.

*



Technical data	BCR-006 (R)	BCR-010 (R)
Load rating (Music power)	6 (15) W	10 (15) W
Transformer tapings at 100 V	6 – 3 – 1.5 W	10 – 5 – 2.5 W
Frequency range (Hz)	150 – 20000 Hz	150 – 20000 Hz
Sound pressure at 1W/1m	94 dB	94,5 dB
Sound pressure SPL Pmax/1m	103 dB @1.3kHz	105 dB @1.3kHz
Angle of refl. beam (-6dB) 1/4/8 kHz	180°/ 70°/ 40°	180°/ 60°/ 50°
Speaker Ø (mm) and Impedance	130/ 8 ohms	130/ 8 ohms
Dimensions HxWxD (mm)	270 x 204 (221) x 66	270 x 204 (221) x 66
Weight (kg)	appr. 1.1	appr. 1.1

Model designations (with rear panel)

- Design-Cabinet Speaker 6 W**, 100V t.f., r.p., contr. . . **BCR-006 R**
Design-Cabinet Speaker 10 W, 100V t.f., r.p., contr. . **BCR-010 R**



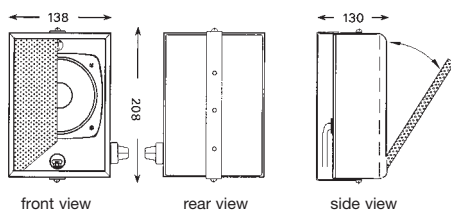
Description

These unusual, small „Compact“ speakers, of the series CBS and CBR are inexpensive, attractive and easy to mount. The high-quality impact and scratch resistant plastic corpus ensures best boom and swing release. This “soft line” corpus design combined with a high-sound pervious grille cover is modern and decent.

Please consider the following features:

- The fitted high quality matching transformer allows a match to 1/1 – 1/2 – 1/4 of the performance.
- The plastic cabinet is impact and scratch resistant and is available on request in all RAL-colours.

- The model series-CBS (with an open back panel) is constructed to be screwed or hung up (via key hole).
- The model series-CBR has an open back panel and a lay-over mounting bracket, which allows the speaker to be turned in every direction.
- A broadband high performance speaker chassis (Ø 130mm) with an integrated high tone cone ensures a very good sound performance in spite of the small cabinet.
- The built-in volume selector (knob) is on the lower ohm side.
- The fixing is burgle proof and can be mounted horizontally, vertically or to the ceiling.

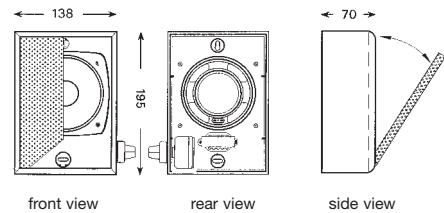


Technical data	CBR-006 WR/SR
Load rating (Music power)	6 (15) W
Transformer tapings at 100 V	6 – 3 – 1.5 W
Frequency range (Hz)	180 – 17000 Hz
Sound pressure at 1W/1m	95.5 dB
Sound pressure SPL Pmax/1m	104 dB @4kHz
Angle of refl. beam (-6dB) 1/4/8 kHz	180°/ 60°/ 45°
Speaker Ø (mm) and Impedance	130/ 8 ohms
Dimensions HxWxD/Weight	208 x 138 x 130 mm / approx. 1.3 kg
Colour corpus/ grille (series "WR"/"SR")	alpinewhite - grey/black

Model designations (with closed back panel and mounting bracket)

Compact-Cabinet Speaker 6 W **CBR-006 WR**
with 100 V matching transformer, white and built-in volume control

Compact-Cabinet Speaker 6 W **CBR-006 SR**
with 100 V matching transformer, black and built-in volume control



Technical data	CB-006 WR/SR
Load rating (Music power)	6 (15) W
Transformer tapings at 100 V	6 – 3 – 1.5 W
Frequency range	190 – 17000 Hz
Sound pressure at 1W/1m	95,5 dB
Sound pressure SPL Pmax/1m	104 dB @4kHz
Angle of refl. beam (-6dB) 1/4/8 kHz	180°/ 60°/ 45°
Speaker Ø (mm) and Impedance	130/ 8 ohms
Dimensions HxWxD/Weight	195 x 138 x 70 mm / appr. 1.0 kg
Colour corpus/ grille (series "WR"/"SR")	alpinewhite - grey/black

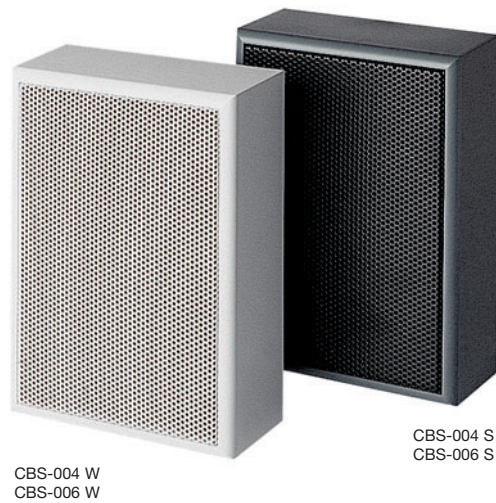
Model designations

Compact-Cabinet Speaker 6 W **CBS-006 WR**
with 100 V matching transformer, white and built-in volume control

Compact-Cabinet Speaker 6 W **CBS-006 SR**
with 100 V matching transformer, black and built-in volume control

„Compact“-CABINET SPEAKER

RCS



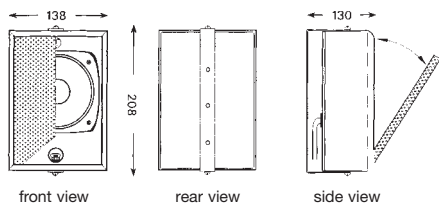
2 power classes
4 Watt – 6 Watt
sine

Description

These unusual, small „Compact“ speakers, of the series CBS and CBR are very inexpensive, attractive and easy to mount. The high-quality impact and scratch resistant plastic corpus ensures best boom and swing release. This “soft line” corpus design combined with a high-sound pervious grille cover is modern and decent.

Please consider the following features:

- A broad band high performance speaker chassis (ø130mm) with an integrated high tone cone and high quality transformer ensure brilliant music playback and excellent speech reproduction despite the small cabinet.

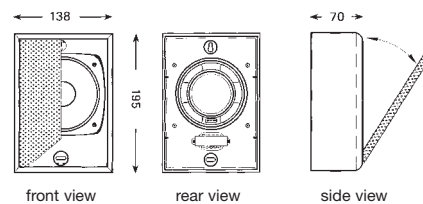


Technical data	CBR-004 W/S	CBR-006 W/S
Load rating (Music power)	4 (15) W	6 (15) W
Transformer tapplings at 100 V	4 – 2 – 1 W	6 – 3 – 1.5 W
Frequency range	180 – 16,500 Hz	180 – 17000 Hz
Sound pressure at 1W/1m	95 dB	95.5 dB
Sound pressure SPL Pmax/1m	102 dB @4.3Hz	104 dB @4kHz
Angle of refl. beam (-6dB) 1/4/8 kHz	180°/ 60°/ 45°	180°/ 60°/ 45°
Speaker Ø (mm) and Impedance	130/ 8 ohms	130/ 8 ohms
Dimensions HxWxD (mm)/Weight (kg)	206x138x130/appr. 1.1	208x138x130/ 1.2kg
Colour corpus/grille (Serie „W“/„S“)	alpinewhite/white – grey/black	

Model designations (with closed back panel and mounting bracket)

- Compact-Cabinet Speaker** 4 W, 100 V **CBR-004 W**
- Compact-Cabinet Speaker** 6 W, 100 V **CBR-006 W**
- Compact-Cabinet Speaker** 4 W, 100 V **CBR-004 S**
- Compact-Cabinet Speaker** 6 W, 100 V **CBR-006 S**

- The model series-CBS (with an open back panel) is constructed to be screwed or hung up (via key hole).
- The model series-CBR has an open back panel and a lay over mounting bracket, which allows the speaker to be turned in every direction.
- The fitted high quality matching transformer allows the matching to 1/1-1/2-1/4 of the performance.
- The mounting is burgle proof and positioned to be horizontal, vertical and to the ceiling.
- The plastic cabinet is impact and scratch resistant and if required can be painted in all RAL colours.



Technical data	CBS- 004 W/ S	CBS- 006 W/ S
Load rating (Music power)	4 (15) W	6 (15) W
Transformer tapplings at 100 V	4 – 2 – 1 W	6 – 3 – 1.5 W
Frequency range	180 – 16500 Hz	190 – 17000 Hz
Sound pressure at 1W/1m	95 dB	95.5 dB
Sound pressure SPL Pmax/1m	102 dB @4.3Hz	104 dB @4kHz
Angle of refl. beam (-6dB) 1/4/8 kHz	180°/ 60°/ 45°	180°/ 60°/ 45°
Speaker Ø (mm) and Impedance	130/ 8 ohms	130/ 8 ohms
Dimensions HxWxD (mm)/Weight (kg)	195x138x70/appr. 0.8	195x138x70/ 0.9
Colour, corpus, grille (series “W”/“S”)	alpinewhite/white – grey/black	

Model designations

- Compact-Cabinet Speaker** 4 W, 100 V **CBS-004 W**
- Compact-Cabinet Speaker** 6 W, 100 V **CBS-006 W**
- Compact-Cabinet Speaker** 4 W, 100 V **CBS-004 S**
- Compact-Cabinet Speaker** 6 W, 100 V **CBS-006 S**

MADE IN GERMANY

 **2-way coaxial chassis**



with professional 2-way coaxial chassis



- 10 W** Adaptations 2.5 – 5 – 10 W
- 20 W** Adaptations 5 – 10 – 20 W
- 30 W** Adaptations 7.5 – 15 – 30 W



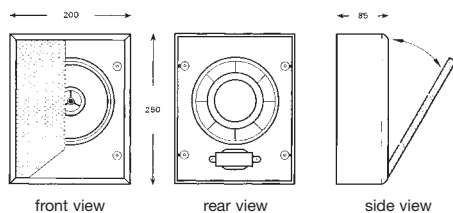
Description

A very high quality 2-way coaxial chassis is used in this model series. A separate tweeter has been integrated into the very wide band basic membrane.

This coaxial speaker fulfills professional requirements in relation to sound pressure and sound reproduction. Maximum load 40 W.

Please consider the following features:

- Mounting is very simple. The grille can be lifted off by a screwdriver in order to have access to the fixing screws.
- The plastic cover is impact and scratch resistant and is available on request in all RAL colours.
- The fixing is burgle proof and can be mounted horizontally, vertically or to the ceiling.
- There is room in the cabinet to mount relays, if necessary.



- Cabinet Speaker 10 W**, with 2-way coaxial chassis **BC-110 C**
with 100 V matching transformer (10 – 5 – 2.5 W), white
- Cabinet Speaker 20 W**, with 2-way coaxial chassis **BC-120 C**
with 100 V matching transformer (20 – 10 – 5 W), white
- Cabinet Speaker 30 W**, with 2-way coaxial chassis **BC-130 C**
with 100 V matching transformer (30 – 15 – 7.5 W), white

Technical data	BC-110C(R)	BC-120C(R)	BC-130C(R)
Load rating (Music power)	10 (40) W	20 (40) W	30 (40) W
Transformer tapings at 100 V	10 – 5 – 2.5 W	20 – 10 – 5 W	30 – 15 – 7.5 W
Frequency range	80 – 20000 Hz	80 – 20000 Hz	80 – 20000 Hz
Sound pressure at 1W/1m	92 dB	92 dB	93 dB
Sound pressure SPL Pmax/1m	103 dB @6kHz	106 dB @6kHz	108 dB
Ang. ref. beam (-6dB) 1/4/8 kHz	100°/ 50°/ 80°	100°/ 50°/ 80°	100°/ 50°/ 80°
Speaker, Ø (mm)/ Impedance	165/ 8 ohms, 2-way coaxial chassis		
Dimensions, HxWxD (mm)	250 x 200 x 85	250 x 200 x 85	250 x 200 x 85
Weight	ca. 1.8 kg	ca. 1.9 kg	ca. 1.9 kg
Colour corpus/grille	alpinwhite/white	alpinwhite/white	alpinwhite/white

The RCS-speakers have been developed according to the newest plastic technology. The high-quality impact and scratch resistant plastic corpus ensures best boom and swing release.

This “soft line” corpus design combined with a high-sound pervious grille cover is modern, discreet and is commented upon in a positive manner by architects.

*

Models with built-in volume control

These cabinet speakers are also available with a fitted volume control (on the lower ohm side).

The control is positioned underneath (lateral, if speaker is mounted horizontally).

The control axis can be adjusted with a screwdriver after taking off the cover cap. It is possible to operate the selector by using the enclosed knob. This only has to be pushed on the axis.

- Cabinet Speaker 10 W**, with 2-way coaxial chassis **BC-110 CR**
with 100 V matching transformer (10 – 5 – 2.5 W), white and built-in L-Control
- Cabinet Speaker 20 W**, with 2-way coaxial chassis **BC-120 CR**
with 100 V matching transformer (20 – 10 – 5 W), white and built-in L-Control
- Cabinet Speaker 30 W**, with 2-way coaxial chassis **BC-130 CR**
with 100 V matching transformer (30 – 15 – 7.5 W), white and built-in L-Control

CABINET SPEAKER (with 100 V transformer)

RCS

3 power classes
4 W – 6 W – 10 W
sine

MADE IN GERMANY



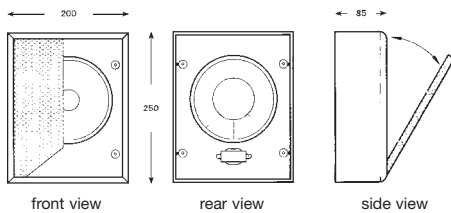
Description

The RCS speakers have been developed according to the latest knowledge in plastic technology. The high-quality impact and a scratch resistant plastic corpus ensure best boom and swing release.

This “soft line” corpus design combined with a high-sound pervious grille cover is modern and decent.

A broadband high performance speaker chassis (dia. 165mm) with an integrated high tone cone and high-quality matching transformer ensures brilliant music playback and excellent speech reproduction.

- Mounting is very simple. The grille can be lifted off by a screwdriver in order to have access to the fixing screws.
- The plastic cover is impact and scratch resistant and is available on request in all RAL colours.
- The fixing is burgle proof and can be mounted horizontally, vertically or to the ceiling.
- There is room in the cabinet to mount relays, if necessary.



- Cabinet Speaker 4 W, white with 100 V transf./control . . . **BC-104**
- Cabinet Speaker 6 W, white with 100 V transf./control . . . **BC-106**
- Cabinet Speaker 10 W, white with 100 V transf./control . . . **BC-110**

Technical data	BC-104 (R)	BC-106 (R)	BC-110 (R)
Load rating (Music power)	4 (15) W	6 (15) W	10 (15) W
Transformer tapings at 100 V	4 – 2 – 1 W	6 – 3 – 1.5 W	10 – 5 – 2.5 W
Frequency range	90 – 20000 Hz	90– 18000 Hz	90 – 16000 Hz
Sound pressure at 1W/1m	96 dB	96 dB	96 dB
Sound pressure SPL Pmax/1m	103 dB @4.5kHz	106 dB @5kHz	107 dB @5kHz
Angle of refle. beam (-6dB) 1/4/8 kHz	100°/ 50°/ 30°	90°/ 55°/ 40°	90°/ 55°/ 40°
Speaker Ø (mm)/impedance	165/ 8 ohms	165/ 8 ohms	165/ 8 ohms
Dimensions, HxWxD (mm)	250 x 200 x 85	250 x 200 x 85	250 x 200 x 85
Weight	appr. 1.5 kg	appr. 1.6 kg	appr. 1.7 kg
Colour corpus/grille	alpine/white	alpine/white	alpine/white

*

Models with built-in volume control

These cabinet speakers are also available with a fitted volume control (on the lower ohm side).

The control is positioned underneath (lateral, if speaker is mounted horizontally).

The control axis can be adjusted with a screwdriver after taking off the cover cap. It is possible to operate the selector by using the enclosed knob. This only has to be pushed on the axis.

- Cabinet Speaker 4 W, with 100 V transf./control **BC-104 R**
- Cabinet Speaker 6 W, with 100 V transf./control **BC-106 R**
- Cabinet Speaker 10 W, with 100 V transf./control **BC-110 R**

MADE IN GERMANY

3 power classes
4 W – 6 W – 10 W
sine

Square, suitable for
ceiling mounting



Description

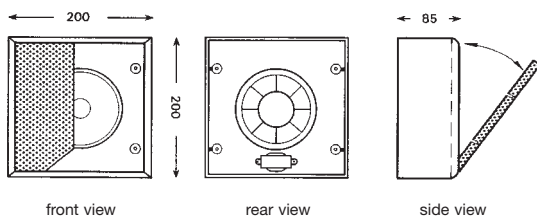
The RCS speakers have been developed according to the latest knowledge in plastic technology. The high-quality impact and scratch resistant plastic corpus ensures best boom and swing release.

This “soft line” corpus design combined with a high-sound pervious grille cover is modern and decent.

A broadband high performance speaker chassis (Ø 130mm) with an integrated high tone cone and a high-quality matching transformer ensure brilliant music playback and excellent speech reproduction.

Please consider the following features:

- Mounting is very simple, the grille can be lifted off with a screwdriver in order to have access to the fixing screws.
- The plastic cover is impact and scratch resistant and is available on request in all RAL colours.
- The fixing is burgle proof and can be mounted horizontally, vertically or to the ceiling.
- In the cabinet is enough free space to install additional relays, if necessary.



Technical data	BC-304 (R)	BC-306 (R)	BC-310 (R)
Load rating (Music power)	4 (15) W	6 (15) W	10 (15) W
Transformer tapings at 100 V	4 – 2 – 1 W	6 – 3 – 1.5 W	10 – 5 – 2.5 W
Frequency range	100 – 20000 Hz	100 – 20000 Hz	100 – 20000Hz
Sound pressure at 1W/1m	94,5 dB	95 dB	95 dB
Sound pressure SPL Pmax/1m	101 dB@1.2kHz	104 dB@1.2kHz	106 dB@1.2kHz
Angle of refl. beam (-6dB) 1/4/8 kHz	90°/ 55°/ 40°	100°/ 50°/ 35°	90°/ 60°/ 40°
Speaker Ø (mm)/impedance	130/ 8 ohms	130/ 8 ohms	130/ 8 ohms
Dimensions, HxWxD (mm)	200 x 200 x 85	200 x 200 x 85	200 x 200 x 85
Weight	appr. 1.3 kg	appr. 1.4 kg	appr. 1,5 kg
Colour corpus/grille	alpine/white	alpine/white	alpine/white

*

Models with built-in volume control

These cabinet speakers are also available with a fitted volume control (on the lower ohm side).

The control is positioned underneath (lateral, if speaker is mounted horizontally).

The control axis can be adjusted with a screwdriver after taking off the cover cap. It is possible to operate the selector by using the enclosed knob. This only has to be pushed on the axis.

Cabinet Speaker 4 W, white w. 100 V transformer. **BC-304**
Cabinet Speaker 6 W, white w. 100 V transformer. **BC-306**
Cabinet Speaker 10 W, white w. 100 V transformer. **BC-310**

Cabinet Speaker 4 W, with 100 V transf./control **BC-304 R**
Cabinet Speaker 6 W, with 100 V transf./control **BC-306 R**
Cabinet Speaker 10 W,with 100 V transf./control. **BC-310 R**

CABINET SPEAKER (with 100 V transformer)



2 power classes
6 W – 10 W
sine



without control

with control

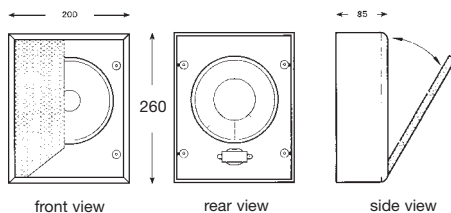
- optional
- optional
- optional
- optional

Description

This cabinet speaker is made of coated MDF wood and is due to its thought-out construction absolutely swinging- and boom-free. In connection with the broadband high performance chassis an excellent speech and music playback can be reached. The design is modern, decent and is commented upon in a positive manner by architects. The rear panel and the comfortable spring snatch lock make the assembly substantially easier.

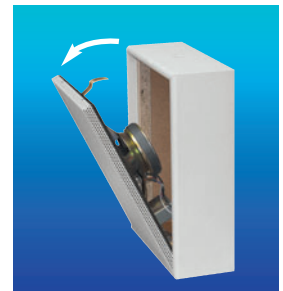
Please consider the following features:

- The installed 100 V transformer enables the tapping to 1/1, 1/2 and 1/4 performance in each case.
- Drilled holes in the rear panel allow a horizontal or vertical attachment of the speakers.
- The models BCH-406 R/410 R are delivered with an installed volume control.
- The speakers are available in all RAL colours on request.



Technical data	BCH-406 (R)	BCH-410 (R)
Load rating (Music capacity)	6 (15) W	10 (15) W
Transformer tapings at 100 V	6 - 3 - 1.5 W	10 - 5 - 2.5 W
Frequency range	90 – 18000 Hz	90 – 16000 Hz
Sound pressure at 1W/1m	96 dB	96 dB
Sound pressure SPL Pmax/1m	106 db @ 5 kHz	107 dB @ 5 kHz
Angle of refl. beam 1/4/8 kHz:	90° / 55° / 40°	90° / 55° / 40°
Speaker Ø (mm)/impedance	165 mm/8 ohms	165 mm/8 ohms
Dimensions, HxWxD (mm)	260 x 200 x 85	260 x 200 x 85
Weight:	ca. 1.6 kg	ca. 1.7 kg
Colour corpus / grille	alpine white / white	alpine white / white

*



Easy assembly due to comfortable spring snatch lock

Models with built-in volume control

These cabinet speakers are also available with a fitted volume control (on the lower ohm side).

The control is positioned underneath (lateral, if speaker is mounted horizontally).

The control axis can be adjusted with a screwdriver after taking off the cover cap. It is possible to operate the selector by using the enclosed knob. This only has to be pushed on the axis.

Cabinet Speaker 6 W **BCH-406**
with 100 V transformer

Cabinet Speaker 10 W **BCH-410**
with 100 V transformer

Cabinet Speaker 6 W **BCH-406R**
with 100 V transformer and control

Cabinet Speaker 10 W **BCH-410R**
with 100 V transformer and control

2 power classes
6 W – 10 W
sinus

IEC 60849

BS 5839
optional

optional



Description

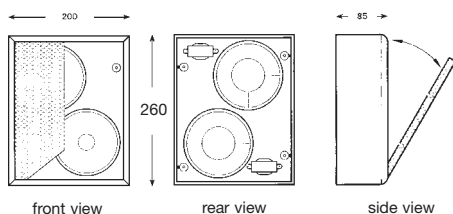
This ceiling and wall speaker is equipped with 2 loudspeakers as well as with 2 transformers. This cabinet speaker enables space-saving A/B division and wiring of the required alarming loudspeakers through **IEC 60849**.

Another advantage regarding the usual A/B wiring (2 separate cabinets) is the very low gauge level regarding the according range, because in case of a line failure no under served range will occur.

Of course this has a positive impact on speaking comprehensiveness and therefore of the efficiency and safety of alarming signals.

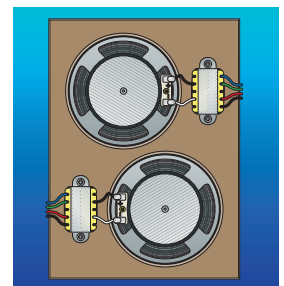
Please consider the following features:

- Redundant dimensioning in a high-quality and mounting-friendly MDF-wood cabinet.
- 2 pieces high-power 130 mm broadband chassis with tweeter cone and 2 high-quality transmitters enable a secure A/B wiring.
- The serial rear panel and the comfortable spring lock do improve mounting considerably.
- Drilling holes on the rear panel enable horizontal and vertical mounting of the loudspeaker.



- All loudspeaker types are available on all RAL colours on request.
- In case this cabinet speaker according to British standard 5839 (part 8) is needed, the option BS-5839 must be ordered as well. This contains a model with a ceramic-clip, thermo-backup and a fire-proof wire.

*



2 high-power 130 mm broadband chassis with 2 matching transformers

Technical Data	BCH-512	BCH-520
Load rating (Music capacity)	2x 6 (15) W	2x 10 (15) W
Transformer tapings at 100 V	2x 6 - 3 - 1,5 W	2x 10 - 5 - 2,5 W
Frequency range	90 – 18.000 Hz	90 – 16.000 Hz
Sound pressure at 1W/1m	98/109 dB	99/110 dB
Sound pressure SPL Pmax/1m	106 db @ 5 kHz	107 dB @ 5 kHz
Angle of refl. beam 1/4/8 kHz:	90° / 55° / 40°	90° / 55° / 40°
Speaker Ø (mm)/impedance	2x 130 mm/8 ohms	2x 130 mm/8 ohms
Dimensions HxWxD in mm	260 x 200 x 85	260 x 200 x 85
Weight	ca. 2,2 kg	ca. 2,2 kg
Colour corpus / grille	alpine white / white	alpine white / white

A/B-Alarming Cabinet Speaker, 2x 6 W BCH-512
with 2x 100 V matching transformer

A/B-Alarming Cabinet Speaker, 2x 10 W BCH-520
with 2x 100 V matching transformer

A/B ALARMING CEILING SPEAKER

RCS

IEC 60849

NEW



Description

This ceiling speaker is equipped with 2 loudspeakers as well as with 2 transformers. This cabinet speaker enables space-saving A/B division and wiring of the required alarming loudspeakers through IEC 60849.

Another advantage regarding the usual A/B wiring (2 built-in speakers) is the very low gauge level regarding the according range, because in case of a line failure no underserved range will occur.

Of course this has a positive impact on speaking comprehensiveness and therefore on the efficiency and safety of alarming signals.

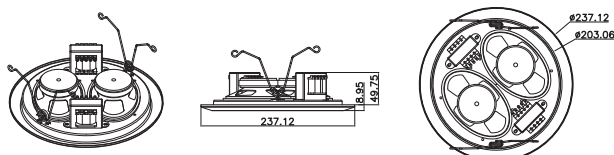
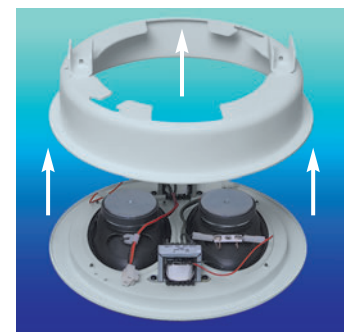
Please consider the following features:

- Redundant dimensioning in a high-quality and mounting-friendly cabinet.
- 2 pieces high-power 5" oval wide band chassis with high-tone cone and 2 high-quality transmitters enable a secure A/B wiring.
- The speaker have a installation depth about 110 mm and is ready for a horizontal or vertical attachment of the speakers.
- All loudspeaker types are available on all RAL colours on request.

- In this series of speaker we also offer a moisture proof version. The technical data is the option "FI-100". Speaker and transformer are especially impregnated.
- The model RC-512FD is equipped with a steel-pot fire protection. With this speaker you can order the option BS-5839.

*

mounting-friendly cabinet



The hole cut-out should have: $\varnothing 204 \text{ mm} \pm 5 \text{ mm}$.
Installation depth should amount to no less than 110 mm.

Technical data	RC-512 / 512 FD
Load rating (Music power)	2x 6 W (15 W)
Transformer tapplings at 100 V	2x 6 W - 3 W - 1,5 W
Frequency range	90 - 18.000 Hz
Sound pressure at 1W/1m	98 dB
Sound pressure SPL Pmax/1m	109 dB @6kHz
Impedance (Chassis)	2x 8 ohms
Hole cut-out	$\varnothing 206 \text{ mm}$
Dimensions \varnothing x Install. depth	237 mm x 110 mm
Weight, Colour, Material	ca. 2,2 kg, white

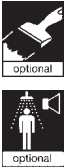
A/B-Alarming Ceiling-Speaker **RC-512**
2x 6 W, with 2x 100 V matching transformer, white

A/B-Alarming Ceiling-Speaker **RC-512 FD**
2x 6 W, with 2x 100 V matching transformer, white, with steel-pod fire protection

15 W Impedance selector switch
15 - 10 - 5 - 2.5 W - 8 ohms



Metal mounting bracket for surface mounting
(speaker appr. 360° swivelling)



Description

This round and elegant speaker boasts an interesting design, functions excellently and meets even special architectural expectations.

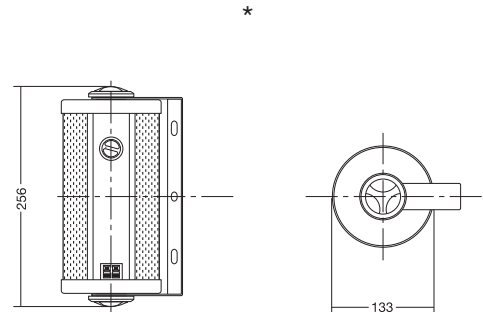
A 2-way bass reflex system provides for outstanding speech and music playback. On the rear side a rotary switch serves for the adjustment of low and high impedance areas. Easy and quick installation is enabled by the 2-pole clamping terminal at the rear side.

In the scope of supply metal handles serve for the attachment and enable to turn the column speaker appr. 360°.

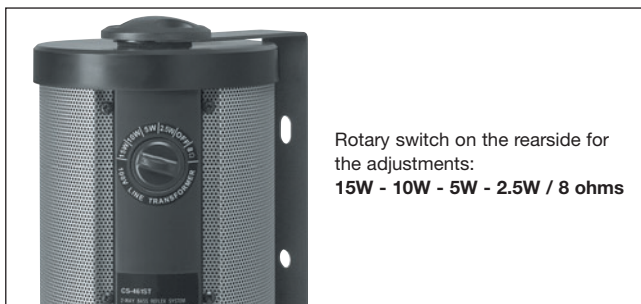
Please consider the following features:

- The rotary switch mounted on the outside of the speaker is adjustable from 15W - 10W - 5W - 2.5W 8 ohms to OFF. A fitted high quality matching transformer makes this possible.
- The assembly is possible horizontally or vertically on the wall or ceiling.

- All CS series models are equipped with mounting brackets enabling the speaker to swivel in all directions.
- The M6 thread hole in the middle of the speakers allows for stand fitting (PST-100). A threadpole allows for the stacking of the speakers.



For wall or ceiling mounting is necessary with mounting brackets, these can be easily removed for the stand assembly (threaded bore M6).



Rotary switch on the rearside for the adjustments:
15W - 10W - 5W - 2.5W / 8 ohms

Technical data	CS-115 W	CS-115 S
Load rating (Music power)	(at 8 ohms) 15 W RMS (30 W max.)	
Transformer tapings at 100 V	15 - 10 - 5 - 2.5 W	15 - 10 - 5 - 2.5 W
Frequency range	170 - 20000 Hz	170 - 20000 Hz
Sound pressure at 1W/1m	93 dB	93 dB
Sound pressure SPL Pmax/1m	106 dB @0.3kHz	106 dB @0.3kHz
Angle of refl. beam (-6dB) 1/4/8 kHz	170°/ 50°/ 60°	170°/ 50°/ 60°
Dimensions, Ø x H	133 mm x 256 mm	133 mm x 256 mm
Weight	2.1 kg	2.1 kg
Colours corpus / grille	white / white	black/ silver
Speaker Ø and Nominal impedance	4" x 6" Woofer + 13 mm Dome-Tweeter	

Round-Cabinet Speaker, black..... **CS-115S**
with 100 V transformer

Round-Cabinet Speaker, white..... **CS-115W**
with 100 V transformer

CEILING SPEAKER

RCS



„Sound-Dome“
Mounting speaker
 with 100 V transformer,
 outstanding sound quality and performance



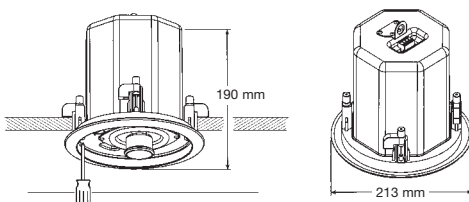
Description

The high performance 2-way speaker for high musical requirements!

The high-quality coaxial chassis provides, in connection with the aluminum case and the integrated bass reflex pipe, for a brilliant sound and outstanding sound pressure. Therefore this speaker is well suited for the use in large restaurants, conference rooms, etc. The Sound-Dome can also be used in gyms and sports halls, as it has a impact resistant structure.

The impedance selector switch at the front enables fast access, so that the speaker can be adjusted to the local conditions at any time.

RMS 30 W



The hole cut-out should have: \varnothing 188 mm +/- 5 mm.
 Installation depth should amount to no less than 190 mm.

Technical data	RSD-300
Load rating (Music power)	30 W (45 W)
Transformer tapings at 100 V	30 W - 15 W - 7.5 W
Frequency range	80 – 20000 Hz
Sound pressure at 1W/1m	92.5 dB
Sound pressure SPL Pmax/1m	108 dB @6kHz
Angle of refl. beam (-6dB) 1/4/8 kHz	180°/ 100°/ 90°
Speaker \varnothing in mm and Impedance	\varnothing 105 mm (16 ohms)
Dimensions \varnothing x Install. depth	213 mm x 190 mm
Weight, Colour, Material	appr. 2.4 kg, white

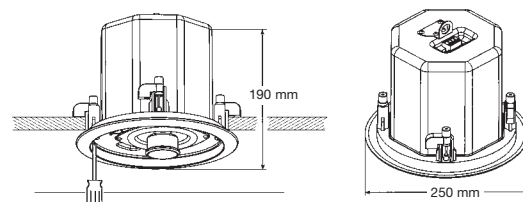
Sound-Dome Ceiling-Speaker **RSD-300**
 30 W, with 100 V Transformer, white

Please consider the following features:

- Available on option "moisture proof impregnated" chassis and transformer.
- Easy installation with high-speed snap fastener.
- On request available in all RAL colours.
- Screw connection terminals with one input and one output per terminal, enable a speedy connection with further speakers.

*

RMS 60 W



The hole cut-out should have: \varnothing 225 mm +/- 5 mm.
 Installation depth should amount to no less than 190 mm.

Technical data	RSD-600
Load rating (Music power)	60 W (90 W)
Transformer tapings at 100 V	60 W - 30 W - 15 W
Frequency range	60 – 20000 Hz
Sound pressure at 1W/1m	97.5 dB
Sound pressure SPL Pmax/1m	116 dB @8kHz
Angle of refl. beam (-6dB) 1/4/8 kHz	180°/ 80°/ 65°
Speaker \varnothing in mm and Impedance	\varnothing 160 mm (16 ohms)
Dimensions \varnothing x Install. depth	250 mm x 190 mm
Weight, Colour, Material	appr. 3.3 kg, white

Sound-Dome Ceiling-Speaker **RSD-600**
 60 W, with 100 V Transformer, white

2 power classes
6 W – 10 W
sine
broadband chassis

2 power classes
10 W – 20 W
sine
coaxial chassis



Description

Round, white, ceiling speaker in metal with an aluminium pot-case.
This fully enclosed speaker-construction with a very fine grille can be offered, taking the ceiling construction into account, as a fire resistant version. It is necessary to consult your local authorities regarding regulations for fire-prevention.

Please consider the following features:

- A High-quality broadband chassis with integrated tweeter is used.
- The aluminium pot-case and speaker are very easy to mount, no tools are necessary.
- Optionally in desired colour and humid room execution available.

*

Technical data	VA-106	VA-110
Load rating (Music capacity)	6 (15) W	10 (15) W
Transformer tapings at 100 V	6 – 3 – 1.5 W	10 – 5 – 2.5 W
Frequency range	140 – 17000 Hz	170 – 17000 Hz
Sound pressure at 1W/1m	99 dB	97.5 dB
Sound pressure SPL Pmax/1m	107 dB @0.5kHz	108 dB @0.5kHz
Angle of refl. beam (-6dB) 1/4/8 kHz	180°/ 90°/ 40°	180°/ 90°/ 40°
Speaker Ø (mm) / Impedance	165/ 8 ohms	165/ 8 ohms
Dimensions Ø	235 mm	235 mm
Weight	appr. 1.4 kg	appr. 1.5 kg

Mounting Speaker, 6 W **VA-106**
with 100 V transformer, white

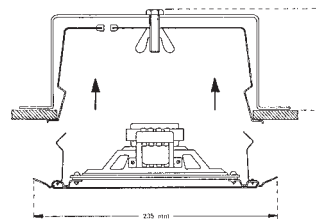
Mounting Speaker, 10 W **VA-110**
with 100 V transformer, white

Description

The models VA-110C and VA-120C are equivalent to the models VA-106 and VA-110 in design, structural shape and mounting method.

But they are equipped with a high-quality 2-way coaxial chassis (10 W, 20 W).

*



Ceiling cut out Ø 190 mm, ±5 mm



Picture shows 2-way coaxial chassis for the models VA-110C, VA-120C .

Technical data	VA-110C (coaxial)	VA-120C (coaxial)
Load rating (Music capacity)	10 (40) W	20 (40) W
Transformer tapings at 100 V	10 – 5 – 2.5 W	20 – 10 – 5 W
Frequency range	160 – 17000 Hz	160 – 20000 Hz
Sound pressure at 1W/1m	91 dB	92.5 dB
Sound pressure SPL Pmax/1m	101 dB @4kHz	106 dB @5kHz
Angle of refl. beam (-6dB) 1/4/8 kHz	180°/ 60°/ 100°	180°/ 60°/ 100°
Speaker Ø (mm) / Impedance	165/ 8 ohms, 2-way coaxial chassis	
Dimensions Ø	235 mm	235 mm
Weight	appr. 1.8 kg	appr. 1.9 kg

Mounting Speaker 10 W, with 2-way coaxial chassis **VA-110C**
with 100 V transformer, white

Mounting Speaker 20 W, with 2-way coaxial chassis **VA-120C**
with 100 V transformer, white

2 power classes
6 W – 10 W
sine
broadband chassis

2 power classes
10 W – 20 W
sine
coaxial chassis



Description

This newly developed speaker is compliant to the **British Standard Norm BS 5839**.

Equipped with a steel pot, fire-proof wire, ceramic block and a fuse, heat resistant to 150°C, the speaker prevents the extension of a fire to the entire speaker network.

The playback of emergency announcements or alarm signals is guaranteed.

Please consider the following features:

- High-quality broadband chassis with integrated tweeter.
- Simple installation without additional tools possible.
- On request available in all RAL colours.

*

Technical data	VAS-106	VAS-110
Load rating (Music capacity)	6 (15) W	10 (15) W
Transformer tapings at 100 V	6 – 3 – 1.5 W	10 – 5 – 2.5 W
Frequency range	140 – 17000 Hz	170 – 17000 Hz
Sound pressure at 1W/1m	99 dB	97.5 dB
Sound pressure SPL Pmax/1m	107 dB @0.5kHz	108 dB @0.5kHz
Angle of refl. beam (-6dB) 1/4/8 kHz	180°/ 90°/ 40°	180°/ 90°/ 40°
Speaker Ø (mm) / Impedance	165/ 8 ohms	165/ 8 ohms
Dimensions Ø	235 mm	235 mm
Weight	appr. 1.4 kg	appr. 1.5 kg

Mounting Speaker, 6 W **VAS-106**
with 100 V transformer, white

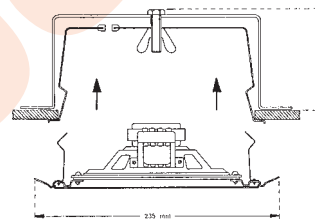
Mounting Speaker, 10 W **VAS-110**
with 100 V transformer, white

Description

The models VAS-110C and VAS-120C are equivalent to the models VAS-106 and VAS-110 in design, structural shape and mounting method.

They are equipped with a **high-quality 2-way coaxial chassis** (10 W, 20 W).

*



Ceiling cut out Ø 190 mm, ±5 mm



Picture shows 2-way coaxial chassis for the models VAS-110C, VAS-120C.

Technical data	VAS-110C (coaxial)	VAS-120C (coaxial)
Load rating (Music capacity)	10 (40) W	20 (40) W
Transformer tapings at 100 V	10 – 5 – 2.5 W	20 – 10 – 5 W
Frequency range	160 – 17000 Hz	160 – 20000 Hz
Sound pressure at 1W/1m	91 dB	92.5 dB
Sound pressure SPL Pmax/1m	101 dB @4kHz	106 dB @5kHz
Angle of refl. beam (-6dB) 1/4/8 kHz	180°/ 60°/ 100°	180°/ 60°/ 100°
Speaker Ø (mm) / Impedance	165/ 8 ohms, 2-way coaxial-Chassis	
Dimensions Ø	235 mm	235 mm
Weight	appr. 1.8 kg	appr. 1.9 kg

Mounting Speaker, 10 W **VAS-110C**
with 100 V transformer, white

Mounting Speaker, 20 W **VAS-120C**
with 100 V transformer, white

3 power classes
4 W – 6 W – 10 W
sine



Description

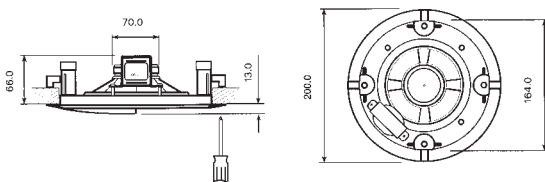
This newly developed speaker has the easiest and most modern type of fixing available, a "QUICK-TIGHT" clamp. This sets new standards for security and simplicity.

Four screws to mount or demount. Lifting of the grille with a screwdriver is all that is necessary. The installation frame is made of high quality plastic, the grille of coated steel. The construction is burgle proof and impact resistant.

Please consider the following features:

- Modern, discreet design with a rim height of approx. 2 mm.
- High-quality wide band 5 1/4" chassis with an integrated tweeter.
- The speaker is available impregnated, with a specially prepared chassis and matching transformer.

Technical data	RC-104	RC-106	RC-110
Load rating (Music power)	4 (6) W	6 (15) W	10 (15) W
Transformer tapings at 100 V (in W)	4 – 2 – 1 W	6 – 3 – 1.5 W	10 – 5 – 2.5 W
Frequency range	75 – 18,500 Hz	75 – 20000 Hz	75 – 20000 Hz
Sound pressure at 1W/1m	91.5 dB	91.5 dB	91.5 dB
Sound pressure SPL Pmax/1m	98 dB @3kHz	100 dB @3kHz	102 dB @3kHz
Angle of refl. beam (-6dB) 1/4/8 kHz	180°/ 100°/ 45°	180°/ 120°/ 70°	180°/ 110°/ 60°
Speaker Ø (mm) and Impedance	130/ 8 ohms	130/ 8 ohms	130/ 8 ohms
Dimensions Ø, Install. depth (max.)	200 (66) mm	200 (66) mm	200 (66) mm
Weight (kg), Colour	appr. 1.1 white	appr. 1.2 white	appr. 1.3 white



The hole cut-out should have: Ø 170 mm ± 5 mm.

- Mounting Speaker, 4 W** with 100 V transformer, white . . . **RC-104**
- Mounting Speaker, 6 W** with 100 V transformer, white . . . **RC-106**
- Mounting Speaker, 10 W** with 100 V transformer, white . . . **RC-110**

2-way coaxial chassis

3 power classes
10 W – 20 W – 30 W
sine



Description

The models RC-110 C, RC-120 C and RC-130 C are identical to the model described on the opposite side.

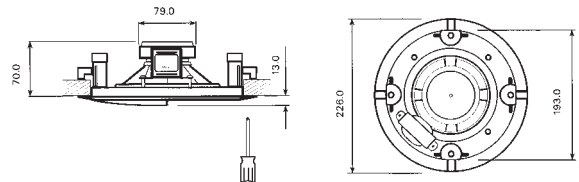
They are larger in measurement and proportion. It is therefore possible to insert a high-quality 6 1/2" 2-way coaxial chassis. This 2-way coaxial chassis has a very wide band basic membrane with a separate tweeter integrated.

This coaxial speaker chassis fulfills the professional demand for sound pressure and tone reproduction. Maximum capacity 40 W. A high-quality matching transformer supplies best music and speech quality.



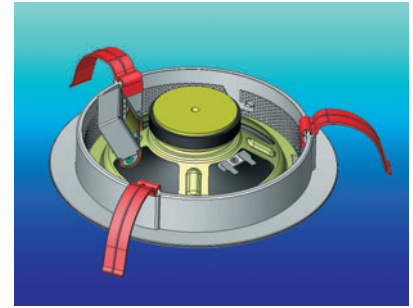
with professional 2-way coaxial chassis

Technical data	RC-110 C	RC-120 C	RC-130 C
Load rating (Music power)	10 W (40 W)	20 W (40 W)	30 W (40 W)
Transformer tapings at 100 V (in W)	10 – 5 – 2.5 W	20 – 10 – 5 W	30 – 15 – 7.5 W
Frequency range	45 – 20000 Hz	35 – 20000 Hz	35 – 20000 Hz
Sound pressure at 1W/1m	93 dB	92 dB	92 dB
Sound pressure SPL Pmax/1m	104 dB @6kHz	106 dB @6kHz	108 dB @6kHz
Angle of refl. beam (-6dB) 1/4/8 kHz	180°/ 80°/ 110°	180°/ 80°/ 110°	180°/ 80°/ 110°
Speaker Ø (mm) and Impedance	165/ 8 ohms, 2-way coaxial chassis		
Dimensions Ø, Install. depth (max.)	226 (70) mm	226 (70) mm	226 (70) mm
Weight (kg), Colour	appr. 1.8 white	appr. 1.9 white	appr. 2.1 white



The hole cut-out should have: Ø 200 mm ± 5 mm.

- Mounting Speaker, 10 W** with 2-way coaxial chassis . . . **RC-110 C**
with 100 V transformer, white
- Mounting Speaker, 20 W** with 2-way coaxial chassis . . . **RC-120 C**
with 100 V transformer, white
- Mounting Speaker, 30 W** with 2-way coaxial chassis . . . **RC-130 C**
with 100 V transformer, white



„Soft-Mount“ Mounting speaker with 100 V transformer

Description

The SRC ceiling and wall mounted speakers for recessed installation are designed according to the latest standards and ensure easy mounting. The fixing of the SRC mounting ring frame is accomplished by three spring clips which are simply inserted.

The speaker inside the grill is held in place by a bayonet-attachment which is turned until it locks. The grilles are made of stove enamelled metal.

This **patented** "SR series" ceiling speaker of perfection is a very popular product and described as a "novum" on the market.

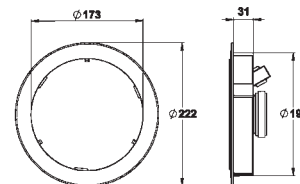
Please consider the following features:

- An extremely easy installation with three spring **Soft-Mount-Clips**. Fits into all common ceilings and wall thicknesses.
- These Soft-Mount-Clips consist of heat-proof **POM**. They are simply pushed into the mounting rings without a tool and without damage to the ceiling.
- The speaker unit with 100 V matching transformer and grid (White Zinc metal sheet; stove-enamelled) is held in place by bayonet-attachment.
- The high-quality 6.5" broadband-speaker chassis with a tweeter cone is dust protected by a filter foam plastic bag.



Speaker with dust protection bag and three pieces "Soft-Mount-Clips"

- The mounting rings and frames are made of high-quality impact and scratch resistant plastic. In all RAL colours available on request.
- In this series of speakers we also offer a moisture proof version. The technical data is the option "FI-100". Speaker and transformer are especially impregnated.
- If necessary, the mounting ring or frame can be fixed with screws. The hole locations are pre-marked.
- This new speaker type is protected by a patent. (patent no. 29604765.1).



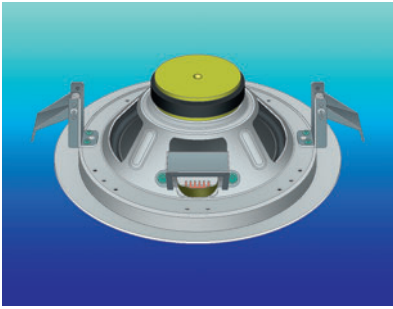
Hole Ø Required 195mm ± 3 mm, minimum depth required 75 mm.

Technical data	SRC-104	SRC-106	SRC-110
Load rating (Music capacity)	4 (15) W	6 (15) W	10 (15) W
Transformer tapings at 100 V	4 - 2 - 1 W	6 - 3 - 1.5 W	10 - 5 - 2.5 W
Frequency range	80 - 16000 Hz	80 - 20000 Hz	80 - 16000 Hz
Sound pressure at 1W/1m	97 dB	97 dB	98 dB
Sound pressure SPL Pmax/1m	106 dB @3kHz	106dB@3.5kHz	109 dB @3kHz
Angle of refl. beam (-6dB) 1/4/8 kHz	180°/ 70°/ 30°	180°/ 80°/ 50°	180°/ 80°/ 50°
Speaker Ø (mm) and Impedance	165/ 8 ohms	165/ 8 ohms	165/ 8 ohms
Dimensions Ø/Install. depth (min.)	222/ 75 mm	222/ 75 mm	222/ 75 mm
Weight	appr. 0.9 kg	appr. 1.0 kg	appr. 1.1 kg

Soft-Mount Mounting Speaker, white **SRC-104**
with 100 V matching transformer, 4 W

Soft-Mount Mounting Speaker, white **SRC-106**
with 100 V matching transformer, 6 W

Soft-Mount Mounting Speaker, white **SRC-110**
with 100 V matching transformer, 10 W



„Snap-In Mount“

Mounting speaker

with 100 V transformer

in 2 power classes
6 Watt and 10 Watt
sine

Description

This ceiling speaker is made of full metal. By the two assembly brackets, which tighten automatically by spring action when inserting the speaker into the hole, assembling time is reduced to a minimum.

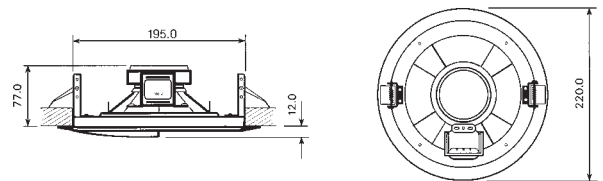
The speaker is in one piece and surprisingly easy to mount. The grille and installation ring are made of varnished steel, and meet most fire regulation rules.

A high-quality, wide band speaker chassis (6 1/2") and an equivalent 100 V matching transformer allow perfect speech and music reproduction.

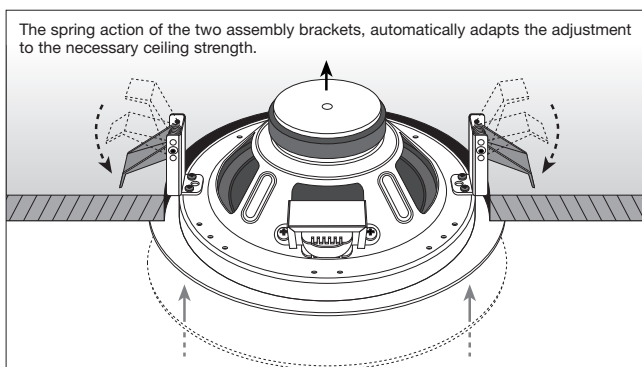
Please consider the following features:

- Modern, very discreet design with approx. 2 mm rim height.
- Very easy to mount, suitable for all ceiling types.
- Impact resistance certificate with the option "BW-100".
- Optionally with specially prepared chassis and transformer also in humid room execution available.

- A special lacquer finish of the speaker in all RAL colours is possible, if desired.
- The high-quality 100 V transformer permits different adjustments. Please take further details from the technical data, shown below.



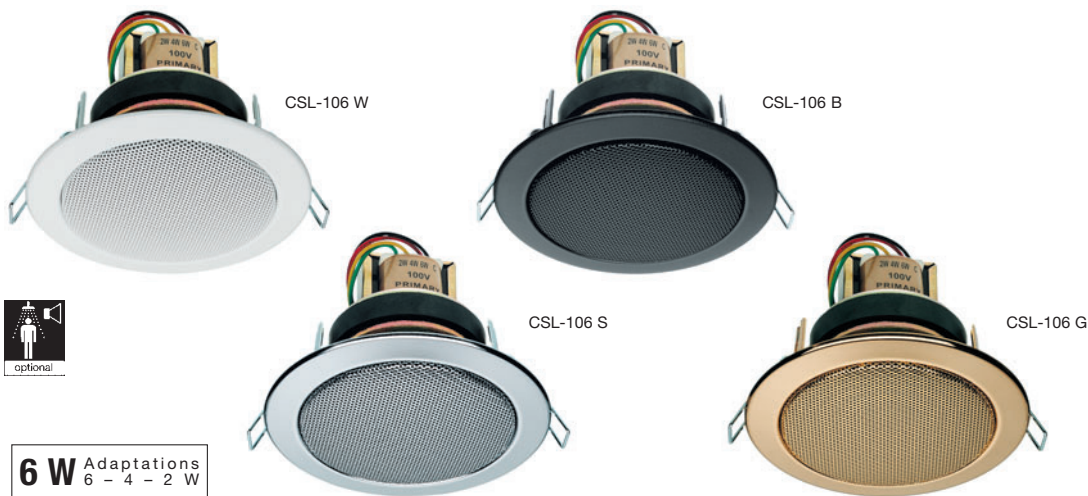
The hole for mounting should have a diameter of 200 mm ± 5 mm
Depth should amount to at least 77 mm.



Technical data	RC-206	RC-210
Load rating (Music capacity)	6 W (10 W)	10 W (15 W)
Transformer tapings at 100 V	6 – 4 – 2 W	10 – 5 – 2.5 W
Frequency range	60 – 20000 Hz	60 – 20000 Hz
Sound pressure at 1W/1m	91 dB	94.5 dB
Sound pressure SPL Pmax/1m	99 dB @2kHz	105dB@6kHz
Angle of refl. beam (-6dB) 1/4/8 kHz	180°/ 100°/ 50°	180°/ 90°/ 30°
Speaker Ø (mm) and Impedance	165/ 8 ohms	165/ 8 ohms
Dimensions Ø, Install. depth (max.)	220 x 77 mm	220 x 80 mm
Weight (kg), Colour	appr. 1.3 kg white	appr. 1.4 kg white

Snap-In Mount-Mounting Speaker, 6 W RC-206
with 100 V matching transformer, white

Snap-In Mount-Mounting Speaker, 10 W RC-210
with 100 V matching transformer, white



Design and dimensions particularly designed for the supplement of halogen light systems.



6 W Adaptations
6 - 4 - 2 W

„Spot-Design“
Ceiling speaker
with 100 V transformer

Description

These “Spot Design” fitted speakers fit in very well with the current halogen light systems.

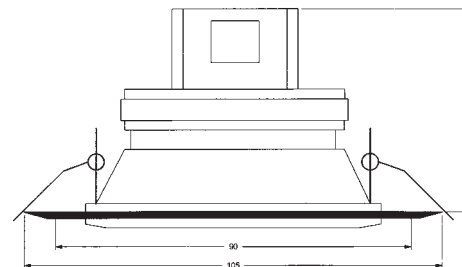
They have a 2 1/2” wide band speaker and an outstanding tone. This speaker is suitable for speech and background music.

This speaker is used where functionality, a special design or small measurements are required.

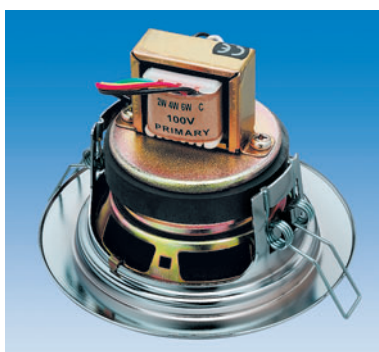
Please consider the following features:

- The exceedingly easy mounting with 2 metal springs fits all ordinary ceilings and walls.
- The matching transformer is suitable for a 50V, 70V and 100V connection and can be adapted to 1/1 – 1/2 – 1/4 power.
- The fitted speaker can be adapted to a lower resistance (8 ohms, 6W). It is connected directly to the chassis. A special delivery with a 20 cm wire and connection clamp is possible.
- The installation depth including the matching transformer is only 65 mm.

- Special speaker colours are available on request.
- The speaker is also available in a moisture proof version, an especially prepared chassis and matching transformer. Please order “FI-100” for this option.



The necessary hole cut should have a Ø of 90 mm ± 3 mm.



This picture shows the simple and time-saving assembly with 2 metal springs.

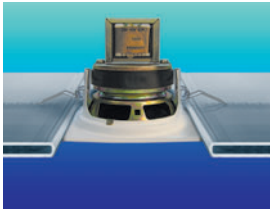
Technical data	CSL-106 W/B/G/S
Load rating (Music power)	6 W (10W)
Transformer tappings at 100 V	6 – 4 – 2 W
Frequency range	110 – 20000 Hz
Sound pressure at 1W/1m	87 dB
Sound pressure SPL Pmax/1m	95 dB @0.3kHz
Angle of refl. beam (-6dB) 1/4/8 kHz	180°/ 100°/ 180°
Speaker Ø (mm) and Impedance	64/ 8 ohms
Dimensions Ø, Install. depth (max.)	105 x 72 mm
Weight (g), Colours	500 g, white, black, gold, silver

Spot-Design Ceiling Speaker, white **CSL-106 W**
with 100 V transformer, 6 W

Spot-Design Ceiling Speaker, black **CSL-106 B**
with 100 V transformer, 6 W

Spot-Design Ceiling Speaker, gold **CSL-106 G**
with 100 V transformer, 6 W

Spot-Design Ceiling Speaker, silver **CSL-106 S**
with 100 V transformer, 6 W



„Spot-Design“
Ceiling speaker
with 100 V transformer

6 W Adaptations
6 - 4 - 2 W

Description

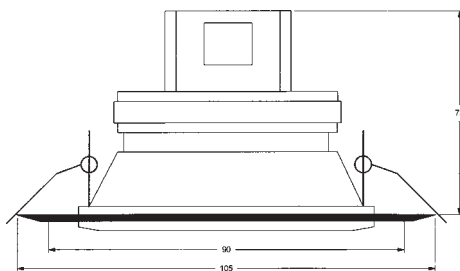
Small, quadratic ceiling and wall speaker, which is also suitable for the installation in 100 mm conduits. Due to inconspicuous design and a harmonized choice of colour it perfectly matches any premises. A 2 1/2" wide band speaker ensures excellent sound and therefore this device may be used for voice transmission as well as for background music purposes.

Please consider the following features:

- The matching transformer is suitable for a 100V connection and can be adapted to 6 W, 4 W oder 2 W power.
- The fitted speaker can be adapted to a lower resistance (8 ohms, 6W). It is connected directly to the chassis. A special delivery with a 20 cm wire and connection clamp is possible.
- The speaker is also available in a moisture proof version, an especially prepared chassis and matching transformer.
Please order "FI-100" for this option.

- Special speaker colours are available on request.
- Two mounting springs ease assembling a great deal and ensure tension force for secure hold. Through this these loudspeakers adjust to any usual wall- and ceiling thicknesses.

*



The necessary hole cut should have a Ø of 90 mm ± 3 mm.

Technical data	CSQ-106 W
Load rating (Music power)	6 W (10W)
Transformer tappings at 100 V	6 - 4 - 2 W
Frequency range	110 - 20000 Hz
Sound pressure at 1W/1m	87 dB
Sound pressure SPL Pmax/1m	95 dB @0.3kHz
Angle of refl. beam (-6dB) 1/4/8 kHz	180°/ 100°/ 180°
Speaker Ø (mm) and Impedance	64/ 8 ohms
Dimensions HxWxD (mm); Install. depth (max.)	103 x 103 x 47; 72 mm
Weight (g); Colour	500 g, white

Model designation

Spot-Design Ceiling-Speaker, white **CSQ-106W**
with 100 V transformer, 6 W

3 power classes
4 W – 6 W – 10 W
sine



square

square

3 power classes
10 W – 20 W – 30 W
sine



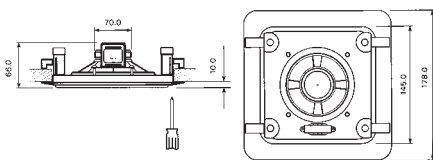
Description

This speaker has the most modern and easy fitting method, a quick fastening clasp. It sets new standards in security and easiness. Four screws to mount or dismount and lifting off the grille (with a screwdriver) is all that is necessary.

The installation frame is made of high-quality plastic, the grille of coated steel. The construction is burgle proof and impact resistant.

- Modern, discreet design with a rim of approx. 2 mm.
- A high-quality wide band 5 1/4" chassis is used with an integrated high tone cone.

Technical data	SC-104	SC-106	SC-110
Load rating (Music power)	4 (6) W	6 (15) W	10 (15) W
Transformer tappings at 100 V	4 – 2 – 1 W	6 – 3 – 1.5 W	10 – 5 – 2.5 W
Frequency range	75 – 18,500 Hz	75 – 20000 Hz	75 – 20000 Hz
Sound pressure at 1W/1m	91.5 dB	91.5 dB	91.5 dB
Sound pressure SPL Pmax/1m	98 dB @3kHz	100 dB @3kHz	102 dB @3kHz
Angle of refl. beam (-6dB) 1/4/8 kHz	180°/ 100°/ 45°	180°/ 120°/ 70°	180°/ 110°/ 60°
Speaker Ø (mm) and Impedance	130/ 8 ohms	130/ 8 ohms	130/ 8 ohms
Side dimension, Install. depth	178 (60) mm	178 (60) mm	178 (60) mm
Weight (kg), Colour	appr. 1.1 white	appr. 1.2 white	appr. 1.3 white



The square cut for the installation should have a side length of 145 mm.

- Ceiling Speaker, 4 W** with 100 V transformer, white **SC-104**
Ceiling Speaker, 6 W with 100 V transformer, white **SC-106**
Ceiling Speaker, 10 W with 100 V transformer, white **SC-110**



Installation case made of soaked chipboard, fits the speakers SC-104/106/110 for installation in ceilings or walls made of bricks, cement etc.

Dimensions in mm: 193 (H) x 193 (B) x 84 (T)

Installation Case **EZ-110**
for SC-104/106/110

Description

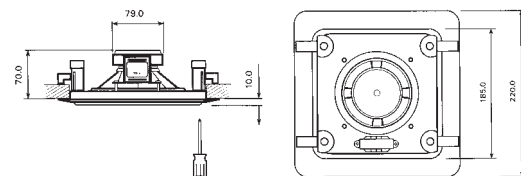
The models SC-110 C and SC-120 C are identical to the model described, on the opposite side.

This model series has a very high-quality 2-way coaxial chassis. A separate tweeter is integrated into the very wide band lined basic membrane. This coaxial speaker case ensures professional sound pressure and sound reproduction. Maximum capacity is 40 W.



with professional 2-way coaxial chassis

Technical data	SC-110 C	SC-120 C	SC-130 C
Load rating (Music power)	10 W (40 W)	20 W (40 W)	30 W (40 W)
Transformer tappings at 100 V	10 – 5 – 2.5 W	20 – 10 – 5 W	30 – 15 – 7.5 W
Frequency range	45 – 20000 Hz	35 – 20000 Hz	35 – 20000 Hz
Sound pressure at 1W/1m	92 dB	92 dB	92 dB
Sound pressure SPL Pmax/1m	104 dB @6kHz	106 dB @6kHz	108 dB @6kHz
Angle of refl. beam (-6dB) 1/4/8 kHz	180°/ 80°/ 110°	180°/ 80°/ 110°	180°/ 80°/ 110°
Speaker Ø (mm) and Impedance	165/ 8 ohms, 2-way coaxial chassis		
Side dimension, Install. depth	220 (70) mm	220 (70) mm	220 (70) mm
Weight (kg), Colour	appr. 1.8 white	appr. 1.9 white	appr. 2.1 white



The square cut for the installation should have a side length of 185 mm.

- Ceiling Speaker, 10 W** 100 V, white, coaxial chassis **SC-110 C**
Ceiling Speaker, 20 W 100 V, white, coaxial chassis **SC-120 C**
Ceiling Speaker, 30 W 100 V, white, coaxial chassis **SC-130 C**



Installation case made of soaked chipboard, fits the speakers SC-110 C and SC-120 C for installation in ceilings or walls made of bricks, cement etc.

Dimensions in mm: 233 (H) x 233 (B) x 100 (T)

Installation Case **EZ-120**
for SC-110/120/130

40 W Adaptations
10 – 20 – 40 W

Including tilt "eyeball-tweeter" system



Description

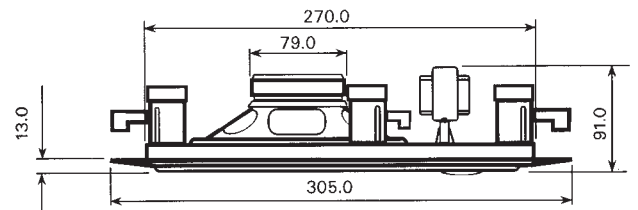
This 2-way fitted speaker with a very wide band woofer chassis and the new "eyeball" tweeter (patent) is of professional Hi-Fi quality. The "eyeball" tweeter and grille can be tilted in every direction, by which the height emission can be driven in every direction.

Please consider the following features:

- Very practical and secure mounting with 6 quick-tightening clasps (burgle proof).
- Very attractive design (rim height only 3.5 mm), frame made of high-quality impact and scratch resistant plastic with a grille made of burn-in painted steel.
- High-quality 100V matching transformer for 1/1-1/2-1/3 performance, also lower ohm connection possible.
- The 2-way fitted speaker SC-400 WT is suitable for high rooms with a medium disturbance level.

- The installation case EZ-400 greatly improves the resonance.

*



Necessary hole cut: 275 mm x 190 mm, ± 5 mm.



Installation case made of soaked chipboard for fitting the SC-400 WT into ceilings, brick walls, concrete, etc.

Dimensions: 315 (H) x 233 (B) x 86 (T) in mm

Installation Case for SC-400 WT . **EZ-400**

Technical data	SC-400 WT
Load rating (Music power)	40 W (60 W)
Transformer tapings at 100 V	40 W – 20 W – 10 W
Frequency range	25 – 20000 Hz
Sound pressure at 1W/1m	87.5 dB
Sound pressure SPL Pmax/1m	104 dB @1.2kHz
Angle of refl. beam (-6dB) 1/4/8 kHz	180°/ 90°/ 180°
Speaker	Woofer Ø 165 mm (8 ohms) + 1 Tweeter
Dimensions B x L x H	220 mm x 305 mm x 91 mm
Weight, Colour, Material	appr. 2.1 kg, white, plastic steel grille

2-way Mounting Speaker, SC-400 WT
white, with 100 V transformer, with „eyeball-tweeter“

CEILING SPEAKER

RCS

2 power classes
6 W – 10 W
 sine
 with wide band chassis

2 power classes
10 W – 20 W
 sine
 with coaxial chassis



Description

The ceiling and wall construction speakers of the SCS series present themselves in a new, responding optic. The form adapts outstandingly to almost all premises.

Particularly in buildings, in which a suspended ceiling is not intended, the complete metal speaker is the solution. Of course it can be used due to its method of construction also as wall speakers.

If desired, it is available in all RAL colours.

Please consider the following features:

- Speaker in complete metal execution.
- Wide-band chassis for excellent speech and music reproduction.
- Simple assembling.
- Optionally in humid room version available.

*

Technical data	SCS-106	SCS-110
Load rating (Music power)	6 (15) W	10 (15) W
Transformer tapplings at 100 V	6 – 3 – 1.5 W	10 – 5 – 2.5 W
Frequency range	155 – 20000 Hz	155 – 20000 Hz
Sound pressure at 1W/1m	95.5 dB	95.5 dB
Sound pressure SPL Pmax/1m	105 dB @8kHz	106 dB @1.2kHz
Angle of refl. beam (-6dB) 1/4/8 kHz	100°/ 90°/ 25°	100°/ 90°/ 30°
Speaker Ø (mm) / Impedance	165/ 8 ohms	165/ 8 ohms
Dimensions Ø	266 mm	266 mm
Weight	appr. 1.3 kg	appr. 1.3 kg

Ceiling Speaker, 6 W **SCS-106**
 with 100 V transformer, white

Ceiling Speaker, 10 W **SCS-110**
 with 100 V transformer, white

Description

The models SCS-110C and SCS-120C correspond to the accompanying model series in design, mounting method and design.

They are equipped with a high-quality 2-way coaxial chassis that in reference to sound pressure and fidelity fulfills also professional requirements.

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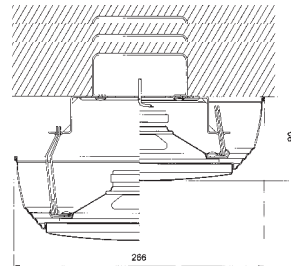


Figure shows 2-way-coaxial-chassis for the models SCS-110C and SCS-120C.

Technical data	SCS-110C	SCS-120C
Load rating (Music power)	10 (40) W	20 (40) W
Transformer tapplings at 100 V	10 – 5 – 2.5 W	20 – 10 – 5 W
Frequency range	170 – 17,500 Hz	160 – 20000 Hz
Sound pressure at 1W/1m	92 dB	92 dB
Sound pressure SPL Pmax/1m	105 dB @0.3kHz	109 dB @0.3kHz
Angle of refl. beam (-6dB) 1/4/8 kHz	110°/ 60°/ 44°	100°/ 55°/ 50°
Speaker Ø (mm) / Impedance	165/ 8 ohms	165/ 8 ohms
Dimensions Ø	266 mm	266 mm
Weight	appr. 1.5 kg	appr. 1.5 kg

Ceiling Speaker, 10 W **SCS-110C**
 with 100 V transformer, white

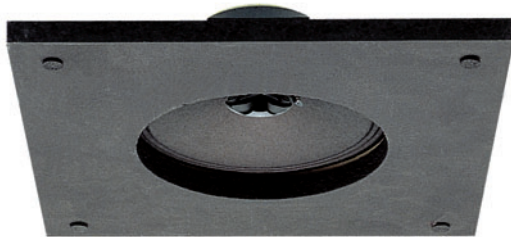
Ceiling Speaker, 20 W **SCS-120C**
 with 100 V transformer, white

3 power classes
4 W – 6 W – 10 W
sine



Sound Panel Speaker, 4 W, with 100 V transformer **SW-004**
Sound Panel Speaker, 6 W, with 100 V transformer **SW-006**
Sound Panel Speaker, 10 W, with 100 V transformer **SW-010**

3 power classes
4 W – 6 W – 10 W
sine



Sound Panel Speaker, 4 W, with 100 V transformer **SW-104**
Sound Panel Speaker, 6 W, with 100 V transformer **SW-106**
Sound Panel Speaker, 10 W, with 100 V transformer **SW-110**



3 power classes
10 W – 20 W – 30 W
sine



Sound Panel Speaker, 10 W, with 100 V transformer **SW-210 C**
Sound Panel Speaker, 20 W, with 100 V transformer **SW-220 C**
Sound Panel Speaker, 30 W, with 100 V transformer **SW-230 C**

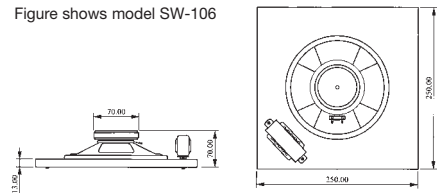
Description

These sound panel speakers are made of 13 mm, totally blackened chipboard on which the speaker chassis and the 100 V matching transformer are fixed.

Please consider the following features:

- The models SW-004/006/010 have a “twin cone” chassis with a diameter of 130 mm, the models SW-104/106/110 with a diameter of 165 mm.
- A high-quality 2-way coaxial case with a very wide banded basic membrane, into which a separate tweeter is fitted, is used for the models SW-210 C, SW-220 C and SW-230 C.
- The sound panel has 4 rubber naps on the bottom side. This enables for instance a vibration- or boom disturbance-free application on ceiling grills.

Figure shows model SW-106



Technical data	SW-004	SW-006	SW-010
Load rating (Music power)	4 (15) W	6 (15) W	10 (15) W
Transformer tappings at 100 V	4 – 2 – 1 W	6 – 3 – 1.5 W	10 – 5 – 2.5 W
Frequency range	110 – 16000 Hz	110 – 17000 Hz	90 – 20000 Hz
Sound pressure at 1W/1m	94 dB	94 dB	94 dB
Sound pressure SPL Pmax/1m	101 dB @4kHz	104 dB @4kHz	105 dB @4kHz
Angle of refl. beam (-6dB) 1/4/8 kHz	180°/ 80°/ 50°	180°/ 80°/ 50°	180°/ 80°/ 50°
Speaker Ø (mm) / Impedance	119/ 8 ohms	119/ 8 ohms	119/ 8 ohms
Side dimensions, overall height	200 – 60 mm	200 – 60 mm	200 – 60 mm
Weight (kg), Colour	1.1 – black	1.1 – black	1.1 – black

	SW-104	SW-106	SW-110
Load rating (Music power)	4 (15) W	6 (15) W	10 (15) W
Transformer tappings at 100 V	4 – 2 – 1 W	6 – 3 – 1.5 W	10 – 5 – 2.5 W
Frequency range	90 – 20000 Hz	90 – 20000 Hz	90 – 20000 Hz
Sound pressure at 1W/1m	94.5 dB	95 dB	95 dB
Sound pressure SPL Pmax/1m	102dB@1.2kHz	104dB@1.2kHz	106dB@1.2kHz
Angle of refl. beam (-6dB) 1/4/8 kHz	180°/ 70°/ 50°	180°/ 70°/ 50°	180°/ 70°/ 50°
Speaker Ø (mm) / Impedance	165/ 8 ohms	165/ 8 ohms	165/ 8 ohms
Side dimensions, overall height	250 – 70 mm	250 – 70 mm	250 – 70 mm
Weight (kg), Colour	1.2 – black	1.2 – black	1.3 – black

	SW-210 C	SW-220 C	SW-230 C
Load rating (Music power)	10 (40) W	20 (40) W	30 (40) W
Transformer tappings at 100 V	10 – 5 – 2.5 W	20 – 10 – 5 W	30 – 15 – 7.5 W
Frequency range	45 – 20000 Hz	35 – 20000 Hz	35 – 20000 Hz
Sound pressure at 1W/1m	92 dB	92 dB	92.5 dB
Sound pressure SPL Pmax/1m	104 dB @6kHz	106 dB @6kHz	108 dB @6kHz
Angle of refl. beam (-6dB) 1/4/8 kHz	180°/ 80°/ 110°	180°/ 80°/ 110°	180°/ 80°/ 110°
Speaker Ø (mm) / Impedance	165/ 8 ohms, 2-way coaxial chassis		
Side dimensions, overall height	250 – 83 mm	250 – 83 mm	250 – 83 mm
Weight (kg), Colour	1.7 – black	1.9 – black	2.1 – black

15 W Adaptations
15 – 7.5 – 4 W



20 W Adaptations
20 – 10 – 5 W



Description

These high-quality sound projectors have been developed according to the latest knowledge in plastic technology. The sound pressure decreases nearly to the level of horn speakers. They have a high wide band, such as dynamic speakers.

Both models (CSP-115 and CSP-220) have a built-in wide range „twin-cone“ speaker chassis. Each of the integrated transformer tapings 100 V, 70 V and also 50 V have respectively three power levels.

An excellent sound characteristic and the dynamic of these sound projectors gives best results for speech articulation as well as for a very good music performance.

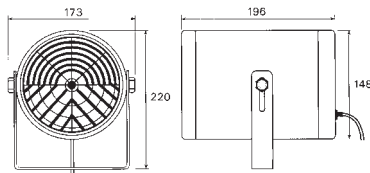
It is possible to rig up a number of these sound projectors, on top of each other, by use of similar phasing of the signal connection. This effects a narrowing of the vertical transmission angle at 1/4/8 kHz, which has the same effect as a column speaker.

Of course the CSP-115 and CSP-220 are both able to be low-impedance connected.

Please consider the following features:

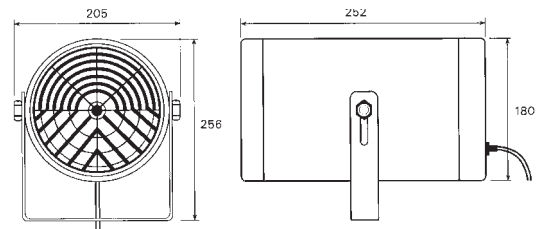
- Both models are established in an equal design, scratch-resistant and impact resistant plastic material.
- The colour of the case is white, similar to RAL 9010, the folding mounting bar is creme white, similar to RAL 9001.
- The form and interior equipment of the sound projectors is configured, so that the favoured polar pattern of the sound radiation is assured.
- The required connection or impedance mode is done with clamp insulated wires (well marked). The cable is led out at the rear side of the unit.

*



Technical data	CSP-115
Load rating (Music power)	15 W (25 W)
Transformer tapings at 100 V	15 – 7.5 – 4 W (also 70 V and 50 V)
Frequency range	150 – 20000 Hz
SPL Pmax/1m – 1 W/1 m	106 dB – 94 dB
Speaker Ø and Nominal impedance	5.5", 8 ohms
Dimensions (without bracket)	148 x 196 mm
Weight, Colour	appr. 1.3 kg, white, similar RAL 9010

Sound Projector, 15 W with 100 V transformer. **CSP-115**



Technical data	CSP-220
Load rating (Music power)	20 W (35 W)
Transformer tapings at 100 V	20 – 10 – 5 W (also 70 V and 50 V)
Frequency range	100 – 20000 Hz
SPL Pmax/1m – 1 W/1 m	109 dB – 95 dB
Speaker Ø and Nominal impedance	6.5", 8 ohms
Dimensions (without bracket)	180 x 252 mm
Weight, Colour	appr. 2.2 kg, white, similar RAL 9010

Sound Projector, 20 W with 100 V transformer **CSP-220**

15 W Adaptations
15 – 7.5 – 4 W



Also for outdoor mounting

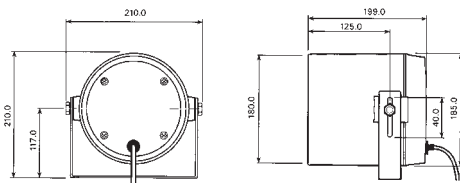
Description

These SOUND PROJECTORS feature almost the sound pressure of a horn speaker but have a wide-band such as a dynamic speaker system. Both of them (CS-015 and CS-030) have installed a top-quality "twin-cone"-speaker chassis and a high-quality matching transformer, which are specially equipped for outdoor use.

That is why it is also ideally applicable for pretentious and professional voice and music reproduction outside, e.g. outdoor swimming pools, sports fields etc.

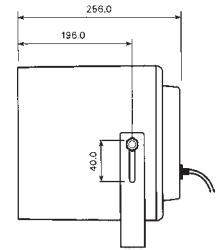
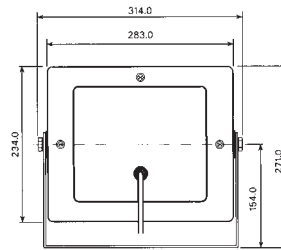
It is possible to rig up a number of these sound projectors, on top of each other, by using similar phasing of the signal connection. This effects a narrowing of the vertical transmission angle at 1/4/8 kHz, which has the same effect as a column speaker.

Of course the CS-015 and CS-030 are also able to be connected at low-impedance. It is only necessary to connect the built-in matching transformer to the appropriate wire bond.



Technical data	CS-015
Load rating (Music power)	15 W (25 W)
Transformer tappings at 100 V	15 – 7.5 – 4 W
Frequency range	125 – 16000 Hz
SPL Pmax/1m – 1 W/1 m	109 dB – 96 dB
Speaker Ø (mm) and Impedance	5 1/4", 8 ohms
Dimensions (without bracket)	Ø 178 mm x 200 mm (L)
Weight, Colour	appr. 1.6 kg, cream white

Sound Projector, 15 W with 100 V transformer **CS-015**



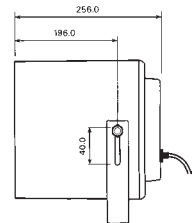
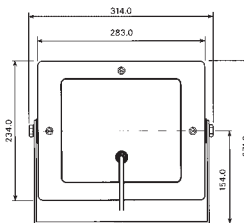
30 W Adaptations
30 – 15 – 7.5 W

Also for outdoor mounting

Please consider the following features:

- Both models have a very attractive design and are made of a shock- and scratch-resistant plastic.
- The colour is creme white, similar to RAL 9001.
- The impedance matching is done very easily by clamping on the appropriate leads of the connection multi-core. The leads are marked appropriately and cannot be confounded.
- By simply changing the plug connections on the matching transformer, the speaker can also be used at low-impedance (8 ohms).

*



Technical data	CS-030
Load rating (Music power)	30 W (40 W)
Transformer tappings at 100 V	30 – 15 – 7.5 W
Frequency range	100 – 16000 Hz
SPL Pmax/1m – 1 W/1 m	114 dB – 99 dB
Speaker Ø (mm) and Impedance	5 1/4", 8 ohms
Dimensions (without bracket) HxWxD	234 x 283 x 256 mm
Weight, Colour	appr. 3.7 kg, cream white

Sound Projector, 30 W with 100 V transformer **CS-030**

BALL SPEAKER



2 power classes
10 W – 20 W
sine



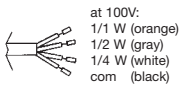
2 power classes
20 W – 30 W
sine



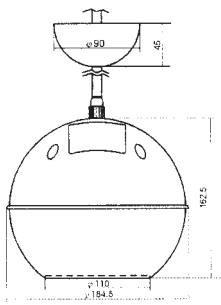
Description

The ball speakers KL-510/520 are made of high-quality impact and scratch resistant plastic and are splash water proof. Its surface can be painted in all colours. The ball speakers are very efficient where low hanging speakers are required, for example rooms with high ceilings.

Please consider the following features:



- Perfect playback quality is ensured by a wide banded and powerful speaker case.
- The high-quality matching transformer is designed for 100 V and 70 V. It can also be connected to 1/1 – 1/2 – 1/4 performance and low-impedance (8 ohms), the cable conductors are marked.
- The installation is burgle proof. The speaker suspension can be adjusted up to 5m.



Supplied with: connection cable 5m, 1 ceiling canopy.

Technical data	KL-510	KL-520
Load rating (Music power)	10 W (20 W)	20 W (40 W)
Transformer tappings at 100 V	10 – 5 – 2.5 W	20 – 10 – 5 W
Frequency range	140 – 14500 Hz	140 – 14500 Hz
Sound pressure at 1W/1m	95 dB	95.5 dB
Sound pressure SPL Pmax/1m	106 dB @1.5kHz	109 dB @1.5kHz
Angle of refl. beam (-6dB) 1/4/8 kHz	180°/ 50°/ 30°	180°/ 50°/ 30°
Speaker Ø (mm) and Impedance	125/ 8 ohms	125/ 8 ohms
Dimensions Ø x H (mm)	184.5 x 162.5	184.5 x 162.5
Weight, Colour	appr. 1.7 kg, white	appr. 1.8 kg, white

Ball Speaker, 10 W **KL-510**
white, with 100 v transformer

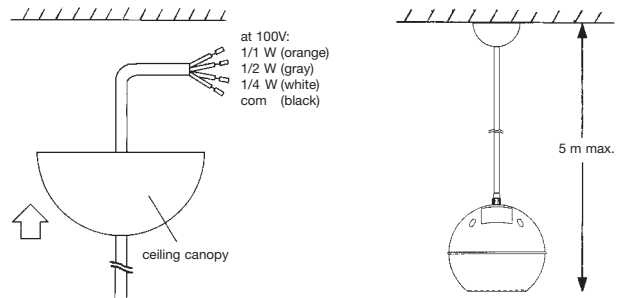
Ball Speaker, 20 W **KL-520**
white, with 100 V transformer

Description

The model KL-620/630 is made of impact and scratch resistant, white plastic in a very attractive but descreet design. Its surface can be painted in all colours. This attractive speaker is suitable for high ceilings where low hanging speakers are required.

Please consider the following features:

- A very wide banded and powerful “twin cone” case allows superb reproduction quality.
- The fitted high-quality 100 V matching transformer prevents every loss of perfect hearing quality.
- Burgle proof installation and up to 5 m adjustable suspension.



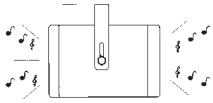
Supplied with: connection cable 5 m, ceiling canopy.

Technical data	KL-620	KL-630
Load rating (Music power)	20 W (30 W)	30 W (40 W)
Transformer tappings at 100 V	20 – 10 – 5 W	30 – 15 – 7.5 W
Frequency range	120 – 20000 Hz	120 – 20000 Hz
Sound pressure at 1W/1m	97 dB	97,5 dB
Sound pressure SPL Pmax/1m	111 dB @2kHz	113 dB @1.2kHz
Angle of refl. beam (-6dB) 1/4/8 kHz	130°/ 50°/ 30°	130°/ 50°/ 30°
Speaker Ø (mm) and impedance	165/ 8 ohms	165/ 8 ohms
Dimensions Ø x H (mm)	265 x 232.5	265 x 232.5
Weight, Colour	appr. 2.2 kg, white	appr. 2.2 kg, white

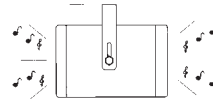
Ball Speaker, 20 W **KL-620**
white, with 100 V transformer

Ball Speaker, 30 W **KL-630**
white, with 100 V transformer

15 W Adaptations
15 – 7.5 – 4 W



20 W Adaptations
20 – 10 – 5 W



Description

These speakers are used, where announcements or music transmissions will be radiated at the same time in opposite directions (e.g. stations, corridors, schools, hospitals etc.). It is possible to install the speakers to the wall and also to the ceiling.

These double-direction speakers were developed in the design of a sound projector and have an outstanding sound pressure.

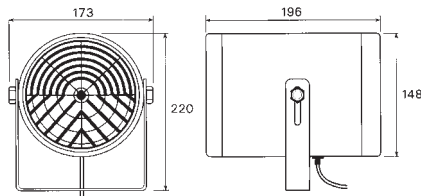
Using a very wide-band speaker chassis and an outstanding matching transformer, these double direction speakers are both perfect for language reproduction as well as for a very good music performance.

Please consider the following features:

- Both models are developed in the same design and manufactured from scratch and impact resistant plastic.

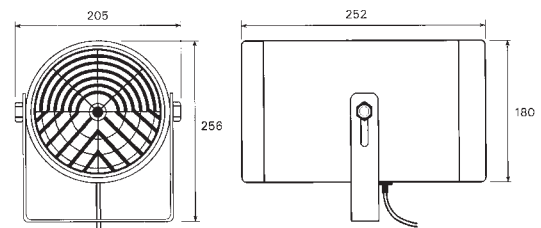
- The matching transformer is installed in the housing, to be attached to 100 V and in addition to 50 V and 70 V. The appropriate multicore cable (well marked) is led out at the bottom side of the speaker.
- The housing colour is white (similar RAL 9010), the assembly handle (hinged) is creme white (similar RAL 9001). The housing can be painted in all colours.
- With the help of the assembly handle contained in the scope of supply, the speaker can be installed in any direction.

*



Technical data	CSP-115 D
Load rating (Music power)	15 W (25 W)
Transformer tappings at 100 V	15 – 7.5 – 4 W (also 70 V and 50 V)
Frequency range	150 – 20000 Hz
SPL Pmax/1m – 1W/1m	106 – 96 dB
Speaker Ø and Nominal impedance	5.5", 8 ohms (2x)
Dimensions (without bracket)	148 x 196 mm
Weight, Colour	appr. 2.3 kg, white, similar RAL 9010

Double-Direction Speaker, 15 W CSP-115 D
with 100 V transformer

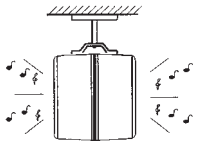


Technical data	CSP-220 D
Load rating (Music power)	20 W (35 W)
Transformer tappings at 100 V	20 – 10 – 5 W (also 70 V and 50 V)
Frequency range	100 – 20000 Hz
SPL Pmax/1m – 1W/1m	109 – 96 dB
Speaker Ø and Nominal impedance	6.5", 8 ohms (2x)
Dimensions (without bracket)	180 x 252 mm
Weight, Colour	appr. 2.8 kg, white, similar RAL 9010

Double-Direction Speaker, 20 W CSP-220 D
with 100 V transformer

DOUBLE-DIRECTION SPEAKERS

R.C.S



15 W	Adaptations 15 – 7.5 – 4 W
30 W	Adaptations 30 – 15 – 7.5 W
2-way coaxial chassis	

Supplied with mounting bracket (for pan and tilt)



Description

Where announcements are required simultaneously in opposite directions (railway stations, corridors, passages, schools etc.), it is of advantage to use such double direction-speakers.

The speakers can be mounted vertically to the wall or horizontally on the ceiling. The body of the speaker cabinet is made of high-quality impact and scratch resistant plastic in a very modern but attractive design.

Excellent speech and music reproduction is achieved by very wide high performance twin cone speakers, with high-quality matching transformers.

Please consider the following features:

- The cabinet has enough space for applying relays or other electronic devices.
- The housing is made of impact and scratch resistant plastic.
- A complete mounting bracket, which allows a pan, tilt and thief-proof mounting.

Technical data	BC-215
Load rating	15 W (2 x 7.5 W), max. 25 W low-imp.
Transformer tapplings at 100 V	15 – 7.5 – 4 W
Frequency range	80 – 15000 Hz
SPL Pmax/1m – 1W/1m	102 – 93 dB (2x)
Speaker (twin cone)	165/8 ohms (2x)
Dimensions (H x W x D)	250 x 200 x 175 mm
Weight	appr. 2.9 kg
Colour corpus/grille, Material	alpine/white – plastic/steel

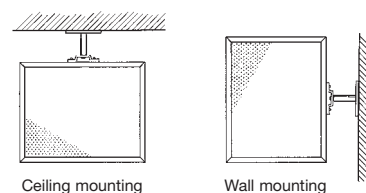
Double-Direction Speaker, 15 W (2 x 7.5 W), 100 V BC-215



The model BC-230 C is exactly the same in design and mounting as the speaker described on the left side of this page.

This model (BC-230C) includes 2 high performance Hi-Fi 2-way-coaxial speakers. A separate tweeter is integrated into the basis diaphragm. This coaxial speaker is also suitable for professional performance in sound pressure and sound quality.

The matching transformer is in accordance to the highest quality standard.

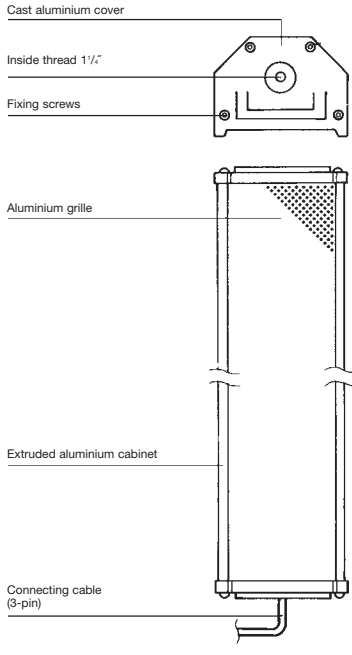


Technical data	BC-230 C
Load rating (Music power)	30 W (2 x 15 W), max. 80 W low-imp.
Transformer tapplings at 100 V	30 W – 15 W – 7.5 W
Frequency range	50 – 20000 Hz
SPL Pmax/1m – 1W/1m	104 – 91 dB (2x)
Speaker, 2-way coaxial Ø mm, Impedance	165/8 ohms with integrated tweeter (2x)
Dimensions (H x W x D)	250 x 200 x 175 mm
Weight	appr. 3.9 kg
Colour corpus/grille, Material	alpine/white – plastic/steel

Double-Direction Speaker, 30 W (2 x 15 W), 100 V BC-230 C
with 2-way coaxial chassis, white



The lobe-shaped sound dispersion characteristic enables excellent coverage of large areas with a relatively small number of column speakers.



Floor Stand



Stable, very robust floor stand enables the set up of the LA speaker series. The stand is made of airplane aluminum, weighs only 3.2 kg and is stepless variable in height by 110 - 200 cm. The centric maximum carrying capacity amounts to approx. 60 kg.

Floor Stand **LST-101**

For indoor and outdoor mounting



LA-160 (60/90 W)

LA-140 (40/60 W)

LA-130 (30/45 W)

LA-120 (20/30 W)

Description

This column speakers series is very strong and sturdily constructed. They are made of extruded aluminium with cast aluminium top and bottom covers.

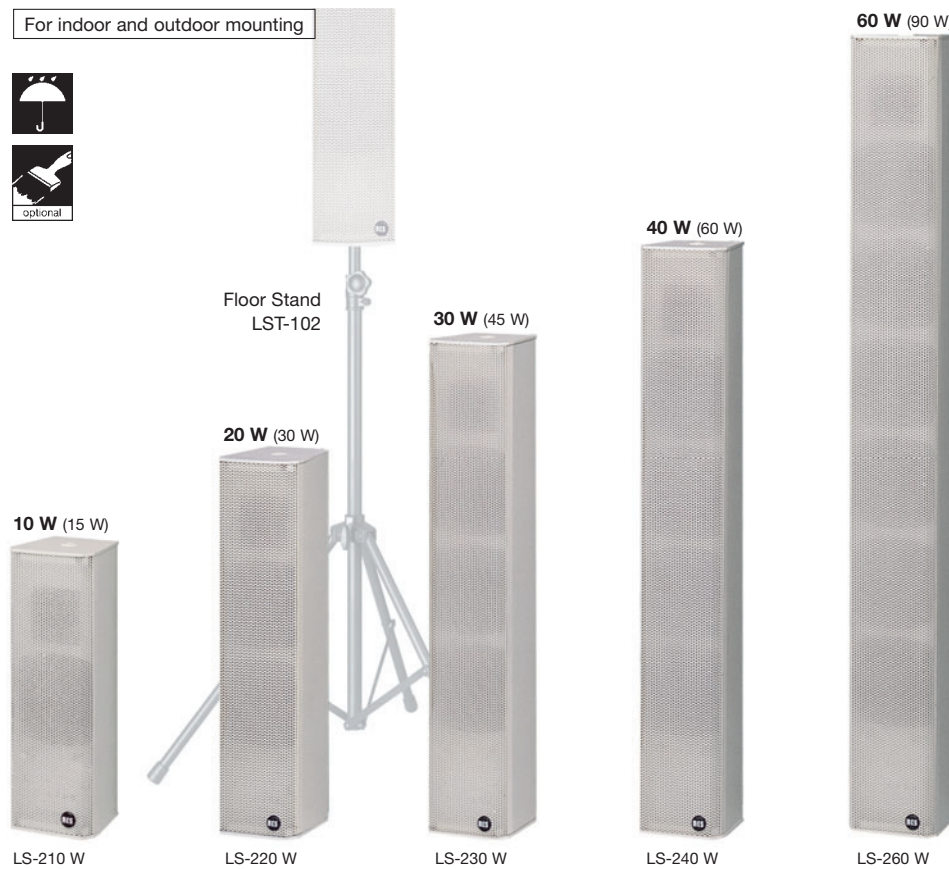
The aluminium grille is stove enamelled. The columns are weather- and dust-proof and are very suitable for outdoor use, e. g. open-air theatres, stadiums and public parks.

- All column speakers in this series are equipped with matching transformers for half and full power use.
- Supplied as standard with each of these speakers. Is complete swivel and tilt wall mounting kit.
- Because of their trapeze-shape, these speakers are very space saving and also suitable for corner installment.
- The casing's cross-section is of a trapezoid form, the column speakers fit very well and are space saving in room corners, etc.

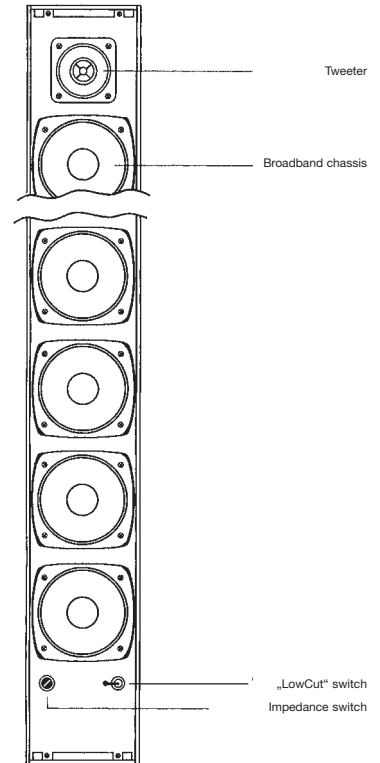
Technical data	LA-120	LA-130	LA-140	LA-160
Load rating (Music power)	20 W (30 W)	30 W (45 W)	40 W (60 W)	60 W (90 W)
Transformer tappings at 100V	10 W – 20 W	15 W – 30 W	20 W – 40 W	30 W – 60 W
Frequency range (Hz)	60 – 15000 Hz	60 – 15000 Hz	60 – 15000 Hz	60 – 15000 Hz
Sound pressure SPL Pmax/1m	110 dB	113 dB	116 dB	118 dB
Speaker, installed	2 units	3 units	4 units	6 units
Dimensions, HxWxD (mm)	330 x 147 x 110	385 x 147 x 110	575 x 147 x 110	830 x 147 x 110
Weight (kg)	appr. 3.5	appr. 4.5	5.5	6.0
Colour	silver met./black	silver met./black	silver met./black	silver met./black

Column Speakers, 20 W (100 V), aluminium **LA-120**
Column Speakers, 30 W (100 V), aluminium **LA-130**
Column Speakers, 40 W (100 V), aluminium **LA-140**
Column Speakers, 60 W (100 V), aluminium **LA-160**

TWO-WAY COLUMN SPEAKERS



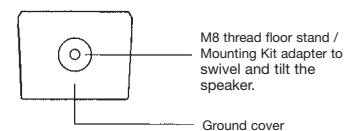
2-way system, 100V & low-impedance



Description

The series LS-200 column speakers feature the "two-way system" and are made of stable, stove-enamelled steel sheet, the two covers of high firm plastics. This modern, very wide-range, high-performance speaker combined with the tweeter provides excellent speech and music reproduction.

- All column speakers in this series are equipped with 100 V-matching-transformer and a turn switch for 1/1 – 1/2 – 1/4 and low-impedance power use.
- The „Low-cut switch" on the front side enables to filter out definite low frequencies, which has the effect of an excellent speech transmission.
- The grill is easily removed. It is easy to handle the impedance- and „low-cut" selector switches. The speaker can be either used in- or outdoors. The scope of delivery contains a mounting set, for pan and tilt.

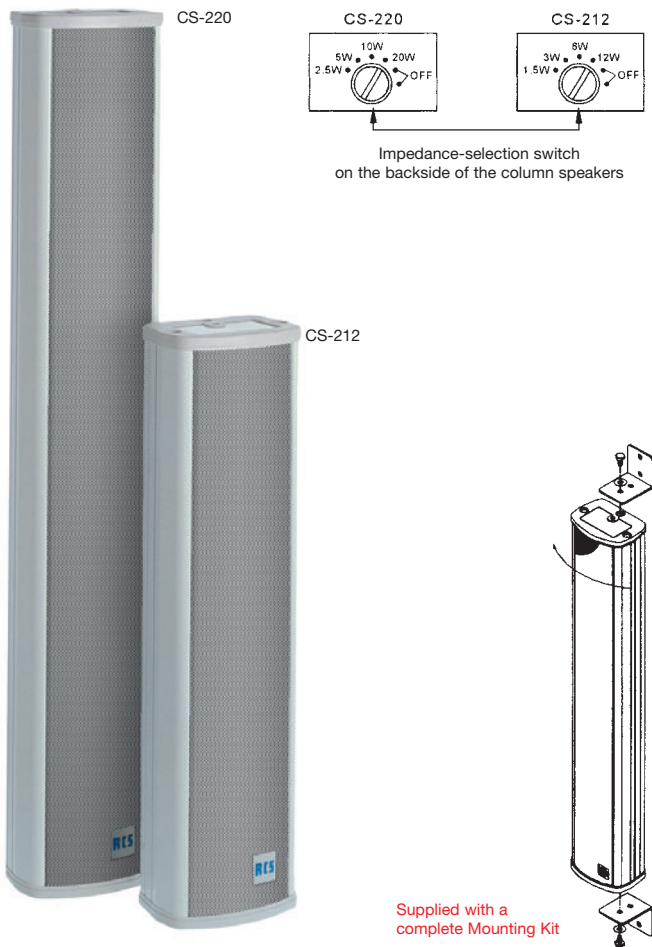


This very robust base plate is in the scope of LST-102 supply. It replaces the lid on the speaker column.

Technical data	LS-210 W	LS-220 W	LS-230 W	LS-240 W	LS-260 W
Load rating (Music power)	10 W (15 W)	20 W (30 W)	30 W (45 W)	40 W (60 W)	60 W (90 W)
Tappings at 100V (Impedance-selector switch)	10-4-1,5 W - 8 ohms	20-10-5W - 8 ohms	30-15-7,5W - 8 ohms	40-20-10W - 8 ohms	60-40-30W - 8 ohms
Frequency range and „Low-Cut“-switch	60 -20000 (400) Hz	60-20000 (400) Hz	60-20000 (400) Hz	60-20000 (300) Hz	60-20000 (200) Hz
Sound pressure 1 W/1 m – SPL Pmax/1m	88 –101 dB	91 – 105 dB	92 – 107 dB	93 – 109 dB	94 – 112 dB
Speakers, installed	1 unit + 1 Tweeter	2 units + 1 Tweeter	3 units + 1 Tweeter	4 units + 1 Tweeter	6 units + 1 Tweeter
Dimensions (HxWxD)	260 x 90 x 85 mm	360 x 90 x 85 mm	470 x 90 x 85 mm	560 x 90 x 85 mm	760 x 90 x 85 mm
Weight	appr. 2.0 kg	appr. 2.5 kg	appr. 3.5 kg	appr. 4.5 kg	appr. 5.5 kg
Colour	grey-white				

Column Speaker, 10/15 W, 2-way, white **LS-210 W**
Column Speaker, 20/30 W, 2-way, white **LS-220 W**
Column Speaker, 30/45 W, 2-way, white **LS-230 W**

Column Speaker, 40/60 W, 2-way, white **LS-240 W**
Column Speaker, 60/90 W, 2-way, white **LS-260 W**
Floor Stand, suitable for LS column series **LST-102**



Supplied with a complete Mounting Kit

Description

These Column Speakers come in a very elegant design, extremely slim, so that they adapt outstandingly to every architecture (e.g. in churches etc.). The housing is of aluminium, the top and bottom of high-quality plastic. The grille is made of steel. The speaker-chassis, along with a high quality audio frequency transformer, ensures very good acoustic pressure and best playback quality.

- On the back of this column speaker is an internal impedance-selector switch.
- The column speaker can be connected with 100 – 70 – 25V respectively with 1/1 – 1/2 – 1/4 performance.

Technical data	CS-212	CS-220
Load rating (Music power)	12 W (24 W)	20 W (40 W)
Tappings (incl. Impedance-selector switch)	12 – 6 – 3 – 1.5 W	20 – 10 – 5 – 2.5 W
Frequency range	100 – 15000 Hz	100 – 15000 Hz
SPL Pmax/1m	103 – 92 dB	106 – 93 dB
Speakers, installed	4 units; Ø 70 mm	7 units; Ø 70 mm
Dimensions (HxWxD)	405 x 106 x 75 mm	620 x 106 x 75 mm
Weight	appr. 2.2 kg	appr. 3.6 kg
Colour, white	similar RAL 9010	similar RAL 9010

- **Column Speaker, 12 W (100 V), Aluminium** **CS-212**
- **Column Speaker, 20 W (100 V), Aluminium** **CS-220**



WIDE HORN SPEAKER

For outdoor and indoor assembly



Description

This speaker combines the weather resistance and the sound pressure of a horn speaker with the wide-band tone quality of a dynamic speaker.

It is ideal for performances outside or in baths etc., when excellent speech and good music quality is required.

The speaker is available both with 100 V transformer and in a low impedance version (8 ohms).

Please consider the following features:

- Broadband chassis for optimal music and speech transmission.
- Weatherproof, therefore suitable for outdoor application.
- Easy to install, tiltable.

Technical data	WSL-015	WSH-115
Load rating	15 W	15 W
Nominal impedance	8 ohms	8 ohms
Transformer tappings at 100V	–	15–10–5–3 W
Frequency range	170 – 25000 Hz	170 – 25000 Hz
Sound pressure at 1W/1m	102 dB	102 dB
Sound pressure SPL Pmax/1m	114 dB @6.5kHz	114 dB @6.5kHz
Angle of refl. beam (-6dB) 1/4/8 kHz	130°/ 35°/ 25°	130°/ 35°/ 25°
Material	high qual. plastic	high qual. plastic
Dimensions (D x T)	220 x 141 mm	220 x 141 mm
Weight, Colour	appr. 1.3 kg – grey	appr. 1.3 kg – grey

- **Wide Horn Speaker 15 W, grey** **WSL-015**
- **Wide Horn Speaker 15 W, grey (100 V)** **WSH-115**



max. 50 W

SPEECH & MUSIC

Description

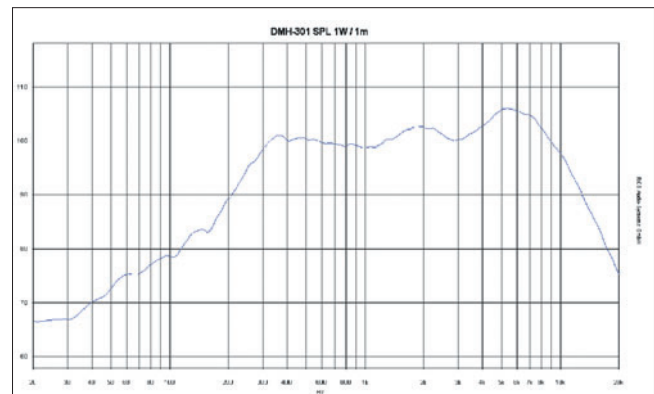
The new music horn speaker DMH-301 combines sound pressure and weatherproof of a horn speaker with the excellent sound of a 2-way system. It is particularly suitable for applications, where apart from speech also a high-quality music performance is required.

The weatherproof construction (protection type IP-66) allows the permanent use outdoors. Therefore the range of application possibilities is greatly extended.

Please consider the following features:

- The housing is made of impact proof ABS-plastic and can be painted in all RAL colours on option.
- 100 V transformers are used, enabling various tapings.
- The music horn contains 2 separate driver units, one for the low and one for the high frequency range.
- The mounting bracket is tiltable – so the music horn speaker is optimally suited for wall- or ceiling mounting.

*



Technical data

DMH-301

Load rating	30 W
Nominal impedance:	8 ohms
Transformer tapings at 100 V	30 W – 15 W – 7.5 W
Frequency range	240 – 11500 Hz
SPL at 1 W/1 m	101 dB
Sound pressure SPL Pmax/1m	120,8 dB @ 5340 Hz
Angle of reflected beam (-6dB, 1/2/8 kHz)	60°/50°/30°
Protection type	IP 66
Dimensions without mounting bar (H x W x D)	330 mm x 412 mm x 445 mm
Weight	approx. 5,7 kg
Material, Colour	ABS plastic, light-grey

10 W



Horn Speaker, with 100 V transformer **DH-110 S**

15 W



Horn Speaker, with 100 V transformer **DH-115 S**

30 W



Horn Speaker, with 100 V transformer **DH-130 S**

Description

Very stable and attractive horn speaker with integrated 100V matching transformer. This series is of high-quality plastic and therefore shock- and scratch-resistant.

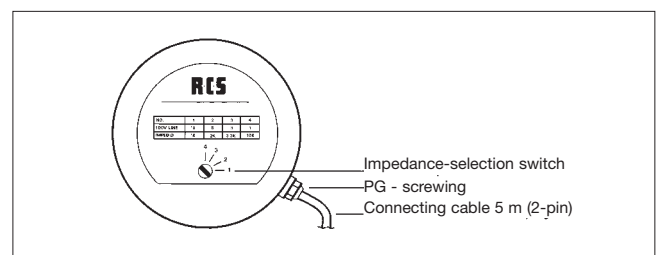
The discreet colouring, a industry-grey tone, blends in very well with the surroundings. Of course it is also possible to paint these horn speakers in all RAL colours.

The mounting bar is completely tiltable and therefore very easy to fit.

Please consider the following features:

- The complete construction of the horn speakers series has the ultimate protection grade, IP 66.
- The 2-pole connection cable (flexible hose line) is led through a waterproof PG-screw joint .
- The 6-step impedance is switchable with a screwdriver at the rear side of the unit.
- The horn speaker system is constructed to give an outstanding high sound pressure and best sound quality reproduction.
The sound pressure is dependent on the different models and the particular impedance change-over.

*



Technical data	DH-110 S	DH-115 S	DH-130 S
Load rating	10 W	15 W	30 W
Nominal impedance	8 ohms	8 ohms	8 ohms
Transformer tapings at 100 V	10 – 5 – 3 – 1 W	15 – 10 – 5 – 3 W	30 – 15 – 10 – 5 – 3 W
SPL at 1 W/ 1m	103 dB	105 dB	107 dB
SPL Pmax/1m	113 dB	117 dB	123 dB
Frequency range	350 – 6000 Hz	300 – 6000 Hz	250 – 6000 Hz
Protection type	IP 66	IP 66	IP 66
Weight	appr. 1.3 kg	appr. 1.5 kg	appr. 2.5 kg
Colour and Material	grey, plastic	grey, plastic	grey, plastic
Dimensions, HxWxL (mm)	150 x 175 x 180	180 x 225 x 230	220 x 290 x 265

HORN SPEAKERS (with 100 V transformer)



Description

Very stable and attractive horn speaker with integrated 100V matching transformer with the grade "HEAVY DUTY". In spite of its stability this speaker series has a very modern and appealing appearance. The back side cover, in which also the matching transformer is installed, is made of scratch- and impact resistant plastic. The horn is made of solid aluminium and the mounting of enamelled steel.

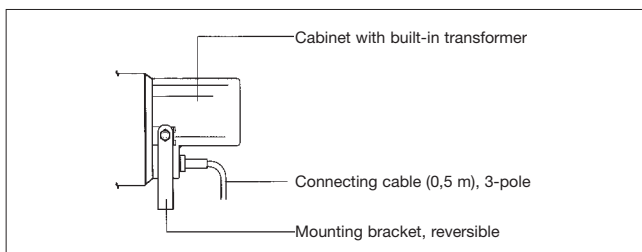
The very technical colouring (dark-metallic and dark-grey) points out the professionalism of this speaker series. Of course it is also possible to paint this equipment in each RAL colour (number) according to the architects requirement.

The mounting bracket is fully tiltable and also very easy to mount.

Please consider the following features:

- The complete construction of this horn speaker series has the highest protection type, IP 66.
- The 3-pole connection cable (flexible hose line) is waterproof.
- Changing the impedance matching is done by clamping on the appropriate labelled cable-leads, onto either 1/1 or 1/2 performance.
- The Horn-Speaker-Systems are constructed for superlative sound pressure and provide an amazingly good frequency response.

*



Technical data	DH-125 HD	DH-135 HD	DH-150 HD
Load rating	25 W	35 W	50 W
Nominal impedance	8 ohms	8 ohms	8 ohms
Transf. tappings at 100 V	25 – 15 W	35 – 25 W	50 – 35 W
SPL at 1 W/1 m	107 dB	109 dB	110 dB
SPL Pmax/1m	124 dB	125 dB	126 dB
Frequency range	200 – 6,500 Hz	200 – 6,500 Hz	200 – 6,500 Hz
Protection type	IP 66	IP 66	IP 66
Weight	appr. 2.5 kg	appr. 3.0 kg	appr. 3.5 kg
Colour and Material	grey, plastic/Alu	grey, plastic/Alu	grey, plastic/Alu
Dimensions (mm)	Ø 245 x L 285	Ø 280 x L 300	Ø 340 x L 360

Heavy Duty

25 W



Horn Speaker, with 100 V transformer **DH-125 HD**

Heavy Duty

35 W



Horn Speaker, with 100 V transformer **DH-135 HD**

Heavy Duty

50 W



Horn Speaker, with 100 V transformer **DH-150 HD**

10 W
15 W
20 W



Horn Speaker, with 100 V transformer. **DH-110 R**
Horn Speaker, with 100 V transformer. **DH-115 R**
Horn Speaker, with 100 V transformer. **DH-120 R**

10 W
15 W



Horn Speaker, with 100 V transformer. **DH-010 F**
Horn Speaker, with 100 V transformer. **DH-015 F**

25 W
35 W



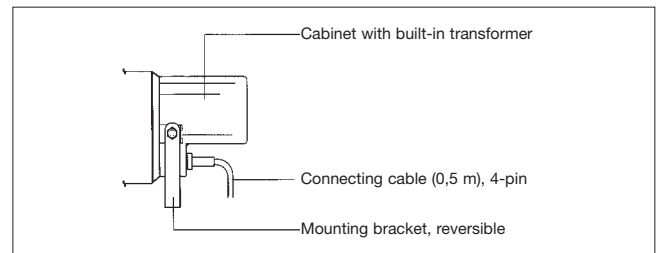
Horn Speaker, with 100 V transformer. **DH-125 F**
Horn Speaker, with 100 V transformer. **DH-135 F**

Description

Very stable and attractive horn speakers with integrated 100V matching transformer. They are made of high-quality plastic and therefore impact- and scratch-resistant. The pleasant colours blend in very well with the surroundings. Of course it is also possible to paint these appliances in each RAL colour (number) according to the architects requirements. The mounting bracket is fully tiltable and also very easy to mount.

Please consider the following features:

- The complete construction of this horn speaker series has the highest protection type, IP 66.
- The 4-pole connection cable (flexible hose line) is waterproof.
- The impedance matching is done by clamping on the appropriate labelled cable-leads.
- The horn system is designed for outstanding sound pressure. The sound pressure is dependent on the different models and the particular adjustment.



Technical data	DH-110 R DH-115 R DH-120 R	DH-010 F DH-015 F	DH-125 F DH-135 F
Load rating	DH-110R: 10 W DH-115R: 15 W DH-120R: 20 W	DH-010F: 10 W DH-015F: 15 W	DH-125F: 25 W DH-135F: 35 W
Nominal impedance	8 ohms	8 ohms	16 ohms
Frequency range	250 – 8000 Hz	350 – 6000 Hz	180 – 8000 Hz
Transf. tappings at 100 V	DH-110R: 10 – 5 – 2.5 W DH-115R: 15 – 10 – 5 W DH-120R: 20 – 15 – 10 W	DH-010F: 110 – 5 – 2.5 W DH-015F: 15 – 10 – 5 W – 3 W	DH-125F: 25 – 15 – 7.5 W DH-135F: 35 – 17.5 – 10 W
SPL at 1 W/1m	DH-110R: 105 dB DH-115R: 106 dB DH-120R: 107 dB	DH-010F: 104 dB DH-015F: 105 dB	DH-125F: 107 dB DH-135F: 108 dB
SPL Pmax/1m	DH-110R: 115 dB DH-115R: 118 dB DH-120R: 121 dB	DH-010F: 113 dB DH-015F: 115 dB	DH-125F: 123 dB DH-135F: 125 dB
Protection type	IP-66	IP-66	IP-66
Weight	appr. 1.6 kg	appr. 1.2 kg	appr. 3.7 kg
Dimensions (mm) HxWxL	210 x 210 x 280	135 x 120 x 190	220 x 400 x 408
Colour and Material	white/gray, plastic	gray, plastic	gray, plastic

HORN SPEAKERS and HORN DRIVER-SYSTEMS **RCS**

Horn Driver-System (with 100 V transformer)

60 W
100 W



Description

Professional horn driver systems with internal 100 V-matching transformer for combination or to screw on (intern. 1 3/8"-thread) at the RCS horn speakers.

Technical data	DS-60T	DS-100T
Load rating	60 W	100 W
Transf. tappings at 100 V	60 – 40 – 20 W	100 – 60 – 40 W
Frequency range	200 – 8000 Hz	160 – 10000 Hz
Sound pressure dB	110 1W/1m	110 1W/1m
Dimensions (mm)	Ø 110, H 160	Ø 110, H 160
Weight	2.4 kg	3.3 kg

Horn Driver-System **DS-60T**
60 W, with 100 V transformer

Horn Driver-System **DS-100T**
100 W, with 100 V transformer

Horn Driver-System (low-impedance)

60 W
100 W



Description

professional horn driver systems for combination or to screw on (intern. 1 3/8"-thread) at the RCS horn speakers.

Technical data	DS-60	DS-100
Load rating	60 W	100 W
Impedance	16 ohms	16 ohms
Frequency range	190 – 8000 Hz	180 – 8000 Hz
Sound pressure dB	106 1W/1m	108 1W/1m
Dimensions (mm)	Ø 114, H 112	Ø 120, H 123
Weight	appr. 2.0 kg	appr. 2.5 kg

Horn Driver-System **DS-60**
60 W, low-impedance

Horn Driver-System **DS-100**
100 W, low-impedance



TH-510



TH-360

Description

The two models shown here have to be combined with the required driver systems. They are operated with a 100V transformer or also low-impedance. With the selection of the appropriate system you will be able to produce a superlative sound pressure, as for racing courses, towers, major events, factories etc. In addition you will receive, conditional upon the big bell-mouth, a superlative sound dispersion characteristic.

Please consider the following features:

- Special sound coverage requirements can be fulfilled, because of the many combination possibilities.
- The stable aluminium metallic-grey, stove enamelled funnels are attached with a rubber protection ring.
- The international commonly used thread fitting (1 3/8") enables the combination with any normally used driver system.
- Excellent, dynamic sound quality, absolutely weather-proof.
- The speakers are supplied with parts (horn, center, bar and accessories for installation) for assembly on location.

*



Technical data	TH-510	TH-360
Horn diameter	51 cm	36 cm
Horn length	39 cm	31 cm
Weight	2.2 kg	1.5 kg
Low frequency cutoff	appr. 170 Hz	appr. 200 Hz
Horn material	aluminium	aluminium
Colour	grey-metallic	grey-metallic
Connecting thread	1 3/8", international	1 3/8", international

Horn Speaker **TH-510**

Horn Speaker **TH-360**

10 W



Description

Very small, stable and practically constructed horn speaker in a modern design. It's an absolutely weather-proof and high-quality plastic horn speaker. These horn speakers are ideal for blind installation in cars, boats etc.

Technical data	DL-010 F
Load rating	10 W (max. 15 W)
Impedance	8 ohms
Protection type	IP 66
Cable connection	Round cable, 50 cm
SPL Pmax/1m	113 dB
Frequency range	350 – 6500 Hz
Colour and Material	grey/darkgrey, plastic
Dimens. (mm) and Weight	H 135 x W 120 x D 190, 1.0kg

Horn Speaker **DL-010 F**

30 W



Description

Voluminous horn speaker with high performance and very good frequency range. The construction is extremely stable and weather-proof. All parts except bar and system are made of plastic material.

Technical data	DL-030 F
Load rating	30 W (max. 40 W)
Impedance	16 ohm
Protection type	IP 66
Cable connection	2-pole, 50 cm
SPL Pmax/1m	125 dB
Frequency range	250 – 6500 Hz
Colour and Material	grey/darkgrey, plastic
Dimens. (mm) and Weight	H 220 x W 400 x D 356, 3.3kg

Horn Speaker **DL-030 F**

10 W



Description

Small round and lightweight but stable horn speaker. It's totally weather-proof and made of stove enamelled metal (aluminium alloy). Good sound pressure and frequency response.

Technical data	DL-010 R
Load rating	10 W (max. 15 W)
Impedance	8 ohms
SPL Pmax/1m	114 dB
Frequency range	250 – 6000 Hz
Colour and Material	silver met., aluminium
Dimens. (mm) and Weight	Ø 210, L 210, 0.9 kg

Horn Speaker **DL-010 R**

15 W



Description

Round, stable horn speaker made of stove enamelled aluminium and steel (silver metallic finish). Completely weather-proof and has a superlative sound pressure and frequency range.

Technical data	DL-015 R
Load rating	15 W (max. 25 W)
Impedance	8 ohms
SPL Pmax/1m	120 dB
Frequency range	250 – 6000 Hz
Colour and Material	silver met., aluminium
Dimens. (mm) and Weight	Ø 250, L 250, 1.1 kg

Horn Speaker **DL-015 R**

30 W



Description

Powerful, round horn speaker made of aluminium with the bar made of steel. Absolutely weather-proof. It provides an excellent frequency response and sound pressure, ideal if high power is required.

Technical data	DL-030 R
Load rating	30 W (max. 40 W)
Impedance	8 ohms
SPL Pmax/1m	124 dB
Frequency range	250 – 6000 Hz
Colour and Material	silver met., aluminium
Dimens. (mm) and Weight	Ø 308, L 283, 1.9 kg

Horn Speaker **DL-030 R**

DIGITAL IMPEDANCE TESTER ZS-2

RCS

MADE IN GERMANY



Description

The impedance meter ZS-2 enables the measurement of impedances for speaker lines and single speakers.

The measurement is done by a 1 kHz proof generator and is shown directly on the LCD-display. The device has three measurement ranges which can be changed manually. The steps are: 200 ohms, 2 kohms and 20 kohms.

The battery voltage is constantly monitored. In order to avoid an error of measurement due to low battery voltage, a red LED below the LED-display indicates when the battery must be changed. The required test leads, one 9V-block-battery and a detailed manual are included in the scope of supply.

Carrier and Storage Bag

High-quality vinyl fabric bag for ZS-2 storage. The padded bag protects the device, when in use.

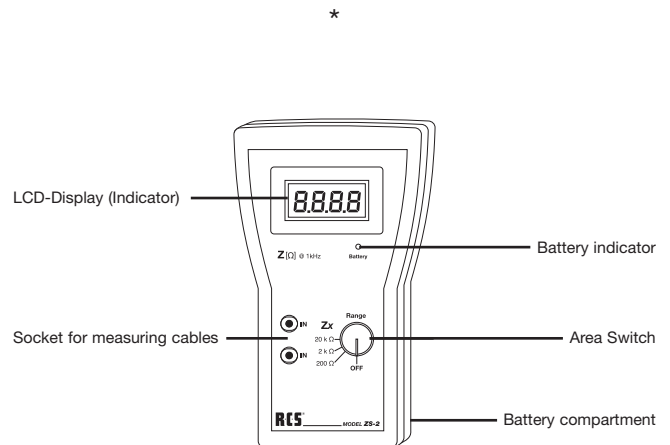
A pocket on the rear side of the bag is for storage of the measurement cables and reserve battery.



Carrier and Storage Bag (without ZS-2) **ZB-2**

Please consider the following features:

- Digital plain text display of the impedance.
- Battery change display by LED.
- High measuring accuracy ($\pm 2\%$) by calibration.
- High-quality protection and storage bag ZB-2 (optional).



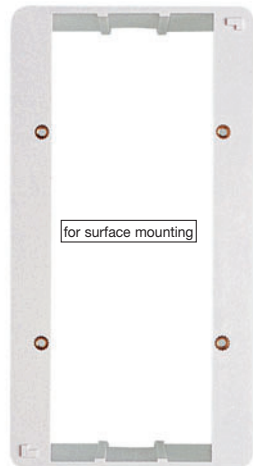
Technical data	ZS-2
Measurement ranges:	0-200 ohms 0-2 kohms 0-20 kohms
Measurement accuracy:	$\pm 2\% \pm 1$ digit
Test frequency:	1 kHz
Power supply:	9 V-block battery
Dimensions and Weight:	112 (B) x 193 (H) x 49 (T) mm; 295 g (incl. battery)

Digital Impedance Tester **ZS-2**

RCS VOLUME CONTROLS AND SELECTOR SWITCHES



Control-program combination



Surface mount socket EG-200

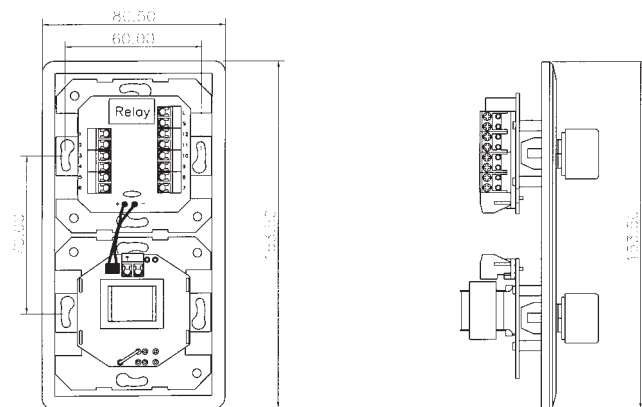
Description

This new LPW presents the combination of a volume control and a program selector switch. It's possible to choose 5 channels and to individually adjust the volume. For technical facts of the program selector switches and volume controls please look on the left side.

The LPW-combinations are basically constructed with a 24V emergency call relay which enables an emergency call even when all controls or program selector switches are in 0-position.

The LPW-combination is suitable to 2 x 55mm mount sockets.

Rear and Front view of the Control-program combination



Control-Program-Combination, up to 6 W **LPW-106 R**

alpine white with relay

Control-Program-Combination, up to 12 W **LPW-112 R**

alpine white with relay

Control-Program-Combination, up to 24 W **LPW-124 R**

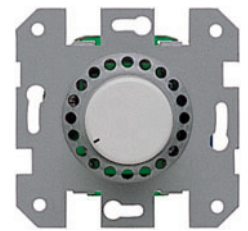
alpine white with relay

Control-Program-Combination, up to 50 W **LPW-150 R**

alpine white with relay

The surface mount socket **EG-200** (plastic) is made for surface installation of the control-program combination.

Surface Mount Socket (surface mounting, plastic) **EG-200**



Description

These program selector switches are for the installation in 55mm flush mount sockets. In the case of surface installation, please use the installation housing EG-100. You can order the device also without coverage.

The program selector switch is made for the reception of up to 5 different channels with one additional 0-position. It is also equipped with an emergency call relay.

*

Program Selector Switch alpine white with relay **PW-106 R**

Program Selector Switch without coverage, with relay . **PW-006 R**

Mounting Case



Description

White, high-quality, impact and scratch resistant plastic for the installation of the volume controls or program selector switches.

Can be used as a surface housing as well as a protective case for flush-mounting.

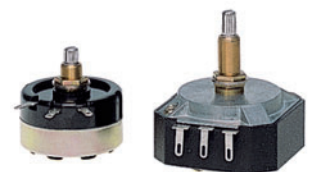
Height: 81 mm

Width: 80 mm

Depth: 45 mm

Mounting Case . . **EG-101**

L-Control (mono)



LRM-015 (15 W)

LRM-030 (30 W)

Description

These mono-L-controls are for setting the speaker volume levels on low impedance use.

They are especially suitable for the mounting in cabinet speakers etc.

LRM-015: 15 W, imp. 4 – 8 ohms (± 25 %) Control range 0 – 40 dB, axis Ø 6 mm, cabinet Ø 41 x (H) 24 mm

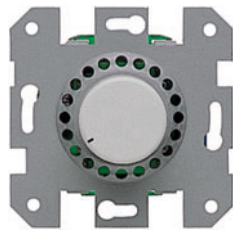
LRM-030: 30 W, imp. 4 – 8 ohms (± 25 %) Control range 0 – 40 dB, axis Ø 6 mm, cabinet Ø 50x50x28 mm.

L-Control, 15 W . . **LRM-015**

L-Control, 30 W . . **LRM-030**



with relay

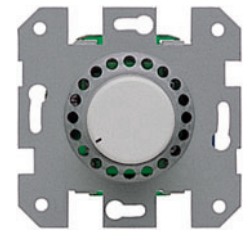


with relay

NEW:
up to 100 W



without relay



without relay

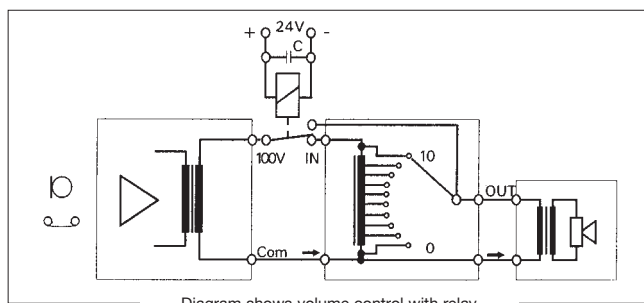
Description

The automatic volume control is done by a matching transformer of 100V and a switch with 11 steps (10 control steps, each 3 decibel + 1 zero position).

The switches are overwindable in order to avoid wilful demolition. The volume controls come with **emergency call relay**. They are suitable for every standard 55mm mount socket.

Cover plates and frames are in a modern, discreet design. If a building project is planned to be equipped with the same surface, use of volume controls without cover plate and frame is possible, as shown on the right. If necessary, the attached control knob can also be changed.

*



Model designations

- Volume Control** up to 6 W, without coverage, with relay **LR-006 R**
- Volume Control** up to 12 W, without coverage, with relay **LR-012 R**
- Volume Control** up to 24 W, without coverage, with relay **LR-024 R**
- Volume Control** up to 50 W, without coverage, with relay **LR-050 R**
- Volume Control** up to 100 W, without coverage, with relay **LR-0100 R**

- Volume Control** up to 6 W, alpine white with relay **LR-106 R**
- Volume Control** up to 12 W, alpine white with relay **LR-112 R**
- Volume Control** up to 24 W, alpine white with relay **LR-124 R**
- Volume Control** up to 50 W, alpine white with relay **LR-150 R**
- Volume Control** up to 100 W, alpine white with relay **LR-1100 R**

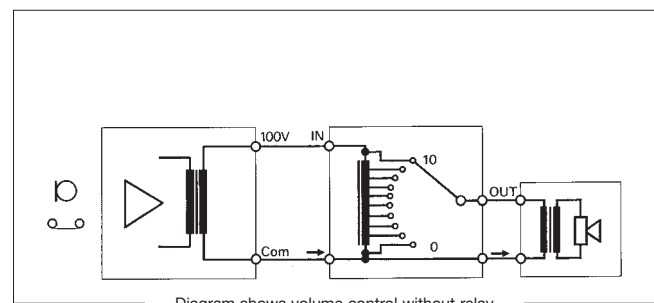
Description

The automatic volume control is done by a matching transformer of 100V and a switch with 11 steps (10 control steps, each 3 decibel + 1 zero position).

The switches are overwindable in order to avoid wilful demolition. The volume controls come with **emergency call relay**. They are suitable for every standard 55mm mount socket.

Cover plates and frames are in a modern, discreet design. If a building project is planned to be equipped with the same surface, use of volume controls without cover plate and frame is possible, as shown on the right. If necessary, the attached control knob can also be changed.

*



Model designations

- Volume Control** up to 6 W, without coverage **LR-006**
- Volume Control** up to 12 W, without coverage **LR-012**
- Volume Control** up to 24 W, without coverage **LR-024**
- Volume Control** up to 50 W, without coverage **LR-050**
- Volume Control** up to 100 W, without coverage **LR-0100**

- Volume Control** up to 6 W, alpine white **LR-106**
- Volume Control** up to 12 W, alpine white **LR-112**
- Volume Control** up to 24 W, alpine white **LR-124**
- Volume Control** up to 50 W, alpine white **LR-150**
- Volume Control** up to 100 W, alpine white **LR-1100**

Description

The presented speaker chassis are produced according to the newest international quality standard. Long lasting experience assures perfect manufacturing of both the mechanical and the physical properties.

The illustrated models are especially appropriate for playback with PA systems, but also best suited with professional facilities, due to their broadband. They satisfy with sound pressure, frequency range and playback quality.

10 W



Technical data	LC-310
Load rating (Music power)	10 (15) W
Nominal impedance	8 ohms
Frequency range	80 – 16000 Hz
SPL at 1 W/1 m	90 dB
Total-(Magnet-)weight	275 (80) g
Basket outside Ø	92 mm
Magnet dimension	60 x 32 x 8 mm
Height (installation depth)	38 mm

Speaker-Chassis **LC-310**

10 W



Technical data	LC-510 T
Load rating (Music power)	10 (15) W
Nominal impedance	8 ohms
Frequency range	70 – 17000 Hz
SPL at 1 W/1 m	92 dB
Total-(Magnet-)weight	392 (155) g
Basket outside Ø	119/129 mm
Magnet dimension	70 x 32 x 10 mm
Height (installation depth)	45 mm

Speaker-Chassis **LC-510 T**

10 W

also in 20 ohms
LC-610-20



Technical data	LC-610
Load rating (Music power)	10 (15) W
Nominal impedance	8 ohms
Frequency range	80 – 18000 Hz
SPL at 1 W/1 m	92 dB
Total-(Magnet-)weight	540 (150) g
Basket outside Ø	165 mm
Magnet dimension	70 x 32 x 10 mm
Height (installation depth)	55 mm

Speaker-Chassis **LC-610**

40 W

2-way chassis



Technical data	LC-640 CX
Load rating (Music power)	40 (60) W
Nominal impedance	8 ohms
Frequency range	50 – 20000 Hz
SPL at 1 W/1 m	93 dB
Total-(Magnet-)weight	1050 (660) g
Basket outside Ø	165 mm
Magnet dimension	100x60x15 mm
Height (installation depth)	68 mm

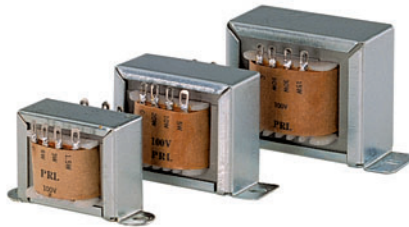
Speaker-Chassis (Coaxial) . . **LC-640 CX**

100 V MATCHING-TRANSFORMER

Connecting cable approx. 20 mm



„L“ at the end of the model designation means:
With connecting cables



„S“ at the end of the model designation means:
With solder lugs

Technical data and model designations:

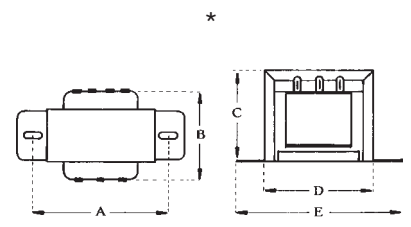
Model	Load rating (W)	Primary 100 V (W)	Secondary (Ohm)	Core (mm)	Weight (g)	Dimensions mm (see sketch)				
						A	B	C	D	E
MT-040 L	4	4 – 2 – 1	8	41 x 14	170	51	33	36	43	62
MT-060 L	6	6 – 3 – 1.5	8	41 x 14	180	51	33	36	43	62
MT-101 L	10	10 – 5 – 2.5	8	41 x 14	190	51	33	36	43	62
MT-150 S	15	15 – 7.5 – 3.9 – 1.8	4 – 8	48 x 20	340	60	42	42	50	70
MT-200 L	20	20 – 10 – 5	8	48 x 20	370	60	42	42	50	70
MT-310 S	30	30 – 15 – 7.5	4 – 8 – 16	48 x 25	410	60	48	42	50	70
MT-600 S	60	60 – 30 – 15	4 – 6	57 x 25	570	71	50	50	59	82

Description

The presented 100V-matching transformers are produced according to the newest international quality standards.

The use of best materials, including modern manufacturing methods, enables the very small dimensions of the matching transformer. The matching transformer features an excellent efficiency ratio.

The frequency ranges are between 50 Hz in the low and up to 18000 Hz in the high frequencies range.



„High-Power“



Description

These „High-power“ 100 V matching transformers are produced according to the most recent, international quality standard.

The application of best materials and modern manufacturing methods make it possible to produce even these large sized of matching transformers in acceptable dimensions.

Please consider the following features:

- The matching transformer has an excellent efficiency of approximately 87%.
- The transmission frequencies are in the low frequencies next to 40 Hz (± 2 decibel), and in the high frequencies next to 20000 Hz (± 2 decibel).
- The „Insertion Loss“ amounts to max. 0.8 decibel, the connection is done by terminal tags.

*

Technical data	HP-100 S	HP-200 S	HP-500 S
Primary	4 and 8 ohms	4 and 8 ohms	4 and 8 ohms
Secondary	100 V - 100 W	100 V - 200 W	100 V - 500 W
Frequency range (-2 dB)	40 - 20000 Hz	40 - 20000 Hz	40 - 20000 Hz
Efficiency	appr. 87 %	appr. 87 %	appr. 87 %
Dimensions HxWxD (mm)	80 x 96 x 71	115 x 95 x 115	115 x 95 x 126
Mounting hole spacing	80 x 59 mm	78 x 81 mm	98 x 81 mm
Weight	appr. 1.9 kg	appr. 3.4 kg	appr. 5.6 kg

„High-Power“ 100 V transformer (100 W)..... **HP-100 S**

„High-Power“ 100 V transformer (200 W)..... **HP-200 S**

„High-Power“ 100 V transformer (500 W)..... **HP-500 S**

SOUND-LEVEL-METER

Description

This high-quality, professional digital sound level meter is very simple to operate. It can be used for all measurements of volume-ranges of 35 dB up to 130 dB. These measurements can be passed on to external devices by a 3.5 mm jack socket.

The sound pressure level measurements work with the two most important frequency evaluation filters A and C, (A: Frequency rate that is modelled on the human hearing, C: Band-pass with edge frequencies 31.5 Hz and 8 kHz).

Please consider the following features:

- Selectable response time from "slow" (1 second) to "fast" (125ms)
- 4-digit digital display (in dB) enables direct and fast reading of the measurement results.
- A maximum value memory (MaxHold) keeps the max. achieved dB value.
- The device features an inserted calibration possibility (CAL 94dB) via an integrated reference signal.
- A battery alerter indicates when the current supply is running low (run-down battery).
- A blind thread hole, fitted in the device, enables the attachment on a stand for precise measurements.
- The device is supplied in a storage case including a 9V block battery, wind protection, screwdriver and 3.5 mm jack plug.

Technical data

Technical data	TES-1351
Resolution	0.1 dB
Accuracy	$\pm 1,5$ dB (94 dB / 1 kHz)
Dynamic range	55 dB
Frequency response filter	A and C
Frequency range	31.5 Hz to 8 kHz
Outlet	AC 0.65 Vrms / 600 ohms, DC 10mv/dB / 100 ohms
Dimensions (L x W x H), Weight	240 mm x 68 mm x 25 mm, 215 g

Sound-Level-Meter **TES-1351**





OTTO-GRAF-INSTITUT, UNIVERSITÄT STUTTGART
FORSCHUNGS- UND MATERIALPRÜFUNGSANSTALT FÜR DAS BAUWESEN (FMFA)
Ref. 46 „Sportböden, Sportstättenbau“



Otto-Graf-Institut, Universität Stuttgart • Referat 46 • Sportböden, Sportstättenbau • Pfaffenwaldring 4 • D-70569 Stuttgart
Telefon: 0711/685-2739 od. 3370 • Fax: 0711/685-2765 • E-mail: fmfa.ref46@po.uni-stuttgart.de

Prüfzeugnis

RCS Audio-Systems GmbH
83043 Bad Aibling
Prüfung der Ballwurfsicherheit
nach DIN 18 032 Teil 3 Ausgabe April 1997

Prüflinge: BC-100-SERIE

Datum des Prüfzeugnisses : 03.07.2000
Auftrag : 46/32325/Sm/C
Textseiten : 4
Beilagen : 1


Schmid
Sachbearbeiter




Dipl.-Ing. Knauf
Referatsleiter



OTTO-GRAF-INSTITUT, UNIVERSITÄT STUTTGART
FORSCHUNGS- UND MATERIALPRÜFUNGSANSTALT FÜR DAS BAUWESEN (FMFA)
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Telefon: 0711/685-2739 od. 3370 • Fax: 0711/685-2765 • E-mail: fmfa.ref46@po.uni-stuttgart.de

Prüfzeugnis

RCS Audio-Systems GmbH
83043 Bad Aibling
Prüfung der Ballwurfsicherheit
nach DIN 18 032 Teil 3 Ausgabe April 1997

Prüflinge: RC-200-SERIE

Datum des Prüfzeugnisses : 03.07.2000
Auftrag : 46/32326/Sm/C
Textseiten : 4
Beilagen : 1


Schmid
Sachbearbeiter




Dipl.-Ing. Knauf
Referatsleiter

**Microphones, microphone stations
and wireless UHF-systems**



6

Page
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Part 6

Dynamic Microphone

with push-to-talk button



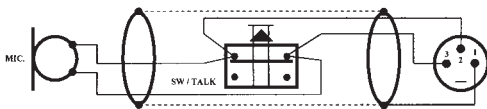
MADE IN GERMANY

Description

Dynamic gooseneck desktop microphone with a newly developed slim desktop housing which also provides additional space for retrofitting special facilities. Through its discreet and functional design, the microphone station fits well into any environment.

Please consider the following features:

- A noise compensated dynamic cardioid microphone capsule is integrated in the gooseneck.
- All models are of balanced assembly, also the model with the 3-pin jack plug.
- The microphone station features high gain-before-feedback and a pop/wind screen. It has a 5 m connection cable fitted with the appropriate connector.



Circuit diagram shows model MS-201 X

Technical data	MS-201 (K / X)
Frequency response	100 – 15000 Hz
Polar pattern	cardioid
Nominal impedance	600 ohms
Sensitivity	-78 dB, ±3 dB
Button functions	Push-to-talk button
Dimensions (W x H x D)	131 x 42 x 181 mm, length of gooseneck: 390 mm
Weight	approx. 700 g

Desktop Microphone, (jack, balanced) **MS-201 K**
Desktop Microphone, (XLR, balanced) **MS-201 X**

Electret Microphone

with push-to-talk button



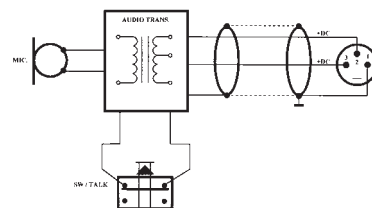
MADE IN GERMANY

Description

Electret gooseneck desktop microphone with a newly developed slim desktop housing which also provides additional space for retrofitting special facilities. Through its discreet and functional design, the microphone station fits well into any environment.

Please consider the following features:

- A noise compensated cardioid condenser microphone capsule is integrated in the gooseneck.
- The desktop microphone is of balanced assembly and a 24 V DC phantom power supply.
- The microphone station features high gain-before-feedback and a pop/wind screen. It has a 5 m connection cable fitted with the appropriate connector.



Circuit diagram shows model MS-201 PX

Technical data	MS-201 PX
Frequency response	100 – 15000 Hz
Polar pattern	cardioid
Nominal impedance	1.2 kohms
Phantom power	24 V DC
Button functions	Push-to-talk button
Sensitivity	-78 dB, ±3 dB
Dimensions (W x H x D)	131 x 42 x 181 mm, length of gooseneck: 290 mm
Weight	approx. 800 g

Desktop Microphone, **MS-201 PX**
 (24 V DC phantom power)

Dynamic Microphone

with push-to-talk and chime button



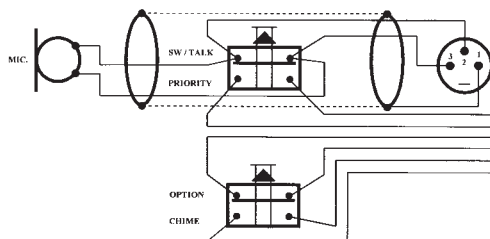
MADE IN GERMANY

Description

Dynamic gooseneck desktop microphone with a newly developed slim desktop housing. Same design as MS-201 microphone station, but with additional button for chime and contact, e.g. for priority control.

Please consider the following features:

- The desktop microphone has a push-to-talk button for release of the microphone and provides an option, e.g. for priority functions, switching matrix control.
- The second button serves to remote control the amplifier, e.g. chime signal, etc.
- The microphone station has a 5 m AF connection cable which is fitted with the appropriate connector and a 5 m control cable.



Circuit diagram shows model MS-202X

Technical data	MS-202 (K / X)
Frequency response	100 – 15000 Hz
Polar pattern	cardioid
Nominal impedance	600 ohms
Sensitivity	-78 dB, ±3 dB
Button functions	1x push-to-talk with option, 1x chime with option
Dimensions (W x H x D)	131 x 42 x 181 mm, length of gooseneck: 390 mm
Weight	approx. 750 g

Desktop Microphone, (jack, balanced) **MS-202K**

Desktop Microphone, (XLR, balanced) **MS-202X**

Electret Microphone

with push-to-talk and chime button



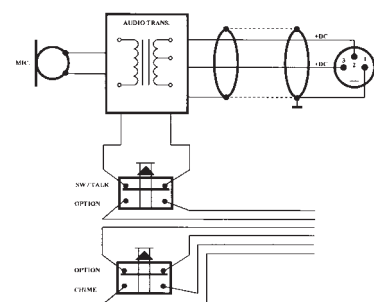
MADE IN GERMANY

Description

Electret gooseneck desktop microphone with a newly developed slim desktop housing. The same design as MS-201 PX microphone station, but with an additional button for chime and contact, e.g. for priority control.

Please consider the following features:

- The desktop microphone has a push-to-talk button for release of the microphone and provides an option, e.g. for priority functions, switching matrix control.
- The second button serves to remote control the amplifier, e.g. chime signal, priority, etc.
- The microphone station has a 5 m AF connection cable which is fitted with the appropriate connector and a 5 m control cable.



Circuit diagram shows model MS-202PX

Technical data	MS-202PX
Frequency response	100 – 15000 Hz
Polar pattern	cardioid
Nominal impedance	1.2 kohms
Phantom power	24 V DC
Sensitivity	-78 dB, ±3 dB
Button functions	1x push-to-talk with option, 1x chime with option
Dimensions (W x H x D)	131 x 42 x 181 mm, length of gooseneck: 290 mm
Weight	approx. 900 g

Desktop Microphone, (24 V DC phantom power) **MS-202PX**

Dynamic Microphone

with push-to-talk, chime and alarm button



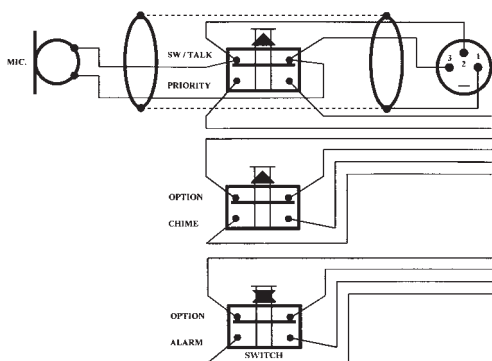
MADE IN GERMANY

Description

Dynamic gooseneck desktop microphone with a newly developed slim desktop housing. Same design as MS-201/MS-202 microphone station, but with additional button for alarm and contact e.g. for special control function, etc.

Please consider the following features:

- Apart from the features of the MS-201 and MS-202 desktop microphone stations, the MS-203 provides an additional alarm button with protective cap and an option for remote control, e.g. for a switching matrix, etc.



Circuit diagram shows model MS-203X

Technical data	MS-203 (K / X)
Frequency response	100 – 15000 Hz
Polar pattern	cardioid
Nominal impedance	600 ohms
Sensitivity	-78 dB, ±3 dB
Button functions	1x talk, 1x chime, 1x alarm, 3x contacts for options
Dimensions (W x H x D)	131 x 42 x 181 mm, length of gooseneck: 390 mm
Weight	approx. 900 g

Desktop Microphone, (jack, balanced) **MS-203K**
 Desktop Microphone, (XLR, balanced) **MS-203X**

Electret Microphone

with push-to-talk, chime and alarm button



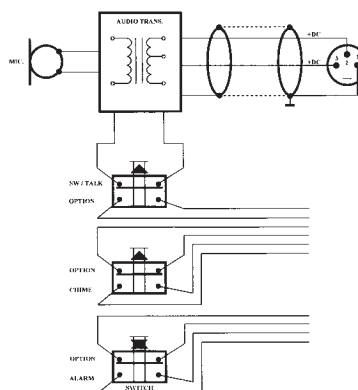
MADE IN GERMANY

Description

Electret gooseneck desktop microphone with a newly developed slim desktop housing. Same design as MS-201 PX/MS-202 PX microphone station, but with additional button for alarm and contact e.g. for special control function, etc.

Please consider the following features:

- Apart from the features of the MS-201 PX and MS-202 PX desktop microphone stations, the MS-203 PX provides an additional alarm button with protective cap and an option for remote control, e.g. for a switching matrix, etc.



Circuit diagram shows model MS-203PX

Technical data	MS-203PX
Frequency response	100 – 15000 Hz
Polar pattern	cardioid
Nominal impedance	1.2 kohms
Phantom power	24 V DC
Sensitivity	-78 dB, ±3 dB
Button functions	1x talk, 1x chime, 1x alarm, 3x contacts for options
Dimensions (W x H x D)	131 x 42 x 181 mm, length of gooseneck: 290 mm
Weight	approx. 1000 g

Desktop Microphone, **MS-203PX**
 (24 V DC phantom power)

Dynamic Microphone (Cardioid)

Great quality dynamic Handmicrophone with cardioid characteristics. It does not have back coupling problems and wind- and pop-protection are integrated.

A low-noise On- and Off-switch is integrated on the handle, and a 5 m long connection cable will be supplied as well as a connector.



Technical Data	DM-200
Frequency response	50 – 18.000 Hz
Polar pattern	Cardioid
Nominal-Impedance	600 Ohm
Sensitivity	-74 dB, ±2 dB
Dimensions and Weight	Ø 40 mm x 168 mm (L); approx. 300 g
Button	ON / OFF with locking screw
Access./Scope of supply	1 connection cable 5m, 1 microphone-holder (3/8" + 5/16")

Dynamic Microphone, with jack plug, unbalanced. **DM-200 K**
Dynamic Microphone, with XLR plug, balanced **DM-200 X**

Dynamic Microphone (Super Cardioid)

Great quality dynamic Handmicrophone with cardioid characteristics. It does not have back coupling problems and wind- and pop-protection are integrated.

A low-noise On- and Off-switch is integrated on the handle, and a 5 m long connection cable will be supplied as well as a connector.



Technical Data	DM-300
Frequency response	50 – 18.000 Hz
Polar pattern	Super Cardioid
Nominal Impedance	600 Ohm
Sensitivity	-74 dB, ±2 dB
Dimensions and Weight	Ø 50 mm x 195 mm (L); approx. 360 g
Button	ON / OFF with locking screw
Access./Scope of supply	1 connection cable 5 m, 1 microphone-holder (3/8" + 5/16")

Dynamic Microphone, with jack plug, unbalanced. **DM-300 K**
Dynamic Microphone, with XLR plug, balanced. **DM-300 X**

Electret-Microphone (with integrated power supply and switch)

Electret Handmicrophone (back-electret) with cardioid characteristic. It perfectly adequate for stage application as well as professional 100V-PA technology.

Power supply results from an integrated battery (1.5 F 1 x mignon AA) and a low-noise On- and Off-switch is integrated on the handle.



Technical Data	ECM-300 S
Frequency response	100Hz – 20000 Hz
Polar pattern	Cardioid
Nominal Impedance	100 Ohm at 1 kHz
Max. Input-Level	135 dB SPL at 1 kHz
S/N Ratio	better than 66dB / 1 PA
Sensitivity	-47dB ±3dB at 1 kHz
Power supply	1 x 1,5 V mignon AA integrated on the handle
Dimensions and Weight	Ø 50 mm x 180 mm (L); ca. 300 g
Button	ON / OFF with locking screw
Access./Scope of supply	1 connection cable 5m, 1 microphone holder

Electret-Microphone (with integrated power supply). . . . **ECM-300 S**

Electret-Microphone (phantom power supply 48V DC)

Electret Handmicrophone (back-electret) with cardioid characteristics, which is perfectly suitable for stage performances as well as 100 V PA-technology.

The power supply results from phantom supply (+ 48 V DC).



Technical Data	ECM-300 P
Frequency response	100Hz – 20000 Hz
Polar pattern	Cardioid
Nominal Impedance	100 Ohm at 1 kHz
Max. Input Level	135 dB SPL at 1 kHz
S/N Ratio	better than 66dB / 1 PA
Sensitivity	-47dB ±3dB at 1 kHz
Power supply	+48V DC phantom power supply
Dimensions and Weight	Ø 50 mm x 180 mm (L); ca. 300 g
Access./Scope of delivery	1 connection cable 5m, 1 microphone holder

Electret-Microphone (phantom power supply). **ECM-300 P**

Electret Desktop Microphone

The EDM-700 is an **electret** condenser desktop microphone with cardioid characteristics and differentiates itself from similar products through its excellent sound quality (microphone capsule \varnothing 16 mm) and an adjusted length of the gooseneck (550 mm) in an optimum way. A **flashing ring** (red) signals the operation mode. A battery, (9V block) which is integrated into the stand supplies up to 200 hours of power supply.



Technical Data	EDM-700
Frequency	50 - 16.000 Hz
Polar pattern	Cardioid
Nominal Impedance	600 Ohm
Max. Input Level	123 dB at 1 kHz
Sensitivity	-35 dB / PA at 1 kHz
Power supply	9V DC Block (6LR21 Battery with Stand)
Length of Gooseneck	550 mm including XLR plug
Weight	1,2 kg
Stand	ON / OFF-switch, XLR connector
Access./Scope of delivery	transportation case, wind deflector, stand, battery (9V DC)

Electret Desktop microphone,
(with integrated power supply)

EDM-700

Gooseneck Microphone

(Unbalanced, electret, cables not terminated)

Electret cardioid gooseneck microphone. It features high gain-before-feedback and an integrated wind and pop screen.

A mounting thread with matching nut is provided at the bottom end of the gooseneck. This enables mounting of the microphone on amplifiers, control panels, etc. The connection cable is balanced and not terminated (1 wire + shield).



Technical Data	EGM-300
Frequency response	100 -15000 Hz
Polar pattern	cardioid
Nominal impedance	1.2 kohms
Sensitivity	-78 dB, \pm 3 dB
Power supply	Phantom power (9 - 24 V), external: balanced, cable not terminated
Dimensions and weight	\varnothing 16 mm x 290 mm (L), approx. 80 g
Accessories included	M8 nut, tooth lock washer, plain washer, wind screen

Electret Gooseneck Microphone **EGM-300**

Gooseneck Microphone

(Balanced, dynamic, cables not terminated)

Dynamic cardioid gooseneck microphone. It features high gain-before-feedback and an integrated wind and pop screen.

A mounting thread with matching nut is provided at the bottom end of the gooseneck. This enables mounting of the microphone on amplifiers, control panels, etc. The connection cable is balanced and not terminated (3 wires).

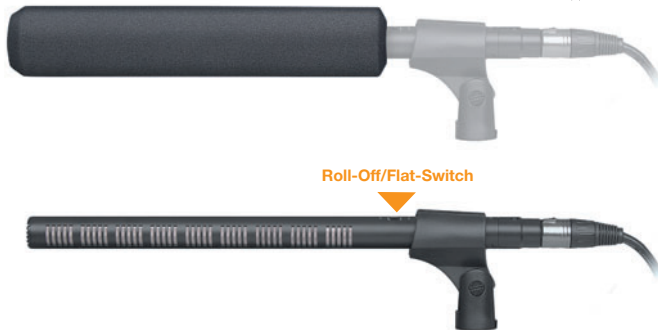


Technical data	DGM-400
Frequency response	100 -15000 Hz
Polar pattern	cardioid
Nominal impedance	600 ohms
Sensitivity	-78 dB, \pm 3 dB
Dimensions and weight	\varnothing 32 mm x 390 mm (L), approx. 110 g
Accessories included	M8 nut, tooth lock washer, plain washer

Dynamic Gooseneck Microphone **DGM-400**

Electret Cudgel Microphone

(with phantom power supply 9-52V DC)



Description

The ECM-400 is a tube-directivity microphone in the shape of a cudgel (shotgun) with excellent directivity characteristic.

This microphone has a brilliant consonant-comprehensibility offering ideal premises for universal usage. Even sound sources which are further away can be amplified with no problem. A wind deflector and a microphone holder are included in scope of delivery.

Technical Data	ECM-400
Frequency	30 – 20.000 Hz
Polar pattern	Cudgel (Shotgun)
Nominal Impedance	150 Ohm
Max. Input Level	130 dB SPL, 1 kHz at 1 % THD
Dynamic	110 dB, 1 kHz at Max. SPL; S/N Ratio 74 dB, 1 kHz
Power supply	Phantom Power 9-52V DC, 2 mA typical
Dimensions and Weight	Ø 21 mm x 32,5 mm, ca. 200 g
Switch	Bass-Roll-off-switch or flat
Access./Scope of delivery	1 wind deflector, 1 microphone holder

Electret Cudgel Microphone **ECM-400**
(with phantom power supply)

Electret Boundary Microphone

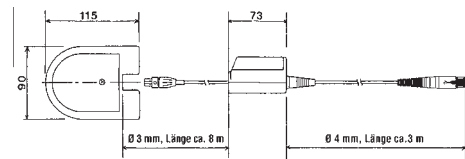
(with integrated power supply)



Description

Handy and attractive cardioid electret boundary microphone. Ideal for the use in schools, churches, conference rooms, etc. as well as for PA and recording.

Supplied with a power supply unit (1.5 V, 1 x UM-3) and cables (8 m and 3 m). The battery has an operating time of up to 5000 hours.



Technical Data	GFM -100
Frequency	100 – 14.000 Hz
Polar pattern	Cardioid
Nominal Impedance	600 ohms
Sensitivity	-63 dB ±3 dB at 1.000 Hz
Power supply	through 1,5 V battery (UM-3) integrated in cable set
Dimensions and Weight	(B) 90 x (H) 150 mm, weight w/o cable: approx. 200 g
Accessories included	Cable-Ø 3 mm – approx. 8 m, cable-Ø 4 mm – approx. 3 m jack

Electret Boundary Microphone **GFM-100**
(with integrated power supply)

Microphone boom (nickel-plated metal tube)



Stable nickel-plated metal tube with black plastic parts. Length: 85 cm, threaded connection $\frac{1}{4}$ ", weight: 0.9 kg.

Microphone boom (nickel-plated metal tube) SA-085

Microphone floor stand



Sturdy floor stand features anti-vibration design and $\frac{1}{4}$ " thread. It extends up to 180 cm. The nickel-plated tubes have a handy folding mechanism.

Floor stand BS-180

Floor stand BS-185
with boom arm

Microphone floor stand



Sturdy floor stand with $\frac{1}{4}$ " thread and nickel-plated tubes. It extends up to 180 cm.

A heavy cast base provides stability and less danger of stumbling.

Floor stand BS-170

Microphone boom (matt black metal tube)



Stable matt black metal tube with black plastic parts. Length: 85 cm, threaded connection $\frac{1}{4}$ ", weight: 0.9 kg.

Microphone boom (matt black metal tube) SA-090

Microphone floor stand

with new mechanism for vertical adjustment



Sturdy and lightweight anti-vibration aluminium stand (black), with new clamping mechanism which provides very easy and silent vertical adjustment. It extends to 170 cm and has a $\frac{1}{4}$ " thread.

Floor stand BS-190

Floor stand BS-195
with boom arm

Desktop microphone stand with boom arm



Sturdy desktop stand with boom arm that extends up to 40 cm. Threaded connections: $\frac{1}{4}$ " and $\frac{1}{8}$ ".

Desktop stand TS-060

Desktop microphone stand



Handy and lightweight, but stable tripod stand with $\frac{1}{4}$ " and $\frac{1}{8}$ " threads.

Desktop stand TS-010



SH-330 X

SH-300

SH-150

Gooseneck (13", black), approx. 33 cm long, with male XLR and female XLR.

Gooseneck SH-330 X

Rugged gooseneck, approx. 30 cm long, with adapter for $\frac{1}{4}$ " and $\frac{1}{8}$ " threaded connection.

Gooseneck SH-300

Rugged gooseneck, approx. 15 cm long, with adapter for $\frac{1}{4}$ " and $\frac{1}{8}$ " threaded connection.

Gooseneck SH-150

Gooseneck flange



Chrome-plated flange plate (\varnothing approx. 45 mm) for mounting microphone goosenecks.

Flange plate has $\frac{1}{4}$ " and $\frac{1}{8}$ " threaded adapter.

Gooseneck flange .. SF-100

Desktop microphone stand



Sturdy desktop stand which extends up to 40 cm, with heavy cast-iron base and $\frac{1}{4}$ " and $\frac{1}{8}$ " threaded connections.

Desktop stand TS-040

Microphone Socket

flush mounting

Picture shows MD-055 UX



Socket with white plastic cover for flush mounting in 55 mm boxes. Can be combined with products of the Jaeger-Busch design program.

Microphone Socket **MD-055 UD**
with DIN socket

Microphone Socket **MD-055 UX**
with XLR socket

Microphone Socket

surface mounting, inc. surface mounting box

Picture shows MD-055 AX



Socket with white plastic cover for surface mounting. Inc. plastic surface mounting box. Colour: alpine white. Dimensions 85 x 85 x 45 mm. Can be combined with products of the Jaeger-Busch design program.

Microphone Socket **MD-055 AD**
with DIN socket

Microphone Socket **MD-055 AX**
with XLR socket

Microphone Socket

Floor socket



Aluminium die cast socket with cover for floor and wall mounting. Colour: hammered grey. Dimensions: 85 x 85 x 65 mm.

Microphone Socket **MD-100 FD**
with DIN socket

Microphone Socket **MD-100 FX**
with XLR socket

Microphone Clip (universal)



This microphone clip fits all common microphone types, also microphones with cone shaped handles. Threaded connection: $\frac{3}{8}$ " and $\frac{5}{8}$ ".

Microphone Clip **MH-101**

Microphone Holder (antishock)



This newly developed micro-phone holder dampens vibrations by means of its special rubber suspension. Threaded connection: $\frac{3}{8}$ " and $\frac{5}{8}$ ".

Microphone Holder **MH-200**

Twin Microphone Mount



This Twin-Microphone Mount is designed for the mounting of 2 or 3 mics. It is equipped with two threaded connections $\frac{3}{8}$ " and can be combined with any floor stand of our product range. The distance between the two connections are 21 cm.

Microphone Mount **ZS-200**

Floor Tank-XLR



This floor tank is made out of a 3 mm steel plate (black burned-in varnish). It is assembled with 4 XLR-jacks. It has a hinged lid and is therefore perfectly suitable for floor installations.

The minimum installation depth is 70 mm and the outside dimensions are 200 x 200 mm. The attachment hole space is 102 x 140 mm. The 4 compatible attachment screws (M5 x 40 mm) are included in the scope of delivery.

Floor Tank XLR **WBT-400 X**
with 4 XLR-plugs

Floor Tank-Speaker



This floor tank is made out of a 3 mm steel plate (black burned-in varnish). It is assembled with 4 Speaker-jacks. It has a hinged lid and is therefore perfectly suitable for floor installations.

The minimum installation depth is 70 mm and the outside dimensions are 200 x 200 mm. The attachment hole space is 102 x 140 mm. The 4 compatible attachment screws (M5 x 40 mm) are included in the scope of delivery.

Floor Tank Speaker **WBT-400 S**
with 4 Speaker-plugs

XLR-PLUG CONNECTORS

XLR-Inline jack, silver

FEMALE

- 3-pole XLR-Coupler
- Self adjusting clamps as strain relief
- Cable-bend protection through vulcanised rubber ending
- Robust, nickel-plated metal-diecast case
- Colour: silver, black



XLR-Inline jack, silver **XLR-203 F**

XLR-Jack, silver

MALE

- 3-pole XLR-Jack
- Self adjusting clamps as strain relief
- Cable-bend protection through vulcanised rubber ending
- Robust, nickel-plated metal-diecast case
- Colour: silver, black



XLR-Jack, silver **XLR-203 M**

XLR-Inline jack, black

FEMALE

- 3-pole XLR-Coupler (female)
- Self adjusting clamps as strain relief
- Cable-bend protection through vulcanised rubber ending
- Robust, burned-in varnish metal-diecast case
- Colour: black



XLR-Inline jack, black **XLR-303 F**

XLR-Jack, black

MALE

- 3-pole XLR-Jack (male)
- Self adjusting clamps as strain relief
- Cable-bend protection through vulcanised rubber ending
- Robust, burned-in varnish metal-diecast case
- Colour: black



XLR-Jack, black **XLR-303 M**

XLR-Angle-Inline jack, silver

FEMALE

- 3-pole XLR-Angle-Coupler with strain relief
- Cable-bend protection through vulcanised rubber ending
- Colour: silver; depth until top edge of angle: 25 mm;



XLR-Angle-Inline jack, silver **XLR-103 WF**

XLR-Angle-Jack, silver

MALE

- 3-pole XLR-Angle-Jack with strain relief
- Cable-bend protection through vulcanised rubber ending
- Colour: silver; depth until top edge of angle: 25 mm;



XLR-Angle-Jack, silver **XLR-103 WM**

Adapter XLR-Inline jack on 6,3 mm (mono) Jack Plug

FEMALE

- 3-pole XLR-Inline jack on 6.3 mm (mono) jack plug
- Robust, nickel-plated metal-diecast case
- Colour: silver



XLR/Jack-Adapter **AXJ-100 F**

Adapter XLR-Inline jack on 6,3 mm (mono) Jack Plug

MALE

- 3-pole XLR-Inline jack on 6.3 mm (mono) jack plug
- Robust, nickel-plated metal-diecast case
- Colour: silver



XLR/Jack-Adapter **AXJ-100 M**

Jack Socket 6,3 mm (mono), silver

FEMALE

- 2-pole 6.3 mm mono jack socket
- Self adjusting clamps as strain relief
- Cable-bend protection through vulcanised rubber ending
- Robust, nickel-plated metal-diecast case
- Colour: silver, black



Jack Socket (mono), silver **JC-102 FM**

Jack Plug 6,3 mm (mono), silver

MALE

- 2-pole 6.3 mm mono jack-plug
- Self adjusting clamps as strain relief
- Cable-bend protection through vulcanised rubber ending
- Robust, nickel-plated metal-diecast case
- Colour: silver, black



Jack Plug (mono), silver **JC-102 MM**

Jack Soket 6,3 mm (stereo), silver

FEMALE

- 3-pole 6.3 mm stereo jack socket
- Self adjusting clamps as strain relief
- Cable-bend protection through vulcanised rubber ending
- Robust, nickel-plated metal-diecast case
- Colour: silver, black



Jack Socket (stereo), silver **JC-103 FS**

Jack Plug 6,3 mm (stereo), silver

MALE

- 3-pole 6.3 mm stereo jack-plug
- Self adjusting clamps as strain relief
- Cable-bend protection through vulcanised rubber ending
- Robust, nickel-plated metal-diecast case
- Colour: silver, black



Jack Plug (stereo), silver **JC-103 MS**

Cinch Socket Set

FEMALE

- 2-pole cinch socket with gold-plated contacts
- Self adjusting clamps as strain relief
- Cable-bend protection through vulcanised rubber ending
- Robust, metal-diecast case
- For cable diameter of: 5 – 6 mm
- Colour: gold/black with red and white flanges



Cinch Socket Set, black **CC-603 F**

Cinch Plug Set

MALE

- 2-pole cinch-plug with gold-plated contacts
- Self adjusting clamps as strain relief
- Cable-bend protection through vulcanised rubber ending
- Robust, metal-diecast case
- For cable diameter of: 5 – 6 mm
- Colour: gold/black with red and white flanges



Cinch Plug Set, black **CC-603 M**

XLR-Installation Jack

FEMALE

- 3-pole XLR-installation-jack
- Latching device
- Robust metal-diecast case
- Colour: black
- Typ: C



XLR-Installation Jack, black..... **XLR-503 F**

XLR-Installation Jack

MALE

- 3-pole XLR-installation-jack
- Latching device
- Robust metal-diecast case
- Colour: black
- Typ: C



XLR-Installation Jack, black..... **XLR-503 M**

XLR-Installation Jack

FEMALE

- 3-pole XLR-installation-jack
- Latching device
- Robust metal-diecast case
- Colour: black
- Typ: D



XLR-Installation Jack, black..... **XLR-403 F**

XLR-Soldering/Installation Jack

FEMALE

- 3-pole XLR-installation-jack
- Robust metal-diecast case
- Colour: black
- Typ: C



XLR-Soldering/Installation Jack, black..... **XLR-503 F**

Speaker-Installation Jack (4-pole)

FEMALE

- 4-pole Speaker-installation-jack
- Robust plastic cabinet
- Colour: black
- Typ: C



Speaker-Installation Jack, (4-pole)..... **SPC-104 F**

Jack Plug Installation Jack 6,3 mm

FEMALE

- 3-pole jack-plug-installation-jack 6.3 mm
- Latching device
- Robust metal-diecast case
- Colour: black
- Typ: C



Jack Plug Installation Jack, 6,3 mm..... **JC-203 F**

Speaker-Inline jack

FEMALE

- 4-pole Speaker-Coupler
- Strain Relief with cable-bend protection
- For cable diameter from 5 mm up to 15 mm
- Ampacity max. 30 A
- Wire-cross-section max. 4 mm²
- Colour: black, blue



Speaker-Coupler, black **SPC-204 F**

Speaker-Coupler

MALE

- 4-pole Speaker-coupler
- Strain Relief
- For cable diameter from 5 mm up to 15 mm
- Ampacity max. 30 A
- Wire-cross-section max. 4 mm²
- Colour: black, blue



Speaker-Coupler, black **SPC-204 M**

Speaker Connector

4-pole Speaker connector, which is used for the connection of two cables with cable-jacks, e.g. to extend the lengths of cables to get to the speaker. The housing of the connector is made of robust aluminium.



Speaker Connector **ASS-104**

Speaker Cable, 10 m

MALE

- 2-pole Speaker-speaker-cable
- **10 m** long
- Speaker / Speaker-jack with locking device
- Strain Relief with cable-bend protection
- Wire-cross-section 2x 2,5 mm²
- Colour: black, blue



Speaker Cable, 10 m **ACC-107**

Speaker Cable, desired length

MALE

- **Sold by meter, up to 40 m**
- 2-pole Speaker-loudspeaker-cable
- **Length depending on allegation** (e.g. ACC-108/1 für 1m)
- Speaker / Speaker-jack with locking device
- Strain Relief with cable-bend protection
- Wire-cross-section 2x 2,5 mm²
- Colour: black, blue



Your desired cable length
(up to 40 m max.)

Speaker Cable, desired length **ACC-108/xx**

XLR Cable

- Sym. XLR-Cable (connector / inline jack)
- Strain Relief with cable-bend protection
- Cable diameter: 6 mm
- Cable color: black

MALE
FEMALE



XLR Cable, 5 m **ACC-050**
XLR Cable, 10 m **ACC-100**

XLR/Jack Plug 6,3 mm (mono) cable

- Sym. Cable XLR (F) / jack-plug 6.3 mm (M)
- Strain Relief with cable-bend protection
- Cable diameter: 6 mm
- Cable color: black

MALE
FEMALE



XLR/Jack Plug 6,3 mm (mono) cable, 5 m ... **ACC-051**
XLR/Jack Plug 6,3 mm (mono) cable, 10 m .. **ACC-101**

Jack Plug 6,3 mm (stereo) on 2x Jack Plug (mono)

MALE

- Cable with jack plug 6.3 mm (stereo) on 2 x jack plug (mono)
- Strain Relief with cable-bend protection
- Cable diameter: 6 mm



Jack Plug 6,3 mm (stereo) on 2x Jack Plug (mono), 5 m **ACC-056**

Cable Jack Plug 3,5 mm (stereo) on 2 x Cinch (L/R)

MALE

- Cable 3.5 mm stereo jack plug on cinch L/R
- Fused with cable-bend protection

Most common application: sound-card-output of a computer on compact-amplifier-inputs.

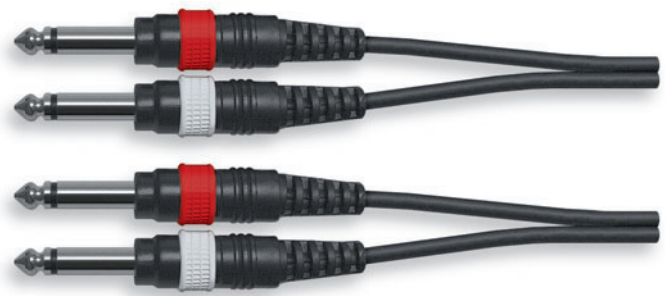


Cable Jack Plug 3,5 mm on 2 x Cinch, 5 m .. **ACC-054**

Cable 2 x Jack Plug 6,3 mm (mono) / 2 x Jack Plug 6,3 mm (mono)

MALE

- Cable 6.3 mm mono L/R on 6.3 mm mono jack-plug L/R
- Strain Relief with cable-bend protection
- Fused with cable-bend protection



2x Jack Plug on 2x Jack Plug 6,3 mm, 5 m .. **ACC-055**

Most common application:

It is most commonly used as an “insert-cable” also called Y-cable. An insert-point e.g. at the mixer contains as a stereo-jack-plug three contacts: ground, input and output.

In order to loop in an external device via the insert-point a stereo-jack-plug is necessary, which is splitted onto two mono cables. The latter will be connected with the in- and outputs of the external device.

The signal leaves the input-channel through that one pole of the insert-jack to get to the effect-device. Then this signal gets back through the other pole of the insert-jack. You then connect both of the jack-plug-cables to the effect-input and output on the other side.

*

16-FREQUENCIES

1 CHANNEL-SYSTEM

RCS[®]
AUDIO-SYSTEMS



UHF WIRELESS MICROPHONE-SYSTEM



Mobile or fixed installation for:

- Exhibitions and Fairs
- Seminars and Schools
- Stage, Church and Sporting Events





- True-Diversity
- 16 Frequencies
- Suitable for Multi-Channel-Systems

The WR-016 receiver offers excellent HF- and NF-characteristics. Due to the integrated diversity-system we can look at best radio transmission results even in problematic environments. The receiver compares both of the antennas and its adjacent signals and selects the strong one. The selection of the pre-programmed frequencies happens very comfortably via a Dip-switch.

- Hand- and Body pack-Transmitter are available as a transmitter
- Ability to choose between 16 frequencies in order to achieve trouble-free reception
- Room-saving – 19" width for installation of 2 receivers next to each other
- The antennas are available to install in a distance.

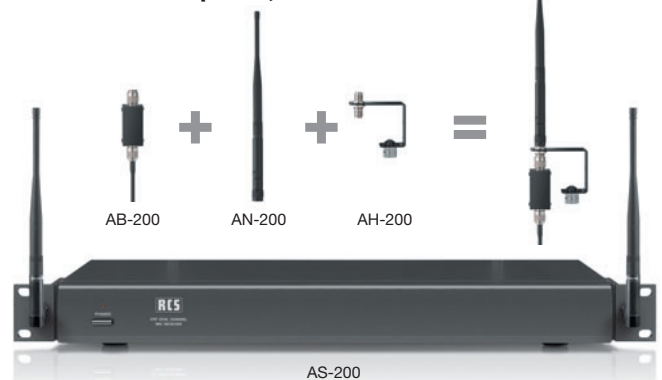
UHF-Receiver 16 frequencies, (794-813 MHz)..... WR-016
complete with mains adapter, antennas



UHF-Receiver with 19"-Installation-Kit RU-202 (see Accessories)

Technical Data	UHF-Receiver
Frequency Range	794 – 813 MHz (16 frequencies)
Operating principles	Diversity
Signal-to-noise ratio	> 94 dB
Frequency response	50 Hz – 15 KHz
Distortion factor	< 1 %
Squelch	Pilotone & Noise lock
Audio-Output	XLR: MIC bal. MIC/LINE switchable, unbalanced
Antenna	TNC, removable
Power supply	12 V DC via power supply
Scope of supply	Receiver, power supply unit, Antenna, cable (jack)
Dimensions / Weight	L 210 mm x B 175mm x H 44.3 mm (H); ca. 1 kg

UHF Antenna-Splitter, Booster and external Antenna



Multi-channel-systems can be assembled with accessory components. The splitter AS-200 (19", 1 RU) manages up to 4 transmitters WR-016. The booster AB-200 provides sufficient amplification as an external cable driver.

- External UHF-Antenna, (pair)..... AN-200**
- UHF-Antenna-Booster, (pair)..... AB-200**
- UHF-Antenna-Holder, (pair)..... AH-200**
- UHF-Antenna-Splitter, 1 RU..... AS-200**
- 19"-Rack Assembly-Set, for front-assembly the antenna... RU-203 T**

1 CHANNEL-SYSTEM / 16 FREQUENCIES



UHF-Wireless Hand Microphone



CE0336

Description

This UHF-Hand Microphone is equipped with a premium condenser microphone capsule. It is a very handy microphone. The frequencies can easily be adjusted via a comfortable Dip-switch. The power supply results from 2 Mignon-Batteries.

Technical Data	UHF-Hand Microphone
Carrier frequency	794 – 813 MHz (16 frequencies)
Modulation	FM
Transmission	PLL synth.
RF Output Power	10 mW
Frequency response	60 Hz – 15 kHz
Microphone type	Condenser microphone
Power supply	2 pcs Mignon (1,5V; AA)
Transmission range	approx. 50 m
Dimensions / Weight	Ø 50 mm x L 260 mm; 250 g

UHF-Hand Microphone, (16 Frequencies)..... WH-016

Neckworn Microphone

3-pin MINI XLR



Very comfortable condenser-neckworn-microphone conducted in the characteristic of a kidney. Due to the low dead-weight and the flexible material this microphone fits all head shapes perfectly. Available in the colours “skin-colour” and “black”.

Neckworn-Microphone, skin-color..... HS-200 S

Neckworn-Microphone, black..... HS-200 B

UHF-Bodypack-Transmitter



CE0336

3-pin MINI XLR

for LA-200 or HS-200S/B

Description

Body pack-Transmitter with 16 eligible frequencies. The input sensitivity is changeable in order to be able to induct Mic- and Line signals. The power supply results from 2 Mignon-Batteries.

Technical Data	UHF-Transmitter
Carrier frequency	794 – 813 MHz (16 frequencies)
Modulation	FM
Transmission	PLL synth.
RF Output Power	10 mW
Frequency response	60 Hz – 15 kHz
Max. Deviation	± 48 kHz
Power supply	2 pcs. Mignon (1,5V; AA)
Transmission range	approx. 50 m
Dimensions / Weight	64 mm (W) x 97 mm (L) x 24 mm (D); 150 g

UHF-Transmitter, (16 Frequencies)..... WB-016

Lavalier Microphone

3-pin MINI XLR



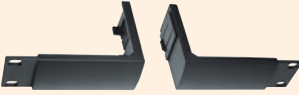
Condenser microphone completed in ball-characteristic. Delivery includes an 80 cm long connecting cable and a clip. It is available in the colour black.

Lavalier-Microphone, black..... LA-200

ACCESSORIES

19"-Rackmount Set

for one WR-016



19" brackets for one Receiver unit (1 RU).

Mounting-Set... **RU-201**

1RU, for one WR-016

19"-Rack Assembly-Set

for front-assembly the antenna

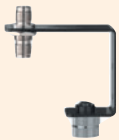


19" brackets for front antenna at one Receiver unit.

Mounting-Set **RU-201 T**

1RU, for one WR-016

UHF-Antenna-Holder



Ant.-Holder... **AH-200**

(pair)

50 ohms Antenna cable, equipped with TNC-Connectors. To install the UHF antenna in a distance (in your order please declare the desired cable length).

Antenna cable, desired length **ACT-050/xx**

19"-Rackmount Set

for two WR-016



19" brackets for two Receiver units (1 RU).

Mounting-Set... **RU-202**

1RU, for two WR-016

Adapter cable

for Bodypack Transmitter WB-016

MIC/Line adapter cable (1 m) for external signals, with Mini-XLR to 6.3 mm jack connector for WB-016 bodypack transmitter.

Adapter cable ... **AC-200**

(Mic/Line)



Mic.-Holder... **MH-800**

for wireless Handmicrophones

UHF-Antenna-Booster



Ant.-Booster... **AB-200**

(pair)

700-FREQUENCIES

1 CHANNEL-SYSTEM

RCS[®]
AUDIO-SYSTEMS



UHF WIRELESS MICROPHONE-SYSTEM



Mobile or fixed installation for:

- Exhibitions and Fairs
- Seminars and Schools
- Stage, Church and Sporting Events





Battery-charge system

- 700 frequencies
- Up to 8 receivers simultaneously adaptable
- Integrated battery charging system

The new UHF receiver WR-701 is available in 700 selectable frequencies. Therefore it is possible to switch to a trouble-free frequency any time. Due to the integrated diversity-system we can look at best radio transmission results even in problematic environments. Furthermore this receiver contains a comfortable charging system, which on demand, enables the operator to charge the hand- and bodypack transmitter batteries.

- Blue multifunctional display showing channel, frequency and volume
- 700 selectable frequencies for trouble-free reception
- Room-saving _ 19" width for installation of 2 receivers next to each other
- The antennas are available to install in a distance.

UHF-Receiver 700 frequencies, (790-820 MHz) WR-701
complete with mains adapter and antennas



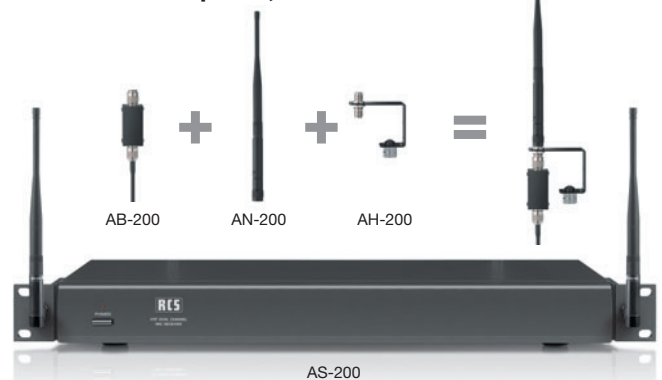
UHF-Receiver with 19"-Installation-Kit RU-201 (see Accessories)



UHF-Receiver with 19"-Installation-Kit RU-202 (see Accessories)

Technical Data	UHF-Receiver
Frequency Range	790 – 820 MHz (700 frequencies)
Operating principles	Diversity
Signal-to-noise ratio	> 94 dB
Frequency response	50 Hz – 15 KHz
Distortion factor	< 1 %
Squelch	„Noise Lock“ Squelch & Pilotone
Audio-Output	XLR: MIC bal. MIC/LINE switchable, unbalanced
Antenna	TNC, DC out 8V, 80mA
Charging jack	DC out 12 V
Power supply	12 V DC (500mA) via power supply
Scope of supply	Receiver, power supply unit, Antenna, cable (jack)
Dimensions / Weight	L 210 mm x W 175mm x D 44.3 mm; approx. 1 kg

UHF Antenna-Splitter, Booster and external Antenna



Multi-channel-systems can be assembled with accessory components. The splitter AS-200 (19", 1 RU) manages up to 4 transmitters WR-701. The booster AB-200 provides sufficient amplification as an external cable driver.

- External UHF-Antenna, (pair) AN-200**
- UHF-Antenna-Booster, (pair) AB-200**
- UHF-Antenna-Holder, (pair) AH-200**
- UHF-Antenna-Splitter, 1 RU AS-200**
- 19"-Rack Assembly-Set, for front-assembly the antenna. RU-203 T**

1 CHANNEL-SYSTEM / 700 FREQUENCIES



UHF-Wireless Hand Microphone



CE0336

Battery-charge system

This premium UHF-Wireless hand microphone with condenser capsule, is perfectly adequate for transmission of speech and singing. The LCD-display shows the Battery status and gives information on the set channel. Due to the utilization of the latest technology, this microphone is very economical with regard to electric power consumption. The 700 possible frequencies can be changed by buttons which are hidden on the microphone. Once the microphone operates with rechargeable batteries, these can be charged in connection with the receiver WR-701, via the **integrated charger**.

Technical Data	UHF-Hand Microphone
Carrier frequency	790 – 820 MHz (700 frequencies)
Modulation	FM
Transmission	PLL synth.
RF Output Power	10 mW
Frequency response	60 Hz – 15 kHz
Microphone-type	Condenser microphone
Power supply	2 pcs. Mignon (1,5V; AA); or rechargeable battery
Transmission range	approx. 60 m
Dimensions / Weight	Ø 55 mm x L 266 mm; 300 g

UHF-Hand Microphone, (700 Frequencies) WH-701
The frequencies are notifiable!

Neckworn Microphone

3-pin MINI XLR



Very comfortable condenser-neckworn-microphone conducted in the cardioid-characteristic. Due to the low dead-weight and the flexible material this microphone fits all head shapes perfectly. Available in the colours “skin-colour” and “black”.

Neckworn-Microphone, skin-color HS-200 S
Neckworn-Microphone, black HS-200 B

UHF-Bodypack-Transmitter



CE0336

Battery-charge system

3-pin MINI XLR
for LA-200 or HS-200S/B

This Bodypack transmitter is for the application of the microphones HS-200 and LA-200. The large LCD-display shows the status of the battery and the channel. The input sensitivity can be adapted, therefore Mic as well as line signals can be inducted. Very economical with regard to electric power consumption.

Once rechargeable batteries are being used, these can be charged via the **integrated charging** jack very comfortably.

Technical Data	UHF-Transmitter
Carrier frequency	790 – 820 MHz (700 frequencies)
Modulation	FM
Transmission	PLL synth.
RF Output Power	10 mW
Frequency response	50 Hz – 15 kHz
Max. deviation	± 48 kHz
Power supply	2 pcs. Mignon (1,5V; AA); or rechargeable battery
Transmission range	approx. 60 m
Dimensions / Weight	65 mm (W) x 100 mm (L) x 27 mm (D); 150 g

UHF-Transmitter, (700 Frequencies) WB-700
The frequencies are notifiable!

Lavalier Microphone

3-pin MINI XLR

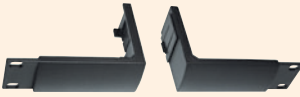


Condenser microphone in ball-characteristic. The delivery includes an 80 cm long connecting cable and a clip. It is available in the colour black.

Lavalier Microphone, black LA-200

ACCESSORIES

19"-Rackmount Set for one WR-016



19" brackets for one Receiver unit (1 RU).

Mounting-Set ... **RU-201** 1RU, for one WR-016

19"-Rack Assembly-Set for front-assembly the antenna



19" brackets for front antenna at one Receiver unit.

Mounting-Set . **RU-201 T** 1RU, for one WR-701

UHF-Antenna-Holder



Ant.-Holder **AH-200** (pair)

50 ohms antenna cable, equipped with TNC-Connectors. To install the UHF antenna in a distance (in your order please declare the desired cable length).

Antenna cable, desired length **ACT-050/xx**

19"-Rackmount Set for two WR-016



19" brackets for two Receiver units (1 RU).

Mounting-Set ... **RU-202** 1RU, for two WR-016

Adapter cable

for Bodypack Transmitter WB-700

MIC/Line adapter cable (1 m) for external signals, with Mini-XLR to 6.3 mm jack connector for WB-700 bodypack transmitter.

Adapter cable ... **AC-200** (Mic/Line)



Mic.-Holder **MH-800** for wireless Handmicrophones

UHF-Antenna-Booster



Ant.-Booster **AB-200** (pair)

2x 700-FREQUENCIES

2 CHANNEL-SYSTEM

RCS[®]

AUDIO-SYSTEMS



UHF WIRELESS MICROPHONE-SYSTEM



Mobile or fixed installation for:

- Exhibitions and Fairs
- Seminars and Schools
- Stage, Church and Sporting Events





- 2-Channel operation
- 790 – 820 MHz
- Integrated battery charging system

With this new 2-channel system it is possible to transmit 2 programs at the same time. The diversity system and the 700 selectable frequencies provide a trouble free operation. The separate volume control for each channel alleviates the controlling of the signals. The receiver can be applied in connection with the UHF-Hand Microphone WH-702 and the Bodypack transmitter WB-700. Once the receiver operates by rechargeable batteries, these can be charged via the charging system of the WR-702

- Blue LCD-display showing channel and receiver intensity
- Squelch-control for each channel
- Diversity system
- Removable antennas
- For use as a table device or for 19"-Installation (1 RU)

UHF-Receiver 700 Frequencies, (790-820 MHz) WR-702
complete with mains adapter and antennas

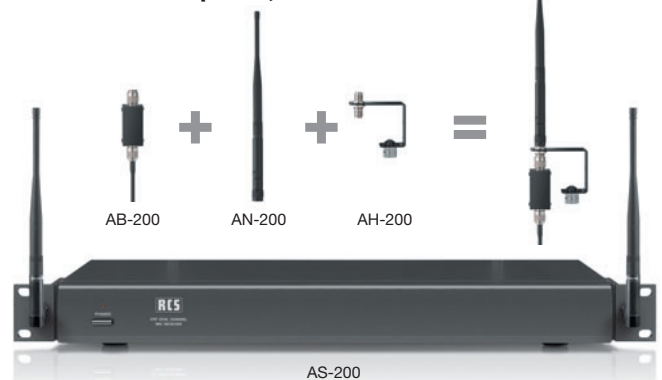
Use it as tabletop unit...



...or as a 19" built-in device (brackets in scope of supply).

Technical Data	UHF-Receiver
Frequency range	790 – 820 MHz (2x 700 frequencies)
Operating principles	Diversity
Signal-to-noise ratio	> 94 dB
Frequency response	50 Hz – 15 KHz
Distortion factor	< 1 %
Squelch	„Noise Lock“ Squelch & Pilotone
Audio-Output	XLR: MIC bal. MIC/LINE switchable, unbalanced
Antenna	TNC, DC out 8V, 80mA
Charging jack	DC out 12 V
Power supply	12 V DC (1000mA) via power supply
Scope of supply	Receiver, power supply unit, Antenna, cable (jack)
Dimensions / Weight	420 mm(L) x 180mm (W) x 45 mm (D); ca. 115 kg

UHF Antenna-Splitter, Booster and external Antenna



Multi-channel-systems can be assembled with accessory components. The splitter AS-200 (19", 1 RU) manages up to 4 transmitters WR-702. The booster AB-200 provides sufficient amplification as an external cable driver.

- External UHF-Antenna, (pair) **AN-200**
- UHF-Antenna-Booster, (pair) **AB-200**
- UHF-Antenna-Holder, (pair) **AH-200**
- UHF-Antenna-Splitter, 1 RU **AS-200**
- 19"-Rack Assembly-Set, for front-assembly the antenna. . . **RU-203 T**

2 CHANNEL-SYSTEM / 2x 700 FREQUENCIES



UHF-Wireless Hand Microphone



CE 0336 Ⓢ

Battery-charge system

This premium UHF-Wireless hand microphone with condenser capsule, is perfectly adequate for transmission of speech and singing. The LCD-display shows the Battery status and gives information on the set channel. Due to the use of the latest technology, this microphone is very economical with regard to electric power consumption. The 700 possible frequencies can be changed by buttons which are hidden on the microphone. Once the microphone operates by rechargeable batteries, these can be charged in connection with the receiver WR-701, via the **integrated charger**.

Technical Data	UHF-Hand Microphone
Carrier frequency	790 – 820 MHz (700 frequencies)
Modulation	FM
Transmission	PLL synth.
RF Output Power	10 mW
Frequency response	60 Hz – 15 kHz
Microphone type	Condenser microphone
Power supply	2 pcs. Mignon (1,5V; AA); or rechargeable battery
Transmission range	approx. 60 m
Dimensions / Weight	Ø 55 mm x L 266 mm; 300 g

UHF-Hand Microphone, (700 frequencies) WH-702
The frequencies are notifiable!

Neckworn Microphone

3-pin MINI XLR



Very comfortable condenser-neckworn-microphone conducted in the cardioid-characteristic. Due to the low dead-weight and the flexible material this microphone fits all head shapes perfectly. Available in the colours “skin-colour” and “black”.

Neckworn-Microphone, skin-color..... HS-200 S
Neckworn-Microphone, black HS-200 B

UHF-Bodypack Transmitter

Battery-charge system



CE 0336 Ⓢ

3-pin MINI XLR

for LA-200 or HS-200S/B

This Bodypack transmitter is for the application of the microphones HS-200 and LA-200. Large LCD-display shows the status of the battery and the channel. The input sensitivity can be adapted, therefore Mic as well as line signals can be induced. Very economical with regard to electric power consumption.

Once rechargeable batteries are being used, these can be charged comfortably via the **integrated charger**.

Technical Data	UHF-Transmitter
Carrier frequency	790 – 820 MHz (700 frequencies)
Modulation	FM
Transmission	PLL synth.
RF Output Power	10 mW
Frequency response	50 Hz – 15 kHz
Max. deviation	± 48 kHz
Power supply	2 pcs. Mignon (1,5V; AA); or rechargeable battery
Transmission range	approx. 60 m
Dimensions / Weight	65 mm (W) x 100 mm (L) x 27 mm (D); 150 g

UHF-Transmitter, (700 frequencies) WB-700
The frequencies are notifiable!

Lavalier Microphone

3-pin MINI XLR



Condenser microphone completed in ball-characteristic. The delivery includes an 80 cm long connecting cable and a clip. It is available in the colour black.

Lavalier Microphone, black LA-200

ACCESSORIES

19"-Rack Assembly-Set

for front-assembly the antenna



19" brackets for front antenna at two Receiver units.

Mounting-Set . . . **RU-203T**

1RU, for one WR-702/AS-200

Adapter cable

for Bodypack Transmitter WB-016

MIC/Line adapter cable (1 m) for external signals, with Mini-XLR to 6.3 mm jack connector for WB-016 bodypack transmitter.

Adapter cable . . . **AC-200**

(Mic/Line)



Mic.-Holder **MH-800**

for wireless Handmicrophones

UHF-Antenna-Holder



Ant.-Holder **AH-200**

(pair)

UHF-Antenna-Booster



Ant.-Booster **AB-200**

(pair)

50 ohms antenna cable, equipped with TNC-Connectors. To install the UHF antenna in a distance (in your order please declare the desired cable length).

Antenna cable, desired length **ACT-050/xx**

In-Ear monitoring system

PEOPLE GUIDE-SYSTEM

RCS[®]
AUDIO-SYSTEMS



- Ideally suited for:
- In-Ear Monitoring ■
 - Multilingual conferences ■
 - Mobile device to guide people ■

FREQ
16

wireless
((()))

CE0336



- 2-channel system
- Mono/stereo operation
- 2 switchable MIC/line-inputs on combo-jacks (XLR, catch)
- 2x Line-Out for cascading or recording
- Mobile device to guide people

Description of the system

Whether on stage, while broadcasting or at multilingual conferences: the latest, multifunctional monitoring system will convince you of its functionality.

This sensational 2-channel technique enables you to listen into two programmes at the same time. Therefore it is possible to induct a microphone signal and induct accompanying music as well. The mono/stereo operation enables the programmes to be mixed or to transfer the signal to the headphones separately.

Description of the transmitter

The transmitter WT-016 operates with 16 frequencies. Up to 6 systems can be operated simultaneously. This characteristic is a great advantage in case a conference will be broadcasted in many languages.

The antenna is mounted on the rear cover via a TNC-compound and can be removed any time. In case you should decide to mount the device into a 19" rack, it is possible to mount the antenna on the front panel, using a special mounting-set.

Description of the receiver

The receiver BR-016 D is due to its' diversity system very much able to ensure perfect reception even in a somewhat problematic rooms with reference to transmission. The coverage of the systems improves dramatically.

Characteristic of the equipment of the BR-016 D:

- 16 frequencies in order to build multichannel systems or to switch to another frequency, which is free of disturbance.
- Record-out 3.5 mm, to connect a recording device.
- Battery- or rechargeable battery operation.
- Includes a charging connector in order to comfortably charge the rechargeable battery (charging via a UHF-system WR-701/WR-702 or mains supply 12 V, 500 mA).
- State of battery- and charging status control LED.
- In connection with the transmitter WH-016/WB-016 it can be used as a mobile device to guide people.
- Ear-phone output 3.5 mm, e.g. for IEP-100 or SHP-300.



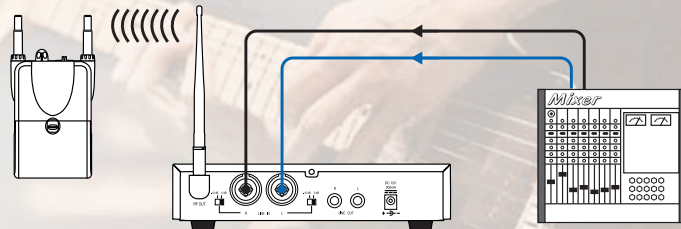
Picture shows SHP-300

UHF-Transmitter, 16 frequencies (794-813 MHz)	WT-016
UHF-Receiver, 16 frequencies (794-813 MHz)	BR-016 D
In-Ear Phone, (stereo)	IEP-100
Stereo Head Phone, (stereo)	SHP-300

Enables perfect monitoring on stage, and the purchase of very expensive monitors belongs to the past, as well as continuous danger of acoustic feedback.

Thanks to the mono-mix/stereo control, the user can listen into the accordingly adjusted audio signal as and when required.

Example of use: IN-EAR MONITORING



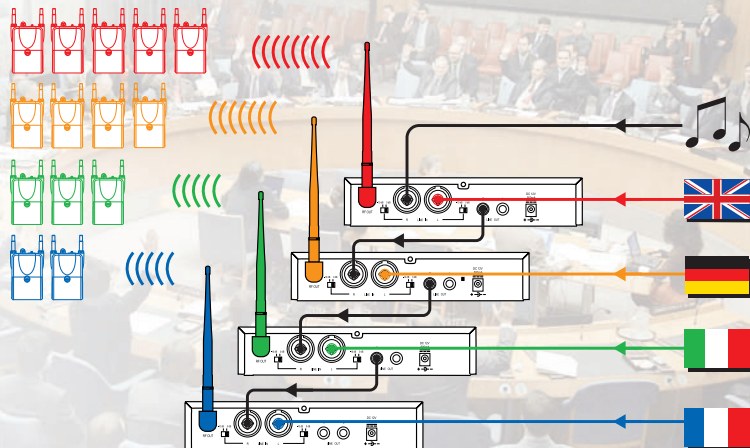
Recommended articles:

- WT-016** (transmitter)
- BR-016 D** (receiver)
- IEP-100** (In-Ear phones)

Use the monitoring system in order to assemble multi-channel devices.

A diverse number of programmes can be transmitted simultaneously on to any amount of receivers.

Example of use: MULTILINGUAL CONFERENCES



Recommended articles:

- WT-016** (transmitter)
- BR-016 D** (receiver)
- IEP-100** (In-Ear phones)

Each in the corresponding amount of devices

Whether for museums, business premises or for guided tours, the combination of the receiver BR-016D and the hand- or pocket transmitter WH-016/WB-016 add up to the perfect mobile device to guide people.

This kind of acoustic sounding turned out to be the most suitable for, i.e. guided tours that take place in especially noisy environments.

Example of use: MOBILE DEVICE TO GUIDE PEOPLE



Recommended articles:

- WH-016** (hand microphone) or
- WB-016** (bodypack) with HS-200 (headset) or LA-200 (lavalier)
- BR-016 D** (receiver)
- SHP-300** (head phones)

Each in the corresponding amount of devices

RCS IN-EAR SYSTEM

Accessories

19"-Rack Mounting Set

for antenna front assembly



19" brackets to assembly the antenna at the frontside of the device.

Mounting-Set . RU-203 T
for 2 pcs. WT-016

19"-Rack Mounting Set

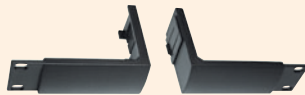
for antenna front assembly



19" brackets to assembly the antenna at the frontside of the device.

Mounting-Set . RU-101 T
for 1 pcs. WT-016

19"-Rackmount Set



19" brackets for one Receiver unit WT-016 (1 RU).

19"-Rackmount Set **RU-201**
1 RU, for 1 pcs. WT-016

Technical Data	UHF-Transmitter WT-016
Frequency range	794 – 813 MHz (16 frequencies)
Transmission method	PLL Synthesized
RF Power Output	max. 10 mW
Audio-Input MIC	XLR, bal. -30 dB (L/R)
Audio-Input LINE	Jack 6,3 mm, unbal. 0 dB (L/R)
Audio-Output LINE	Jack 6,3 mm, unbal. 0 dB (L/R)
Output ear phones	Jack 6,3 mm
Max. Hub	± 48 kHz
Audio frequency range	100 Hz – 12 kHz
Power supply	12V DC / 500 mA
Range	50 – 70 m
Dimensions / Weight	W 210 mm x H 44,3 mm x D 175 mm; approx. 1 kg

Technical Data	UHF-Receiver BT-016 D
Frequency range	794 – 813 MHz (16 frequencies)
Function type	Diversity
Signal-to-noise ratio	> 94 dB
Audio frequency range	100 Hz – 12 kHz
Audio output Line	-10dB
Output ear phones	3,5 mm, 30mW
Charging Input	12V DC / 500 mA
Max. Hub	± 48 kHz
Power supply	2x Mignon (1,5V; AA) or Accus
Range	50 – 70 m
Dimensions / Weight	W 106 mm x H 30 mm x D 70 mm; ca. 200 g

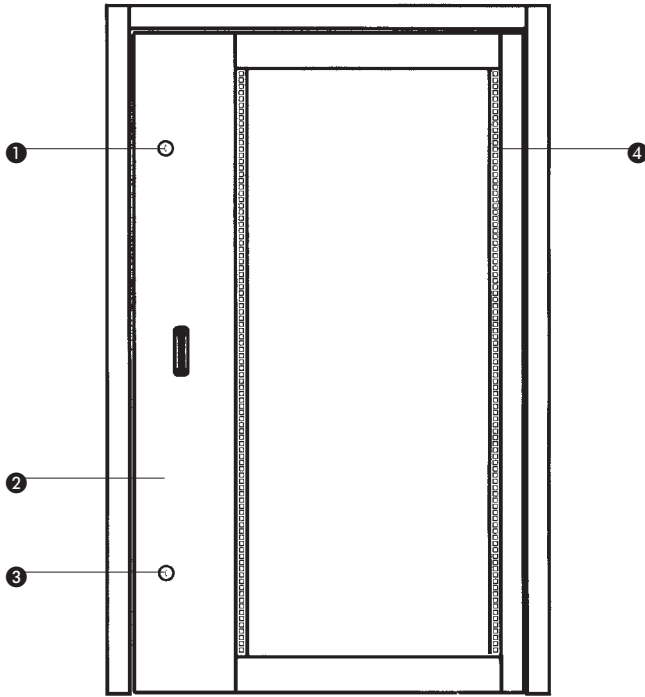
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19" cabinets and accessories



7
Page
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Part 7



- 1 Keyed cylinder lock
- 2 Stable 19" swinging rack
- 3 Universal lock
- 4 19" rackrails with ASA hole pattern



The picture shows the additional castor on 30 and 40 RU swinging rack cabinets.

1 RU = 44,45 mm (1 1/4").

H = overall height in mm
D = overall depth in mm
W = overall width in mm
h = usable height (for 19" units) in mm
d = usable depth (rack frame can be pivoted) in mm

Models	RU	H	h	D	d	W	Weight
RSS-5524	24	1250	1067	550	490	800	93 kg
RSS-5530	30	1515	1334	550	490	800	108 kg
RSS-5540	40	1960	1778	550	490	800	132 kg

Description

The RSS series 19" swing frame cabinets presented in this section have been especially developed for the use with audio systems.

The cabinets with a 19" swing frame rack serve to accommodate rackmount devices, subracks, front panels etc. with 19" design according to DIN 41494.

The cabinets feature high-quality design and finish as well as excellent stability, thus complying with the latest standards of manufacture. For example, the rackrails have ASA hole pattern.

Please consider the following features:

- The frame construction consists of extremely stable welded sheet steel sections with holes for floor and wall anchoring. Colour: RAL-7032.
- Safe cooling is ensured through appropriate design of the rear panel (free space of 3 RU at the bottom, perforated vent sections at the top).
- The additional castor for the swing frame rack (with 30 and 40 RU cabinets) permits easy pivoting of the rack frame, even when the cabinet is full.
- The opening angle of 170° provides easy access to the rear of the rack, even when devices are mounted in the swing frame rack.
- Cable entry is possible from the top, the bottom or the rear. Mounting facilities for components such as terminal strips, etc. are provided on the rear.
- The 19" rackrails with ASA hole pattern permit mounting of devices from different manufacturers.
- The toughened safety plexiglass doors of the RTS series have keyed cylinder locks and are available for all swing frame rack cabinets of the RSS series.
The mounting of the plexiglass doors to the swinging rack cabinets will be carried out by the customer. To provide optimum customer-friendliness, the cabinets have been well prepared in such a way that the requirements for mounting the doors have been reduced to a minimum.
- For devices that do not have a 19" design (HIFI design) a wide range of 19" accessories such as shelves, sliding trays, drawers, blank panels, etc. is available. See "19" accessories" section in this catalogue.

19"-accessory parts

With heavy rackmount devices the use of a pair of RGL-550 slide rails is recommended.

Slide rails **RGL-550**

The optional RST-5500 base is suitable for all cabinets of the RSS series and provides additional room, e.g. for cable management.

Base, H x W x D 200 x 800 x 550 mm (weight: 27 kg) **RST-5500**



19" swing frame cabinets, depth 550 mm
(with plexiglass doors)

19" swing frame cabinets, depth 550 mm
(without doors)

Please note: When comparing prices, please take into account, our swing frame cabinets are delivered completely assembled and packaged.

Model designations

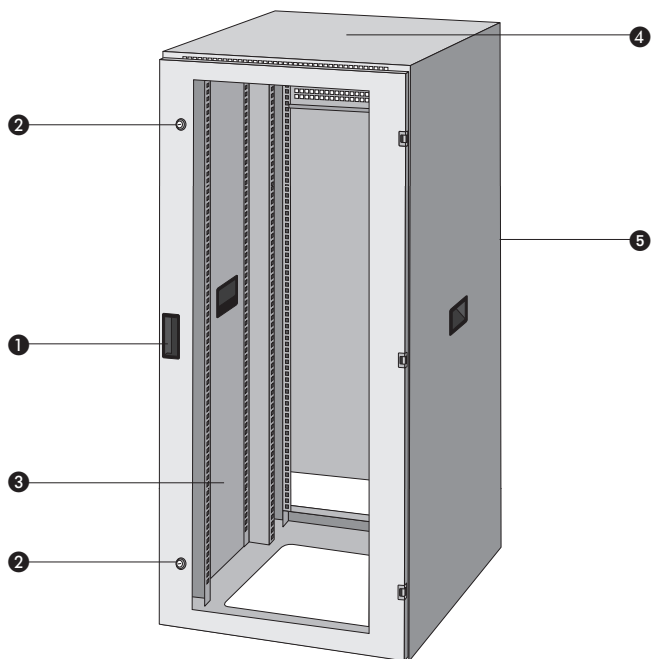
Plexiglass doors

Plexiglass door , for RSS-5524, (25 kg)	RTS-024
Plexiglass door , for RSS-5530, (30 kg)	RTS-030
Plexiglass door , for RSS-5540, (39 kg)	RTS-040

Model designations

19" swing frame cabinets

19" Swing Frame Cabinet , (24 RU)	RSS-5524
19" Swing Frame Cabinet , (30 RU)	RSS-5530
19" Swing Frame Cabinet , (40 RU)	RSS-5540



- 1 Handle with grip recess
- 2 Cylinder lock
- 3 Full view plexiglass doors
- 4 Louvers for safe cooling
- 5 Rear panel removable

1 RU = 44.45 mm (1 3/4").

H = overall height in mm **h** = useable height (for 19" units) in mm
D = overall depth in mm **d** = useable depth (for 19" units) in mm
W = overall width in mm

Models	RU	H	h	D	d	W	Weight
RAB-014	14	707	630	600	530	569	30,0 kg
RAB-018	18	885	808	600	530	569	34,0 kg
RAB-024	24	1152	1075	600	530	569	38,0 kg
RAB-030	30	1418	1341	600	530	569	44,0 kg
RAB-036	36	1685	1608	600	530	569	46,0 kg
RAB-042	42	1952	1875	600	530	569	50,0 kg

Description

The 19" racks of the new RAB series were particularly developed for the professional application in PA and sound systems. They are outstandingly manufactured and correspond in the reference of assembly dimensions and protection class to the current standards.

The cabinets serve as a placement of devices, module carriers, modules as well as accessories of the 19" systems compliant to DIN 41494.

Please consider the following features:

- The extremely stable frame construction consists of welded steel sheet. The housing is completely powder-coated and supplied in the RAL colour 7035.
- For all models of the RAB series a plexiglass door is available, which can be locked due to two cylinder locks, in the scope of supply.
- An optimal ventilation of the system is ensured with the optional active fan panel RFF-200. Two high performance 15 W filter fans provide the necessary air interchange during overheating.
- The use of the base plate (RBP-100), lockable by a sliding mechanism, ensures a dust free draft of air. The cable harness can be comfortably led outside through the foam material catch.
- With heavy rackmount devices the use of a pair of RGL-525 slide rails is recommended.
- For devices that do not have a 19" design (HIFI design) a wide range of 19" accessories such as shelves, sliding trays, drawers, blank panels, etc. is available. See "19" accessories" section in this catalogue.

19"-accessory parts

The two-way fan panel, particularly developed for this cabinet, is installed at the cabinet rear side. The current supply is made by 230 V mains.



Van panel **RFF-200**

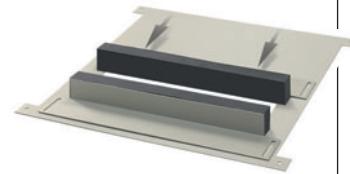
Thermostat controlled with a control range of 0-60°C. The closing contact activates the fan panel RFF-200 when achieving the critical temperature.

Thermostat for top hat rail mounting **RTC-200**

The set includes 4 levelling feet for the 19" cabinets of the RAB series which serve to compensate uneven floors.

Levelling feet **RJF-300**

The base plate RBP-100 is lockable and prevents the penetration of dust and dirt particles. Cables can be led out tidily.



Base plate **RBP-100**

This extremely stable set of castor bases includes 2 fixed castors and 2 swivel castors with brakes (400 kg max. load).

Castor base set **RDR-350**

With heavy rackmount devices the use of a pair of RGL-525 sliding rails is recommended.

Sliding rails **RGL-525**

MADE IN GERMANY



Note: When comparing prices, please take into account, our cabinets of the RAB series are delivered completely assembled and packaged.

Model designations

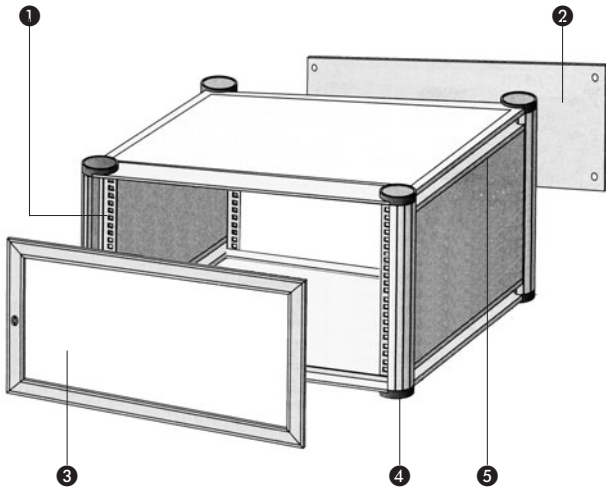
Plexiglass doors for 19" cabinets »RAB«

Plexiglass door, (14 RU)	RTB-014
Plexiglass door, (18 RU)	RTB-018
Plexiglass door, (24 RU)	RTB-024
Plexiglass door, (30 RU)	RTB-030
Plexiglass door, (36 RU)	RTB-036
Plexiglass door, (42 RU)	RTB-042

Model designations

19" cabinets without doors

19"-Cabinet, (14 RU)	RAB-014
19"-Cabinet, (18 RU)	RAB-018
19"-Cabinet, (24 RU)	RAB-024
19"-Cabinet, (30 RU)	RAB-030
19"-Cabinet, (36 RU)	RAB-036
19"-Cabinet, (42 RU)	RAB-042



- 1 19" rackrails with ASA hole pattern
- 2 Rear panel shortened by 3 RU to provide cable entry and better ventilation
- 3 Plexiglass door for the models RAC-006 T, RAC-009 T, RAC-012 T, RAC-018 T, RAC-024 T
- 4 Feet, can be replaced by optional levelling feet (RJF-100) or twin wheeled swivel castors (RDR-150)
- 5 Aluminium sections designed as grip

1 RU = 44.45 mm (1 3/4").

H = overall height in mm h = useable height (for 19" units) in mm
 D = overall depth in mm d = useable depth (for 19" units) in mm
 W = overall width in mm

Models	RU	H	h	D	d	W	Weight
RAC-006	06	319	266	440	395	568	8.0 kg
RAC-006 T	06	319	266	440	335	568	9.5 kg
RAC-009	09	452	399	440	395	568	10.0 kg
RAC-009 T	09	452	399	440	335	568	12.0 kg
RAC-012	12	586	532	500	455	568	12.0 kg
RAC-012 T	12	586	532	500	395	568	15.0 kg
RAC-018	18	854	800	500	455	568	16.0 kg
RAC-018 T	18	854	800	600	495	568	20.0 kg
RAC-024	24	1120	1066	500	455	568	20.0 kg
RAC-024 T	24	1120	1066	600	495	568	25.0 kg

Description

The 19" racks of the series RAC and RAC-T (with plexiglass door) presented in this section have been developed in cooperation with one of the most renowned manufacturers especially for the use with audio systems.

They comply with international standards, namely DIN 41494, IEC 297-1 (dimensions) and IEC-529 (IP rating of IP 40) and feature high-quality design and finish as well as excellent stability, thus meeting the latest standards of manufacture. For example, the rackrails have ASA hole pattern.

Please consider the following features:

- The lateral aluminium sections have been designed as user-friendly grips.
- The frame construction consists of stable extruded aluminium sections. The panels are also made of aluminium sheet (lightweight) and are finished in RAL-7035 light grey powdered coat.
- The lockable levelling feet (option, see accessories) serve to compensate for uneven floors, thus providing the required stability.
- The racks can be stacked and offer numerous design and extension options.
- The racks of the types RAC-006 T (6 RU), RAC-009 T (9 RU), RAC-012 T (12 RU), RAC-018 T and RAC-024 T are equipped with a plexiglass door at the front.
- The 19" rackrails with ASA hole pattern enable mounting of devices from different manufacturers.
- With heavy rackmount devices the use of a pair of RGL sliding rails is recommended.
- For devices that do not have a 19" design (HIFI design) a wide range of 19" accessories such as shelves, sliding trays, drawers, blank panels, etc. is available. See "19" accessories" section in this catalogue.

19" accessory parts

The set includes 4 levelling feet for the 19" racks which serve to compensate for uneven floors, thus providing the required stability.

Levelling feet **RJF-100**

This castor set for RAC series cabinets includes 4 twin wheeled swivel castors.

Each castor has a load capacity of approx. 30 kg.

Twin wheeled swivel castor set **RDR-150**

With heavy rackmount devices the use of a pair of slide rails (RGL-265) is recommended for RAC-006T and RAC-009T racks.

Slide rails, (1 pair) **RGL-265**

With heavy rackmount devices the use of a pair of slide rails (RGL-325) is recommended for RAC-006, RAC-009 and RAC-012 T.

Slide rails, (1 pair) **RGL-325**

With heavy rackmount devices the use of a pair of slide rails (RGL-385) is recommended for RAC-012, RAC-018 and RAC-024.

Slide rails, (1 pair) **RGL-385**

With heavy rackmount devices the use of a pair of slide rails (RGL-425) is recommended for RAC-018T and RAC-024T racks.

Slide rails, (1 pair) **RGL-425**



Note: When comparing prices, please take into account, our cabinets of the RAC series are delivered completely assembled and packaged.

Model designations

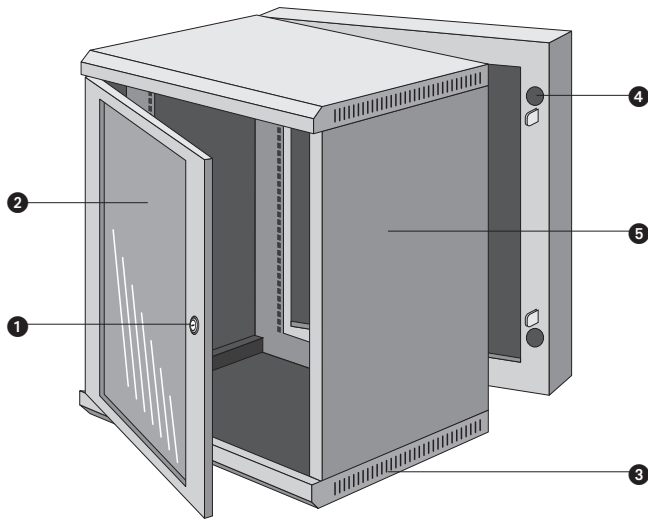
19" cabinets and enclosures without doors

19" Cabinet, (6 RU)	RAC-006
19" Cabinet, (9 RU)	RAC-009
19" Cabinet, (12 RU)	RAC-012
19" Cabinet, (18 RU)	RAC-018
19" Cabinet, (24 RU)	RAC-024

Model designations

19" cabinets and enclosures with plexiglass door

19" Cabinet inc. plexiglass door, (6 RU)	RAC-006 T
19" Cabinet inc. plexiglass door, (9 RU)	RAC-009 T
19" Cabinet inc. plexiglass door, (12 RU)	RAC-012 T
19" Cabinet inc. plexiglass door, (18 RU)	RAC-018 T
19" Cabinet inc. plexiglass door, (24 RU)	RAC-024 T



- 1 Cylinder lock
- 2 Swing frame full view plexiglass doors (ESG Security glass, 3 mm)
- 3 Louvers for safe cooling
- 4 Rearpanel for wall assembly
- 5 Swing frame 19" cabinet (main part)

1 RU= 44,45 mm (1¾").

H = overall height in mm **D** = overall depth in mm
W = overall width in mm **d** = useable depth (for 19" units) in mm
RU = Rack units

Models	RU	H	D	d	W	Weight
WSS-006	6	337	650	470	600	22 kg
WSS-009	9	510	650	470	600	29 kg
WSS-012	12	640	650	470	600	34 kg
WSS-015	15	770	650	470	600	36 kg

Description WSS series

19" swing frame cabinets can be used with audio systems and special media technology. The cabinets of the WSS-series are very stable despite a rather low empty weight and can be loaded with a **max. of 60 kg**. A threepart assembly with a swinging, lockable centre section enables an easy insertion and wiring of the devices.

The container is made of sheet steel and is powder coated (light-grey, RAL 7035). The latest passive ventilation system ensures that emerging heat will be directed outwards even if the door is closed.

The door is equipped with an insert of a 4 mm thick safety glass. Depending on the requirements the door can be mounted in order to be opened to the left or to the right.

Please consider the following features:

- Available in 6, 9, 12 and 15 RU.
- 19"-rail can be adjusted continuously in depth on the front.
- Security glass door with safety glass (4mm) with a cylinder lock. Beam width of the door is 180°.
- Right hinged and left hinged door hang
- Maximum built-in depth: 545 mm.
- Grounding safety class system according to EN 60950, DIN VDE 0800, 0804, and 0100.
- Grounding set, drilling template and attachment screw are included in scope of delivery.
- Optional empty blind with integrated strip can be used to comfortably pass cable looms.

*

19"-Accessory parts

Implementation panel with strip enables comfortable cable running of single audio cables or entire cable looms. Colour: light grey.



Implementation-Panel, (1RU) **RDP-101**

Patch panel with 5 cable guides to run patch- and audio-cables neatly. Colour: light grey



Patch-Panel, (1RU) **RRP-101**

MADE IN GERMANY

NEW



Note: When comparing prices, please take into account, our cabinets of the WSS series are delivered completely assembled and packaged.

Model designations

19" Wall-Swing Frame Cabinet, (6 RU)	WSS-006
19" Wall-Swing Frame Cabinet, (9 RU)	WSS-009
19" Wall-Swing Frame Cabinet, (12 RU)	WSS-012
19" Wall-Swing Frame Cabinet, (15 RU)	WSS-015

MADE IN GERMANY

NEW



Description

Our 19" rack flight cases are designed in accordance with the international 19" standard a meeting of highest requirements regarding the quality, stability, handling and design.

They are able to withstand the rigours of everyday use on stages and events as well as shipping through carriers or by air-freight.

Please consider the following features:

- The corpus is made out of "double-door" 7mm multilayer birch-multiplex-wood.
- Edge protection made out of robust aluminium angles that are fitted all around (25/25 mm).
- All 8 corners are additionally equipped with ball corners made from galvanized sheet steel.
- At the bottom of the "flight-case" there are 4 stable rubber feet.
- All flight-cases are supplied with flap handles in recessed grips and butterfly locks.
- 19" rack stripes serves professional usage on the front side as well as on the back side.

Model designations

- 19"-Rack „Flight-Case“, (10 RU)..... **RFC-010**
- 19"-Rack „Flight-Case“, (12 RU)..... **RFC-012**
- 19"-Rack „Flight-Case“, (15 RU)..... **RFC-015**
- 19"-Rack „Flight-Case“, (20 RU)..... **RFC-020**

- Continuous mounting of the drawers with enclosed number of fastening screws, screw nuts (M5) as well as discs and rosettes.
- One removable cover on the front and in the back of the flight-case.

*

Model	RU	H	h	D	d	W	Weight
RFC-010	10	510	450	675	520	550	14 kg
RFC-012	12	595	545	675	520	550	16 kg
RFC-015	15	730	680	675	520	550	18 kg
RFC-020	20	945	905	675	520	550	21 kg

RU = 1 RU about 44,45 mm (1 3/4") D = Total depth in mm
 H = Total height (with feet) in mm d = Built-in depth (for 19"-Devices) in mm
 h = Built-in height (for 19"-Devices) in mm W = Total width in mm

Accessories:

Rack Support Rail Set

The ESS-408 rack support rail set includes 1 pair of aluminium angles. Support rails are recommended with heavy rack mount devices.

Rack Support Rail Set..... ESS-520

Castor Case for RFC-Series

The RUS-100 castor base consists of an extremely stable base plate made of multilayer multiplex wood (15mm), which is finished in black. Four 100 mm blue high-quality castors are equipped with two stoppers. The dimensions of the RUS-100 are 535 (b) x 600 (d) mm, weight approx. 6 kg.

Castor Case, 4 pcs. 100 mm-„Blue-Wheels“..... RUS-100

MADE IN GERMANY



Description

Our 19" angle rack flight cases are designed in accordance with the international 19" standard a meeting of highest requirements regarding the quality, stability, handling and design.

They are able to withstand the rigours of everyday use on stages and events as well as shipping through carriers or by airfreight.

Please consider the following features:

- The corpus is made out of "double-door" 7mm multilayer birch-multiplex-wood.
- Edge protection made out of robust aluminium angles that are fitted all around (25/25 mm).
- All 8 corners are additionally equipped with ball corners made from galvanized sheet steel.
- At the bottom of the "flight-case" there are 4 stable rubber feet.
- All flight-cases are supplied with flap handles in recessed grips and butterfly locks.
- Arrangable rack rail on the top (10 RU/19").

- Service cover (back) with spring lock for easy access to the back of the device.
- One removable cover on the front and on the top of the flight-case.

*

Model	RU	H	h	D	d	W	Weight
WFC-010	10	570	455	610	500	550	16 kg
WFC-012	12	660	545	610	500	550	18 kg
WFC-015	15	750	680	610	500	550	20 kg
WFC-020	20	980	905	610	500	550	24 kg

RU = 1 RU about 44,45 mm (1 1/4")
 H = Total height (with feet) in mm
 h = Built-in height (for 19"-Devices) in mm
 D = Total depth in mm
 d = Built-in depth (for 19"-Devices) in mm
 W = Total width in mm

Accessories:

Castor Case for WFC-Series

The RUS-101 castor base consists of an extremely stable base plate made of multilayer multiplex wood (15mm), which is finished in black. Four 100 mm blue high-quality castors are equipped with two stoppers. Weight approx. 6 kg.

Castor Case, 4 pcs. 100 mm-„Blue-Wheels“ **RUS-101**

Model designations

19" Angle „Flight-Case“, (10 RU) **WFC-010**
19" Angle „Flight-Case“, (12 RU) **WFC-012**
19" Angle „Flight-Case“, (15 RU) **WFC-015**
19" Angle „Flight-Case“, (20 RU) **WFC-020**



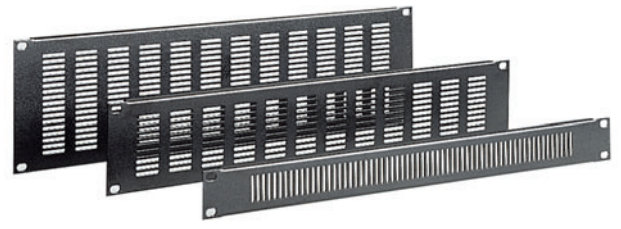
Description

These 19" blank panels made of 1.3 mm steel serve to fill empty spaces in 19" rack cabinets. The blank panels are flanged on top and bottom to increase strength. They may also be used for custom fabrication.

Please consider the following features:

- The 19" blank panels are finished in black powdered coat.
- The panels are available in 3 different heights.

19" Blank Panel , 1 RU (weight: 0.34 kg)	RLP-001
19" Blank Panel , 2 RU (weight: 0.59 kg)	RLP-002
19" Blank Panel , 3 RU (weight: 0.85 kg)	RLP-003



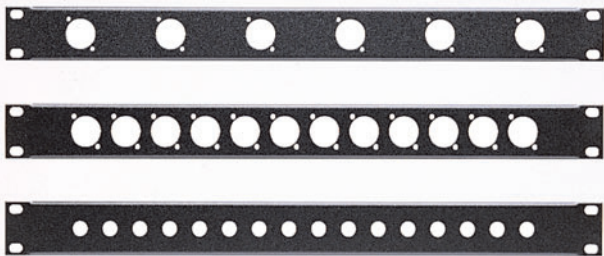
Description

These 19" vent panels made of 1.3 mm steel serve to fill empty spaces in 19" rack cabinets. They have 3 x 25 mm vent slots to provide optimum ventilation of the 19" rack cabinet.

Please consider the following features:

- The 19" vent panels are finished in black powdered coat.
- The panels are available in 3 different heights.

19" Vent Panel , 1 RU (weight: 0.28 kg)	RLF-001
19" Vent Panel , 2 RU (weight: 0.47 kg)	RLF-002
19" Vent Panel , 3 RU (weight: 0.66 kg)	RLF-003



Description

The 19" rack panels made of 1.3 mm steel serve to accommodate XLR sockets (universal "D" type) and jack sockets.

Please consider the following features:

- The XLR rack panels can accommodate 6 or 12 XLR sockets.
- The rack panel for jacks can accommodate up to 16 jack sockets.

19" XLR Rack Panel , 1 RU, 6 XLR (weight: 0.30 kg)	RXP-061
19" XLR Rack Panel , 1 RU, 12 XLR (weight: 0.26 kg)	RXP-121
19" Jack Rack Panel , 1 RU, 16 jacks (weight: 0.30 kg)	RKP-161



Description

The 1 RU rack lighting serves as an additional light source for 19" racks. This can be useful especially for mobile systems.

Please consider the following features:

- The 19" lighting panel is equipped with a single lamp (12 V), an on/off switch and a dimmer.
- The gooseneck lamp with Neutrik XLR connector can be easily replaced.

19" Lighting Panel , 1 RU (weight: 0.80 kg)	REL-001
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Description

This 19" sliding shelf is suitable for depositing or mounting devices and accessories. The base plate slides on rails allows full extension. Additionally, holes are provided in the base plate for fastening components.

Please consider the following features:

- The 19" sliding shelf is finished in black powdered coat. It is approx. 240 mm extendable and has a mounting depth of approx. 370 mm.
- The sliding shelves are made of 1.2 mm steel and are extremely stable.

19" Sliding Shelf, 3 RU (weight: 4.60 kg) **RAU-003**



Description

This 19" writing shelf slides on rails, allows full extension. It can be used as a writing surface or to deposit items such as data sheets.

Please consider the following features:

- The 19" writing shelf made of 1.2 mm steel is finished in black powdered coat. It is approx. 300 mm extendable and has a mounting depth of approx. 370 mm.
- Additionally, the writing shelf has a handy tray for ball-point pens and the like.

19" Writing Shelf, 1 RU (weight: 3.44 kg) **RSP-001**



Description

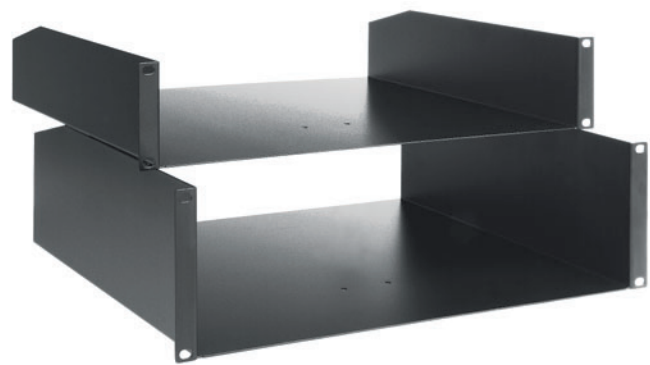
These 19" clamping shelves serve to install components that require captivation. The clamps are adjustable in height and depth to provide a secure fit.

Please consider the following features:

- The mounting depth of these 19" clamping shelves is 250 mm.
- They are finished in black powdered coat.

19" Clamping Shelf, 2 RU (weight: 2.20 kg) **REF-002**

19" Clamping Shelf, 3 RU (weight: 2.50 kg) **REF-003**



Description

The 19" universal shelves are extra deep and can be used for accommodating accessories, non-rackmount components and the like. Holes are provided in the shelf itself which can be used for fasting components.

Please consider the following features:

- The mounting depth of these universal shelves is 370 mm. They are made of 1.6 mm steel.
- They are finished in black powdered coat.

19" Universal Shelf, 2 RU (weight: 2.77 kg) **RAF-002**

19" Universal Shelf, 3 RU (weight: 3.36 kg) **RAF-003**



Description

19" storage box which serves to accommodate components and accessories. It has a hinged cover that swings down. All storage boxes with hinged cover have flush pulls.

Please consider the following features:

- The 19" storage boxes are finished in black powdered coat.
- They are made of 1.2 mm steel and have a mounting depth of 250 mm.

19" Storage Box , 2 RU (weight: 3.90 kg)	RKB-002
19" Storage Box , 3 RU (weight: 4.95 kg)	RKB-003



Description

19" drawers which serve to accommodate components and accessories. The drawer slides are on rails and enable full extension.

All drawers are equipped with a flush pull and a lock with 2 keys.

Please consider the following features:

- The mounting depth of the drawers is 360 mm.
- The drawers are made of 1.2 mm steel and are extremely stable.

19" Drawer , 2 RU (weight: 6.20 kg)	RSL-002
19" Drawer , 3 RU (weight: 7.30 kg)	RSL-003



Description

Empty 19" housing which can be used for custom fabrication.

Please consider the following features:

- The housings are finished in black powdered coat and have a 3 mm aluminium front panel.
- The mounting depth of these empty housings is 240 mm.

19" Empty Housing , 1 RU, (weight: 2.54 kg)	RLG-001
19" Empty Housing , 2 RU, (weight: 3.23 kg)	RLG-002
19" Empty Housing , 3 RU, (weight: 3.83 kg)	RLG-003



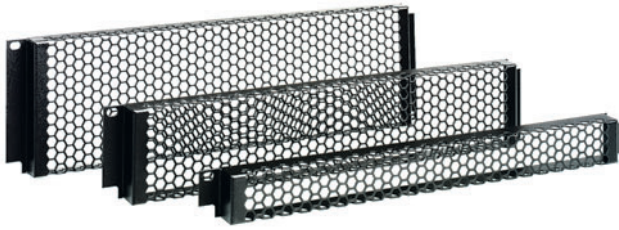
Description

Empty 19" housings with vent slots which can be used for custom fabrication.

Please consider the following features:

- The housings are finished in black powdered coat and have a 3 mm aluminium front panel.
- The mounting depth of these empty housings is 300 mm

19" Empty Housing , 1 RU, (weight: 3,24 kg)	RLL-001
19" Empty Housing , 2 RU, (weight: 3,98 kg)	RLL-002
19" Empty Housing , 3 RU, (weight: 4,84 kg)	RLL-003



Description

These 19" protective grids are made of 1.5 mm and serve to protect your devices against impact.

Please consider the following features:

- The 19" protective grids are finished in black powdered coat.
- They are fixed diagonally by means of the 19" rackmount screws.

- 19" Protective Grid, 1 RU (weight: 0.43 kg) RSG-001**
- 19" Protective Grid, 3 RU (weight: 0.46 kg) RSG-002**
- 19" Protective Grid, 3 RU (weight: 0.54 kg) RSG-003**



The set includes 25 M5 or M6 oval head screws and the matching plastic cup washers.

- Additional Screw Set M5, M5 x 16 RKS-005**
- Additional Screw Set M6, M6 x 16 RKS-006**



The set includes 25 M5 or M6 cage nuts for mounting the rackmount devices on the front rackrails.

- Cage Nut Set M5 RKM-005**
- Cage Nut Set M6 RKM-006**



Description

Stage boxes for the connection of multicore cables, for example, to distribute the cables coming from the mixer on the stage.

All stage boxes are suitable for the installation of universal XLR sockets. The XLR holes are identified by numbers. The rugged boxes are made of sheet steel and are finished in black powdered coat.

The difference between the XSH series stage boxes and the XSB series stage boxes (on the right) is, that with the XSH boxes a complete Harting connection flange can be installed for cable entry.

- XLR-Stage-Box, 16 XLR sockets/Harting (weight: 1.22 kg) XSH-016**
- XLR-Stage-Box, 24 XLR sockets/Harting (weight: 1.27 kg) XSH-024**



Description

Stage boxes for the connection of multicore cables, for example, to distribute the cables coming from the mixer on the stage.

All stage boxes are suitable for the installation of universal XLR sockets. The XLR holes are identified by numbers. The rugged boxes are made of sheet steel and are finished in black powdered coat.

- XLR-Stage-Box, 8 XLR sockets (weight: 0.95 kg) XSB-008**
- XLR-Stage-Box, 16 XLR sockets (weight: 1.30 kg) XSB-016**
- XLR-Stage-Box, 24 XLR sockets (weight: 1.65 kg) XSB-024**

·STAGE-SOUND·
**Amplifiers, effects and
accessories**



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Part 8

FRONT VIEW

1 LED indicators

- Temperature LED
lit when temperature problems occur
- Clip/Lim LED
lit in the event of signal overload
- Signal LED
lit from an amplification of 100 mV
- Power LED
indicates operating status of respective channel

2 Volume controls

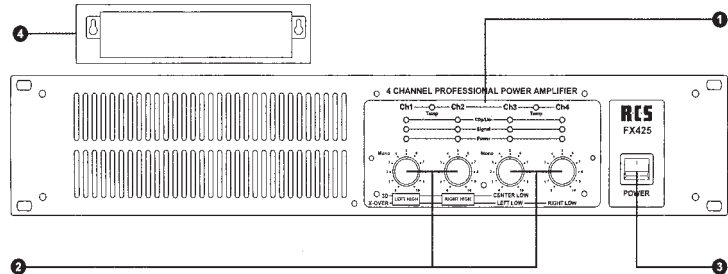
For adjusting the volume of the respective channel

3 Power switch

ON/OFF switch

4 Cover

Protective cover for volume controls



REAR VIEW

1 Power cord

Power cord for 230 V AC.

2 Signal input and LINK

Balanced inputs on XLR sockets and LINK outputs on jack sockets (6.3 mm).

3 Limiter switch

Switch for activating the peak limiter

4 LS outputs

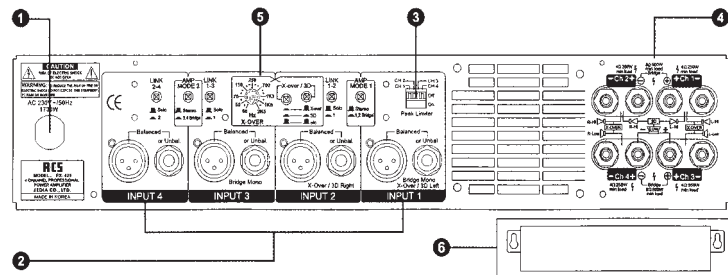
2-pin screw-type sockets for connection of loudspeakers

5 Operating modes

Switch to select the operating mode: Stereo, mono, bridged, X-Over and 3D.

6 Cover

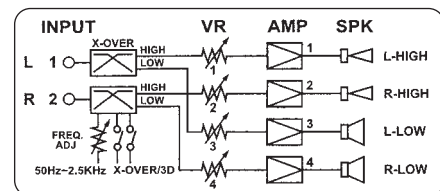
Cover for the operating mode selector switch



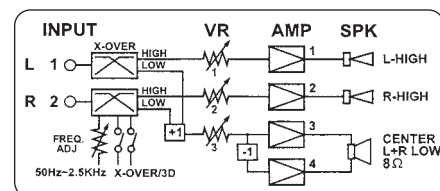
Technical data

FX-425

Output power (1 kHz, 1 % THD)	8 ohms stereo	4 x 165 W
	4 ohms stereo	4 x 250 W
	8 ohms bridged	2 x 500 W
Output power (1 kHz, 0.1 % THD)	8 ohms stereo	2 x 150 W
	4 ohms stereo	2 x 230 W
Frequency response at 4 ohms		20 - 20,000 Hz +0 / -0.5 dB
Input sensitivity at 4 ohms		+4 dBu (1.23 V)/30 kohms bal.
Signal-to-noise ratio		better than 100 dB
Crosstalk		better than 65 dB
Input clipping		10 Vrms (+22 dB)
Damping factor (8 ohms, 1 kHz)		better than 300
Slew rate		better than 50 V/us
Power supply		220V - 240V/AC, 50-60 Hz
Power consumption at 4 ohms		1730 W
Dimensions (W x H x D)		483 x 88 x 380 mm, (2 RU)
Weight		16.5 kg



Connection example with X-over 2-channel operation



Connection example with 3D 2-channel operation

With X-Over/3D and Limiter



● GENERAL

With its 4 separate output stages, this 19" 4-channel power amplifier provides different operating modes and a wide range of connection options.

● SOFT START

The amplifier features a speaker turn-on/off delay to protect the loudspeakers and to avoid pops associated with turning power on or off.

● PROTECTION CIRCUITS

The FX-425 has protection circuits against short circuit, overheating, inductive load, etc.

● LIMITER

The limiter serves as an overload protection for the loudspeakers and can be switched separately for each channel.

● PERFECT COOLING

The amplifier is equipped with a quiet running cooling fan, which, together with the vents in the housing, provides excellent cooling.

● MODERN DESIGN

The FX-425 power amplifier has a modern, functional and economic 19" design (2 RU).

It is suitable for demanding applications and gives great performance, even when operating at "full load".

● INFORMATIVE DISPLAY

The front panel of this amplifier has been designed in such a way that the user constantly gets all important information on the current operating status, e.g. through indication of protective functions, active clipping, power on, temperature, etc.

● X-OVER/3D FUNCTION

Different operating modes are available to the user including:

- 4-channel mono (4 x 250 W)
- 2-channel stereo linear (internal crossover network deactivated)
- 2-channel stereo operation with active crossover network (50Hz - 2,5 KHz)
- 2-channel stereo operation with crossover network and mono bass

● ACTIVE CLIPPING

The amplifier features a special ACTIVE CLIPPING function across the entire frequency range of 20 Hz - 20 kHz. The input and output signals are constantly compared, and deviations that exceed a certain value, e.g. 0.5%, are indicated by the signal LED.

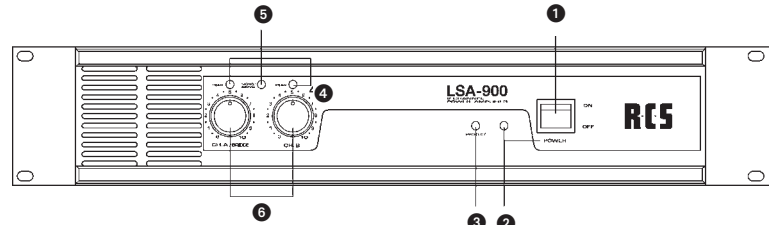
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Model designation

Stage-Sound 4-Channel Amplifier, 4 x 250 W **FX-425**

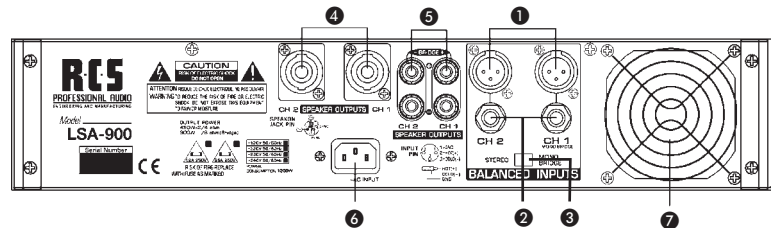
FRONT VIEW

- 1 Power On/Off Switch**
For switching the device on and off
- 2 Power LED display**
Lights up when the device is switched on
- 3 Protect LED display**
Lights up at switch-on or fault
- 4 Peak LED display**
Lights up at signal overload
- 5 Bridged mode LED display**
Lights up when CH A and B are bridged (Bridge mono mode)
- 6 Input level control**
For adjusting the volume



REAR VIEW

- 1 XLR inputs**
Signal input on XLR
- 2 Jack socket inputs**
Signal input link on 6.3mm jack socket
- 3 Bridged mode switch**
For adjusting the input mode between stereo and mono (bridged)
- 4 LS outputs**
Loudspeaker connections on speak-on
- 5 LS outputs**
Loudspeaker connections on 2-pole LS plug-screw sockets
- 6 AC mains connection**
For connecting a flex with IEC power connector
- 7 Cooling fan**
Electronically regulated cooling fan



Technical data	LSA-200 (fanless)	LSA-600	LSA-900	
Output power (1 kHz, 1 % THD)	4 ohms – 2 channels	2 x 100 W	2 x 300 W	2 x 450 W
	8 ohms – 2 channels	2 x 70 W	2 x 210 W	2 x 290 W
	8 ohms / bridged	1 x 200 W	1 x 600 W	1 x 900 W
Output power (1 kHz, 0,1 % THD)	4 ohms – 2 channels	2 x 90 W	2 x 270 W	2 x 430 W
	8 ohms – 2 channels	2 x 60 W	2 x 200 W	2 x 280 W
	8 ohms / bridged	1 x 180 W	1 x 550 W	1 x 860 W
Frequency response	20 – 30,000 Hz +0 / -1 dB			
THD (ref. 1 kHz, f = 20 Hz- 20,000 Hz)	< 0.05%			
Input sensitivity	at 4 ohms / stereo	+4.0 dBu (1.23 V)		
	at 8 ohms / stereo	+5.1 dBu (1.23 V)		
Input impedance	10 kohms (unbal.)/ 20 kohms (bal.)			
Signal-to-noise ratio	> 100 dB	> 101 dB	> 103 dB	
Crosstalk	> 80 dB, 1 kHz	> 90 dB, 1 kHz	> 90 dB, 1 kHz	
Damping factor (8 ohms / 1 kHz)	> 300			
Power supply	220V – 240V/AC, 50-60 Hz			
Input power	420 W	980 W	1200 W	
Dimensions (W x H x D) / Weight	483 x 44 x 240 mm, 19" (1 RU); 6.1 kg	483 x 88 x 407 mm, 19" (2 RU); 14.5 kg	483 x 88 x 407 mm, 19" (2 RU); 15.3 kg	

LSA-200 / LSA-600 / LSA-900

POWER AMPLIFIER

with bridge circuit

LSA-200 fanless cooling



SOFT START

The amplifiers feature “soft start” as well as switch-on and -off delay in order to conserve the loudspeakers and avoid switching and cracking noises.

PROTECTIVE CIRCUITS

The LSA series has protective circuits against short circuit and overheating as well as current limitations, switch-on/-off delay, DC voltage fault protection, AC fuse and a clip limiter circuit against overstressing the loudspeakers.

PERFECT COOLING

The amplifier models LSA-600 and LSA-900 are equipped with ball-bearing, automatic cooling fans, which automatically adapt their speed depending on the amplifiers’ strain. The air duct, embedded in the casing, provides excellent cooling in connection with the fans and ventilation slots.

The model **LSA-200** features a passive **fanless cooling** system and is therefore also excellently suited for very quiet applications.

MODERN DESIGN

The power amplifiers of the LSA-series feature a modern and functional design and are economically structured in 19” technology (LSA-200 in 1 RU, LSA-600 and LSA-900 in 2 RU).

INFORMATIVE DISPLAY

The front panel of the LSA-series is designed in such a way, that any important information on the current operating status is indicated optically all the time. These LED displays are: power, clip, protect as well as mono/bridge.

HIGH LIGHTS

- Any of these stereo power amplifiers offers the possibility of a bridge circuit in the mono bridged mode.
- The LSA-series is of top-quality construction and also allows, because of its very high signal-to-noise ratio, the application for absolutely demanding purposes.

*

Model designations

- STAGE-SOUND Power Amplifier, 200 W **LSA-200**
- STAGE-SOUND Power Amplifier, 600 W **LSA-600**
- STAGE-SOUND Power Amplifier, 900 W **LSA-900**

FRONT VIEW

1 LED indicators

- Protect LED
lit, when power is switched on or when a fault occurs.
- Clip/Lim LED
lit in the event of signal overload
- Signal LED
lit from an amplification of 100 mV
- Power LED
indicates the operating status of the amplifier

2 Limiter switch

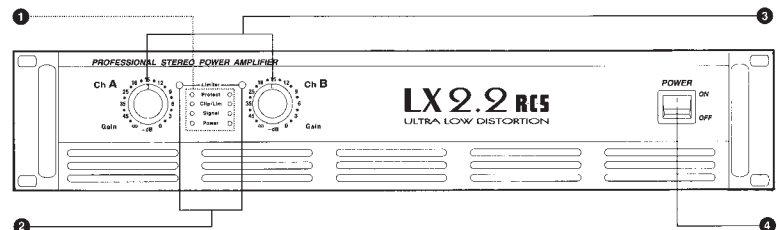
Switch for activating the limiter

3 Volume controls

For adjusting the volume of the respective channel

4 Power switch

Switch for turning the device on/off.



REAR VIEW

1 IEC power inlet (cold condition)

Connection for power cord

2 Signal input and LINK

Balanced inputs on XLR sockets and LINK outputs on balanced jack sockets (6.3 mm).

3 LS outputs

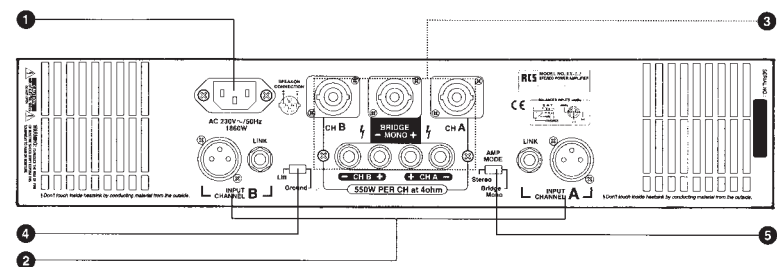
Speaker sockets or 2-pin screw-type sockets for connection of loudspeakers

4 Ground/Lift

Switch for disconnecting signal ground from chassis ground (shielding), in order to avoid any hum pick-up.

5 Mode switch

Switch to select the operating mode: stereo or bridged



Technical data	LX 1.0	LX 1.5	LX 2.2
Output power (1 kHz, 1 % THD)	8 ohms stereo	2 x 170 W	2 x 255 W
	4 ohms stereo	2 x 255 W	2 x 370 W
	8 ohms bridged	1 x 510 W	1 x 740 W
Output power (1 kHz, 0.1 % THD)	8 ohms stereo	2 x 160 W	2 x 240 W
	4 ohms stereo	2 x 235 W	2 x 355 W
Frequency response	20 - 20,000 Hz +0 / -0.5 dB		
Input sensitivity at 4 ohms	+4 dBu/1.23 V		
Signal-to-noise ratio	better than 100 dB		
Crosstalk	better than 65 dB		
Input clipping	10 Vrms (+22 dB)		
Damping factor (8 ohms, 1 kHz)	better than 300		
Slew rate	better than 50 V/us		
Power supply	220V - 240V/AC, 50-60 Hz		
Power consumption at 4 ohms	880 W	1135 W	1860 W
Dimensions (W x H x D)	483 x 88 x 380 mm, (2 RU)		
Weight	12 kg	12.3 kg	14.5 kg

LX 1.0 / LX 1.5 / LX 2.2

POWER AMPLIFIER



With bridged output and **limiter**



SOFT START

The amplifiers feature a speaker turn-on/off delay to protect the loudspeakers and to avoid pops associated with turning power on or off as well as a soft start circuit.

PROTECTION CIRCUITS

The devices of the -LX- series have protection circuits against short circuit, overheating, inductive load, etc. The switchable **limiter** provides overload protection for the speakers.

PERFECT COOLING

The amplifiers are equipped with two quiet running cooling fans, which, together with the vents in the housing, provide excellent cooling.

MODERN DESIGN

The - LX - series power amplifiers have a modern, functional and economic 19" design (2 RU). They are suitable for demanding applications and give great performance, even when operating at "full load".

INFORMATIVE DISPLAY

The front panel of the - LX - series amplifiers has been designed in such a way that the user constantly gets all important information on the current operating status, e.g. through indication of protective functions, active clipping, power on, etc.

ACTIVE CLIPPING

The - LX - series amplifiers feature a special ACTIVE CLIPPING function across the entire frequency range of 20 Hz - 20 kHz. The input and output signals are constantly compared, and deviations that exceed a certain value, e.g. 0.5 %, are indicated by the signal LED.

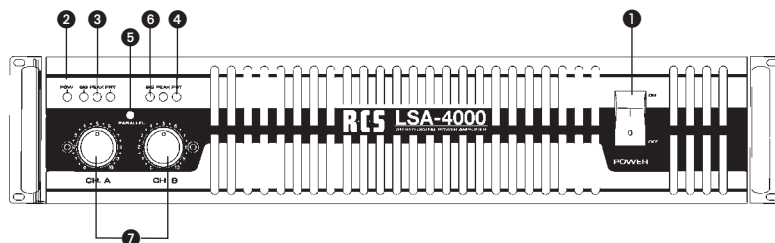
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Model designations

- STAGE-SOUND Amplifier, 580 W max. output **LX 1.0**
- STAGE-SOUND Amplifier, 800 W max. output **LX 1.5**
- STAGE-SOUND Amplifier, 1200 W max. output **LX 2.2**

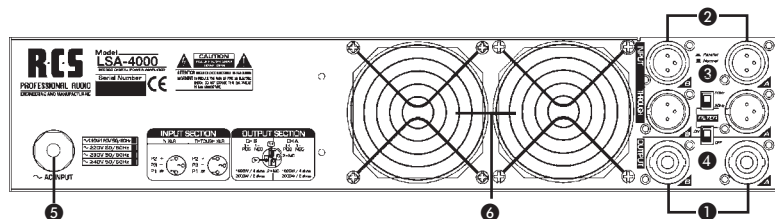
FRONT VIEW

- 1 Power On/Off switch**
For switching the device on and off
- 2 Power LED display**
Lights up when the device is switched on
- 3 Peak LED display**
Lights up at signal overload
- 4 Protect LED display**
Lights up at switch-on or fault
- 5 Parallel mode LED display**
For indicating the desired operation input mode parallel / normal
- 6 Signal LED display**
Lights up at an amplification of 100mV and more
- 7 Input level control**
For adjusting the volume



REAR VIEW

- 1 LS outputs**
Loudspeaker connections over speak-on
- 2 XLR inputs**
Signal input and link over XLR
- 3 Parallel mode switch**
For adjusting the input mode between parallel or normal
- 4 Input filter (low-cut filter)**
Switchable low-cut filter with frequency selector switch between 30 Hz and 50 Hz
- 5 AC mains connection**
LSA-2000 with safety plug, LSA-3400 and LSA-4000 with open ends
- 6 Cooling fans**
Electronically regulated cooling fans



Technical data	LSA-2000	LSA-3400	LSA-4000
Output power (1 kHz, 1 % THD)	2 ohms – 2 channels	--	2 x 1700 W
	4 ohms – 2 channels	2 x 1030 W	2 x 1300 W
	8 ohms – 2 channels	2 x 650 W	2 x 900 W
Output power (1 kHz, 0.1 % THD)	2 ohms – 2 channels	--	2 x 1680 W
	4 ohms – 2 channels	2 x 1000 W	2 x 1250 W
	8 ohms – 2 channels	2 x 600 W	2 x 850 W
	8 ohms / bridged	1 x 2000 W	--
Frequency response	20 – 30.000 Hz +0 / -1 dB		
THD (ref. 1 kHz, f = 20 Hz-20,000 Hz)	≤ 0.05%		
Input sensitivity at 4 ohms / 8 ohms stereo	+4.0 dBu (1.23 V) / +5.1 dBu (1.23 V)		
Input impedance	6 kohms (unbal.) / 12 kohms (bal.)		
Signal-to-noise ratio	≥ ≤ 104 dB	≤ 107 dB	≤ 107 dB
Crosstalk	≥ ≤ 63 dB, 1 kHz	≤ 64 dB, 1 kHz	≤ 64 dB, 1 kHz
Damping factor (8 ohms / 1 kHz)	≥ ≤ 500		
Power supply	220V – 240V/AC, 50-60 Hz		
Input power	2800 W	3800 W	4100 W
Dimensions (W x H x D) / Weight	483 x 88 x 460 mm; 13.9 kg	483 x 88 x 495 mm, 16.6 kg	483 x 88 x 495 mm, 17.8 kg

LSA-2000 / LSA-3400 / LSA-4000

SWITCHING POWER AMPLIFIER

LSA-2000 with **bridge circuit, limiter** and switchable input **high-pass filter**

LSA-3400 and LSA-4000 **stable at 2 ohms, with input parallel connection, limiter** and input **high-pass filter**



● SOFT START

The amplifiers feature “soft start” as well as switch-on and -off delay in order to conserve the loudspeakers and avoid switching and cracking noises.

● PROTECTIVE CIRCUITS

The LSA series has protective circuits against short circuit and overheating as well as current limitations, switch-on/-off delay, DC voltage fault protection and a clip limiter circuit against overstressing the loudspeakers.

● PERFECT COOLING SYS.

The amplifiers are equipped with ball-bearing, automatic cooling fans (two on the LSA-2000, four on the LSA-3400 / LSA-4000), which automatically adapt their speed depending on the amplifiers’ strain. The air duct, embedded in the casing, provides excellent cooling in connection with the fans and ventilation slots.

● MODERN DESIGN

The switching power amplifiers of the LSA series feature a modern and functional design and are economically structured in 19” technology (2 RU). They are suited best for demanding application and show, even at full strain, no sign of stress.

● INFORMATIVE DISPLAY

The front panel of the LSA series is designed in such a way, that any important information on the current operating status is indicated optically all the time.

These LED displays are: power, clip, protect, signal as well as mono/parallel.

● ACTIVE SWITCHING

In the LSA series, output stages with switching power supply are used. Depending on the strain, the switching power supply picks up the accordant amount of electricity.

● STABLE AT 2 OHMS

The amplifiers LSA-3400 and LSA-4000 are designed for highest requirements and therefore may also be operated with 2 ohms.

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Model designations

STAGE-SOUND Amplifier, 2x 1000 W max. output **LSA-2000**

STAGE-SOUND Amplifier, 2x 1700 W max. output **LSA-3400**

STAGE-SOUND Amplifier, 2x 2000 W max. output **LSA-4000**

2-way stereo and 3- or 4-way mono Crossover with subwoofer output



3-way stereo and 4- or 5-way mono Crossover

INPUT-SECTION

The crossover SEC-203/SEC-304, with its 24 dB/oct. active crossover filters, assigns most precisely the selected frequency band to each loudspeaker. Input level controls with peak display LED for stereo (2x) and mono (1x) operation can be supplied and adjusted over rear-side XLR sockets (balanced). By a selector switch, the desired mode (stereo or mono operation) can be selected.

STEREO-SECTION

At stereo operation, a high-level control without frequency control as well as a mid-control (only SEC-304) and a low-level control with frequency control from 60 Hz to 1.3 kHz or from 600 Hz to 13 kHz (switchable) as well as a mute switch are available for CH A and B respectively. The adjusted signal can be put out over XLR sockets (balanced) on the rear for high, mid and low respectively.

MONO-SECTION

At mono operation, a high-level control without frequency control, a mid (only SEC-203), a high-mid/low-mid (only SEC-304) and a low level control with frequency control from 60 Hz to 1.3 kHz or from 600 Hz to 13 kHz (switchable) as well as a mute switch are available. The adjusted signal can be put out over XLR sockets (balanced) on the rear for high, high-mid, low-mid and low respectively.

SUBWOOFER-SECTION

Independently from the operation mode (mono / stereo), a mono subwoofer section with frequency control, level control, low-cut filter (switchable 15 Hz 18 dB/oct.) and mute switch is additionally available. The adjusted signal here also can be put out over a XLR socket on the rear side.

Model designations

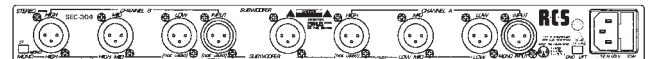
- Crossover 2-Way**, 19" (1 RU) **SEC-203**
- Crossover 3-Way**, 19" (1 RU) **SEC-304**

SPECIALS

- The crossover SEC-304, made in 19" design with 1 RU, further features a ground/lift switch on the rear in order to avoid possibly occurring hum loops.
- The power supply takes place over an IEC power socket on the rear side of the device. The power ON/OFF switch is on the front side.

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Rear View of SEC-304



Technical Data

SEC-203/SEC-304

Inputs	2 x XLR (balanced)
Input impedance	10 kohms
Max. input level	20 dBm
Outputs	SEC-203: 4x XLR (bal.); SEC-304: 7x XLR (bal.)
Output impedance	100 ohms
Bandwidth	20 Hz - 20 kHz ±0.5 dB
Crossover frequency-band	60 Hz - 13 kHz / 24 dB/oct.
Subwoofer frequency-band	60 Hz - 250 Hz / 24 dB/oct.
Subwoofer low-cut	15 Hz 18 dB/oct.
THD	0.03%
Signal-to-noise ratio	better than 90 dB
Input power	15 W
Power supply	220V - 240V/AC, 50-60 Hz
Dimensions (W x H x D)	483 x 44 x 176 mm, 19", 1 RU
Weight (net)	2.5 kg



INPUT-SECTION

The professional headphone amplifier HAS-266 has 6.3 mm jack master inputs L/R at its rear side (balanced/unbalanced depending on assignment) and additionally one stereo or mono direct input per channel. When using the direct input, the master input signal of the used channels is switched off, and the separately supplied direct input signal is transmitted amplified to the connected headphone.

MASTER-SECTION

The total volume of the supplied master signal can be adjusted comfortably by means of a master level control on the front side. A switch allows changing between stereo and mono transmission.

OUTPUT-SECTION

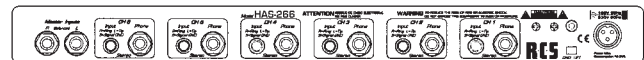
- The HAS-266 allows supplying up to 6 headphones with a stereo or mono signal, which is fed-in on the rear side, over a 6.3 mm jack connection both on the front and the rear side.
- The desired amplifying level is to be adjusted for each headphone individually on the front of the amplifier. The LED lights on the front side show the supplied signal of each output channel.

SPECIALS

- The headphone amplifier HAS-266, manufactured in 19" design and 1 RU, in addition features a ground/lift switch on the rear side, in order to avoid possibly occurring hum loops.
- Power is supplied by a provided mains adapter. The power switch is on the front side..

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Rear View of HAS-266



Technical Data	HAS-266
Inputs	6 x CH direct input, master L/R input 6.3 mm jack
Input impedance	0.775 V (0 dB) 20 kohms balanced
Max. input level	+ 21 dBu balanced or unbalanced
Outputs	6 x CH front and 6 x CH rear, 6.3 mm jack (tip=right, ring=left)
Output impedance	0.775 V (0 dB) 32 - 600 ohms balanced
Frequency response	20 Hz – 20 kHz
THD	better than 0.02 % at 150 mW / 200 ohms. 1 kHz
Signal-to-noise ratio	better than 90 dB
Power supply	external mains adapter 2 x 13 V AC / 0.75 A
Dimensions (W x H x D)	483 x 44 x 175 mm, (19", 1 RU)
Weight	2.2 kg

Model designation

Headphone Amplifier, 19" (1RU) **HAS-266**



DESCRIPTION

- The feedback suppressor SFB-4010, with its four adjustable notch filters, allows suppressing highly unpleasant feedbacks on audio systems.
- The whistle occurring in the signal is damped both in its depth and frequency by 4 notch filters.
- The system is built into a solid 19" casing (1 RU) and features a LED meter with notch-level (dB) and notch-frequency display.

FILTER-SECTION

The filters of the device operate within a range from 60 Hz to 6 kHz with a filter width of 1/6 octave and are able to weaken the feedback signal variably up to -20 dB.

Technical Data

SFB-4010

Inputs	jack 6.3 mm, balanced
Input impedance	0.775 V (0 dBm) 15 kohms, balanced
Max. input level	+ 21 dBu balanced or unbalanced
Outputs	jack 6.3 mm, balanced
Output impedance	0.775 V (0 dBm) 600 ohms, balanced
Frequency response	20 Hz – 20 kHz @ +0, -1 dB
THD	better than 0.04% @ 20 Hz - 20 kHz
Signal-to-noise ratio	better than 68 dB
Notch-filter frequency	60 Hz – 6 kHz switchable
Filter depth	max. -20 dB adjustable
Power supply	220V – 240V/AC, 50-60 Hz; 24V DC
Input power	5.5 W
Dimensions (W x H x D)	483 x 44 x 210 mm, (19", 1 RU)
Weight (net)	2.6 kg

FUNCTIONS

- The feedback suppressor is interposed between the mixing pre-amplifier or mixer and the respective power amplifier.
- Due to the narrow-banded suppressing of the feedback signal, quality losses in the audio signal are hardly perceivable.
- The unaltered input signal may be compared to the "filtered" output signal with an IN/OUT switch.

POWER SUPPLY

The power supply takes place over an IEC power socket or a 24 V DC terminal on the rear side of the device. The power ON/OFF switch is on the front side.

Rear View of SFB-4010



Model designation

Feedback Suppressor, 19" (1 RU)..... **SFB-4010**



DESCRIPTION

- The frequency shifter serves in order to avoid any kind of back coupling in connection with microphone systems.
- It has 2 symmetrical inputs and outputs on XLR-plugs with additional screw-type connectors.
- The NF-signal may be shifted from 3 – 15 Hz in 13 steps in order to achieve better quality. Regarding an adjacent NF-signal, an LED indicator lights up for both channels.
- The integrated by-pass switch offers the opportunity to place the input signals onto the outputs in order to ensure an immediate comparison.

HIGH LIGHTS

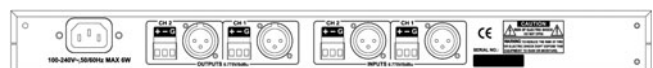
- Frequency shifter, from 3 Hz up to 15 Hz
- Rise of the coupling security up to 8 dB
- No audible side effects
- A bypass switch for immediate comparison
- NF- guided noise-gate-functions for each channel
- Easy and quick assembly and setting up
- 2 channels with 2 symmetrical inputs and outputs each
- LED indicator for all fundamental functions
- Power switch located on the front panel

POWER SUPPLY

The power supply takes place over an IEC power socket or a 24 V DC terminal on the rear side of the device. The power ON/OFF switch is on the front side.

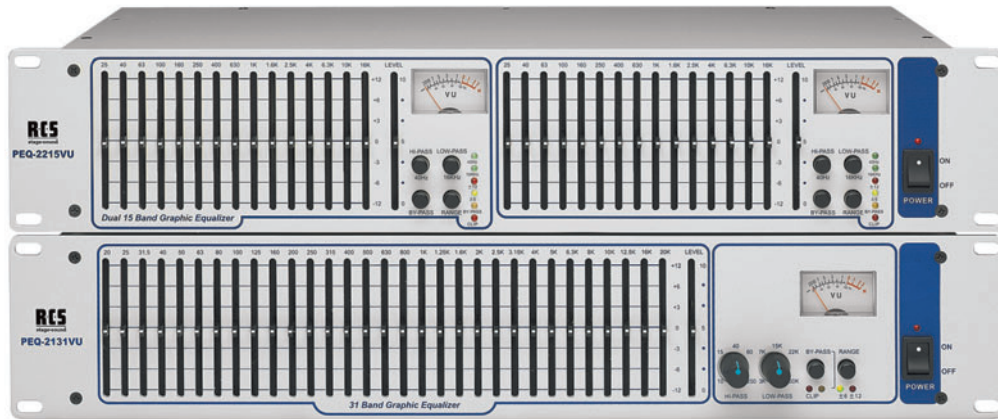
Technical Data	FS-152
Receiver sensitivity	max. +20dB / 60 kohms, symmetrical
Output impedance	max. +20dB / 50 kohms symmetrical
Technical displacement	adjustable from 3 up to 15 Hz
Cross Over	45 – 9.600 Hz (24dB/oct)
Frequency	20 – 20,000 Hz, better than -0.1 dB
Signal-to-noise ratio	better than 70 dB
THD at 1 kHz	better than 0.03%
Power supply	AC 220-240 V, (50 – 60 Hz)
Power consumption	max. 6 W
Dimensions (W x H x D)	483 x 44 x 200 mm, (19", 1 RU)
Weight	approx. 2.5 kg

Rear View of FS-152



Model designation

Frequency Shifter, (1 RU) **FS-152**



DESCRIPTION

- The graphic equalizer PEQ-2215 VU has twice 15 bands (stereo), the PEQ-2131 VU 31 bands (mono), each with a range switch for ± 6 dB or ± 12 dB (cut/boost) and 60 mm centrally catching faders.
- For every channel, there is one input level fader ± 12 dB with an output level VU meter in order to adjust altered signals.
- The stereo graphic equalizer PEQ-2215 VU further features for every channel a switchable high-pass filter (40 Hz, 12 dB/oct.) as well as a low-pass filter (16 kHz, 12 dB/oct.).
- The mono graphic equalizer PEQ-2131 VU has a switchable high- (from 10 Hz to 250 Hz) as well as a switchable low-pass filter (from 3 kHz to 50 kHz).
- One clip LED per CH lights up, if the signal is 5 dB below clipping.
- By a special “bypass” switch with LED display, the unaltered input signal may be compared to the altered output signal for any channel.
- The graphic equalizers, made in 19” design with 2 RU, feature for every channel, as possibility for input and output connection, a 6.3 mm jack socket, a XLR socket (balanced) and a RCA socket (unbalanced).
- At the request of 24V DC operation (Please inquire).

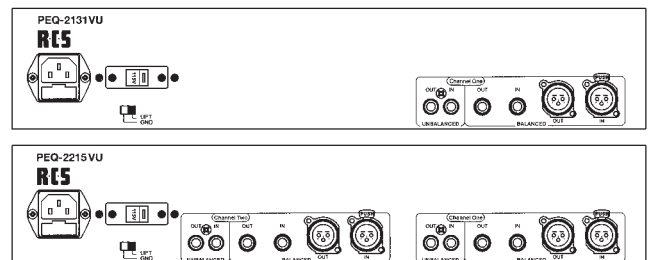
Model designations

Graphic-Equalizer, (2 RU, 2 CH, 2 x 15-Band) **PEQ-2215 VU**

Graphic-Equalizer, (2 RU, 1 CH, 31-Band) **PEQ-2131 VU**

- The power supply takes place over an IEC power socket on the rear side of the device. The power switch is on the front side.
- Additionally, a ground/lift switch on the rear side helps avoiding possibly occurring hum loops.

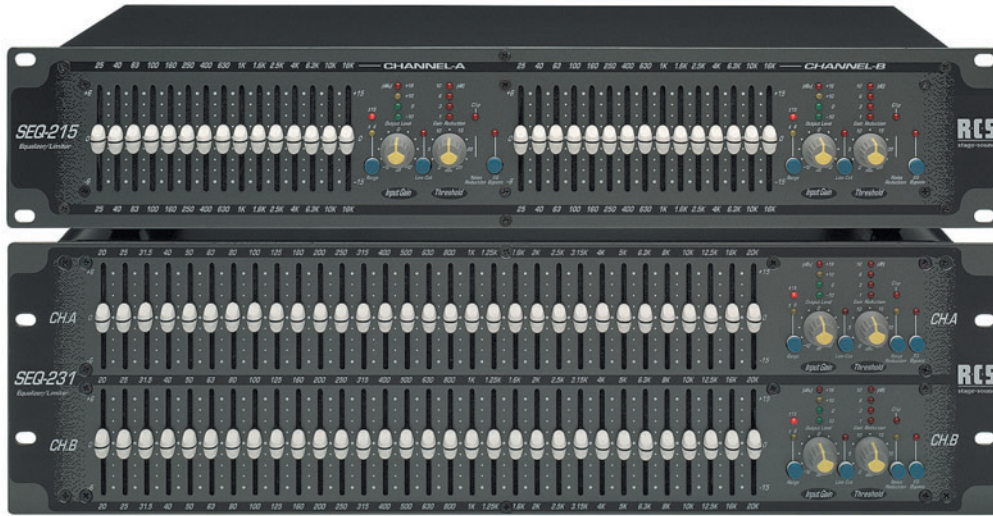
Figures show rear view of PEQ-2131 VU and PEQ-2215 VU



Technical Data	PEQ-2215 VU	PEQ-2131 VU
Input sensitivity	0.775 V (0 dBm)	
Input impedance	20 kohms, balanced; 15 kohms, unbalanced	
Inputs	XLR, jack 6.3 mm, RCA	XLR, jack 6.3 mm, RCA
Output impedance	< 600 ohms	
Outputs	XLR, jack 6.3 mm, RCA	
Bandwidth	2/3 oct 2 x 15 band	1/3 oct 1 x 31 band
Frequency response	20 Hz – 50 kHz @ -3 dB	
THD	0.02% @ 1 kHz	
Signal-to-noise ratio	> 93 dB	> 93 dB
High-pass filter	40 Hz 12 dB/octave	10 Hz - 250 Hz switchable
Low-pass filter	16 kHz 12 dB/octave	3 kHz - 50 kHz switchable
Range (band selection)	± 6 dB or ± 12 dB switchable per channel	
Input power	15 W	
Power supply	220V – 240V/AC, 50-60 Hz	
Dimensions (W x H x D)	483 x 88.8 x 200 mm (2 RU)	
Weight (net)	3.7 kg	3.6 kg

SEQ-231 / SEQ-215

GRAPHIC-EQUALIZER ULTRA LOW NOISE



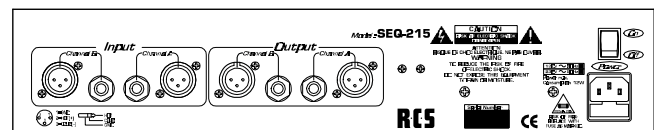
DESCRIPTION

- The graphic equalizer SEQ-215 has twice 15 bands, the SEQ-231 twice 31 bands, each with a range switch for ± 6 dB or ± 15 dB (cut/boost) and 50 mm centrally catching HQ-faders.
- For every CH, there is one input level control ± 12 dB with an output level meter (LED from -10 dBu to +18 dBu) in order to adjust altered signals.
- The absolute top-quality „ultra-low noise“ graphic equalizers further feature for every channel a switchable low-cut filter (40 Hz, 18 dB/oct.) as well as a limiter with threshold control (from ± 0 dBu to +24 dBu) with gain reduction LED meter display.

- One clip LED per CH lights up, if the signal is 3 dB below clipping, the input is operated above +22 dBu, the input gain is too high or single frequencies are raised excessively.
- By a special “bypass” switch with LED display, the unaltered input signal may be compared to the altered output signal for any channel.
- The model SEQ-231 additionally has a switchable “noise-reduction” function (± 15 dB) with LED display.
- The graphic equalizers, made in 19” design, feature for every channel, as possibility for input and output connection, a 6.3 mm jack socket, a XLR socket and, additionally with the SEQ-231, a field for screw-type terminals in electronically balanced construction.
- The power supply takes place over an IEC power socket with power switch on the rear side of the device.
- At the request of 24V DC operation (Please inquire).

Technical Data	SEQ-215	SEQ-231
Input sensitivity	0.775 V (0 dBm) electronically balanced	
Input impedance	40 kohms, balanced; 20 kohms, unbalanced	
Inputs	XLR, jack 6.3 mm	XLR, jack 6.3 mm, screw-type terminal
Output impedance	120 ohms balanced, 60 ohms unbalanced	
Outputs	XLR, jack 6.3 mm	XLR, jack 6.3 mm, screw-type terminal
Bandwidth	2/3 Oct 2 x 15 Band (25Hz-16kHz +/-0.5dB)	1/3 Oct 2 x 31 Band (20Hz-20kHz +/-0.5dB)
Frequency response	10 Hz - 50 kHz, +0.5/-3 dB	
THD	0.02% @ +4 dBu, 1 kHz	
Signal-to-noise ratio	better 94 dB	
Low-cut filter	40 Hz 18 dB/oct. high-pass filter	
Range (band selection)	± 6 dB or ± 15 dB switchable per channel	
Crosstalk	<-80 dB, 20 Hz - 20 kHz	
Input power	12 W	24 W
Power supply	220V - 240V/AC, 50-60 Hz	
Dimensions (W x H x D)	483 x 88 x 197 mm (2 RU)	483 x 132 x 197 mm (3 RU)
Weight (net)	3.9 kg	5.6 kg

Figure shows rear view of SEQ-215



Model designations

- Graphic-Equalizer, (19”, 2 RU, 2 CH, 2 x 15-Band)..... **SEQ-215**
- Graphic-Equalizer, (19”, 3 RU, 2 CH, 2 x 31-Band)..... **SEQ-231**



● COMPRESSOR / LIMITER

- The 2-channel compressor SCL-2020 with gain reduction meter controls the dynamic range of a signal with adjustable parameters such as threshold (threshold limit adjustable from -40 dB to +20 dB), ratio n:1 / limiter (degree of gain reduction in ratio the input signal), attack (setting range 0.1 ms - 200 ms) and release (setting range 50 ms - 4 sec).
- A switchable auto attack-release automatically controls the attack and release times, based on the dynamically changing input signal.
- With the help of an output level control (± 20 dB), altered signals may be readjusted. A bypass switch allows comparing the unaltered input signal directly to the altered output signal.

● EXPANDER / GATE

Unwanted noises can smoothly be erased from the signal with the gate function. The intention is to open the gate only as long as the wanted signal sounds and to mute background noises in the breaks. The gate section of the SCL-2020 may be adjusted in such a way, that it works like an expander. The complete section can also be switched to "OFF".

● ENHANCER SECTION

With the enhancer function, the high fractions of the signal, which are lost at heavy gain reduction, may be restored. For this, the adjustable enhancer function re-adds highs to the original signal in an intensity that corresponds to the intensity of the gain reduction. This function may also be switched off.

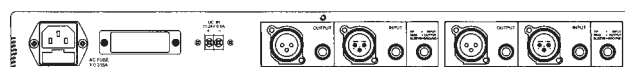
Model designation

Compr./Limiter/Expander/Gate, 19" (1 RU) **SCL-2020**

● SPECIALS

- The SCL-2020, made in 19" design with 1 RU, excels by a special side-chain function, which allows external handling of the compressor's detector control. There are many useful application areas for external handling of the detector control, such as EQ-adaptation for frequency-independent compression, de-esser for erasing sibilants via EQ as well as external control of a voice track for ducking effects.
- The power supply takes place over an IEC power socket or a 24 V DC terminal on the rear side of the device. The power ON/OFF switch is on the front side.

Rear View of SCL-2020



Technical Data

SCL-2020

Inputs	XLR and jack 6.3 mm, balanced
Input impedance	60 kohms balanced and unbalanced
Max. input level	+21 dBu balanced or unbalanced
Outputs	XLR and jack 6.3 mm
Output impedance	40 kohms unbalanced
Max. output level	+21 dBu
Frequency response	20 Hz - 20 kHz @ +0, -1 dB
THD	better than 0.05% @ 1 kHz, +4 dBu
Signal-to-noise ratio	> -97 dB
Crosstalk	> -85 dBu @ 20 kHz
Power supply	220V - 240V/AC, 50-60 Hz; 24 V DC
Dimensions (W x H x D)	483 x 44 x 217 mm, (19", 1 RU)
Weight (net)	2.8 kg

»STAGE-SOUND«
Mixers and equalizers



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Part 9



DJM-401

DJM-201

DESCRIPTION

- 4-channel stereo DJ-mixer DJM-401 with 4 input gain controls, 1 MIC input (jack/XLR) and 8 RCA LINE inputs (of which 3 are switchable to PHONO).
- DJ microphone channels with bass, treble and level controls as well as talk-over (-12dB) or auto-talk-over function.
- Pre-listening of stereo input channels (PFL) or programme, or „Split mode” for left PFL and right PGM. Adjustable headphones output.
- Four HQ programme faders, each with switchable cue-/send function, input selector switch between PHONO/AUX and LINE as well as a HQ master fader with PAN control, stereo/mono selector switch and booth/zone control.
- Smooth running, exchangeable HQ cross-fader with two allocation selector switches.
- Switchable 5-band sum graphic EQ with sensitivity switch between ± 6 dB and ± 12 dB.
- Signal display over two LED chains from -40 dB to +10 dB with display selector switch between master and PFL.

Technical Data	DJM-401
Inputs	LINE: 85 mV RMS / 10 kohms ± 1 dB (RCA) MIC: 2 mV RMS / 10 kohms ± 1 dB (6.3 mm jack/XLR) PHONO: 1.5 mV RMS / 47 kohms ± 1 dB (RCA)
Outputs	LINE: 9 V RMS max. (XLR) HEADPHONE: 0.5 W @ 47 kohms (6.3 mm jack)
Signal-to-noise ratio	LINE: better than 90 dB, MIC: better 75 dB, PHONO: better 80 dB
Frequency response	LINE: 20 Hz - 22 kHz ± 5 dB, MIC: 20 Hz - 20 kHz ± 5 dB
Graphic equalizer	± 12 dB @ 63 Hz, 250 Hz, 1 kHz, 5 kHz, 17 kHz
Input power	10 W
Power supply	220V - 240V/AC, 50-60 Hz
Dimensions/Weight	483 x 175 x 95 mm (19", 4 RU); 3,2 kg

Model designation

DJ-Mixer DJM-401

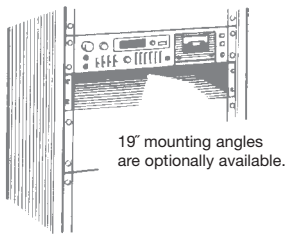
DESCRIPTION

- 2-channel stereo DJ-mixer DJM-201 with input gain control, 3-band equalizer and PHONO/LINE switches.
- DJ microphone channel over 6.3 mm jack socket with optional talk-over function (-14dB), level control, bass and treble controls.
- Pre-listening of the stereo input channels (PFL) or the programme (switchable) over adjustable headphones output.
- Two programme faders, each with one treble-, mid- and bass-kill switch respectively, will make your heart beat faster.
- Smooth running, exchangeable HQ cross-fader with switchable channel direction and selectable cross-fading point.
- "Transform push-buttons" allow a temporary change in the cross-fading direction.
- Signal display over two LED chains from -40dB to +10dB.

Technical Data	DJM-201
Inputs	LINE: 750 mV RMS / 10 kohms ± 1 dB (RCA) MIC: 8.8 mV RMS / 10 kohms ± 1 dB (6.3 mm jack) PHONO: 10.5 mV RMS / 47 kohms ± 1 dB (RCA)
Outputs	LINE: 7 V RMS max. (RCA) HEADPHONE: 0.5 W @ 47 kohms (6.3 mm jack)
Signal-to-noise ratio	LINE: better 91 dB, MIC: better 75 dB, PHONO: better 85 dB
Frequency response	LINE: 20 Hz - 20 kHz ± 5 dB, MIC: 20 Hz - 15 kHz ± 5 dB
Channel equalizer	Highs: +15 dB / -25 dB @ 20 kHz Mids: +15 dB / -30 dB @ 1.36 kHz Lows: +15 dB / -30 dB @ 40 Hz
Channel-kill	Highs: -66 dB@15 kHz, mids: -30 dB@1.2 kHz, lows: -66 dB@40 Hz
Input power	5 W
Power supply	External power supply unit
Dimensions; Weight	(W x H x D): 241 x 257 x 145 mm; 3,2 kg

Model designation

DJ-Mixer DJM-201



● INPUT-SECTION

- Top-quality mixer with 6 mono input channels, which can be supplied as MIC over XLR sockets or as LINE over 6.3 mm jack sockets. Channels 5/6 & 7/8 may also be supplied as stereo input channels, each over two 6.3 mm jack sockets. Channels 9/10 & 11/12 can be operated both mono (L) and stereo (L/R) over 6.3 mm jack sockets.
- The mono channels 1-4 have amplification pre-controls for MIC "Gain" and for LINE "Trim" as well as a 3-band CH-EQ and a low-cut switch (75 Hz). Channels 5/6 & 7/8 feature a pad switch (-20 dB) and a 3-band CH-EQ. Channels 9/10 & 11/12 are equipped with a 3-band CH-EQ. There are panorama controls for mono and balance controls for stereo.
- Pre-listening of all channels is possible over an adjustable headphone output as well as the "Solo function" of the CH. The mixer also features a pre-fader and a post-fader AUX way as well as allocation selector switches for Main L/R per channel and SUB 1/2 for the alternative total output.
- Phantom power is centrally switchable for all MIC inputs (+48 V DC).

● MASTER-SECTION

- Two stereo output sockets (XLR balanced and 6.3mm jack unbalanced) for main output over stereo fader (L+R) with LED meter as well as two alternative output sockets (6.3mm jack unbalanced) over SUB-1/2-fader.
- 2 RCA input sockets with input control and 2 RCA output sockets for 2-track IN/OUT per L/R. 2 unbalanced AUX sends and 2 adjustable AUX returns are available. The AUX returns can be switched on to the monitor way.

● HIGHLIGHTS

- A switchable digital effects board allows adding 16 high-grade effects with an adjustable DSP master to the sum and with a switch to the monitor way also. This DSP is switchable ON/OFF by a foot switch. A mono out jack socket with level control makes another pre-amplified signal output possible. The mixer FMX-1202 FX is designed to be tabletop unit as well as for integration into 19" racks or flight-cases. The 19" mounting angles „RMK-12" (8 RU) are optionally available.

Technical Data	FMX-1202
Input sensitivity	MIC -55 dBu (mono) 1.3 kohms (balanced)
	LINE -35 dBu (mono) -20 dBu (stereo)
	all other inputs >10 kohms
Output sensitivity	Tape output 1.0 kohms
	FX-returns or AUX: 10 kohms
	all other outputs <100 ohms
Signal-to-noise ratio	≥90 dB
Crosstalk	better than 85 dB
Frequency response	20 Hz – 60 kHz +0 / -1.5 dB
Channel equalizer	Highs: 12 kHz shelving ±15 dB
	Mids: 3.0 kHz peaking ±12 dB
	Lows: 80 Hz shelving ±15 dB
	Low cut: 18 dB/oct. @ 75 Hz
Phantom power	+48 V DC
Power supply	220V – 240V/AC, 50-60 Hz
Input power	22 W
Dimensions (W x H x D)	305 x 354 x 72 mm (without edges and little feet)
Weight	4.7 kg

Model designations

- Audio Mixer**, 12 channels **FMX-1202**
19" Rack-Mounting-Kit, 8 RU..... **RMK-12**



INPUT-SECTION

- This mixer features 10 mono input channels, which can be supplied as MIC over XLR sockets or as LINE via 6.3 mm jack sockets. Channels 11/12 & 13/14 can be operated over 6.3 mm jack sockets both mono (L) and stereo (L/R).
- The mono channels 1-10 have amplification pre-controls for MIC „Gain“ and for LINE „Trim“ as well as a 4-band channel equalizer and a low cut switch (18 dB/oct. @ 75 Hz). Channels 11/12 & 13/14 are equipped with LINE trim controls (±20 dB) and a 3-band CH-EQ. There are pan-orama controls for mono and balance controls for stereo.
- Pre-listening of all channels is possible via an adjustable headphone output as well as the “Solo function” of the CH. 2 pre-fader and 2 post-fader AUX ways and allocation selector switches for CH mute, sub 1/2, sub 3/4 and main L/R per CH.
- CH-insert for channels 1-10 PRE-fader/PRE-EQ and master L/R-insert PRE-graphic-EQ (e.g. feed-in point for compr./lim./gate). CH 1-8 offer direct-out jack sockets.
- Phantom power is centrally switchable for all MIC inputs (+48 V DC).

MASTER-SECTION

- For main output are two stereo output sockets, which can be supplied by a stereo master fader (L+R) with LED meter display and a switchable 7-band graphic-EQ. The section also features the group-faders SUB-1-4 with alternative output sockets and L/R separate connection to the master sum. The mono main out (XLR) with switchable 75 Hz LPF serves as subwoofer output.
- The master section also has two RCA input sockets with level input controls, switchable to the master, and two RCA output sockets (2 TR IN/OUT per L/R). Master-send controls are available for the AUX ways respectively.

HIGHLIGHTS

- A switchable 24-bit digital effects board allows adding 99 high-grade effects with 3 adjustable master-returns to the sum as well as to the 2 monitor ways. The DSP is comfortably to handle over a digital display and an up/down push-button and foot switch. “Stereo output jack sockets with level controls enable another pre-amplified signal output.
- The mixer FMX-1402 R is designed for installation into 19“-racks (9 RU) or flight-cases.

Technical Data	FMX-1402R
Input sensitivity	MIC -55 dBu (mono) 1.3 kohms (balanced)
	LINE -35 dBu (mono), -20 dBu (stereo)
	all other inputs >10 kohms
Output sensitivity	Tape output 1.0 kohm
	all other outputs <100 ohms
Signal-to-noise ratio	90 dB
Crosstalk	better than -85 dB
Frequency response	20 Hz – 60 kHz +0 / -1 dB
Channel equalizer	Highs: 12 kHz shelving ±15 dB
	High mids: 3.0 kHz peaking ±12 dB
	Low mids: 800 Hz peaking ±12 dB
	Lows: 80 Hz shelving ±15 dB
	Low cut: 18 dB/oct. @ 75 Hz
Phantom power	+48 V DC
Power supply	220V – 240V/AC, 50–60 Hz
Input power	50 W
Dimensions; Weight	(W x H x D) 483 x 370 x 140 mm (9 RU); 7.1 kg

Model designation

Audio Mixer, 19" (9 RU), 14 channels **FMX-1402R**

FMX-1602

PROFESSIONAL AUDIO MIXER



INPUT-SECTION

- Top-quality mixer with 10 mono input channels, which can be supplied as MIC over XLR sockets or as LINE over 6.3 mm jack sockets. Channels 9/10 & 11/12 may also be supplied as stereo input channels, each over two 6.3 mm jack sockets. Channels 13/14 & 15/16 can be operated both mono (L) and stereo (L/R) over 6.3 mm jack sockets.
- The mono channels 1-8 have amplification pre-controls for MIC „Gain“ and for LINE „Trim“ as well as a 4-band CH-EQ and a low cut switch (75 Hz). CH 9/10 & 11/12 feature a pad switch (-20 dB) and a 3-band CH-EQ. CH 13/14 & 15/16 are equipped with a 3-band CH-EQ. There are panorama controls for mono and balance controls for stereo.
- Pre-listening of all channels is possible over an adjustable headphone output as well as the “Solo function” of the CH. The mixer also features a pre-fader and a post-fader AUX way as well as allocation selector switches for Main L/R per channel and additionally SUB 1/2 for the alternative total output.
- CH insert for channel 1 and 2 PRE-fader/PRE-EQ allows feeding in external signals (e.g. compr./lim./gate).
- Phantom power is centrally switchable for all MIC inputs (+48 V DC).

MASTER-SECTION

- Two stereo output sockets for main output can be supplied by a stereo master fader (L+R) with LED meter display. Two alternative output sockets (6.3 mm jack unbalanced) are fed over separately adjustable SUB-1- and SUB-2-faders.
- 2 RCA input sockets with level input controls and two RCA output sockets for 2-track IN/OUT per L/R. 2 unbalanced AUX sends and 2 adjustable AUX returns are available. The AUX returns can be switched on to the monitor way.

HIGHLIGHTS

- A switchable digital effects board allows adding 16 high-grade effects with an adjustable DSP master to the sum and with a switch to the monitor way also. An additional mono out jack socket with a level control enables another pre-amplified signal output. FMX-1602 is designed to be tabletop unit or for integration into 19" racks. The 19" mounting angles „RMK-16“ (8 RU) are optionally available.

Technical Data

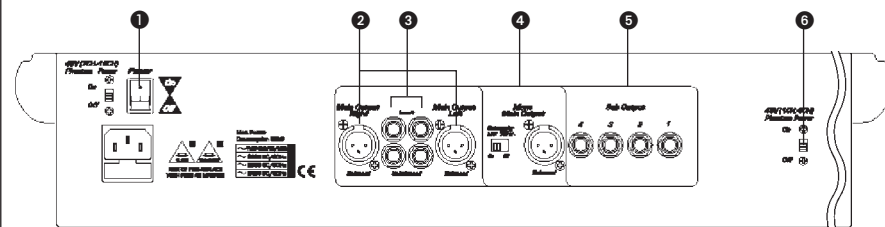
FMX-1602

Input sensitivity	MIC -55 dBu (mono) 1.3 kohms (balanced)
	LINE -35 dBu (mono), -20 dBu (stereo)
	all other inputs >10 kohms
Output sensitivity	Tape output 1.0 kohm
	all other outputs <100 ohms
Signal-to-noise ratio	better than 90 dB
Crosstalk	better than 85 dB
Frequency response	20 Hz – 60 kHz +0 / -1.5 dB
Channel equalizer	Highs: 12 kHz shelving ±15 dB
	High mids: 3.0 kHz peaking ±12 dB
	Low mids: 800 Hz peaking ±12 dB
	Lows: 80 Hz shelving ±15 dB
	Low cut: 18 dB/oct. @ 75 Hz
Phantom power	+48 V DC
Power supply	220V – 240V/AC, 50–60 Hz
Input power	25 W
Dimensions (W x H x D)	411 x 354 x 72 mm (without edges and little feet)
Weight	5.7 kg

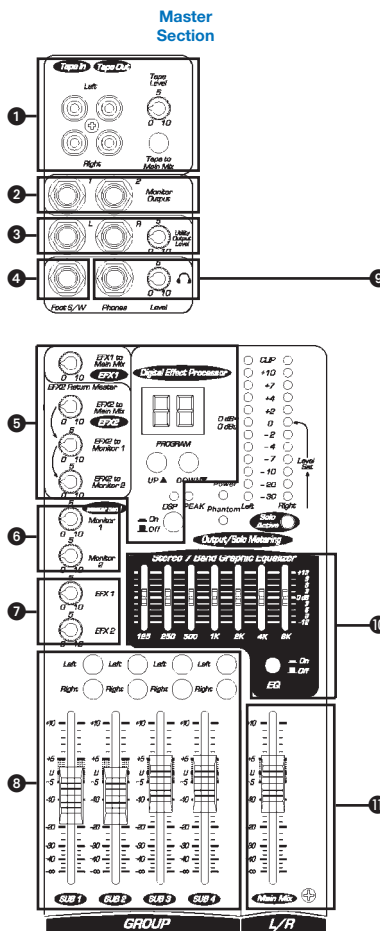
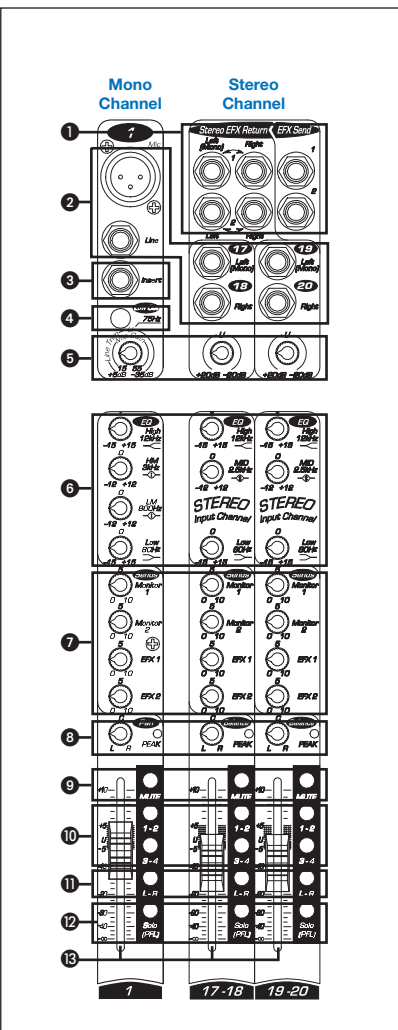
Model designations

Audio Mixer, 16 channels	FMX-1602
19" Rack-Mounting-Kit, 8 RU.....	RMK-16

REAR VIEW



- 1 Power switch
- 2 Master output section L/R
- 3 Insert send
- 4 Mono output (e.g. Subwoofer OUT)
- 5 Sub group section (1-4)
- 6 Phantom power switch



Mono Channel / Stereo Channel

- 1 Effect section
- 2 Input section
- 3 Insert send
- 4 Low cut switch (18dB/Okt @ 75Hz)
- 5 Amplification pre-controls
- 6 EQ-section
- 7 AUX send section
- 8 PAN or balance control
- 9 Mute switch
- 10 SUB group allocation switch
- 11 Allocation switch to master sum
- 12 PFL-(Solo) switch
- 13 60 mm fader

Master Section

- 1 Two-track In/Out-section
- 2 Monitor master section
- 3 Utility output section
- 4 Foot switch socket for effect ON/OFF
- 5 Effect section
- 6 Monitor master send
- 7 Effect master send
- 8 Sub group section (1-4) fader
- 9 Headphones section
- 10 Master EQ-section
- 11 Master output fader L/R

Technical Data

FMX-2002

Input sensitivity	MIC -55 dBu (mono) 1.3 kohms (balanced); LINE -35 dBu (mono), -20 dBu (stereo), CH inserts (unbalanced) 2.5 kohms, all other inputs >10 kohms
Output sensitivity	Tape output 1.0 kohms, EFX returns or AUX: 10 kohms, all other outputs <120 ohms
Signal-to-noise ratio	better than 90 dB
Crosstalk	better than 85 dB @ 1 kHz
Frequency response	20 Hz – 60 kHz +0 / -1 dB
Channel equalizer	Highs: 12 kHz shelving ±15 dB; High mids: 3,0 kHz peaking ±12 dB; Low mids: 800 Hz peaking ±12 dB; Lows: 80 Hz shelving ±15 dB; Low cut: 18 dB/oct. @ 75 Hz
Phantom power	+48 V DC
Power supply	220V – 240V/AC, 50–60 Hz
Input power	50 W
Dimensions; Weight	(W x H x D): 483 x 370 x 140 mm; 9,1 kg



● INPUT-SECTION

- Professional audio-mixer with 16 mono input channels, which can be supplied as MIC over XLR or as LINE over 6.3 mm jack sockets. Channels 17/18 & 19/20 may be operated over 6.3 mm jack sockets both mono (L) and stereo (L/R).
- The mono channels 1-16 have amplification pre-controls for MIC „Gain“ and for LINE „Trim“ as well as a 4-band CH-EQ and a low-cut switch (18 dB/oct. @ 75 Hz). Channels 17/18 & 19/20 are equipped with LINE trim controls (± 20 dB) and a 3-band channel equalizer. Panorama controls for mono and balance controls for stereo allow the desired sound distribution per channel.
- Pre-listening of all channels is possible over an adjustable headphone output as well as the “Solo function” (PFL) of the CH. The mixer has 2 pre-fader and 2 post-fader AUX ways as well as allocation selector switches per CH for CH mute, sub 1/2, sub 3/4 and main L/R.
- CH insert for channels 1-16 PRE-fader/PRE-EQ and master L/R insert PRE-graphic-EQ allow feeding in external signals.
- Phantom power is switchable for all MIC inputs (+48 V DC) block by block (CH 1-6 and CH 7-16).

● MASTER-SECTION

- Master-send controls are available for AUX 1-4 respectively.
- The master section also has two RCA input sockets with level input controls, switchable to the master, as well as two RCA output sockets (for 2-track IN/OUT per L/R).

- Stereo output sockets for main output over 2 x XLR balanced or 2 x 6.3 mm jack unbalanced may be supplied by a stereo master fader (L+R) with LED meter and switchable 7-band graphic equalizer. Four alternative output sockets (6.3 mm jack unbalanced) can be separately adjusted over the group-faders SUB 1-4 and can be separately switched (L/R) to the master sum.

● HIGHLIGHTS

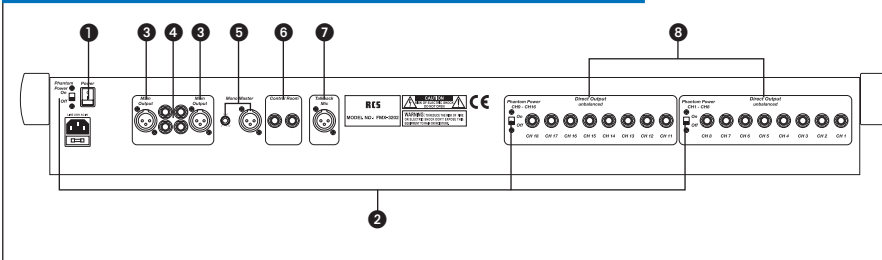
- A switchable 24-bit digital effects board allows adding 99 high-grade effects with 3 adjustable master returns to the sum as well as to the monitor 1 and monitor 2 ways. The DSP can be operated comfortably over a digital display and an UP/DOWN push-button. It may even be remotely switched ON/OFF by a foot switch.
- Stereo output jack sockets with utility level control make another pre-amplified signal output possible.
- A mono main out (XLR, balanced) with switchable 18 dB/oct. @ 75 Hz LPF serves as subwoofer output.

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Model designations

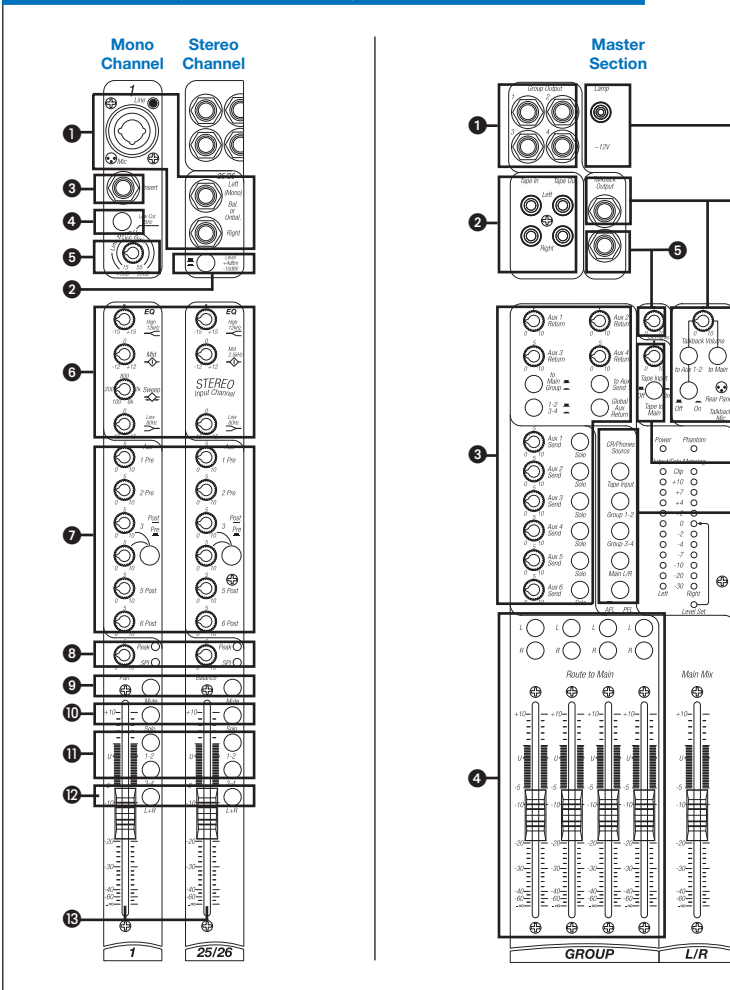
Audio Mixer, 20 channels **FMX-2002**

REAR VIEW



- ❶ Power switch
- ❷ Phantom power switch
- ❸ Main output (XLR)
- ❹ Insert send return
- ❺ Mono output (XLR) with level control
- ❻ Control room output
- ❼ Talkback (XLR) output
- ❽ Direct Input (6,3 mm jack)

MONO CH, STEREO CH, MASTER SECTION



Mono Channel / Stereo Channel

- ❶ Input section
- ❷ Input level switch (+4dBm/-10dBV)
- ❸ Insert send return
- ❹ Low cut switch (18dB/Okt @ 75Hz)
- ❺ Amplification pre-controls
- ❻ EQ-section
- ❼ AUX-section
- ❽ PAN or balance control
- ❾ Mute switch
- ❿ PFL-(Solo) switch
- ⓫ SUB group allocation switch
- ⓬ Allocation switch to master sum
- ⓭ 100 mm fader

Master Section

- ❶ Sub group (1-4) output (6,3 mm jack)
- ❷ Two-track In/Out section
- ❸ Aux master send/return section
- ❹ Sub group section (1-4) fader
- ❺ Headphone section
- ❻ Talkback section
- ❼ BNC lamp junction

Technical Data

FMX-3202

Inputs	MIC -15 dBm to -55 dBm, 1.3 kohms (balanced); LINE +5 dBm to -35 dBm; CH inserts 2.5 kohms (unbalanced); all other inputs >10 kohms
Outputs	Tape output 1.1 kohms; EFX returns or AUX: -10 dBu to +22 dBu, 10 kohms; all other outputs <120 ohms
Signal-to-noise ratio	better than 90 dB
Crosstalk	better than -85 dB @ 1 kHz
Frequency response; THD	20 Hz – 60 kHz +0 / -1 dB; 0.005%
Channel equalizer	Highs: 12 kHz shelving ±15 dB; Mids cut/boost: ±12 dB with mid-frequency control: 100 Hz – 8 kHz; Lows: 80 Hz shelving ±15 dB; Low cut: 18 dB/oct. @ 75 Hz
Phantom power	+48 V DC
Power supply	220V – 240V/AC, 50-60 Hz
Input power	58 W
Dimensions; Weight	(W x H x D) 960 x 470 x 130 mm; 16.0 kg



● MASTER-SECTION

- Stereo output sockets for main output over 2 x XLR balanced or 2 x 6.3 mm jack unbalanced, which can be supplied by a stereo master fader (L+R) over LED meter display.
- 4 SUB group output sockets (6.3 mm jack unbalanced) can be separately adjusted over the group 1-4 faders and be separately (L/R) switched to the master sum.
- Master send controls are available for AUX 1 to 6 over solo function and solo meter LED.
- There are 4 adjustable stereo AUX returns (L=mono), of which AUX 3 is switchable to main group (optionally 1/2 or 3/4) and AUX 4 is switchable to AUX 1 send. The solo function "global AUX return" allows pre-listening to all stereo AUX returns.
- The master section also has two RCA input sockets with level input controls, switchable to the master, as well as two RCA output sockets (2-track IN/OUT per L/R).

● HIGHLIGHTS

- 100 mm HQ-fader controls.
- Two stereo output jack sockets (control room output unbalanced) allow another total signal output.
- Plug-in connector for BNC gooseneck lamp.
- A mono main out (XLR, balanced), adjustable in its level, may be used as additional output (e.g. for subwoofer).

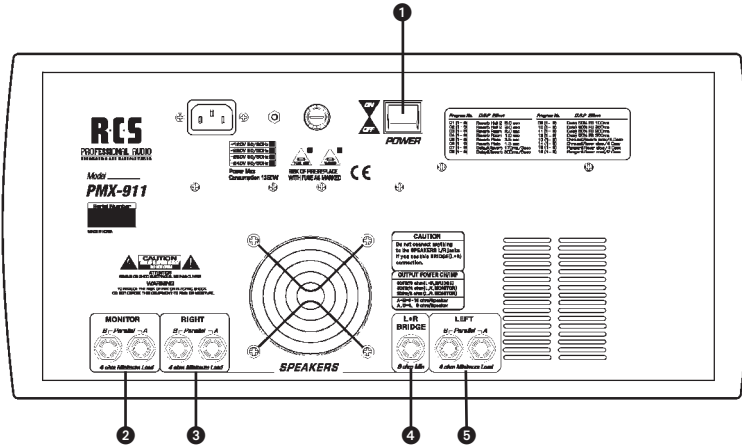
● INPUT-SECTION

- Professional 32-channel audio-mixer-console with 24 mono input channels, which can be supplied as MIC over XLR or as LINE over 6.3 mm jack-combo sockets. Channels 25/26 to 31/32 may be operated over 6.3 mm jack sockets both mono (L) and stereo (L/R).
- The mono channels 1-24 have amplification pre-controls for MIC „Gain“ and for LINE „Trim“ as well as a 3-band CH-EQ with semi-parametric mids and a low cut switch (18 dB/oct. @ 75 Hz). Channels 25/26 to 31/32 are equipped with LINE level switches (+4 dBm / -10 dBV) and a 3-band CH-EQ. Panorama controls for mono and balance controls for stereo allow the desired sound distribution per channel.
- Pre-listening of all channels and listening to tape input, group 1-2, group 3-4, main L/R, AFL/PFL is possible over an adjustable headphone output.
- The mixer has 6 AUX ways with 2 pre-, 2 pre-/post- (switchable) and 2 post-fader AUX send controls, as well as allocation selector switches for CH mute, SUB 1/2, SUB 3/4 and main L/R.
- CH insert for channels 1-24 PRE-fader/PRE-EQ and master insert for L and R allow feeding in external signals.
- A talk-back MIC input (XLR) with push-button can be switched on to the AUX 1/2 ways and/or to the master sum.
- Phantom power is switchable for all MIC inputs (+48 V DC) block by block (CH 1-8, CH 9-16 and CH 17-24).

Model designation

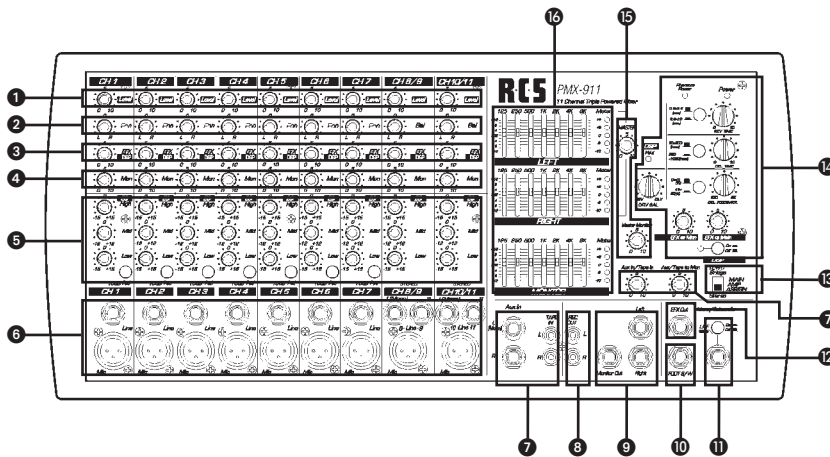
Audio Mixer Console, 32 channels..... **FMX-3202**

REAR VIEW



- 1 Power switch
- 2 Master MONITOR OUT
- 3 Master RIGHT OUT
- 4 Master L+R bridged OUT
- 5 Master LEFT OUT

FRONT VIEW



- 1 Input level control
- 2 Panorama / balance control
- 3 Effect / DSP send control
- 4 Monitor send control
- 5 Channel EQ section
- 6 Input section
- 7 Tape IN / AUX IN section
- 8 Record OUT
- 9 Monitor / main L/R preamp output
- 10 Footswitch effect ON/OFF female
- 11 Subwoofer OUT with LFP
- 12 Effect output female
- 13 Main amp-mode switch (stereo/bridged)
- 14 Effect section
- 15 Master level control
- 16 Graphic EQ section

Technical Data

	PMX-911	PMX-911 R
Output power at 4 ohms L/R monitor	3 x 300 W	
Output power at 8 ohms L/R monitor	3 x 200 W	
THD (MIC input to power-amp output)	0.05%	
Frequency response	20 Hz - 20 kHz	
Input sensitivity	MIC-in -50 dBu, LINE-in (1-7) -20 dBu, LINE-in (8-11) -10 dBu, AUX-in -10 dBu, TAPE-in -10 dBu	
Output sensitivity	Main-out +4 dBu, Monitor-out +4 dBu, EFX-out +4 dBu, Rec-out -10 dBu	
Channel equalizer	Highs 12 kHz \pm 15 dB shelving, Mids 2.5 kHz \pm 12 dB peaking, Lows 80 Hz \pm 15 dB shelving	
2 x master & 1 x monitor 7-band graphic equalizer	125 Hz, 250 Hz, 500 Hz, 1 kHz, 2 kHz, 4 kHz, 8 kHz	
Signal-to-noise ratio	better than 90 dB	
Crosstalk	better than 90 dB	
Phantom power	DC 48 V centrally switchable	
Power supply	220V - 240V/AC, 50-60 Hz (fuse T6.3A)	
Input power	1350 W	
Dimensions (W x H x D)	483 x 205 x 270 mm (5 RU)	483 x 238 x 276 mm
Weight	15.3 kg	17.5 kg

PMX-911 / PMX-911 R

PROFESSIONAL STEREO POWER-MIXER 900 W MAX.

RCS
stage-sound



INPUT-SECTION

- Professional power-mixer with nine mono LINE inputs (CH 8/9 & CH 10/11 also adaptable as stereo) over 6.3 mm jack socket and nine mono MIC inputs over XLR socket, which can be transmitted to monitor out, record out and master out (L/R or bridge L+R).
- 2 stereo inputs (TAPE in as RCA socket and AUX in 6.3 mm as jack socket) with combined volume control can be transmitted to the master section. Another combined control makes it possible to additionally put these two signals on the monitor way.
- All inputs are equipped with input level, PAN, effect (DSP), monitor as well as highs, mids, and lows controls.
- PAD switches (-10 dB) for CH 1-7 in order to damp the input signal.
- Phantom power for all MIC inputs (+48 V DC) centrally switchable.

AMPLIFIER-SECTION

- Apportionment of the 3 integrated amplifiers:
2 x 300 W @ 4 ohms for stereo operation, each with two 6.3 mm jack output sockets L+R connected in parallel, or 1 x 600 W @ 4 ohms for mono operation over a 6.3 mm jack output socket L+R (bridged).
Additionally, one power amplifier with 300 W @ 4 ohms is available for monitor operation with two 6.3 mm jack socket outputs connected in parallel.

EFFECT-SECTION

- Effects processor with adjustable effect values such as Reverb-Time (0-10ms), Delay-Time (0-1000ms), Delay-Feedback (0-100%) and Delay/Reverb balance control. The effects can be added to the monitor way and separately to the master out (L/R and bridged L+R). The effects may be externally switched ON/OFF via the foot switch jack socket. Effect-send AUX for external effects devices.

MASTER-SECTION

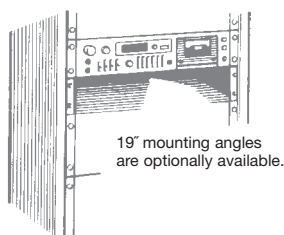
- The mixer features three 7-band graphic equalizers, relating to stereo master L/R, mono master L+R (bridged) and monitor master, as well as monitor out and main L/R out.
- Furthermore, the mixer has master level controls with LED meter displays and a mode switch for selecting between mono L+R (bridged) and stereo L/R.
- Monitor-Out und Main L/R-Out.



Figure shows PMX-911 with robust compact casing.

Model designations

- Power Mixer, 3 x 300W output, compact casing **PMX-911**
- Power Mixer, 3 x 300W output, 19"(5 RU) , **PMX-911 R**



INPUT-SECTION

- 6 mono input channels can be supplied as MIC over XLR sockets or as LINE over 6.3 mm jack sockets. CH 7/8 & 9/10 can be operated mono (L) and stereo (L/R). CH 11/12 & CH 13/14 used as stereo AUX returns or as LINE level CH.
- CH 1-6 have pre-amplifying controls for MIC "Gain" and for LINE "Trim". CH 7/8 & 9/10 have input level switches. CH 1-3 are equipped with low-cut switches and a 3-band channel-EQ with semi-parametric mids. CH 4-10 feature a 3-band CH-EQ. There are panorama controls for mono and balance controls for stereo CH (except for CH 11-14).
- Pre-listening to all CH and monitor sum, main L/R, mono out and AFL/PFL is possible with an adjustable headphone output. 2 pre-fader and one post-fader AUX ways per CH as well as CH-insert for CH 4-6 PRE-Fader/PRE-EQ.
- Phantom power is centrally switchable for all MIC inputs.

AMP.-/ MASTER-SECTION

- The main amplifier output (L/R, each 300 W @ 4 Ohms) has 2 speak-on output sockets or 2 jack sockets, connected in parallel, which can be adjusted by a stereo master fader (L+R) over a LED meter display and a graphic-EQ L/R. Amp-mode, either L+R monitor or L/R stereo, selectable.
- 2 RCA in-/output sockets with level control and solo switch serve for 2-track IN/OUT (L/R). A mono-fader with switchable LPF serves for subwoofer-out, main L/R and monitor pre-amp out for external power amplifiers.

EFFECT-SECTION

- A switchable 24-bit digital effects board enables to add 99 high-grade effects with a DSP master fader to the sum and with another control also to the monitor way. Easy to handle over digital display with up/down push-button.

HIGHLIGHTS

- Use of the internal power amplifier and the master EQ automatic switch-off of the mixer section over amp-input.
- The mixer PMX-614 is designed to be tabletop unit or for integration into 19" racks. The 19" mounting angles "RMK-14 P" (9 RU) are optionally available.

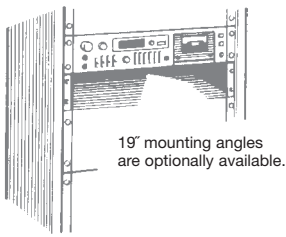
Technical Data	PMX-614
Input sensitivity	MIC IN: -55dBm (1.38mV), 50-600 ohms
	LINE IN: -35dBm (13.8mV), 600 ohms
	Stereo In: 0 dBu (775mV), 600ohms
Output power	2x 300/450W at 4 ohms, 2x 200/340W at 8 ohms
Output sensitivity	Tape-Out (L/R): 600 ohms, -10dBu (245mV)
	all other outputs: 600 ohms, +4dBu (1,23V)
Signal-to-noise ratio	better than 97dB
Crosstalk	better than 90dB
Frequency response	20Hz - 20kHz +1 / -2dB
Channel equalizer	Highs: 12kHz shelving ±15dB
	Mids: 2,5kHz peaking ±12dB
	Mids for CH 1-3 semi-parametric 100Hz-8kHz ±12dB
	Lows: 80Hz shelving ±15dB
	Low cut: 18dB/Okt. @ 75Hz
Phantom Power	+48V DC
Power supply	220V - 240V/AC, 50-60 Hz
Input power	approx 1.200 W
Dimensions (W x H x D); Weight	470 x 405 x 148 mm; 16,0 kg

Model designations

- Power Mixer, 14 channels, 600 W **PMX-614**
 19" Rack-Mounting-Kit, 9 RU **RMK-14 P**

PMX-1216

PROFESSIONAL 16 CHANNEL POWER-MIXER 1200 W



19" mounting angles are optionally available.



INPUT-SECTION

- 8 mono input CH, which can be supplied over MIC (XLR sockets) or LINE (6.3 mm jack sockets). CH 9/10 & 11/12 can be operated mono (L) and stereo (L/R). CH 13/14 & CH 15/16 may be used as stereo AUX returns or LINE level CH.
- CH 1-8 have pre-amplifying controls for MIC "Gain" and LINE "Trim". CH 9/10 & 11/12 have an input level switch. CH 1-4 are equipped with low-cut switches and a 3-band CH-EQ (semi-parametric mids). CH 5-10 feature a 3-band CH-EQ. There are panorama controls for mono and balance controls for stereo channels (except for CH 13-16).
- Pre-listening to all channels and listening to monitor sum, main L/R, mono out and AFL/PFL is possible with an adjustable headphone output. 2 pre-fader and one post-fader AUX ways per CH and CH-insert for CH 5-8.
- Phantom power is centrally switchable for all MIC inputs.

AMP.-/ MASTER-SECTION

- The main amplifier output (L/R, each 600 W @ 4 ohms) has two speak-on output sockets or two jack sockets connected in parallel, adjustable by a stereo master fader (L+R) over a LED meter display and a graphic-EQ L/R. Amp-mode, L+R monitor or L/R stereo selectable.
- 2 RCA in-/output sockets with level control and solo switch serve for 2-track IN/OUT (L/R). A mono-fader with switchable LPF serves for subwoofer out, Main L/R and monitor pre-amp out for external power amplifiers.

EFFECT-SECTION

- A switchable digital effects board enables to add 99 high-grade effects with a DSP master fader to the sum and to the monitor way. Easy to handle via digital display with up/down push-button.

HIGHLIGHTS

- Use of the internal power amplifier and the master EQ automatic switch-off of the mixer section over amp-input.
- The mixer PMX-1216 is designed to be tabletop unit or for integration into 19" racks. The 19" mounting angles "RMK-16 P" available on option.

Technical Data

PMX-1216

Input sensitivity	MIC IN: -55 dBm (1.38 mV), 50-600 ohms LINE IN: -35 dBm (13.8 mV), 600 ohms Stereo in: 0 dBu (775 mV), 600 ohms
Output power	2x 600/900W at 4 ohms, 2x 350/520W at 8 ohms
Output sensitivity	Main out L/R, mono out, aux send 1/2 and monitor out 600 ohms, +4 dBu (1.23 V) Tape out (L/R) 600 ohms, -10 dBu (245 mV)
Signal-to-noise ratio	better than 97 dB
Crosstalk	better than 90 dB
Frequency response	20 Hz - 20 kHz +1 / -2 dB
Channel equalizer	Highs: 12 kHz shelving ± 15 dB Mids: 2.5 kHz peaking ± 12 dB Mids for CH 1-3 semi-parametric 100 Hz-8 kHz ± 12 dB Lows: 80 Hz shelving ± 15 dB Low cut: 18 dB / oct. @ 75 Hz
Phantom power	+48 V DC
Power supply	220V - 240V/AC, 50-60 Hz
Input power	approx 2.200 W
Dimensions (W x H x D) ;Weight	515 x 405 x 148 mm; 16.0 kg

Model designations

Power Mixer, 16 channels, 1200 W.....	PMX-1216
19" Rack-Mounting-Kit, 9 RU.....	RMK-16 P

·STAGE-SOUND·
Speaker-systems



10
Page
233 – 248

Part 10

● GENERAL

This **transportable** stage-sound active-system offers a set of ideal premises for voice and music transmission. The cost- and performance ratio is excellent and the high quality of the 2-way full-range-

system (2', 12') as well as the sub-woofer (18') predestines this satellite active-system for an application in an area of semi-professionalism as well as the very professional PA- and DJ-area.

● ASSEMBLY

The housing of these loudspeakers consists of black coated 18 mm MDF. They also have incorporated carrying handles. A massive metal grille coated with acoustic foamed plastic completes the robust structure. Rubber feet help to avoid a damage of the housing.

The amplifier-units with 2 x 300 W /RMS for the satellite-speaker and 1 x 600 W (RMS) for the sub-woofer are located inside the sub-woofer-housing.

A deeper embedded mixer-panel offers the opportunity to control all connected components in a very comfortable way via pots and LED-indicators.

● TRANSPORT

A very quietly running fan provides cooling for the power amplifier. Both of the satellite-boxes can be placed and fixed on top of the sub-woofer box in a provided space. A set of four swivel castors ø 60 mm (two of them with breaks) help to achieve a trouble-free transportation of the installation.

● EQUIPMENT

Both of the satellite-boxes are equipped with 2" tweeter-driver-unit and 12" middle-woofer of very high quality. Furthermore the boxes continue to possess crossover-networks, which are perfectly adjusted to the assembly of the systems.

System-Details



The system is stackable.



The Mixer Panel



Absolutely simple: transportable

The sub-woofer is equipped with 18" sub-bass-loudspeaker, ensuring excellent transmission of woofer-sounds.

● CONNECTORS

Input-connectors such as MIC-IN (XLR or JACK-PLUG 6.3 mm), LINE-IN (XLR or JACK-PLUG 6.3 mm L/R) and AUX-IN (Cinch L/R) are available each with gain-control.

Output-connectors such as XLR-OUT L/R (sym.) and Cinch-OUT L/R (unbalanced) serve as outputs for the mixer-signal to further active systems or external power amplifiers.

Both of the full-range speakers can be perfectly fed via supplied loudspeaker cable (each 10 m) through two speaker output jacks (L/R).

An integrated power supply (IEC socket 230 V AC) in the sub-woofer with power switch enables the power supply of the active system via the IEC cable included in the scope of delivery.

● STAND and WALL-BRACKET

The **Speaker stand QST-200** or the **QST-185** is perfectly suitable for both of the full-range speakers. The **distance bar (QDB-120)** in between the sub-woofer and the full-range-box offers a perfect fixation opportunity for a satellite-box.

Technical Data	PSA-1200	Satellite Speaker	Sub-Woofer
Nominal capacity -/ performance		2x 300W (RMS)	1x 600W (RMS)
Speaker		2x 2-way fullrange-systems (2', 12' full-range speaker)	1x active sub-woofer speaker (18' sub-woofer)
Sound pressure SPL 1 W / 1 m		98 dB	97 dB
Sound pressure SPL MAX		120 dB	124 dB
Frequency (+- 3 dB)		50 Hz - 20.000 Hz	40 Hz - 150 Hz
Impedance (nominal)		4 ohms	4 ohms
Connectors		2x Speaker-jack (IN / OUT) apiece	2 x Speaker Out (L/R)
Control		-	Gain (MIC, LINE, AUX), Balance, Sublevel
Corresponding radiation		60° x 40°	k. A.
Power Supply		-	220V - 240V AC, 50-60 Hz
Dimensions , Colour, Weight		58 x 36 x 36 mm; black; 23 kg	766 x 615 x 605 mm; black; 72 kg

PSA-1200

PORTABLE SATELLITE-ACTIVE-SYSTEM

RCS
stage-sound



Model designations

Active Portable Satellite System, black PSA-1200
black, 2 Satellites Speaker (300 W) and 1 Active-Sub-Woofer (600 W)

Accessories

- Speaker Stand, up to 1,85 m for Satellites QST-185**
- Speaker Stand, up to 2,00 m for Satellites QST-200**
- Distance Bar, for Satellites and Sub-Woofer QDB-120**



- Compact PA-System
- Mobile usage for up to 600 listeners
- Wireless UHF technology (16 frequencies)

This mobile PA-System PCS-600 has **500W** (RMS) performance and is suited for professional sounding for up to 600 people. Optimal results can be achieved through carefully selected, complementary components. This compact and user friendly system can be ready for operation within a few minutes. The mobile set of wheels makes handling very easy with little effort.

Please consider the following:

The PCS-600 System will be delivered fully assembled and is best suited for mobile usage as well as stationary opera-

tion. Please extract further technical data regarding the individual components from our main catalogue.

*

This system includes the following components:

- 1x PMX-614 Power Mixer 2 x 300W (RMS)**
Including 14 input-channels (6x Mono-CH) and diversity of outputs
- 2x QRF-212 Professional 2-Way Speakers**
Full Range, including 10m Connection cables each
- 2x Floor Stands**
Adjustable height from 115 cm up to 200 cm
- 1x CD-MP3 / SD-Card playing device**
Including pitchable CD-MP3-Module, SC-Card-Module with playing and recording function and internal memory (128MB)
- 1x UHF Wireless Microphone-System**
Diversity receiver, 16 frequencies, 1-Channel, with Hand receiver
- 1x Professional Angle-Flightcase**
19", 10 RU, incl. rack rail lifting device on the top and mobile set of wheels
- Diverse Accessories**
Including Rack drawer, Connection Cable, Power splitter, etc.

Technical Data	PCS-600		
Mixer	Inputs CH 1-6 (mono)	Mic In: -55dBu (1,38mV) 50-600 ohms,	
	Inputs CH 7-14 (stereo)	Line In: -35dBu (13,8mV), 600 ohms	
		Stereo In: 0dBu (775mV), 600 ohms	
	RMS/Program power	2x 300/450W at 4 ohms; 2x 200/340W at 8 ohms	
	Sound Control Channel	Highs:	12kHz shelving ±15dB
		Mids:	2,5kHz peaking ±12dB
Mids for CH 1-3: semiparam.		100Hz-8kHz ±12dB	
	Low Cut:	80Hz shelving ±15dB	
		Low Cut: 18dB/oct.@ 75Hz	
Speaker	250W (RMS), 400W (MAX), with Speaker IN/Out;		
	1,29" tweeter, 12" full range		
Speaker Floor Stand	Aluminium tube Ø 36mm, adjustable 115-200mm,		
Microphone Wireless System	UHF 16 frequencies (794-813 MHz), 1-channel		
System	Power supply	220V – 240V/AC, 50-60 Hz	
	Power absorption	approx. 1.200W	
	Wheels	4 steering rollers 100mm, 2 with brakes (blue wheels)	
	Dimensions/Weight	B 550 x H 570 x T 560mm (Angle-Flightcase); 43 kg	

PORTABLE COMPACT-SYSTEM, 500W PCS-600
with 2 professional 2-way speakers and accessories (see image)

PCS-1200

COMPACT PA-SYSTEM FOR MOBILE OPERATION

RCS
stage-sound

NEW



- Compact PA-System
- Mobile usage for up to 1.500 listeners
- Wireless UHF technology (16 frequencies)

This mobile PA-System PCS-1200 has **1200W** (RMS) performance and is suited for professional sounding for up to 1.500 people. Optimal results can be achieved through care-

fully selected, complementary components. This compact and user friendly system can be ready for operation within a few minutes. The mobile set of wheels makes handling very easy with little effort.

Technical Data	PCS-1200		
Mixer	Inputs CH1-8 (mono)	Mic In: -55dBu (1,38mV) 50-600 ohms,	
	Inputs CH9-16 (stereo)	Line In: -35dBu (13,8mV), 600 ohms	
		Stereo In: 0dBu (775mV), 600 ohms	
	RMS/Program power	2x 600/900W at 4 ohms; 2x 350/520W at 8 ohms	
	Sound Control Channel	Highs:	12kHz shelving ±15dB
		Mids:	2,5kHz peaking ±12dB
		Mids for CH 1-4: semiparam.	100Hz-8kHz ±12dB
Lows:		80Hz shelving ±15dB	
	Low Cut: 18dB/oct. @ 75Hz		
Speaker	250W (RMS), 400W (MAX), with Speaker IN/Out; 1,29" tweeter, 12" full range		
Speaker Floor Stand	Aluminium tube Ø 36mm, adjustable 115-200mm,		
Microphone Wireless System	UHF 16 frequencies (794-813 MHz), 1-channel		
System	Power supply	220V – 240V/AC, 50- 60 Hz	
	Power absorption	approx. 2.200W	
	Wheels	4 steering rollers 100mm, 2 with brakes (blue wheels)	
	Dimensions/Weight	B 550 x H 570 x T 560mm (Angle-Flightcase); 43 kg	

Please consider the following:

The PCS-1200 System will be delivered fully assembled and is best suited for mobile usage as well as stationary operation. Please extract further technical data regarding the individual components from our main catalogue.

*

This system includes the following components:

- 1x PMX-1216 Power Mixer 2 x 600W (RMS)**
Including 16 input-channels (8x Mono-CH) and diversity of outputs
- 4x QRF-212 Professional 2-way Speakers**
Full Range, including 10m Connection cables each
- 4x Floor Stands**
Adjustable height from 115 cm up to 200 cm
- 1x CD-MP3 / SD-Card playing device**
Including pitchable CD-MP3-Module, SC-Card-Module with playing and recording function and internal memory (128MB)
- 1x UHF Wireless Microphone-System**
Diversity receiver, 16 frequencies, 1-Channel, with Hand receiver
- 1x Professional Angle-Flightcase**
19", 10 RU, incl. rack rail lifting device on the top and mobile set of wheels
- Diverse Accessories**
Including Rack drawer, Connection Cable, Power splitter, etc.

PORTABLE COMPACT-SYSTEM, 1000W PCS-1200
with 4 professional 2-way speakers and accessories (see image)

COMPACT PA-SYSTEM FOR MOBILE OPERATION



800W
2 SPEAKER SYSTEM
HORIZONTAL LINE-ARRAY

- Compact **HORIZONTAL-LINE-ARRAY** PA-System
- Mobile usage for up to 1.000 listeners
- Wireless **UHF** technology (16 frequencies)

This Horizontal-Line-Array PA-System PCS-1200L has **800W** (RMS) performance and is suited for professional sounding for up to 1.000 people. Optimal results can be achieved through carefully selected, complementary components and the Line-Array-Principle. This compact and user friendly system can be ready for operation within a few minutes. The mobile set of wheels makes handling very easy with little effort.

Please consider the following:

The PCS-1200L System will be delivered fully assembled

This system includes the following components:

- 1x PMX-1216 Power Mixer 2 x 600W (RMS)**
Including 16 input-channels (8x Mono-CH) and diversity of outputs
- 2x QRF-2212 Professional 2-way Speakers**
Horizontal-Line-Array, Full Range, including 10m Connection cables each
- 2x Floor Stands**
Adjustable height from 115 cm up to 200 cm
- 1x CD-MP3 / SD-Card playing device**
Including pitchable CD-MP3-Module, SC-Card-Module with playing and recording function and internal memory (128MB)
- 1x UHF Wireless Microphone-System**
Diversity receiver, 16 frequencies, 1-Channel, with Hand receiver
- 1x Professional Angle-Flightcase**
19", 10 RU, incl. rack rail lifting device on the top and mobile set of wheels
- Diverse Accessories**
Including Rack drawer, Connection Cable, Power splitter, etc.

and is best suited for mobile usage as well as stationary operation. Please extract further technical data regarding the individual components from this catalogue.

*

Technical Data	PCS-1200 L	
Mixer	Inputs CH 1-8 (mono)	Mic In: -55dBu (1,38mV) 50-600 ohms,
	Inputs CH 9-16 (stereo)	Line In: -35dBu (13,8mV), 600 ohms
		Stereo In: 0dBu (775mV), 600 ohms
	RMS/Program power	2x 600/900W at 4 ohms; 2x 350/520W at 8 ohms
	Sound Control Channel	Highs: 12kHz shelving ±15dB
		Mids: 2,5kHz peaking ±12dB
Mids for CH 1-4: semiparam. 100Hz-8kHz ±12dB		
	Low Cut: 18dB/oct. @ 75Hz	
Speaker	250W (RMS), 400W (MAX), with Speaker IN/Out;	
	1,29" tweeter, 2x 12" full range	
Speaker Floor Stand	Aluminium tube Ø 36mm, adjustable 115-200mm,	
Microphone Wireless System	UHF 16 frequencies (794-813 MHz), 1-channel	
System	Power supply	220V – 240V/AC, 50-60 Hz
	Power absorption	approx. 2.200W
	Wheels	4 steering rollers 100mm, 2 with brakes (blue wheels)
	Dimensions/Weight	B 550 x H 570 x T 560mm (Angle-Flightcase); 43 kg

PORTABLE COMPACT-SYSTEM, 800W . . . PCS-1200 L
with 2 professional 2-way Horizontal-Line-Array speakers and accessories (see image)



Description

The **active loudspeakers** are of high-quality and are universally applicable **for multimedia applications**, conference rooms and similar utilization.

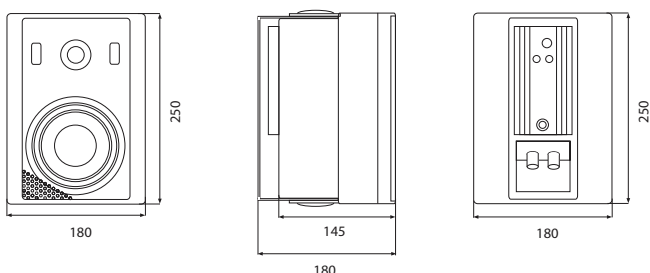
A very high maintenance adjustment of the single high-class components offers an exceptional neutral and precise sound pattern of the active system, with a constant angle of reflected beam of 100° x 100°.

An internal automatic starting activates the system via any connected system (e.g. a beamer). Operating the mounted loudspeakers is therefore not necessary anymore.

The scope of delivery includes the entire set (active stereo speaker boxes) and mounting clamp.

Please consider the following features:

- Switching on is automatically crack free via any additional systems and switching off through an internal timer (after approx. 5 min).



- Active stereo core amplifier with a volume control on the back side of one speaker box and the other speaker box is passive. Therefore power and NF can only be fed to one single speaker box.
- It is possible to mount the devices on the wall or ceiling vertically or horizontally through rotary mounting clamps and trapezoidal cabinets.

*

Technical data	PBA-050 W
Load rating	2x 30 W
Input sensitivity	-10 dBu / 10 kOhm
Speaker type	active speaker pair 2-Way bass reflex; left Box with amplifier unit, right Box passive
Speaker	5" woofer, 1" tweeter
Amplifier unit	Volume controller on rear side, "ON" LED at front, turn-on automatic; switch-off delay 5 min.
Frequency range	80 – 20.000 Hz
SPL max/1m	101 dB @1kHz
Corresponding radiation (H x V)	100° x 100°
Connections	Input Cinch (stereo), Connection left/ right box via screw-type connector
Power supply	AC 230 V, 50 VA; 3 m power cord
Dimensions H x B x T (mm)	280 x 180 x 180 (with bracket)
Weight (kg), Colour	1x passive 3 kg, 1x active 5 kg; white

Active-Speaker-System, 2x 30 W..... PBA-050 W
Stereo speaker incl. mounting bracket

● GENERAL

The Stage-Sound **Active** Speaker series **PBA** is equipped with high-quality and high capacity amplifier modules. Best sound characteristics in connection with

a light, but stable housing construction. This model series distinguishes with a perfect price performance ratio.

● DESIGN

These active speakers have a high-quality scratch resistant and shockproof plastic housing. The active speaker series PBA characterises through its compactness, easy assembly, the integrated amplifier, the sound control (only PBA-120 and PBA-250) and the connection possibilities.

The speaker series is in the best way suitable for fixed installation as well as for mobile acoustic irradiation. A stable screw-on metal grille completes the sturdy design.

PBA-250: This speaker can be used as a monitor or can be set up vertically. Three threaded inserts are used for mounting. An integrated hand grip on the side increases the transport comfort and easy handling.

● EQUIPMENT

The loudspeaker contains a high quality 6.5", 8" or 12" Bass-speaker and a 25 mm and respectively 34 mm high quality tweeter.

The outstanding sound is also influenced by the acoustically professionally designed housing. Adapted frequency switches and amplifiers provide a high efficiency and an accurate sound characteristic in the various cabinets.

Accessories PBA-250



● CONNECTION

All input terminals for the PBA-Series are switchable from MIC to LINE. The PBA-250 comes with an XLR-IN and -OUT socket. The PBA-120 and PBA-080 comes with a 6.3 mm jack each. An additional AUX-Out on all devices for use the NF-signal output to another active speaker or amplifier.

● STANDS & BRACKETS

Accessories PBA-080 / PBA-120

For the attachment of the speaker box PBA-120 a mounting bracket is in the scope of supply. The speakers can be swivelled around 160° by using this bracket, the speaker can be attached in a vertical or horizontal position. Using an adapter flange (scope of supply PST-100) it is possible to mount the speaker onto the on option available **floor stand PST-100**.

Accessories PBA-250

The **speaker stand QST-185** is suitable for the speaker box PBA-250 and is individually adjustable in height (109–185 mm).

The, on option available **wall bracket QWH-035** and **mounting bracket PWB-100** (impact proof) are suitable for our PBA-250 as well as for all boxes with a 36 mm Ø stand flange. The bracket is 160° rotatable and approx 15° tiltable.

Technical data	PBA-080	PBA-120	PBA-250
Load rating	50 W (RMS)	80 W (RMS)	150 W (RMS)
Loudspeakertyp	Active, 2-way, fullrange	Active, 2-way, fullrange	Active, 2-way, fullrange
Bass-Speaker, Horn Driver	1 x 6.5"; 1 x 25mm tweeter	1 x 8"; 1 x 25mm tweeter	1 x 12"; Double-radial-34mm tweeter
Sound pressure at rated power	108 dB SPL	110 dB SPL	116 dB SPL
Frequency range	80 – 20.000 Hz	60 – 20.000 Hz	45 – 20.000 Hz
Equalizer (sound control)	none	Treble ±12 dB, Bass ±12 dB	Treble ±12 dB, Mids ±12 dB, Bass ±12 dB
Impedance	8 ohms	8 ohms	8 ohms
Socket adapters	MIC/Line IN: 6.3mm jack; AUX Out 6.3mm jack	MIC/Line IN: 6.3mm jack; AUX Out 6.3mm jack	MIC/Line IN: XLR; AUX Out: XLR
Power supply	220V – 240V AC, 50–60 Hz (cable)	220V – 240V AC, 50–60 Hz (cable)	220V – 240V AC, 50–60 Hz (socket)
Dimensions (H x W x D)	370 x 240 x 220 mm	410 x 285 x 250 mm	650 x 420 x 330 mm
Weight, Colour	6.9 kg, black	8.6 kg, black	23 kg, black

ACTIVE STAGE-SOUND SPEAKER

PROFESSIONAL SPEAKER-SYSTEMS

RCS
stage-sound



active



Model designations

Active Stage-Sound Speaker, (50 W/80 W) **PBA-080**
black, with swiveling mounting bracket

Active Stage-Sound Speaker, (80 W/120 W) **PBA-120**
black, with swiveling mounting bracket

Accessories: _____

Floor Stand, black, for PBA-080/120 **PST-100**

Model designations

Active Stage-Sound Speaker, **PBA-250**
black, (150W/250W)

Accessories: _____

Floor Stand, black, for PBA-250 **QST-185**

Wall Bracket, black, for PBA-250 **QWH-035**

Mounting Bracket, black, for PBA-250 **PWB-100**

● GENERAL

The Pro Sound Speaker series PRO with high speaking and syllable understanding is also in the best way suitable for the Hifi music performance.

These speakers are universally applicable, as they are made of high-quality components, are of light weight and compact dimensions.

● DESIGN

These active speakers have a high-quality scratch resistant and shockproof plastic housing. The PRO-series speakers are in the best way suitable for fixed installation as well as in the mobile acoustic irradiation sector, because of their light weight and the compact dimensions. A stable screw-on metal grille completes the sturdy design.

PRO-1200: This speaker can be used as a monitor or can be set up vertically. Three threaded inserts are used for mounting. An integrated hand grip on the side increases the transport comfort and easy handling.

● EQUIPMENT

The loudspeaker contains a high quality 6.5", 8" or 12" Bass-speaker and a 25 mm and respectively a 34 mm high quality tweeter.

The outstanding sound is also influenced by the acoustically professionally designed housing. Adapted frequency switches and amplifiers provide a high efficiency and an accurate sound characteristic in the various cabinets.

Accessories PRO-1200



● CONNECTION

The speaker boxes are provided with high-quality Speaker sockets as an input terminal. To loop the signal through the boxes a second parallel switched Speaker socket is available.

● STANDS & BRACKETS

Accessories PRO-650 / PRO-800

A mounting bracket is in the scope of supply for the attachment of the speakers. The speakers can be swivelled around 160° by using this bracket, the speaker can be attached in a vertical or horizontal position. Using an adapter flange (scope of supply PST-100) it is possible to mount the speaker onto the on option available **floor stand PST-100**.

Accessories PRO-1200

The **speaker stand QST-185** is suitable for the speaker PRO-1200 and is individually adjustable in height (109–185 mm).

The on option available **wall bracket QWH-035** and **mounting bracket PWB-100** (impact proof) is suitable for our PRO-1200 as well as for all boxes with a 36 mm Ø stand flange. The bracket is 160° rotatable and approx 15° tiltable.

Technical data	PRO-650	PRO-800	PRO-1200
Load rating	80 W (RMS), 120 W (MAX)	100 W (RMS), 150 W (MAX)	200 W (RMS), 300 W (MAX)
Bass-Speaker	1 x 6.5"	1 x 8"	1 x 12"
Horn / Driver	1 x 25 mm polymer dome tweeter	1 x 25 mm polymer dome tweeter	double-radial-34 mm
SPL 1 W / 1 m	91 dB	93 dB	97 dB
Max. SPL	110 dB	112 dB	120 dB
Frequency range	80 – 20.000 Hz	60 – 20.000 Hz	45 – 20.000 Hz
Impedance	8 ohms	8 ohms	8 ohms
Socket adapters	2 x Speaker	2 x Speaker	2 x Speaker
Dimensions (H x W x D)	370 x 240 x 220 mm	410 x 285 x 250 mm	650 x 420 x 330 mm
Weight, Colour	5.3 kg, black	6.6 kg, black	18.4 kg, black



PST - 100
(Stand for PRO-650/800)

PRO-1200

PRO-1200 (as Monitor)

NEW

PRO-800

PRO-650

Model designations

Stage-Sound Speaker 80W	PRO-650
black, 8 ohms, with swiveling mounting bracket	
Stage-Sound Speaker 100W	PRO-800
black, 8 ohms, with swiveling mounting bracket	
Accessories:	
Floor Stand , black, for PRO-650/800	PST-100

Model designations

Stage-Sound Speaker 200 W	PRO-1200
black, 8 ohms	
Accessories:	
Floor Stand , black, for PRO-1200	QST-185
Wall Bracket , black, for PRO-1200	QWH-035
Mounting Bracket , black, for PRO-1200	PWB-100

● GENERAL

Stage-sound speaker of the QRF-series are perfectly suitable for voice and music transmission. They can be used for medium-sized up to large events. They were constructed in a very stable way. The high-quality, sophisticated sound prede-

stines this PA-loudspeaker for an application in an area of very professional PA and DJ. This loudspeaker is perfectly suitable for fixed installations (e.g. school gyms and event locations, etc.).

● MOUNTING

All speaker boxes of the QRF-series (excluding monitor QRF-212 M and subwoofer QRF-115 S) can also be hung-up. This means they are equipped with five recessed eye-bolts on each (one flying ear-rail on the back side and two on each side).



Inclusive recessed eyebolts

IMPORTANT:

When doing price comparisons please pay attention to the fact that the speaker boxes are delivered with professionally adjustable recessed eyebolts.

● ASSEMBLY

The housing of these loudspeakers consists of grey varnished (3 layers polyurethane) 18 mm MDF. They also have incorporated carrying handles. A massive metal grille completes the robust structure. Rubber feet help to avoid a damage of the housing.

● EQUIPMENT

The speaker boxes are equipped with 12" and respectively 15"-bass woofers. These are very high quality products with excellent tweeter-horns ("double-radial"). All the boxes of this series do have frequency gates, which are adjusted to the individual assembly.

● CONNECTORS

As input connectors the speaker boxes are provided with high-quality speaker sockets. In order to connect the signal through, all boxes are equipped with a speaker socket switched in a parallel way.

● STAND

We recommend the speaker stand QST-185 (109 – 185 mm) for the speaker boxes QRF-210 / 212 and QRF-212 M, the speaker stand QST-200 (115 – 200 mm) for the QRF-2212, QRF-215 and QRF-315. The stands are very stable and are made of anodized aluminium circular tubes (ø 36 mm). They are adjustable for height stepwise and are very easy to build and fold up. The QDB120 serves as a connector between a QRF-115 S and a different box from the ORF-series. Wall bracket QWH-035 is 15° sloping and 160° pivoting and is suited for the types QRF-210 / 212 and QRF-212 M.

Technical Data	QRF-212 M	QRF-210	QRF-212	QRF-2212	QRF-215	QRF-315	QRF-115 S
Type of speaker	2-way-multi-functional, fullrange	2-way fullrange	2-way fullrange	2-way horizontal line-array	2-way fullrange	3-way fullrange	sub-woofer
Nominal capacity/performance	250 W (RMS), 400 W (MAX)	220 W (RMS), 350 W (MAX)	250 W (RMS), 400 W (MAX)	250 W (RMS), 400 W (MAX)	300 W (RMS), 500 W (MAX)	300 W (RMS), 500 W (MAX)	600 W (RMS), 900 W (MAX)
IBass-speaker	1x 12"	1x 10"	1x 12"	2x 12"	1x 15"	1x 8", 1x 15"	1x 15" Woofer
Horn-speaker	1x 1.3"	1x 1.3"	1x 1.3"	1x 1.3"	1x 1.3"	1x 1.3"	–
Stand hole	yes	yes	yes	yes	yes	yes	yes (on the top)
Sound pressure 1W/1m	95 dB SPL	96 dB SPL	96 dB SPL	99 dB SPL	97 dB SPL	97 dB SPL	98 dB SPL
Sound pressure SPL MAX	119 dB SPL	122 dB SPL	123 dB SPL	129 dB SPL	124 dB SPL	124 dB SPL	130 dB SPL
Frequency (+ - 3dB)	55 ~ 20.000 Hz	53 ~ 20.000 Hz	50 ~ 20.000 Hz	40 ~ 20.000 Hz	40 ~ 20.000 Hz	50 ~ 20.000 Hz	40 ~ 115 Hz
Impedance (nominal)	8 ohms	8 ohms	8 ohms	8 ohms	8 ohms	8 ohms	4 ohms
LS-Connectors	2x Speaker	2x Speaker	2x Speaker	2x Speaker	2x Speaker	2x Speaker	2x Speaker
Corresponding radiation	90° x 40 °	120° x 60°	120° x 60°	120° x 60°	120° x 60°	120° x 60°	–
Dimensions	350 x 590 x 390 mm	390 x 574 x 375 mm	418 x 614 x 375 mm	440 x 975 x 427 mm	504 x 758 x 483 mm	470 x 960 x 420 mm	504 x 594 x 602 mm
Weight, Colour	20 kg, grey	22 kg, grey	25 kg, grey	42 kg, grey	35,5 kg, grey	42 kg, grey	40 kg, grey



**HORIZONTAL
LINE-ARRAY**

Model designations

Stage-Sound Multifunct. Speaker, 250 W .. QRF-212 M

2-way system with 12" bass woofer and 1,3" horn

Stage-Sound Speaker, 220 W .. QRF-210

2-way system with 10" bass woofer and 1,3" horn

Stage-Sound Speaker, 250 W .. QRF-212

2-way system with 12" bass woofer and 1,3" Horn

Stage-Sound Speaker, 250 W .. QRF-2212

2-way Horizontal-Line-Array system with 2x 12" bass woofer and 1,3" horn

Accessories:

Wall bracket, only for QRF-210, QRF-212 and QRF-212M QWH-035

Stage-Sound Speaker, 300 W .. QRF-215

2-way system with 15" bass woofer and 1,3" horn

Stage-Sound Speaker, 300 W .. QRF-315

3-way system with 8" and 15" bass woofer and 1,3" horn

Stage-Sound Speaker, 600 W .. QRF-115 S

Sub woofer with 15" bass woofer

Accessories:

Distance Bar, for QRF-115S .. QDB-120

Speaker Stand, up to 1,85 m high .. QST-185

Speaker Stand, up to 2,00 m high .. QST-200

● GENERAL

The PBL Stage-Sound speaker series features high speech intelligibility, and is also perfectly suited for HIFI music reproduction. The speakers can be used both for indoor and outdoor application. Through

the use of high-quality full-range speakers and tweeters they are suitable for all kinds of PA applications – in assembly halls, dance halls and gyms as well as at conferences and events, etc.

● MOUNTING

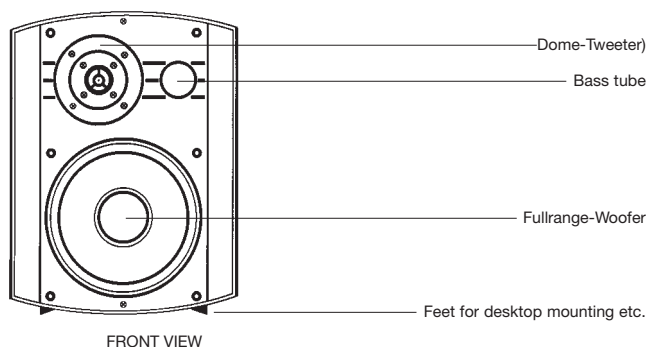
The speakers can be mounted vertically and horizontally. The mounting brackets which are supplied with the speakers provide a swivel range of approx. 120°.

The trapezoidal shape of the enclosure facilitates easy mounting in corners. Of course, this speaker series can also be mounted on stands.

Small feet mounted on the bottom of the enclosure, make it possible to place the speakers on tables, desks and the like. The model PBL-030 W/S has a mounting lug that can be pulled out.

The models PBL-050 W/S and PBL-080 W/S have two threaded inserts which permit fitting of separate wall mounting brackets, if desired.

Figure shows PBL-080 W/S



● CONNECTIONS

The speaker cables can be easily connected by means of 2 quick-clamp terminals.

● EQUIPMENT

A high-quality full-range speaker and a dome tweeter (model PBL-080 W/S additionally has a bass tube) are housed in an enclosure with a professional acoustic design.

The butyl rubber suspension enables indoor and outdoor use of the speakers.

The grille can be removed, if required, for reasons of appearance or design. The enclosure is shock- and scratch-resistant and can be painted in any colour on request.

● STAND

The PST-100 speaker stand can be used with PBL-080 W/S speakers.

The bottom threaded insert can be used for mounting the speaker on the stand, after the mounting bracket has been removed. The tripod stand is very stable and extends up to 200 cm. Through its simple folding mechanism it can be put up easily. The stand is made of chrome-plated steel and weighs approx. 4 kg.

*

Technical data	PBL-030 W/PBL-030 S	PBL-050 W/PBL-050 S	PBL-080 W/PBL- 080 S
Rated power (music power)	30 (50) W	50 (80) W	80 (150) W
Impedance	8 ohms	8 ohms	8 ohms
Frequency response (-10 dB)	80 - 22,000 Hz	60 - 22,000 Hz	40 - 22,000 Hz
Sound pressure at rated power / 1 W/1 m	102 dB / 88 dB	106 dB / 91 dB	113 dB / 93 dB
Speaker	1 x 3.5" full-range speaker	1 x 5" full-range speaker	1 x 8" full-range speaker
Tweeter	1x2" dome tweeter	1 x 2" dome tweeter	1x3" dome tweeter
Outside dimensions (H x W x D)	195 x 130 x 105 mm (exc. bracket)	240 x 181 x 140 mm (exc. bracket)	365 x 272 x 210 mm (exc. bracket)
Weight, colour	1.35 kg, W = white, B = black	2.15 kg, W = white, B = black	5.35 kg, W = white, B = black



Model designations

Stage-Sound Speaker 30 W	PBL-030 W
white, low-impedance, 8 ohms with swivel mounting bracket	
Stage-Sound Speaker 50 W	PBL-050 W
white, low-impedance, 8 ohms with swivel mounting bracket	
Stage-Sound Speaker 80 W	PBL-080 W
white, low-impedance, 8 ohms with swivel mounting bracket	

Stage-Sound Speaker 30 W	PBL-030 S
black, low-impedance, 8 ohms with swivel mounting bracket	
Stage-Sound Speaker 50 W	PBL-050 S
black, low-impedance, 8 ohms with swivel mounting bracket	
Stage-Sound Speaker 80 W	PBL-080 S
black, low-impedance, 8 ohms with swivel mounting bracket	
Speaker Stand, for PBL-080W/S	PST-100

»MOBILE-SOUND«
Mobile speaker systems



MEDIA + SOUND CENTER

RCS[®]

mobile sound



- Videopresentations and Conferences
- Advertising and Sales Promotion
- Exhibitions and Fairs
- Hotels, Seminars and Sporting Events

DVD
VIDEO

DOLBY 5.1
DIGITAL





16 Frequencies!



- Vision & Sound
- High-Performance Amplifier
- Dual System
- Selectable Frequencies
- Voice Over Function (adjustable)

This device is equipped with a DVD-Player, a digital MP3-Player and UHF wireless technology. Therefore this portable system is suitable for any kind of performance. Connect this device to a video reproducer (e.g. projector, monitor), presentations on a professional level are possible.



Due to the clarity of the operating elements and useful accessories, such as a serial remote control for the DVD-Player, this device is very userfriendly. The integrated battery allows operation, completely independent of the mains supply over a longer period of time.

The device contains, depending on the specification, either a 1- or 2-Channel UHF receiver system. 16 optional frequencies, which are free of registration (863-865 MHz), enable trouble-free operation. In combination with the Headset-, Lavalier- or

Neckworn-Microphone, the Bodypack-Transmitter MB-106 or the UHF Hand Microphone MH-106 can be used as a sending device.

With help of the passive auxiliary speaker MSC-1000 ZL the degree of system efficiency can be improved. In order to expand the power of the unit it is reasonable to use an additional active speaker (SR-120). Very large locations can be irradiated acoustically in a correct way.

Integrated Audio & Video Module

The serial integrated disc offers a wide range of possibilities to the operator. The DVD-Player plays a diversity of formats such as VCD, SVCD, MP-3, CD-R or CD-RW, besides customary DVD's. With help of a remote control, which is included, you can activate all the common functions of the DVD-Player.



Different audio- and video outputs, matching the desired demands, are provided by the system.

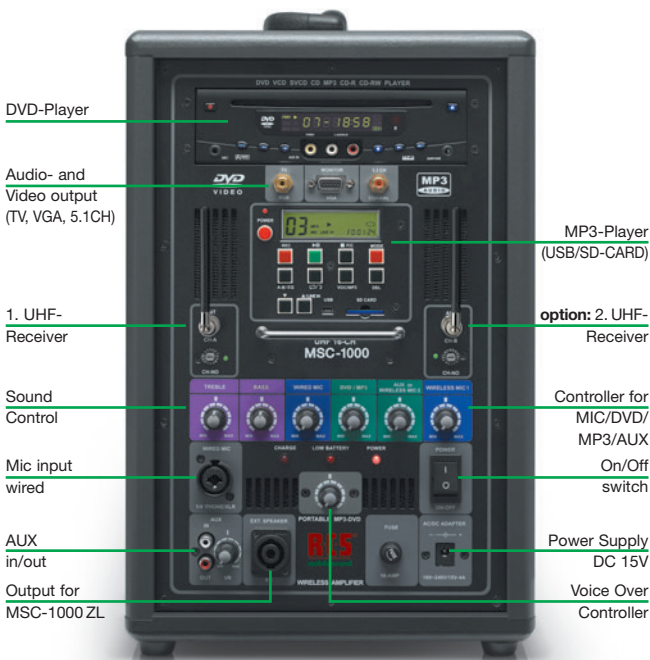
The MP3-Player enables the recording and replay of any spoken passage via the internal memory (128 MB).



*

Depending upon the requirements, the memory card can be expanded with a customary SD-Card. The logging of a large presentation or an event is very easy with this device.

- MEDIA & SOUND CENTER, 130 W..... MSC-1000 U1**
with integrated 1-Channel UHF-Receiver
- MEDIA & SOUND CENTER, 130 W..... MSC-1000 U2**
with integrated 1-Channel UHF-Receiver
- Auxiliary Speaker, 130W MSC-1000 ZL**
passive, for Media & Sound Center



UHF-Accessories:

UHF-Hand Microphone

This UHF-Hand Microphone is equipped with a premium condenser microphone capsule. Mute-Function for noise free switch on. The power supply results from 2 Mignon-Batteries.



UHF-Hand Microphone (863-865 MHz) MH-016

UHF-Bodypack (for LA-100 or HS-100)

Bodypack-Transmitter with 16 eligible frequencies. The input sensitivity is changeable in order to be able to induct Mic- and Line signals. The power supply results from 2 Mignon-Batteries.



UHF-Bodypack (863-865 MHz) MB-016

Lavalier-Microphone

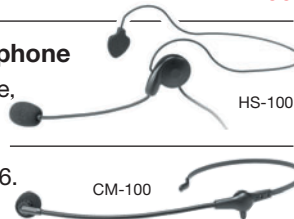
Condenser microphone completed in ball-characteristic. Delivery includes an 90 cm long connecting cable and a clip.



Lavalier-Microphone LA-100

Headset or Neckworn-Microphone

Condenser-Neckworn microphone, completed in ball-characteristic. High carrying comfort, matching the Bodypack-Transmitter MB-016. Cable length approx. 100 cm.



Headset-Microphone HS-100

Neckworn-Microphone CM-100

Adapter-Cable (LINE), 1 m AC-200 C

Adapter-cable for the input of external linesignals into the bodypack MB-016. Assembly: Cinch to Jack 3,5 mm.

MEDIA & SOUND CENTER - Accessories

Carriage and Storage Cover



High-quality, weatherproof vinyl fabric cover for carriage, while use and storage of the MSC-1000.

Carriage and Storage Cover

for MSC-1000ZL **VC-1000**

Carriage and Storage Case



Lockable, sturdy case, made of alu comp., foam cut interior and additional space for accessories.

Carriage and Storage Case

for MSC-1000ZL **SK-1000**

Carriage and Storage Bag

This rip-proof, water resistant, vinyl and fabric bag has two inner pockets for up to three stands, a zip closure and carry handles.



Carriage and Storage Bag CB-130

for up to 2 speaker tripods and 1 mic stand

Connecting Cable, 30 m for auxiliary speaker AC-100

Auxiliary Speaker

With help of the passive auxiliary speaker MSC-1000 ZL the degree of system efficiency can be improved.

Auxiliary Speaker, 130W MSC-1000ZL

passive, for Media & Sound Center

Floor Stand

This stable floor stand for the MSC-1000 series is made of aircraft aluminium and weighs only 3.2 kg. It is continuously adjustable and enables an adaptability for various localities.

Floor Stand QST-185

for MSC-1000 or Auxiliary Speaker MSC-1000 ZL



Technical Data	MSC-1000 U1 / U2
RMS / Program rate	90 W / 130 W
Power AC	100-240 V, 50-60 Hz; AC/DC Adapter
Power DC	Battery 12 V (7 Ah)
Operating time Battery	max. 5 hours
Charging time Battery	ca. 10 hours
Input Mic.	1 x Mic (plug 6,3 mm)
Input Mic. UHF (16 Ch.)	optional 1 or 2 x wireless
Input AUX	1 x AUX (Cinch)
Output Line	1 x Line-out (Cinch)
Output Speaker (16 Ohm)	1 x Speakon
UHF-Receiver System	UHF 16 Frequencies (863-865 MHz)
Tone regulation	2-times (Highs + low separate)
Speaker	8" broadband + 2" tweeter
Weight	approx. 16 kg
Dimensions in mm	266 (W) x 410 (L) x 266 (D)

Technical Data	DVD-Player
Format Disc	DVD / SVCD / VCD / CD-R / CD-RW / MP3
Format Video	MPEG1, MPEG2
Format Audio	Dolby Digital
Output Signal	Video-Signal: NTSC or PAL Video: 1.0VP-P Audio: 1 V
Output Interface	1 x TV output (Cinch) 1 x VGA D-SUB 1 x coaxial digital 5.1 CH
Inputs AUX	TV-in (Cinch) Audio L-R (Cinch)
Frequency	20 Hz - 20 KHz
Input DVD-Player	1 x Mic (3,5 mm jack)
Output DVD-Player	1 x Headphones (3,5 mm plug)
Remote control	included in delivery

Technical Data	MP3-Player
Internal Memory	128 MB
Expansion of Memory	SD-Card up to 1 GB
Internal recording	up to 60 min. (48 k)
USB-Version	1.1 (USB cable included in delivery)
EQ	Jazz, Classic, Rock, Pop, Normal
Display	LCD with backlight
Functions	Repeat A-B, Recording

*

SOUND-MASTER

RCS[®]
mobile sound



- Conference and Teaching
- Exhibitions and Fairs
- Clubs and Associations
- Community Centres
- Sporting Events
- Hotels, Schools and Residential Homes
- Advertising and Promotional Events





16 Frequencies!



- Extremely powerful
- user-friendly handling
- universal module assembly
- very sturdy ABS casing

The portable amplifier system SOUND-MASTER is a mobile power control unit, which can be used for demonstration purposes, sport performances, advertising events, and exhibitions etc. The advantages of this device will soon become essential for a successful event. The SOUND MASTER stands for professional acoustic irradiation, being very easy to handle. Depending on the locality, this apparatus is able to provide for up to 400 people with acoustic irradiation. Due to the mains- & battery powered combination technology, this device is able to function completely independently of a mains supply. The battery operating time is (3-4 hours) depending upon the equipment.

The ability to choose between 4 audio modules and 16 Frequencies. Radio technology increases the flexibility of the SOUND MASTER and therefore the possibility in creating the adequate apparatus. Please regard that a maximum of 2 discs can be selected per SM-100.

*

Available are the following basic versions:

- | | |
|---|------------------|
| SOUND-MASTER* | SM-100 |
| Basic version, without UHF receiver module | |
| SOUND-MASTER* | SM-100 U1 |
| 1-Channel UHF receiver module is included already | |
| SOUND-MASTER* | SM-100 U2 |
| 2-Channel UHF receiver module is included already | |

*Sound Source Modules SMM-01 to SMM-04 are optional.

Sound Source Modules for the SOUND-MASTER:

Please regard that a maximum of 2 modules can be selected per SM-100:



CD/MP3-Player **SMM-01**
CD/MP3-Player to play standard formats like CD's, CD-R's and CD-RW's.



CD/MP3-Player with Pitch-Control **SMM-02**
CD/MP3-Player for all standard formats. Integrated Pitch-Control, to adjust the playing speed (+15%/-12%) of the CDs.



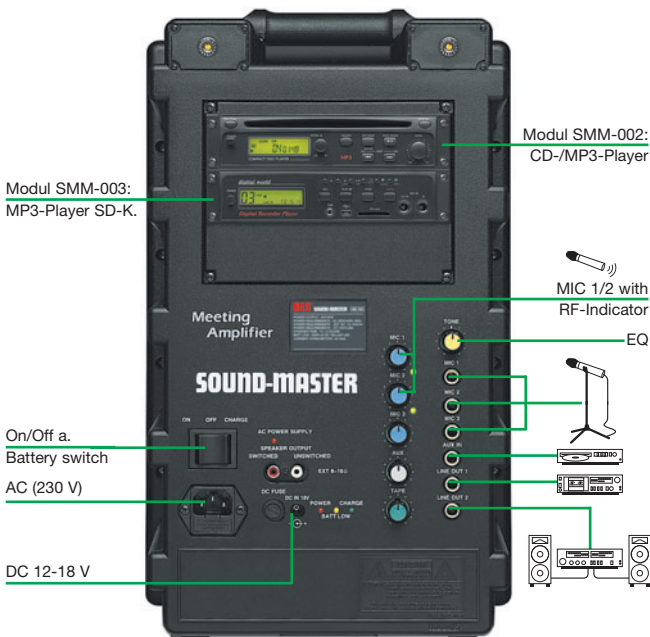
MP3-Player for SD-Memorycards / USB **SMM-03**
Digital MP3-Player with 128 MB internal memory (expandable with external SD-Card). The device is equipped with an integrated recording function.



Cassette-Recorder with Pitch-Control **SMM-04**
Auto-Reverse Cassette-Recorder with adjustable tapespeed and digital progress display.

*

If your order contains modules, the SOUND MASTER is delivered, fully assembled and ready for operation.



SOUND-MASTER Accessories

Carriage and Storage Cover



High-quality, weatherproof vinyl fabric cover for carriage, while use and storage of the Sound-Master.

Carriage and Storage Case



Lockable, sturdy case, made of alu comp., foam cut interior and additional space for accessories.

Carriage and Storage Cover

for SOUND-MASTER **VC-100**

Carriage and Storage Case

for SOUND-MASTER **SK-100**

UHF-Accessories:

UHF-Hand Microphone

This UHF-Hand Microphone is equipped with a premium condenser microphone capsule. Mute-Function for noise free switch on. The power supply results from 2 Mignon-Batteries.



CE0678

UHF-Hand Microphone (863-865 MHz) **MH-016**

UHF-Bodypack (for LA-100 or HS-100)

Bodypack-Transmitter with 16 eligible frequencies. The input sensitivity is changeable in order to be able to induct Mic- and Line signals. The power supply results from 2 Mignon-Batteries.



CE0678

UHF-Bodypack (863-865 MHz) **MB-016**

Lavalier-Microphone

Condenser microphone completed in ball-characteristic. Delivery includes an 90 cm long connecting cable and a clip.

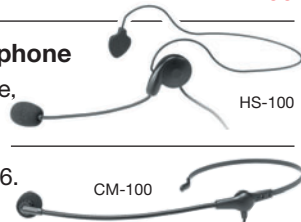


LA-100

Lavalier-Microphone **LA-100**

Headset or Neckworn-Microphone

Condenser-Neckworn microphone, completed in ball-characteristic. High carrying comfort, matching the Bodypack-Transmitter MB-016. Cable length approx. 100 cm.



HS-100

CM-100

Headset-Microphone **HS-100**

Neckworn-Microphone **CM-100**

Adapter-Cable (LINE), 1 m **AC-200 K**

Adapter-cable for the input of external linesignals into the bodypack MB-016. Assembly: Jack 6,3 to Jack 3,5 mm.

Carriage and Storage Bag

This rip-proof, water resistant, vinyl and fabric bag has two inner pockets for up to three stands, a zip closure and carry handles.



Carriage and Storage Bag **CB-130**

for up to 2 speaker tripods and 1 mic stand

Connecting Cable, 30 m f. additional SOUND-MASTER .. **AC-300**

Floor Stand

This stable floor stand for the Sound-Master is made of aircraft aluminium and weighs only 3.2 kg.



It is continuously adjustable and enables an adaptability for various localities.

Floor Stand **ST-100**

for SOUND-MASTER or additional SOUND-MASTER



SOUND-MASTER Accessories

Dynamic Microphone with 5 m cable



Great quality dynamic Hand-microphone with cardioid characteristics. It does not have back coupling problems and wind- and pop-protection are integrated. A low-noise On- and Off-switch is integrated on the handle.

Dynamic Microphone **DM-200 K**
jack-plug (bal.), with 5m cable and microphone holder (3/8" and 5/16")

Microphone Stand



Mic Stand **BS-195**
With adjustable boom extension (170 cm)



Mic Holder **MH-800**
for Wireless Hand mic



Tabletop Mic Stand **TS-060**
With adjustable boom extension (40 cm)

Technical Data	SOUND-MASTER
Output rate	60 W RMS / 100 W program
Power	18 V-battery / 90 - 265 V-Mains
Operating time battery	3-4 hours (depends on equipment)
Input	3 x MIC, 1 x AUX (6,3 mm)
Output	2 x LINE (6,3 mm)
Frequency range	50 Hz - 16.000 KHz
UHF-Receiver System	UHF 16 frequencies (863-865 MHz)
Receiver module	optional RM-800
Tone regulation	single EQ
System/distortion factor	< 0,5%
Case	ABS
Dimensions / weight	266 (W) x 423 (L) x 242 mm (D) / 9,2 kg

*

SOUND-COACH

RCS[®]
mobile sound



- Schools and Presentations
- Propagandists
- Sports events
- Conferences and training courses





- CD/MP3-Player
- UHF-receiver-system (16 frequencies)
- Dual speaker system
- Smart battery monitoring system

This device is brilliant in sound and diverse equipment components. The new SOUND-COACH sets new benchmarks and is proof of the fact, that even devices of a lower price category convince through excellent quality.

A serial CD-/MP3-player support all normal functions and formats. A functional remote control is part of the scope of delivery.

Depending on the desired version, the new SOUND-COACH has one or two UHF-receiver. A UHF-receiver system, whose 16 frequencies are free of charge and registration, is used. As a sender the Handmicrophone MH-016 and the UHF-Bodypack MB-016 are available.

The device has a powerful, maintenance-free battery. This battery is protected by an intelligent monitoring- and rebuilding system (ABMR = Automatic Battery Monitoring & Recovery System)

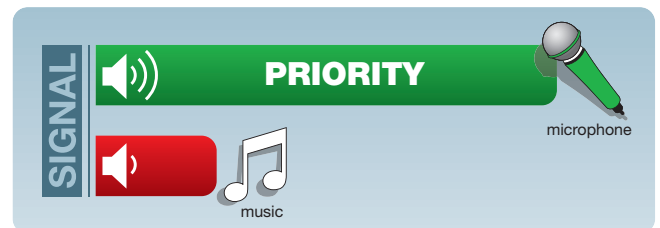
*

- SOUND-COACH, 55 W** **SDC-055 U1**
with integrated 1-channel UHF-Receiver
- SOUND-COACH , 55 W** **SDC-055 U2**
with integrated 2-channel UHF-Receiver

Optional equipment:

Voice-Priority-Module

This module enables the preference of a microphone signal. In case a CD is played during a presentation or an event, the music-signal shall be inhibited (mute) throughout a voice announcement. The sensitivity can be adjusted.



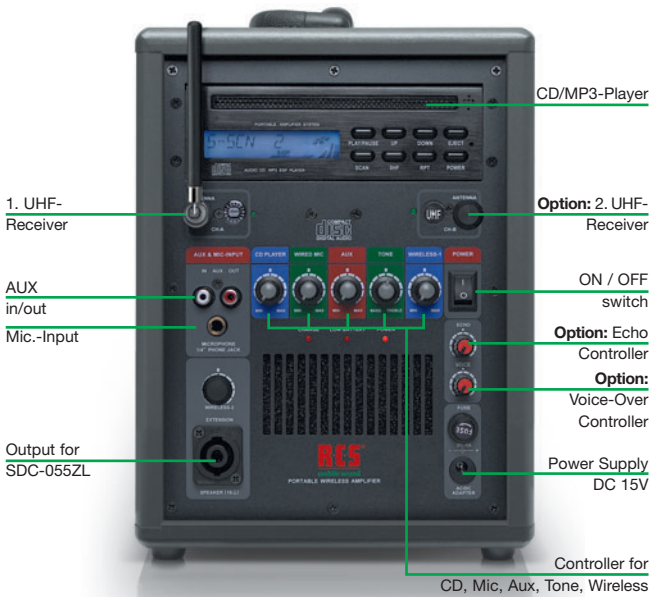
- Voice-Priority-Module** **VPM-100**
incl. installation service

Digital-Echo-Module

With this module striking echo-effects can be accomplished regarding voice announcements. When applied the right point in time, speeches and presentation may be presented in a more interesting modality.



- Digital-Echo-Module** **DEM-100**
incl. installation service



UHF-Accessories:

UHF-Hand Microphone

This UHF-Hand Microphone is equipped with a premium condenser microphone capsule. Mute-Function for noise free switch on. The power supply results from 2 Mignon-Batteries.



UHF-Hand Microphone (863-865 MHz) MH-016

UHF-Bodypack (for LA-100 or HS-100)

Bodypack-Transmitter with 16 eligible frequencies. The input sensitivity is changeable in order to be able to induct Mic- and Line signals. The power supply results from 2 Mignon-Batteries.



UHF-Bodypack (863-865 MHz) MB-016

Lavalier-Microphone

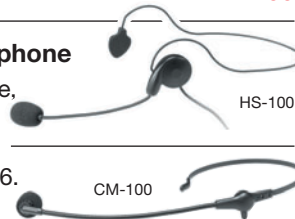
Condenser microphone completed in ball-characteristic. Delivery includes an 90 cm long connecting cable and a clip.



Lavalier-Microphone LA-100

Headset or Neckworn-Microphone

Condenser-Neckworn microphone, completed in ball-characteristic. High carrying comfort, matching the Bodypack-Transmitter MB-016. Cable length approx. 100 cm.



Headset-Microphone HS-100

Neckworn-Microphone CM-100

Adapter-Cable (LINE), 1 m AC-200 K

Adapter-cable for the input of external linesignals into the bodypack MB-016. Assembly: Jack 6,3 to Jack 3,5 mm.

SOUND-COACH Accessories

Carriage and Storage Cover



High-quality, weatherproof vinyl fabric cover for carriage, while use and storage of the Sound-Coach. With removable accessory bag.

Carriage and Storage Cover

for SOUND-COACH **VC-050**

Carriage and Storage Case



Lockable, sturdy case, made of alu comp., foam cut interior and additional space for accessories.

Carriage and Storage Cover

for SOUND-COACH **SK-150**

Carriage and Storage Bag

This rip-proof, water resistant, vinyl and fabric bag has two inner pockets for up to three stands, a zip closure and carry handles.



Carriage and Storage Bag CB-130

for up to 2 speaker tripods and 1 mic stand

Connecting Cable, 10 m for auxiliary speaker AC-100

Auxiliary Speaker

With help of the passive auxiliary speaker SDC-055ZL the degree of system efficiency can be improved.

Auxiliary Speaker, 55 W SDC-55 ZL

passive, for SOUND-COACH



Floor Stand

This stable floor stand for the STP-055 series is made of aircraft aluminium and weighs only 3.2 kg. It is continuously adjustable and enables an adaptability for various localities.

Floor Stand QST-185

for SDC-55 or Auxiliary Speaker SDC-055ZL



Technical Data	SDC-055 U1 / U2
RMS / Program rate	33 W / 55 W
Power AC	100-240 V, 50-60 Hz; AC/DC Adapter 15,4 V
Power DC	Led-Gel Battery 12 V (3 Ah)
Operating time Battery	approx. 3 hours
Charging time Battery	approx. 10 hours
Input Mic.	1 x jack plug 6,3 mm, unbal.
Input Mic. UHF (16 Ch.)	1 x, or optional 2 x wireless
Input AUX	1 x AUX (Cinch)
Output Line	1 x Line-out (Cinch)
Output Speaker	1 x Speakon (16 Ohm)
UHF-Receiver System	UHF 16 frequencies (863 – 865 MHz)
Tone regulation	simple EQ
Speaker	6" broadband, 2" tweeter
Weight	ca. 6,5 kg
Dimensions in mm	B 205 x H 270 x T 245

Wireless POWER-PHONE

RCS[®]
mobile sound



- Processions
- Propagandism
- Guided Tours, Exhibitions and Fairs
- Sports events
- Fire brigade or Clubs and Associations





Picture shows WPP-050

- Very mobile due to small empty weight
- Wireless UHF technology (16 frequencies)
- Long-lasting lead-gel storage-battery
- Especially convenient for voice transmission
- Parallel operation of multiple devices possible
- In combination with the LST-050, usable as an procession system (more details on page 266)

Description

It is possible to expose smaller groups with up to 100 people adequately to supersonic sounding, with this mobile voice transmission system. The small empty weight eases the handling of this device and therefore allows operation during longer lasting events.

The integrated UHF-System promises absolute flexibility and additionally allows the choice between 16 frequencies.



Technical data

POWER-PHONE

RMS / Program rate	30 W / 50 W
Power AC	230 V (mains supply ~19V); 12 V battery, 2.7Ah
Operating time Battery	approx. 3 hours
Inputs	1 x MIC (wireless), 1x MIC (Jack 6,3 mm), 1 x AUX (Jack 3,5 mm)
Outputs	LINE Out 0dB
Frequency	60 Hz ~ 15.000 KHz
UHF-Receiver System	UHF 16 frequencies (863 – 865 MHz)
Tone regulation	single EQ
System/distortion factor	< 0,1%
Speaker	5 7/8", 4 Ohm
Case	ABS
Dimensions / Weight	160 (W) x 210 (L) x 290 mm (D) / 3.3 kg

*

It can be switched to a trouble-free frequency immediately. The UHF-Handmicrophone as well as the UHF-Bodypack UB-016 is available as a receiver. The Bodypack can be combined with a Headset- or a Clip-on microphone.

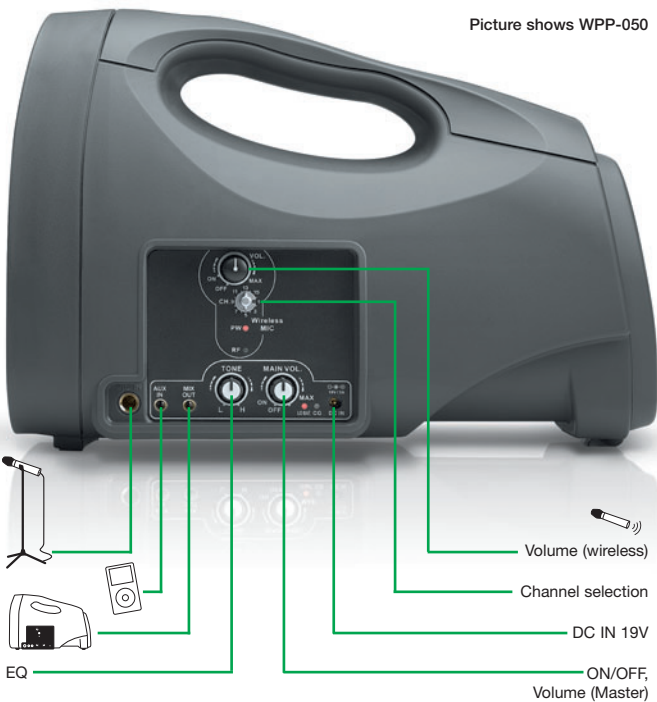
For the incoming supply of further signals the AUX-input can be used. Offhand music can easily be imported e.g. with a MP3-Stick.

In case the power of a single device should not be sufficient, or the number of people to be exposed to acoustic irradiation cannot be estimated, it is useful to place a second device adequately. Naturally both devices can be addressed via a Hand- or Bodypack transmitter, of course using the same frequency.

The PP-050 Version delivered without UHF-Receiver but with a wired microphone.

POWER-PHONE, 50 W **PP-050**

Wireless POWER-PHONE, 50 W **WPP-050**
with integrated UHF-Receiver module



UHF-Accessories:

UHF-Handmicrophone

Dynamic Handmicrophone, optimised for voice transmission. One of 16 frequencies are selectable. The power LED constantly gives information of battery status. The power supply results from 2 Mignon-Batteries (AA) or according rechargeable batteries.



CE0681

UHF-Handmicrophone (863-865 MHz) **UH-016**

UHF-Bodypack (for LA-200 or HS-200)

This Bodypack-Transmitter can be used for Microphone LA-200 and HS-200. One of 16 frequencies are selectable. It includes Battery status display and removable antenna. The power supply results from 2 Mignon-Batteries (AA) or according rechargeable batteries.



CE0681

UHF-Bodypack (863-865 MHz) **UB-016**

Lavalier-Microphone

The cardioid condenser clip-microphone corresponds to the Bodypack UB-016. Length of the cable is approximately 90 cm.



Lavalier-Microphone **LA-200**

Headset-Microphone

A cardioid condenser-microphone. High wearing comfort, compatible with Bodypack transmitter UB-016. Cable length approx. 100 cm.



Headset-Microphone, skin-color **HS-200 S**
Headset-Microphone, black **HS-200 B**

For Processions and demonstrations:

Mobile Horn Loaded Compression Drivers



Carrying-Set (without base)



As Boom-Set

This pair of weather-proof mobile horn loaded compression drivers is specifically constructed for high-quality speech, ideal for the use outside and enables in combination with the Sound-Case great flexibility. An excellent choice for clear speech and music reproduction with a natural clarity.

The stand is extendable up to a height of 1.80 m; the adjustable shoulder strap is removable. By screwing the 3 poles together you will have a stable boom.

The speakers are variable to swivelling and tilting, with the option of unidirectional or opposite direction for acoustic irradiation.



Technical data:

Power output 50 W, Weight 3.8 kg, Impedance 4 ohms, frequency range 150 – 15000 Hz.

Mobile Horn Loaded Compression Drivers

incl. Boom, 50 W. **LST-050**

SERVICE-LST

The models **PP-050** and **WPP-050** can be used as a procession system with the **LST-050**.



For this case it is necessary to order the optional **SERVICE-LST** for the Power-Phone. This upgrade contains all required modifications of the devices.

After this, the speaker stand **LST-050** can be connect easy with the delivered cable-set to the portable Power-Phone.

Service-Upgrade PP-050/WPP-050... **SERVICE-LST**

POWER-PHONE-Accessories

Carriage and Storage Bag



High-quality, weatherproof vinyl fabric bag for carriage, usage and storage of the POWER-PHONE.

Carriage and Storage Bag

for POWER-PHONE **CB-030**

Dynamic Microphone

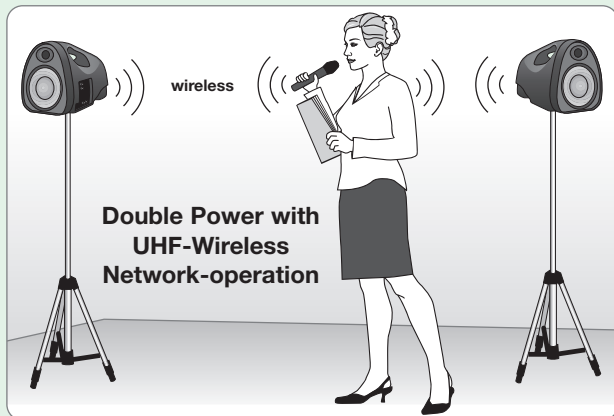
with 5 m cable



Great quality dynamic Handmicrophone with cardioid characteristics. It does not have back coupling problems and wind- and pop-protection are integrated. A low-noise On- and Off-switch is integrated on the handle.

Dynamic Microphone

Jack-plug, balanced. **DM-200 K**
with 5m cable and microphone holder



Floor Stand

This stable floor stand for the POWER-PHONE is made of aluminium and is to be set up.

The stand is made out of aircraft aluminium and weight only 3.2 kg. It is continuously adjustable and enables adaptability for various localities.



Floor Stand **ST-030**

for POWER-PHONE

Carriage and Storage Bag **CB-130**

for up to 2 speaker tripods and 1 mic stand

SOUND-STAR

RCS[®]

mobile sound



- Advertising and Sales Promotion
- Exhibition – Stands
- Schools – Classrooms
- Hotels – Seminar and Meeting Rooms





- Inside and outside use
- Battery powered (no cable)
- For speech and music
- UHF wireless microphone (16 frequencies)

The multitasking Sound-Star is the ideal partner for audio-visual presentations, seminars, sales promotions and in the classroom.

The Sound-Star has a simple, yet innovative design. Inside or outside, this lightweight handheld public address system is perfect for smaller amplification use.

The Sound-Star has a built-in 40 Watt amp. speaker, battery and charger, and comes with an optional UHF receiver. The integrated battery module allows users to operate the system without cables, making it ideal for kindergartens, schools, churches and sporting events.

Please consider the following features:

- AUX for external audio applications such as DVD, CD and mp3 player.
- Line out for assembling larger public address systems or attaching recording equipment.
- Wireless design for a freedom of movement.
- Excellent projection range with clear voice amplification.
- Two hours of built-in battery power.
- Doubles your output possibilities with 2 pieces of SS-040 U. Also available with microphones (hand-held, headband mic or collar).

Technical Data

SOUND-STAR

Output-rate	20/40 W
Power	Battery 1,2 Ah/115 V/230 V/50-60 Hz
Operating time	Up to 2 hours
Input	1 x Receiver, 1 x MIC, 1x AUX
Output	1 x LINE
Receiver system	UHF 16 frequencies (863-865 MHz)
Frequency range	50 Hz ~ 12000 Hz, ±3 dB
Case	ABS with metal grille
Dimensions and weight	W 185 x H 290 x D 135 mm; 2,6 kg

*

SOUND-STAR, 40 W **SS-040**
SOUND-STAR, 40 W* **SS-040 U**
 including built-in wireless mic. receiver





UHF-Accessories:

UHF-Hand Microphone

This UHF-Hand Microphone is equipped with a premium condenser microphone capsule. Mute-Function for noise free switch on. The power supply results from 2 Mignon-Batteries.



CE0678

UHF-Hand Microphone (863-865 MHz) **MH-016**

UHF-Bodypack (for LA-100 or HS-100)

Bodypack-Transmitter with 16 eligible frequencies. The input sensitivity is changeable in order to be able to induct Mic- and Line signals. The power supply results from 2 Mignon-Batteries.



CE0678

UHF-Bodypack (863-865 MHz) **MB-016**

Lavalier-Microphone

Condenser microphone completed in ball-characteristic. Delivery includes an 90 cm long connecting cable and a clip.

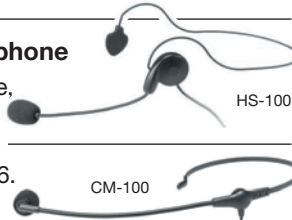


LA-100

Lavalier-Microphone **LA-100**

Headset or Neckworn-Microphone

Condenser-Neckworn microphone, completed in ball-characteristic. High carrying comfort, matching the Bodypack-Transmitter MB-016. Cable length approx. 100 cm.



HS-100

Headset-Microphone **HS-100**

Neckworn-Microphone **CM-100**

Adapter-Cable (LINE), 1 m **AC-200 C**

Adapter-cable for the input of external linesignals into the bodypack MB-016. Assembly: Cinch to Jack 3,5 mm.

SOUND-STAR Accessories

Dynamic Microphone

with 5 m cable



Great quality dynamic Handmicrophone with cardioid characteristics. It does not have back coupling problems and wind- and pop-protection are integrated.

Dynamic Microphone

Jack-plug, balanced . . . **DM-200 K**

Microphone Stand



Mic. Stand **BS-195**

With adjustable boom extension (170cm)

Carriage and Storage Case



This lockable, sturdy case is made of alu composites, has a foam cut interior and additional space for accessories.

Carry Case

SOUND-STAR **SK-040**



Mic. Holder **MH-800**

for Wireless Hand Microphone



Tabletop Mic. Stand **TS-060**

With adjustable boom extension (40cm)

SOUND-RANGER

RCS[®]
mobile sound



SOUND-RANGER



- Conferences and Training
- Exhibitions and Trade-Fairs
- Clubs and Associations
- Community Centres and Churches
- Sporting Events
- Hotels, Schools and Residential Homes
- Advertising and Sales Promotion



- High power max. 120 W system
- Wireless UHF technology (16 frequencies)
- Music and speech
- Absolutely flexible

The portable SOUND-RANGER system offers absolute flexibility and freedom of use without a disturbing cable. The integrated 12 V high-performance battery guarantees the user 8 hours of cable-free use. This unique speaker construction enables the acoustic irradiation of larger areas. The optional wireless technology of this system is very flexible and makes the use easy.

Please consider the following features:

- The speaker line-construction guarantees an even acoustic irradiation.
- The integrated mixer processes up to four audio sources, whereof max. 2 are wireless receivers.
- This system uses the latest 12 V storage battery technology.

*

Model Designations

SOUND-RANGER, max. 120 W, black or white. **SR-120**

SOUND-RANGER, max. 120 W, black or white. **SR-120 U1**
with built-in 1 channel UHF wireless mic receiver

SOUND-RANGER, max. 120 W, black or white. **SR-120 U2**
with built-in 2 channel UHF wireless mic receiver

Please state when ordering:

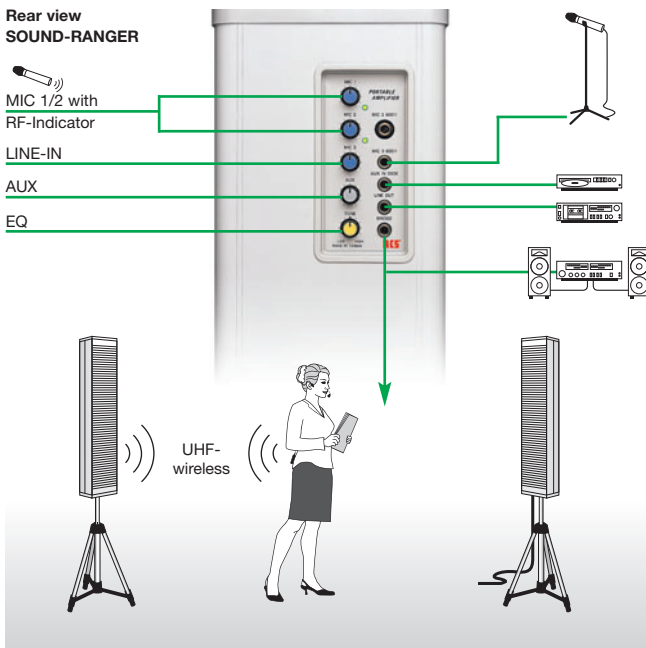
Color: **B** = black **W** = white

16 frequencies!



*

Technical Data	SOUND-RANGER
Output rate	60 W RMS / 120 W program
Power	AC 90 V – 260 V, 50/60 Hz, Battery 7,2 Ah
Battery operating time	up to 8 hours
Input - MIC	2 x MIC with LED-Indicator for wireless systems
Input - AUX	-22 dBV / 600 Ohm
Output	0 dB / 600 Ohm
Output/Input - Bridge	IN +12 dB 50K / OUT +12 dBV 600 K
Frequency range/distortion factor	90 Hz ~ 15.000 KHz ±3 dB
Tone control	single EQ
Speaker	4 x 30 W broadband
UHF-Receiver System	UHF 16 frequencies (863-865 MHz)
Case	ALU; ABS
Dimensions / Weight	180 (W) x 940 (L) x 145 mm (D) / 12,8 kg



UHF-Accessories:

UHF-Hand Microphone

This UHF-Hand Microphone is equipped with a premium condenser microphone capsule. Mute-Function for noise free switch on. The power supply results from 2 Mignon-Batteries.



CE0678

UHF-Hand Microphone (863-865 MHz) MH-016

UHF-Bodypack (for LA-100 or HS-100)

Bodypack-Transmitter with 16 eligible frequencies. The input sensitivity is changeable in order to be able to induct Mic- and Line signals. The power supply results from 2 Mignon-Batteries.



CE0678

UHF-Bodypack (863-865 MHz) MB-016

Lavalier-Microphone

Condenser microphone completed in ball-characteristic. Delivery includes an 90 cm long connecting cable and a clip.

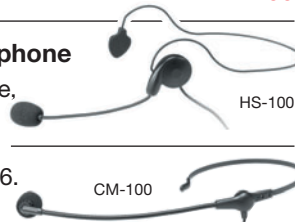


LA-100

Lavalier-Microphone LA-100

Headset or Neckworn-Microphone

Condenser-Neckworn microphone, completed in ball-characteristic. High carrying comfort, matching the Bodypack-Transmitter MB-016. Cable length approx. 100 cm.



HS-100

CM-100

Headset-Microphone HS-100

Neckworn-Microphone CM-100

Adapter-Cable (LINE), 1 m AC-200 K

Adapter-cable for the input of external linesignals into the bodypack MB-016. Assembly: Jack 6,3 to Jack 3,5 mm.

SOUND-RANGER Accessories

Carriage and Storage Cover

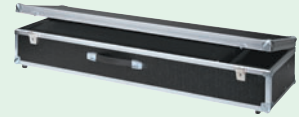


High-quality, weatherproof vinyl fabric cover for carriage, while use and storage of the SOUND-RANGER.

Carriage and Storage Cover

for SOUND-RANGER **VC-110**

Carriage and Storage Case



This lockable, sturdy case is made of alu composites, has a foam cut interior and additional space for floor stand ST-120 and accessories.

Carriage and Storage Case

for SOUND-RANGER **SK-120**

Speaker Stand Carrier Bag

This rip-proof, water resistant, vinyl and fabric bag has two inner pockets for up to three stands, a zip closure and carry handles.



Speaker Stand Carrier Bag CB-130

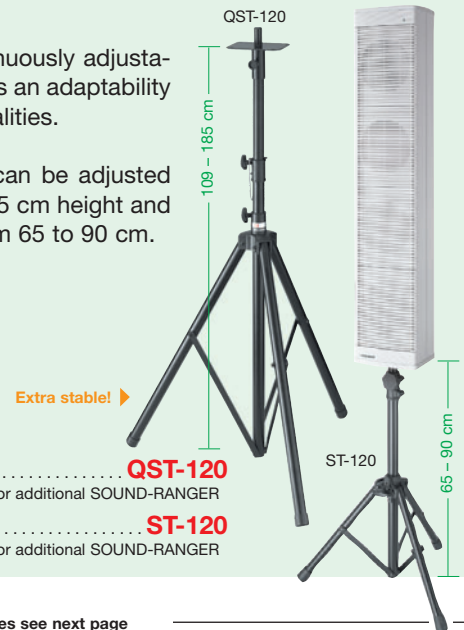
for up to 2 speaker tripods and 1 mic stand

Connecting cable, 30 m f. additional SOUND-RANGER. . . AC-300

Floor Stands

Both are continuously adjustable and enables an adaptability for various localities.

The QST-120 can be adjusted from 109 to 185 cm height and the ST-120 from 65 to 90 cm.



Floor Stand QST-120
for SOUND-RANGER or additional SOUND-RANGER

Floor Stand ST-120
for SOUND-RANGER or additional SOUND-RANGER

SOUND-RANGER Accessories

Dynamic Microphone with 5 m cable



Great quality dynamic Handmicrophone with cardioid characteristics. It does not have back coupling problems and wind- and pop-protection are integrated. A low-noise On- and Off-switch is integrated on the handle.

Dynamic Microphone **DM-200 K**
with jack plug (balanced), 5 m cable and microphone-holder (3/8" + 5/16")

Microphone Stand



Mic Stand **BS-195**
With adjustable boom extension (170 cm)



Mic Holder **MH-800**
for Wireless Hand mic



Tabletop Mic Stand **TS-060**
With adjustable boom extension (40 cm)

SOUND-DESK

RCS[®]
mobile sound



- Hotels, Schools and Residential Homes
 - Community Centres
 - Clubs and Associations
 - Exhibitions and Trade-Fairs
 - Sporting Events
 - Advertising and Sales Promotion
-



- innovated Design
- UHF Wireless Technology (16 frequencies)
- Music and Speech
- High Performance Speaker System

SOUND-DESK: This name stands for an innovated lectern with a built-in sound system for perfect presentation. The powerful 60/120 Watt amplifier is aligned to the speaker line-construction inside the base.

It is possible to extend the system with the integrated bridge-technique with further systems, and put acoustic irradiation into practice for every room size.

Please consider the following features:

- Due to its construction the SOUND-DESK is one of the highest performance lecterns on the market.
- The case made of aluminium and ABS presents itself in an attractive and classic design.
- The system comes with a 55 cm gooseneck microphone.
- DESK-LIGHT (optional): Integrated battery operated manuscript light for use in dark rooms.
- You can install a maximum of two UHF wireless receivers which have two separate volume controls.
- The built-in battery allows cable-free use for several hours.

SOUND-DESK, max. 120 W, black or white **SD-120**

SOUND-DESK, max. 120 W, black or white **SD-120 U1**
with built-in 1-channel UHF wireless mic receiver

SOUND-DESK, max. 120 W, black or white **SD-120 U2**
with built-in 2-channel UHF wireless mic receiver

Please state when ordering:

Color : **B = black** **W = white**



Additional Active-Speaker

The SR-120 is the speaker sound system to compliment the SOUND-DESK. This active sound system together with the SOUND-DESK enables users to reach an audience of boundless capacities. The Bridge Technology makes it simple to connect the systems.

The impressive construction of the SR-120 ensures high-fidelity. Obviously you can use the UHF technology system to create wireless networks.

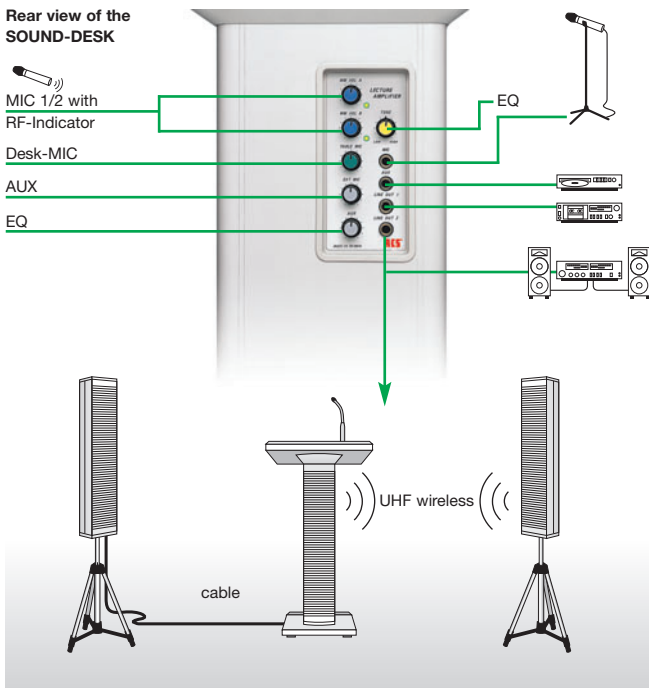
Additional Active-Speaker, max. 120W **SR-120**

Additional Active-Speaker, max. 120W **SR-120 U1**
with built-in 1-channel UHF wireless mic receiver

Please state when ordering:

Color: **B = black** **W = white**

Floor Stand for Additional Active-Speaker **ST-120**



UHF-Accessories:

UHF-Hand Microphone

This UHF-Hand Microphone is equipped with a premium condenser microphone capsule. Mute-Function for noise free switch on. The power supply results from 2 Mignon-Batteries.



CE0678

UHF-Hand Microphone (863-865 MHz) MH-016

UHF-Bodypack (for LA-100 or HS-100)

Bodypack-Transmitter with 16 eligible frequencies. The input sensitivity is changeable in order to be able to induct Mic- and Line signals. The power supply results from 2 Mignon-Batteries.



CE0678

UHF-Bodypack (863-865 MHz) MB-016

Lavalier-Microphone

Condenser microphone completed in ball-characteristic. Delivery includes an 90 cm long connecting cable and a clip.

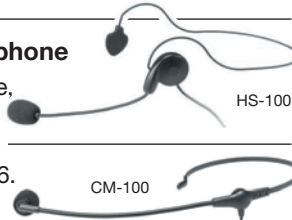


LA-100

Lavalier-Microphone LA-100

Headset or Neckworn-Microphone

Condenser-Neckworn microphone, completed in ball-characteristic. High carrying comfort, matching the Bodypack-Transmitter MB-016. Cable length approx. 100 cm.



HS-100

CM-100

Headset-Microphone HS-100

Neckworn-Microphone CM-100

Adapter-Cable (LINE), 1 m AC-200 K

Adapter-cable for the input of external linesignals into the bodypack MB-016. Assembly: Jack 6,3 to Jack 3,5 mm.

Dynamic Microphone

with 5 m cable



Great quality dynamic Handmicrophone with cardioid characteristics. It does not have back coupling problems and wind- and pop-protection are integrated.

Dynamic Microphone

Jack, unbalanced **DM-200 K**

Venyl-Cover



This heavy duty Vinyl-Cover for storage of the SOUND-DESK with an integrated pocket for accessories.

Venyl-Cover VC-120

with integrated Accessories bag

This rip-proof, water resistant, vinyl and fabric bag has two inner pockets for up to three stands, a zip closure and carry handles.



Speaker Stand Carrier Bag CB-130

for up to 2 speaker tripods and 1 mic stand

Connecting Cable, 30 m for Add on Speaker AC-300

Desk-Light

Manuscript light (optional) for the SOUND-DESK. The battery powered energy-saving Desk-Light enables exact adjustment as it has a flexible gooseneck.



Desk-Light DL-120

Battery operated Desk-Light

Microphone Stand



Mic Stand BS-195

With adjustable boom extension (170 cm)



Mic Holder MH-800

for Wireless Hand mic



Tabletop Mic Stand TS-060

With adjustable boom extension (40 cm)

Technical Data	SOUND-DESK
Output rate	60 W RMS / 120 W program
Power	AC 90 V – 260 V, 50/60 Hz, Battery 7,2 Ah
Battery operating time	up to 8 hours
Microphone	high quality 55 cm / gooseneck
Input - MIC	2 x MIC mit LED-Indicator for wireless systems
Input - AUX	-10 dBV / 20 KOhm
Output	0 dB / 600 Ohm
Frequency range/distortion factor	90 Hz – 15.000 KHz ±3 dB
Tone control	single EQ
Speaker	4 x 30 W broadband
UHF-Receiver System	UHF 16 frequencies (863-865 MHz)
Case	ALU; ABS
Dimensions / Weight	550 (W) x 1080 (L) x 432 mm (D) / 21,5 kg

Technical Data	Additional Active-Speaker (SR-120)
Output rate	60 W RMS / 120 W program
Power	AC 90 V – 260 V, 50/60 Hz, Battery 7,2 Ah
Battery operating time	up to 8 hours
Input - MIC	2 x MIC mit LED-Indicator for wireless system
Input - AUX	-22 dBV / 600 Ohm
Output	0 dB / 600 Ohm
Output/Input - Bridge	IN -12 dB 50K / OUT -12 dBV 600 K
Speaker	4 x 30 W broadband
UHF-Receiver System	UHF 16 frequencies (863-865 MHz)
Dimensions / Weight	180 (W) x 940 (L) x 145 mm (D) / 12,8 kg
Battery	7,2 Ah

*

SOUND-BELT

- Ultra compact - only 200 grams
- Electronic speech optimiser
- 8 Watts powers



Technical Data

Output rate	max. 8 W
Power	6 St. Mignoncells or rechargeable
Battery lifetime	normal use up to 40 hours
Reach	outdoors up to 400 qm
Dimensions / Weight	200 (W) x 72 (L) x 50 mm (D); 200 g
Colour	grey



Description

This ultra compact short-range acoustic irradiation system is for use with groups of up to 50 people. It is optimal for speeches, teaching, sales and sports events, or the likes.

The SOUND-BELT comes with a comfortable headset-microphone leaving your hands free and the adjustable belt has a snap-in connector.

The active sound system has a volume control, one microphone socket and is powered by 6 mignon or rechargeable batteries.

SOUND-BELT, max. 8 W SB-008

Carriage and Storage Bag

High-quality vinyl fabric bag with two interior drawers for storage of the SOUND-BELT and accessories.



Carriage and Storage Bag CB-008
for SOUND-BELT



POWER-MEGAPHONES

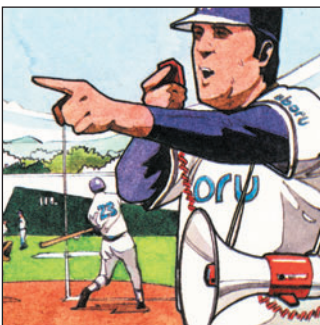
RCS[®]
mobile sound



POWER

40

Max. Watt



- Big Events and Guided Tours ■
- Building Sites, Traffic Control ■
- Advertising and Miscellaneous Events ■
- Red Cross, Police, Fire Brigade, Security ■
- Schools, Sports Events and Swimming Halls ■

MEGAPHONE



Hand Megaphone
max. 12 W

Siren or Alarm
Whistle option



Description

Very handy transistor-megaphone with a bundled, impact and scratch resistant horn (ABS). The megaphone is feedback reduced, speech button and volume control are easy to handle. The model HM-012 S has an additional alert siren curve (repeat). The model HM-012 T has a whistle for the use in sports halls and swimming pools.

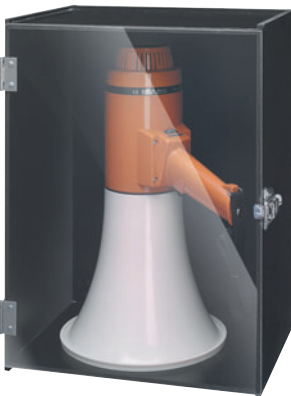
Please consider the following features:

- Pistol grip with carrier strap
- **Siren or whistle signal** switchable

Technical Data

Output rate	max. 12 W
Power	8 Mignoncells (UM-3)
Battery lifetime	normal use up to 6 hours
Reach	outdoors up to 500 m
Dimensions/Weight	Ø 190 mm, L 315 mm; 1.0 kg
Colour and Material	fire brigade red; ABS

- Hand Megaphone** **HM-012**
- Hand Megaphone with Siren** **HM-012 S**
- Hand Megaphone with Whistle** **HM-012 T**



Storage box

This practical storage box for wall mounting is outstandingly suitable for the safe placement of the megaphones M-012/S, HM-025/S and SM-025/S.

The sturdy box is manufactured from high-quality multiplex wood and has additionally a transparent door consisting of plexiglass. The door can be locked by the attached hinge with a lock or a seal.

Please consider the following features:

- Sturdy housing made of 7 mm strong multiplex wood
- Mounting possible at every wall
- Improves the safety, as the megaphones which serve particularly as a signaler in public utilities, are easily accessible in case of an emergency

*

Storage box, approx. 2,5 kg **ABB-400**

MEGAPHONE



Hand Megaphone
max. 25 W



Weight 1,1 kg Battery IPX4

Description

The unique water-protected hand megaphones (WHM-series) are designed for security firms and fire brigades. Especially made for the robust employment in water sports and ideal for the use on boats.

The clear speech comprehensibility, the water resistance and the the high-quality housing make this megaphones indispensable. The transparent horn increases the field of view. Both models are very handy, extreme lightly and easy to handle.

- The model WHM-025 S has an additional alert siren curve (repeat)
- Protection type **IPX4 compliant to IEC 60529**
- Feedback reduced by optimized directivity

Technical Data

Output rate	max. 25 W
Power	6 Babycells Typ C (UM-2)
Battery lifetime	normal use up to 8 hours
Reach	outdoors up to 1000 m
Protection type IEC 60529	degree 4 (IPX4)
Dimensions/Weight	Ø 208 mm, length 320 mm; 1,1 kg
Colour and Material	WHM-025: light blue, WHM-025S: red; ASA-plastic

*

- Hand Megaphone, light blue **WHM-025**
- Hand Megaphone, red with Siren **WHM-025 S**



Storage Box

This practical storage box for wall mounting is outstandingly suitable for the safe placement of the megaphones WHM-025 and WHM-025 S.

The sturdy box is manufactured from high-quality multiplex wood and has additionally a transparent door consisting of plexiglass. The door can be locked by the attached hinge with a lock or a seal.


Please consider the following features:

- Sturdy housing made of 7 mm strong multiplex wood, for dust and dirt protection
- Mounting possible at every wall or to set up simply
- Improves the safety, as the megaphones which serve particularly as a signaler in public utilities, are easily accessible in case of an emergency

*

MEGAPHONE

Hand Megaphone max. 25 W

Siren signal optional: 



- Hand Megaphone **HM-025**
- Hand Megaphone with Siren **HM-025 S**

Description

Powerful transistor-megaphone with a bundled, impact and scratch resistant horn (ABS). The directional of the built-in microphone makes feedback nearly impossible. Speech button and volume control are easy to handle. The megaphone is ideal for the use at events, in swimming halls and on building sites.

Please consider the following features:

- Easy handling
- Pistol grip with carrier strap

Technical Data

Output rate	max. 25 W
Power	6 Babycells (UM-2)
Battery lifetime	normal use up to 8 hours
Reach	outdoors up to 1.000 m
Dimensions/Weight	Ø 211 mm, L 375 mm; 1,6 kg
Colour and Material	pearlwhite-lightbrown with red signal stripe; ABS

Shoulder Megaphone max. 25 W

Siren signal optional: 



- Shoulder Megaphone **SM-025**
- Shoulder Megaphone with Siren **SM-025 S**

Description

Powerful transistor-megaphone with a bundled, impact and scratch resistant horn (ABS). The directional of the built-in microphone makes feedback nearly impossible. Speech button and volume control are easy to handle. The megaphone is ideal for the use at events, in swimming halls and on building sites.

Please consider the following features:


- Hand Microphone with fitted helix cable
- Speech shift-lock and volume control on the microphone

Technical Data

Output rate	max. 25 W
Power	6 Babycells (UM-2)
Battery lifetime	normal use up to 8 hours
Reach	outdoors up to 1.000 m
Dimensions/Weight	Ø 211 mm, L 375 mm; 2,4 kg
Colour / Material	pearlwhite-lightbrown with red signal stripe; ABS

MEGAPHONE

POWER Shoulder Megaphone
max. 40 W

Siren signal
optional: 



Description

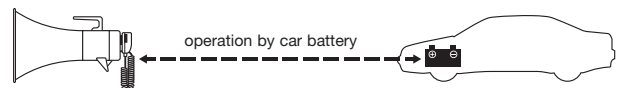
Very stable high-power megaphone with max. 40 W. Especially suitable for security use.

The Microphone has a volume control and a shift-lock speech button. Due to the direction of the Microphone the feedback noise is extremely well suppressed.

The Megaphone has a 12 V connector for power supply or car battery, stand assembly (s. below) is possible.

Please consider the following features:

- Rechargeable use with trickle charge in the megaphone
- 12 V car adapter



Technical Data

Output-rate	max. 40 W
Power	8 Babycells or NiMH rechargeable batteries
Battery lifetime	permanent operation 5 hours
Reach	Outdoors up to 1500 m
Dimensions/Weight	Ø 313 mm, L 435 mm; ca. 2.5 kg (without batteries)
Colour and Materials	ABS and Aluminim, red-white
Tripod connection	M8 internal screw
Input	12 V power supply & charger socket
Siren signal	curve repeat (only Model SM-040 S)



Also Hand Megaphone

The removable microphone can also be attached to the rear of the megaphone, where it can be operated. This enables the use as a hand megaphone.



- POWER Shoulder Megaphone**, max. 40 W, for battery- and rechargeable use **SM-040**
POWER Shoulder Megaphone with Siren, max. 40 W, for battery- and rechargeable use **SM-040 S**



This lockable, sturdy case is made of alu composites, has a foam cut interior and room for accessories.

Carry Case
for SM-040 (S) **MK-040**



4500 mAh

Nickel-Metal-Hydride Accu-Kit

This product can be equipped with NiMH-Accus and stay in the megaphone while charging.

Accu-Kit **NH-040**



Accu-Charger for NH-040

Special charger for NH-040. Software controlled charging.

Accu-Charger **LG-040**

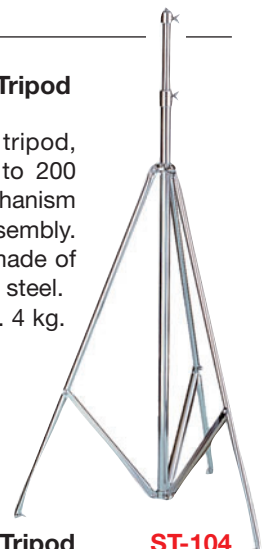
Vinyl fabric bag for storage of the charger LG-040 and the Accu-Kit NH-040.

Carrier and Storage Bag **CB-008**
(no pic.) for LG-040, NH-040, etc.

Megaphone-Tripod

for SM-040 (S)

Very sturdy tripod, extensible up to 200 cm. Easy mechanism for a quick assembly. The tripod is made of chrome-plated steel. Weight approx. 4 kg.



Megaphone-Tripod **ST-104**

GENERAL INTRODUCTION INTO THE 100V PA TECHNOLOGY

The following tips, explanations and illustrations are to approximate and facilitate the planning, configuration and subsequent service of 100V PA systems to you.

As an introduction, we may state in many cases it is the 100V PA technology which makes a commercial acoustic irradiation principally possible, whereas it would be not at all, or only very hard and insufficiently possible, to implement effective systems with low-impedance technology; this being popular first of all as entertainment electronics.

In the following, we would like to give you some typical examples for the application of 100V PA technology, which you will find again in the second part of this “guideline” supplemented by schematic drawings, circuit diagrams and explanations.

- Sports fields and halls
- Open air and indoor baths
- Supermarkets and big stores
- Churches and chapels
- Car dealers and petrol stations
- Office and administration buildings
- Hotels and inns

BASIC CHARACTERISTICS OF THE 100V PA TECHNOLOGY

It is important and basic to realize that 100V PA systems are practically always built in “Mono”.

This is no issue of quality, as a mono signal is not worse than a stereo signal. But, in order to use a stereo signal expediently, 2 loudspeakers and 2 power amplifiers have to be supplied, and furthermore the listeners have to be in the proper position and distance to the speakers – and also stay that way. Needless to say that this is impossible, especially when you look at the above mentioned application examples.

Naturally, a horn speaker does not have the same transmission quality as a Pro-Sound speaker. This does not at all deal with the approach mono against stereo, but solely with the situation of application which differs from case to case.

Referring to 100V transformers:

A modern 100V transformer is easily able to achieve a frequency response of 50 – 20,000 Hz which is fully sufficient for top quality acoustic irradiation. However, in practice such a frequency response is normally not required for commercial PA systems.

Normally, a 100V PA system consists of three parts, which are:

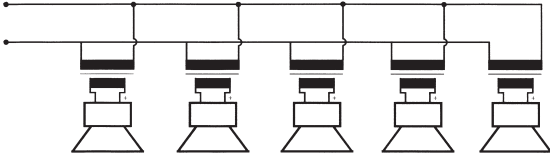
- **Microphone or microphone station**
- **Amplifier with components**
- **Loudspeaker**

The signal sent to the amplifier by either a microphone or a similar device, is edited by the amplifier and its component units and finally provided at the outputs. There, the signal is changed to 100V by a transformer which is normally installed in the amplifier.

There is also a 100V transformer embedded in the loudspeaker, which changes the incoming signal again to the appropriate impedance for the particular speaker frame (usually 4, 8 or 16 ohms).

Since the number of required loudspeakers for PA systems is normally high or very high, the 100V technology can show all its strength in wiring as well as in the desired allocation of signals.

The wiring is in general very simple. All loudspeakers with built-in transformers can be parallel connected as in the following drawing.



Connecting the speakers this way allows many versions, which will be presented in detail in the later following part "Tips and clues for 100V PA technology". Here are only some of them:

- Interconnecting of loudspeakers of different ratings without any difficulties.
- If one or more loudspeaker fails, the remaining speakers, i.e. the whole system still works.
- Each loudspeaker takes only so much power from the 100V line as is set at the transformer. It is easily possible to connect 40 speakers, each with a load rating of 3W, to one 120W amplifier, which may already be sufficient for the acoustic irradiation of a small supermarket.
- You can install single, group or all-call.
- You can set priority circuits, emergency calls and special announcements, as well as switch on central fire alarm systems.

Please note: The sum of all power settings at the loudspeaker-transformers should not exceed the amplifier's nominal rating considerably. We recommend to choose the amplifier's nominal rating slightly higher than it may seem necessary at the first system layout.

SAFETY TIPS

- The installation of 100V PA systems should be performed by experts who are familiar with the relevant safety regulations.
- Only materials and tools approved for 100V should be used for the system.
- Please pay absolute attention to the required protection against contact, even if the equipment used is secured to a large extent by CE-conformity.
- If amplifiers are fully loaded, high voltages occur that can endanger your physical health in case of contact. You should therefore always switch off loudspeakers or amplifiers before opening and working on them.

★



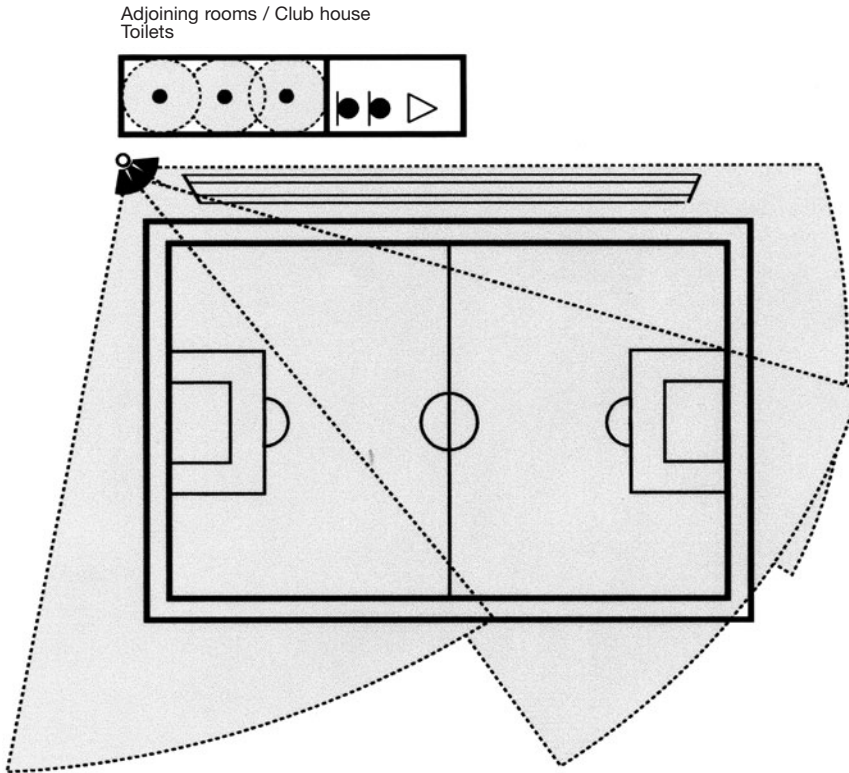
Electromagnetic compatibility and low-voltage guidelines

RCS tests all devices and products, which are subject of the CE guidelines by certified test laboratories. By the fact it is guaranteed that you may sell our devices in Germany and in the European Union domestic market without additional checks.

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RCS Application example **SMALL SPORTS FIELD**

Configuration of loudspeakers and devices







System description

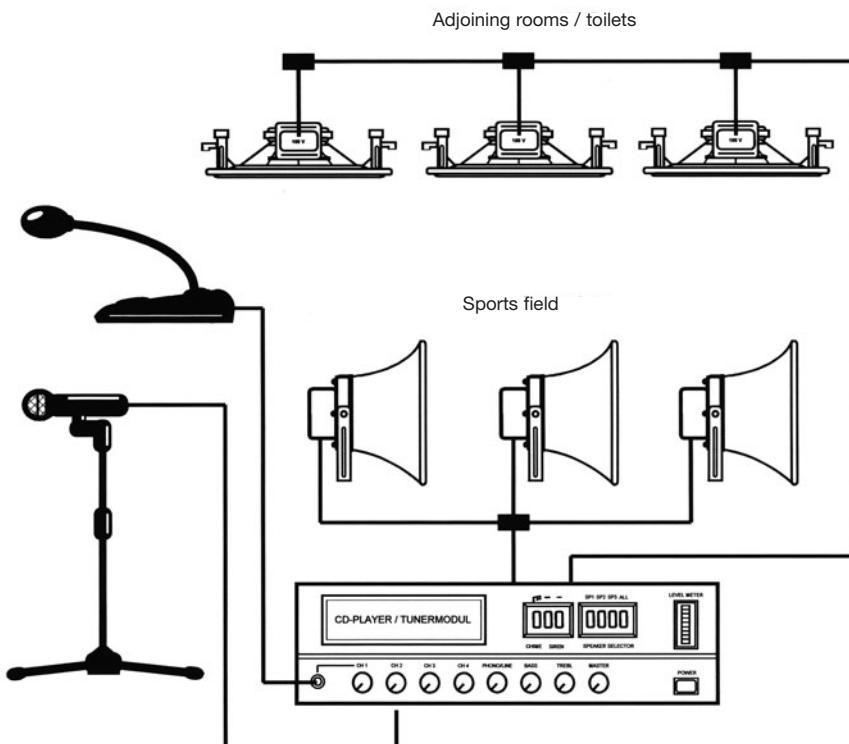
The most important system requirement is a clear and understandable speech playback for audience and players as well as low pricing as sports clubs usually have limited funds.

The system should be suited for music playback from a CD player, cassette player or tuner. Two microphones, one of them with priority control, are intended for announcements and commentary.

*

-  Horn speaker
-  Microphone
-  Amplifier
-  Built-in speaker

System layout



Equipment recommendation

- 1 x handheld microphone DM-200 X
- 1 x desktop microphone MS-201 X
- 1 x PA center CPA-3120 X
- 1 x CD / tuner module CDR-10 RDS
- 3 x horn speaker DH-135 HD
- 3 x built-in speaker RC-106
- 1 x microphone stand BS-190

Comparable system concepts

The concept, introduced above, is suited in the same or similar form for school yards, tennis courts or smaller recreational facilities.

If you are interested in larger systems, we would be glad to advise you. Please contact us for assistance!





System description

The most important requirement for such systems is a clear and understandable playback of announcements through two microphones which are capable of addressing each of the 5 adjustable loudspeaker zones individually.

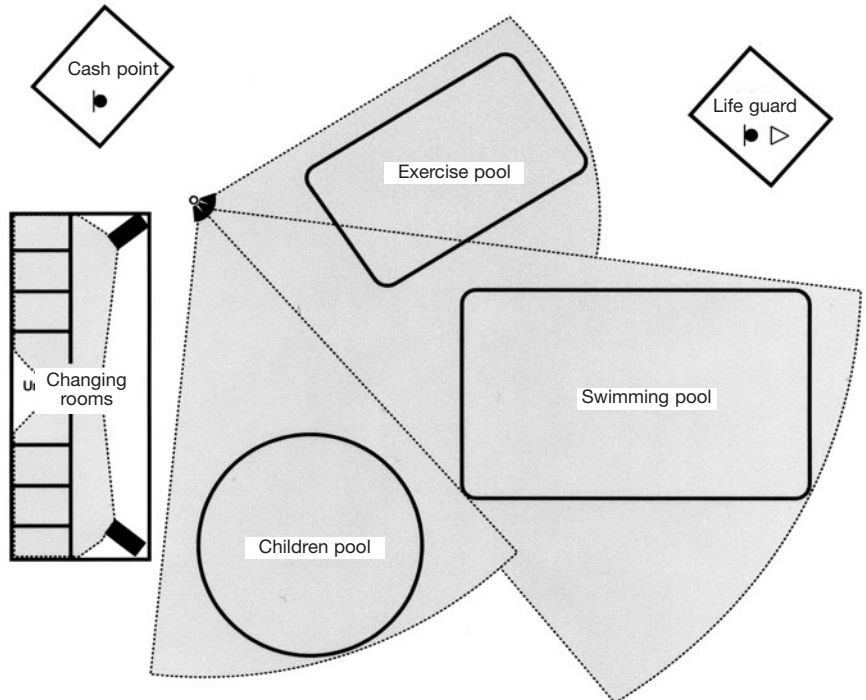
At the same time, people living in the neighbourhood must not be disturbed. Therefore, the loudspeakers should be mounted onto a high mast and emit diagonally down to certain targets (see configuration of loudspeakers). The speakers are to be suitable for outdoor areas.

The supervisor's announcement must have priority over all other announcements.

*

-  Microphone
-  Amplifier
-  Sound projector
-  Horn speaker

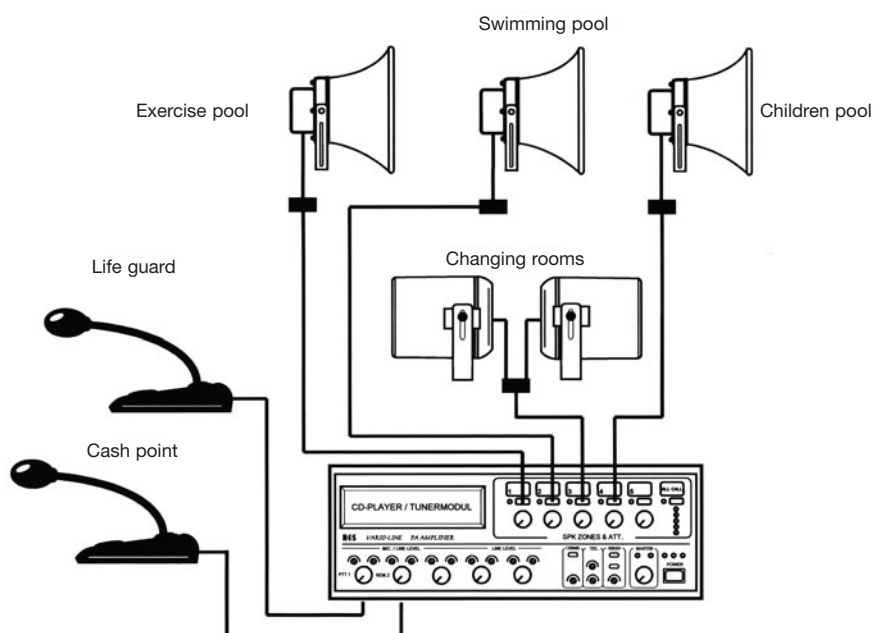
Configuration of loudspeakers and devices



Equipment recommendation

- 1 x microphone station VLM-105
- 1 x PA center VLA-240 C
- 3 x horn speaker DH-150 HD
- 2 x sound projector CS-015

System layout

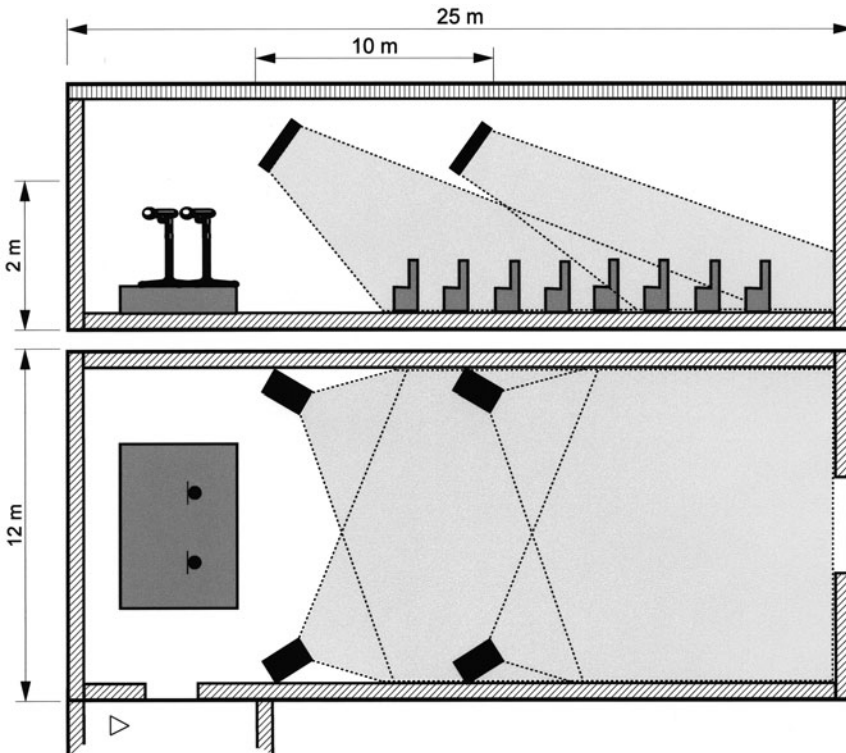


Comparable system concepts

The concept, introduced above, is suited in the same or a similar form for recreational facilities, camping grounds, kindergartens, etc.

If you are interested in larger systems, we would be glad to advise you. Please contact us for assistance!

Configuration of loudspeakers and devices






System description

To achieve a clear and understandable playback of speech for the audience is the most important requirement for such systems.

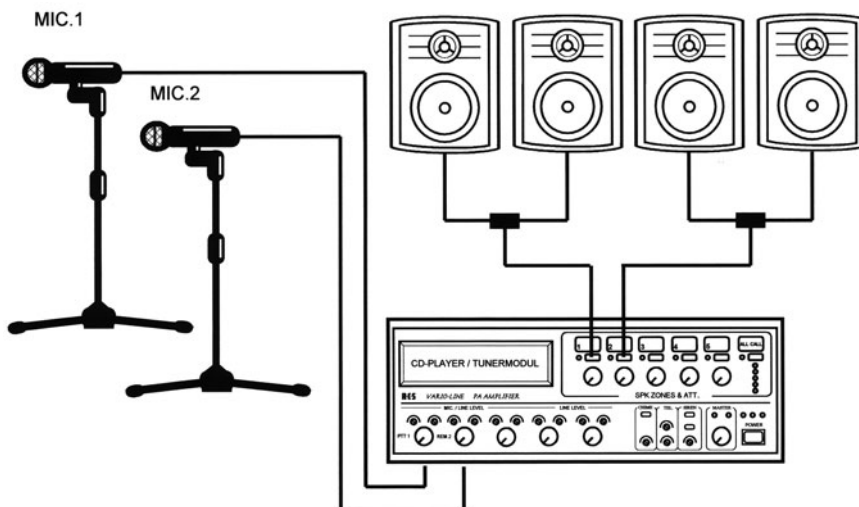
Attention should be paid to not getting higher sound pressure from the loudspeakers in the close-up range to the audience. At the same time, people sitting further behind should be provided with good understandability of speech.

By positioning monitor loudspeakers in equal spaces at the auditorium's length side, a consistent sound distribution is achieved at a relatively low sound pressure. The speakers are directly opposite the seating in order to avoid reflections from the opposite wall.

*

-  Amplifier, located in the office for instance
-  Pro-Sound loudspeaker
-  Microphone

System layout



Equipment recommendation

- 2 x electret microphone ELM-300 P
- 1 x PA center VLA-240 C
- 1 x CD player module CDP-10
- 4 x Pro-Sound loudspeaker PB-760
- 2 x microphone stand BS-190 / SA-090
- 2 x microphone cable ACC-050

Comparable system concepts

The concept, introduced above, is suited in the same or similar form for seminar rooms, assembly halls, hotels, etc.

If you are interested in larger systems, we would be glad to advise you. Please contact us for assistance!





System description

The most important requirement for such systems is a clear and understandable playback of announcements and paging. The announcements are made by the information center as single or group calls (5 speaker zones, separately adjustable).

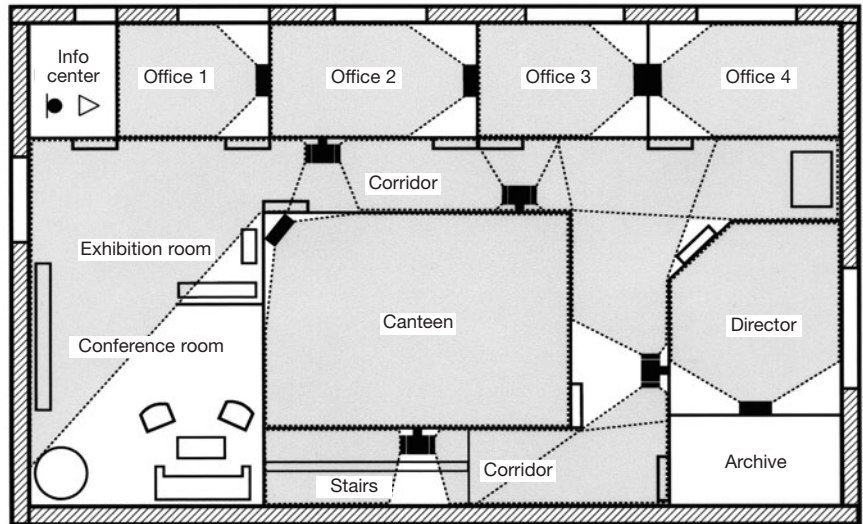
In order that the operating schedule is not interrupted, announcements should be transmitted in low volume.

The wall loudspeakers are to be mounted to the smaller side of the rooms in order to irradiate acoustically the maximum space in the offices. The double-direction speakers should be mounted alternately to opposing walls.

*

-  Double-direction speaker
-  Cabinet loudspeaker
-  Amplifier
-  Microphone

Configuration of loudspeakers and devices



If possible, it is better to use built-in speakers instead of cabinet speakers on site.

Equipment recommendation

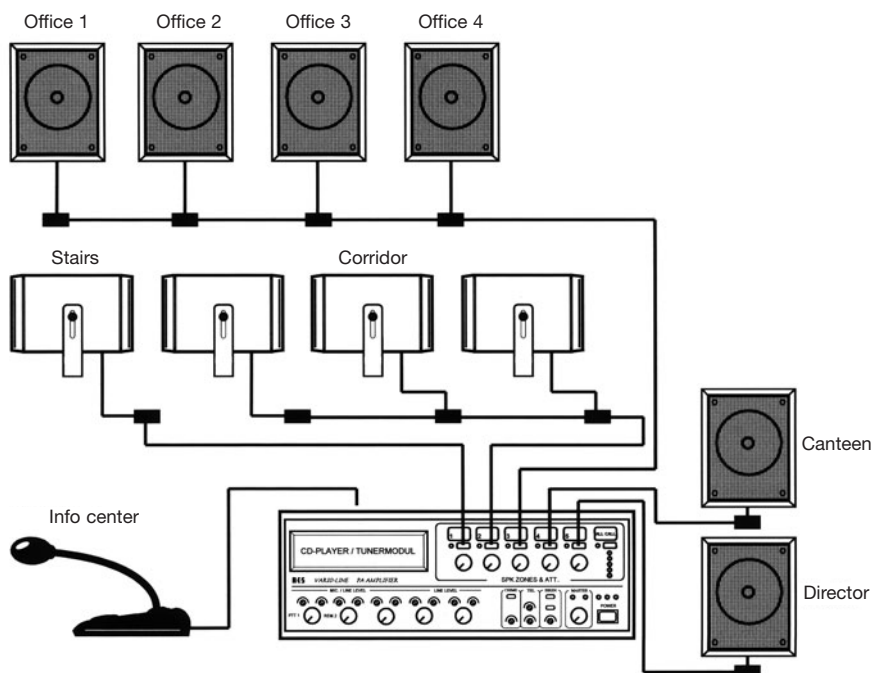
- 1 x microphone station VLM-105
- 1 x PA center VLA-240 C
- 1 x CD / tuner module ... CDR-10 RDS
- 4 x Double-direct. speaker .. CSP-220 D
- 6 x Cabinet loudspeaker BC-110

Comparable system concepts

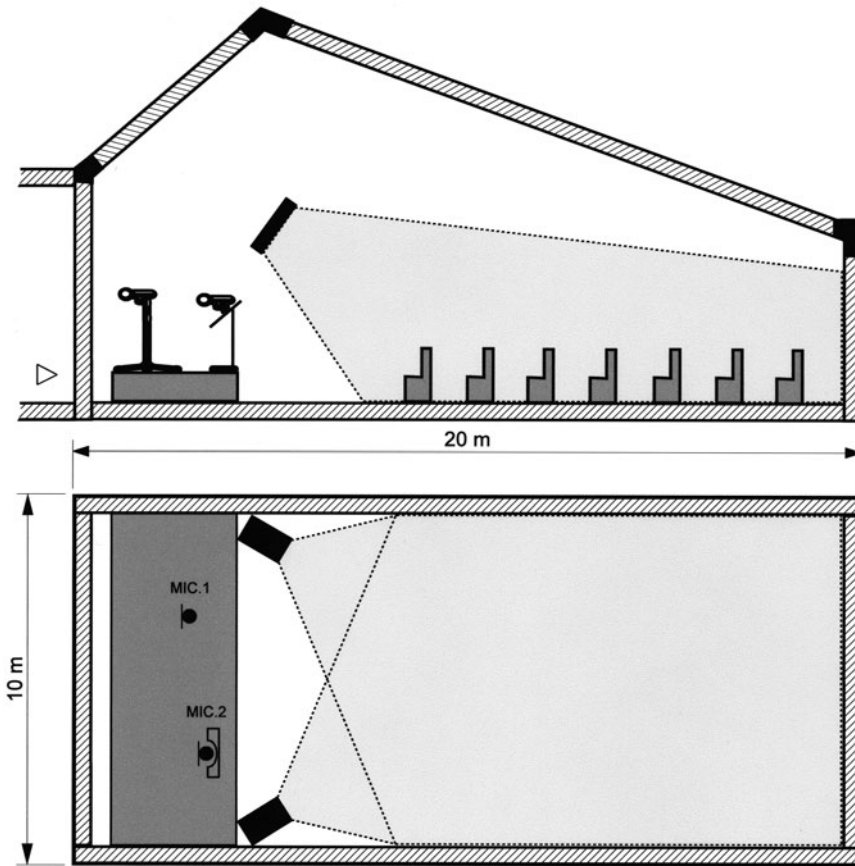
The concept, introduced above, is suited in the same or similar form for seminar rooms, assembly halls, hotels, etc.

If you are interested in larger systems, we would be glad to advise you. Please contact us for assistance!

System layout






Configuration of loudspeakers and devices



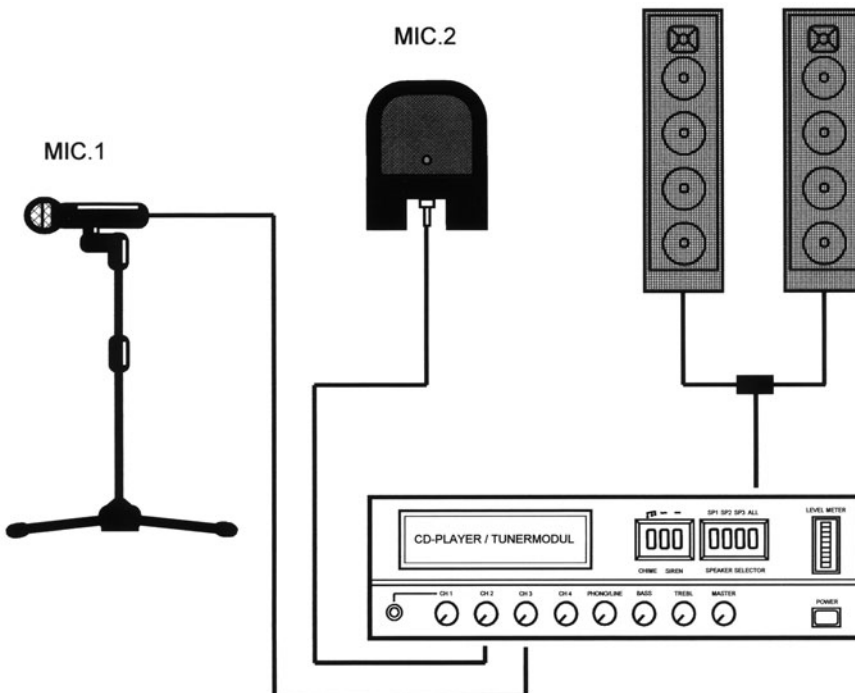
System description

It is difficult to achieve a good playback speech quality in the whole church interior because of the very strong echo. Therefore, the loudspeakers are centred in the opposite corners of the rooms. They should also be aimed directly at the seating in order to avoid reflections from the walls. To avoid acoustic feedback, as little direct echo as possible should be absorbed by the microphones.

*

-  Amplifier, located e.g. in the registry
-  Microphone
-  Column speaker

System layout



Equipment recommendation

- 1 x handheld microphone ... DM-300 X
- 1 x interfacial microphone ... GFM-100
- 1 x PA centerCPA-3060 X
- 1 x CD player module CDP-10 M
- 2 x column speaker CS-220
- 1 x microphoneBS-190 / SA-090
- 1 x microphone cable ACC-050

Comparable system concepts

The concept, introduced above, is suited in the same or a similar form for smaller assembly halls, etc.

If you are interested in larger systems, we would be glad to advise you. Please contact us for assistance!

System description

The most important requirement for such systems is a playback of speech and music which is suitable for background music, advertisements and paging.






The music should be gentle and unobtrusive, whereas the announcements have to be transmitted loudly and clearly.

The system's amplifier should have features such as a priority and speaker zone control as well as a chime and siren.

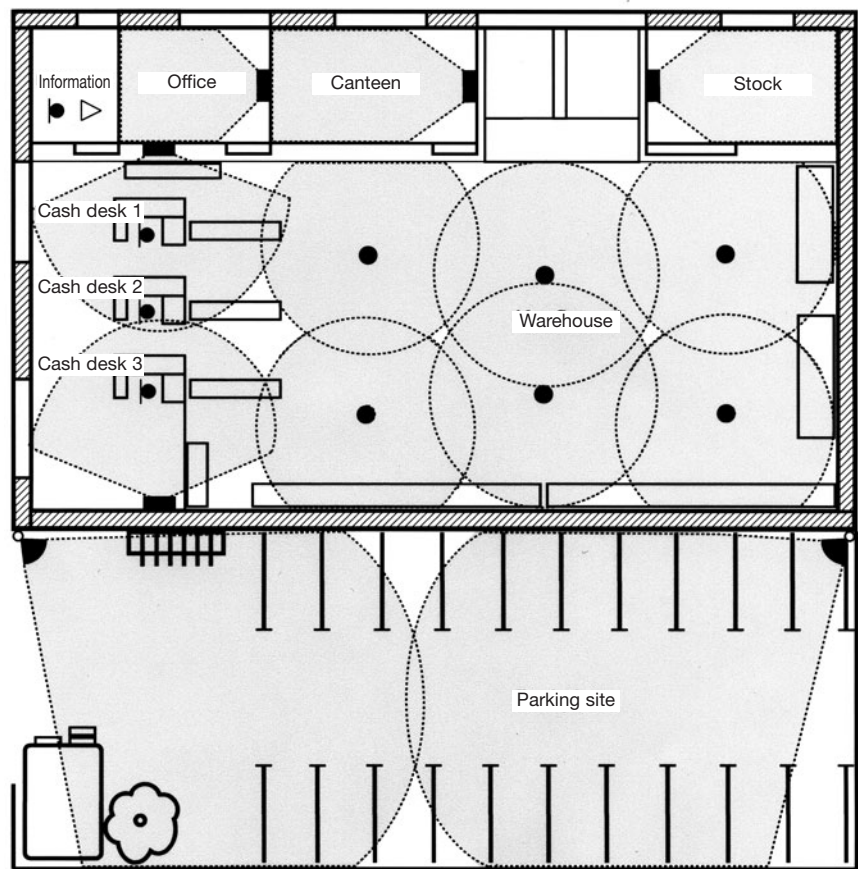
Built-in speakers provide a consistent acoustic irradiation in the customers' area. Cabinet loudspeakers in this design are sufficient for the office, canteen and warehouse.

The parking site's acoustic irradiation is done with horn speakers.

*

-  Horn speaker
-  Microphone
-  Built-in speaker
-  Amplifier
-  Cabinet speaker

Configuration of loudspeakers and devices



Equipment recommendation

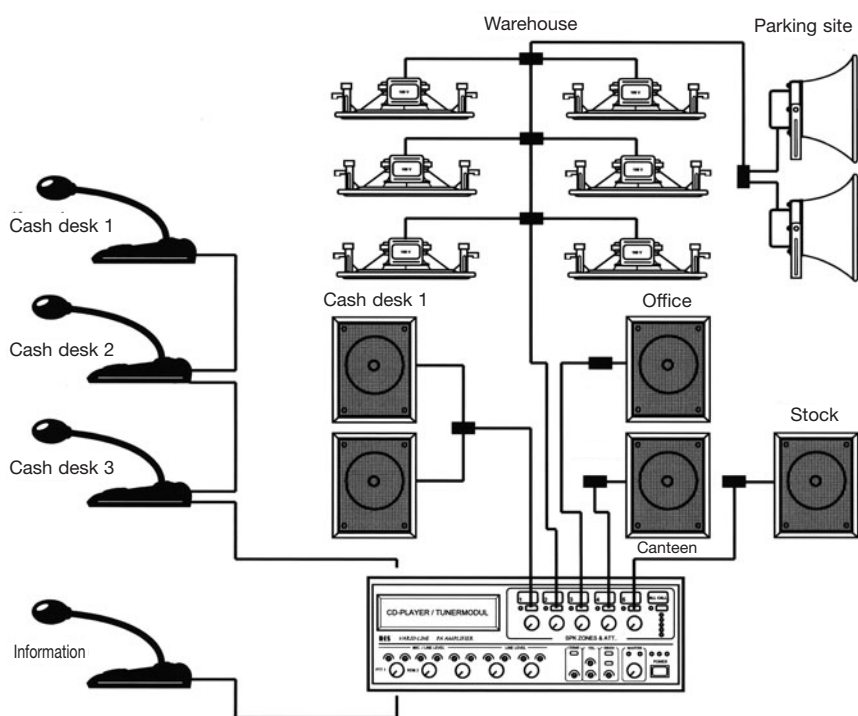
- 3 x microphone station VLM-105
- 1 x microphone station VLM-100
- 1 x PA center VLA-120 C
- 1 x CD / tuner module CDR-10 RDS
- 6 x built-in loudspeaker RC-110 C
- 5 x cabinet loudspeaker BC-106
- 2 x horn speaker DH-115 R

Comparable system concepts

The concept, introduced above, is suited in the same or a similar form for restaurants, canteens, sales rooms, etc.

If you are interested in larger systems, we would be glad to advise you. Please contact us for assistance!

System layout



TIPS AND CLUES FOR 100V PA TECHNOLOGY

MICROPHONES

1.) Microphone types

a) Dynamic microphones:

Dynamic microphones transform the absorbed pressure variations (this is the sound) into a very small electric current. The intensity of this electric current corresponds to the sound's intensity.

These electric pulses are then fed over the microphone cable to the amplifier, which transforms and amplifies the incoming signals.

b) Electret condenser microphones:

Electret condenser microphones contain a capacitive converter, which consists of an uncharged membrane and an anti diode. These two parts are disrupted by a small air gap that provides the condenser's dielectric.

Electret condenser microphones also contain an amplifying stage that is supplied with voltage. This voltage is provided by the so-called phantom power.

*

2.) Phantom power

Phantom power is necessary for electret condenser microphone feed-in. By means of a special circuit, a DC voltage of e.g. 12, 24 or 48V is provided within the amplifier and fed in phase to both balanced wires of the microphone line. The line's shielding is connected to the negative pole of the power supply unit. This voltage is disengaged by a corresponding circuit and used for supplying the "impedance transformer" or amplifier within the microphone.

*

3.) Directional characteristic

The directional characteristic of a microphone is a very important selection criteria for a PA system's optimal operation. The following characteristics are differentiated:

a) omni-directional:

An omni-directional microphone absorbs sound equally from all directions.

Applications: recording studios, radio installations, command systems.

b) cardioid:

Cardioid characteristic means full sensibility to the front, approximately half sensibility sideways and only approximately one tenth of the full sensibility to the rear. This results in a wide absorption angle as well as a clear acoustical separation of the microphone's front and rear.

Applications: music, speech, common application.

c) hyper-cardioid:

These microphones are similar to the hyper-cardioid ones, but with slightly weaker directivity and less sound absorption from the back.

Applications: speaker microphones, stage microphones for especially critical acoustic situations.

d) super-cardioid:

These microphones are similar to the hyper-cardioid ones, but with slightly weaker directivity and less sound absorption from the back.

Applications: speaker microphones, stage microphones for especially critical acoustic situations.

*

4.) Close talking effect

Some basic mistakes are made in the handling of microphones, which could easily be avoided.

For instance, whilst talking into the microphone, a distance between 10 and 30 cm should be kept. If the distance falls below 10 cm, a phenomenon known as "close talking effect" will occur. Low-frequency sound fractions are thereby overemphasized in such a manner that especially speech will sound dull and speech clarity will suffer greatly.

If a very high noise level requires close talking, microphones, which reduce low frequencies, have to be used. If such a microphone is not available, the same effect is achieved by reducing the low frequencies manually on the amplifier.

*

5.) Microphone cables

Microphones with low-resistant, balanced outputs should be used. Then cable lengths of 100 m and more can be operated without problems such as too high damping or humming.

*

6.) Wireless microphones

In fields, where a lot of movement and independence of position is required, more and more wireless microphone systems (radio microphones) are being used.

In the microphone's chassis, a HF-transmitter powered by (storage) batteries is integrated. This is also possible for clip-on microphones in a separately carried extra case.

The microphone signal is first modulated onto a HF carrier, then radiated by a small, built-in antenna and finally picked up by the receiver.

The most common frequencies for the operation of wireless microphones are found in the VHF and UHF range. However, only microphone transmitters approved in your country may be used. They have to bear the corresponding approval numbers.

*

7.) Acoustic feedback

Whenever a microphone and a loudspeaker of the same amplifier system are placed in the same room, there is a risk of the feared acoustic feedback.

The microphone absorbs the sound coming from the loudspeaker, the signal is amplified for the second time, once more emitted by the loudspeaker, again picked up by the microphone and so on.

This way a closed loop consisting of microphone, amplifier, loudspeaker and room evolves. If the total amplification is too high, this loop will act as a resonant circuit and the loudspeaker will emit the highly disturbing feedback whistle at full volume.

Not only is this whistle extremely unpleasant for the listener, if occurring for a longer time, it can also cause damage to the

system, especially in the loudspeaker.
The risk of acoustic feedback can be decreased by:

- ▶ Using high-quality cardioid microphones
- ▶ Using adjustable loudspeakers
- ▶ Correct coordination of microphones and loudspeakers
- ▶ Applying electronic devices such as feedback suppressors, equalizers, frequency shifters, etc.

AMPLIFIERS AND PA CENTERS

Expanding your knowledge in the 100V technology is only possible in a very limited way within the range of this "Know-How" information. Nevertheless, we would like to deal with some important points, which raise questions time and again.

1.) Amplifier connection and sound output transformers

PA amplifiers normally operate with the so-called 100V technology. This technology presents a number of advantages, especially for longer circuits.

Through the 100V technology an increase of the amplifier's output power on the speaker outputs is achieved. This leads to a lower current flow at equal power and therefore smaller power losses. Besides, it is not necessarily required to use heavy cables with large conductor diameters for long circuits, which is yet another advantage.

All loudspeakers can be connected in parallel, as long as the amplifier is not overloaded. Regarding the impedance on the output side, the amount of loudspeakers used is irrelevant.

Because the 100V transformers installed in the loudspeakers are usually equipped with 3 or more power taps, every speaker can be operated with the desired or adequate power. However, the sum of the connected wattage (of the loudspeakers' transmitters) must not or only insignificantly exceed the output power of the amplifier.

*

2.) Single call

With appropriate activation and respectively the amplifier's relevant configuration, a single call can be made with a desktop microphone if necessary.

Generally, this single call can be activated either by a desktop microphone or directly by the PA center.

*

3.) Group call

Group call stands for an announcement for a previously determined number or arrangement of loudspeakers or speaker zones. For this purpose, suitable group call buttons have to be available on the PA center and the microphone station.

*

4.) All-call

All-call normally means that the relevant announcement is transmitted to all connected loudspeakers and speaker zones. This kind of call is required for chime and especially alarm transmissions.

*

5.) Priority override

The possibility of priority override is essential in the security sector.

In addition to the for this purpose necessary features of the PA center, the connected loudspeakers and respectively their volume controls need to have a built-in emergency call relay. That way, the privileged priority announcement can be, as the name implies, freely transmitted. This has to be considered especially for loudspeakers with a built-in volume control.

*

6.) Priority control

In this case one or, if necessary, several announcement or other signals are switched to one or different priorities in the PA center.

These important signals, e.g. alarm calls or the like, are then transmitted with priority and in the meantime fade out or at least weaken secondary signals (e.g. background music, etc.). After completion of the priority signal, the faded or weakened signal is activated again.

*

7.) Chime

The sound of a short chime signal (1- or 2-tone chime) arouses the public's (e.g. in supermarkets, etc.) attention for the upcoming announcement. A final chime following the announcement is possible, as far as provided by the PA center. However, this is not common and required.

*

8.) Programme transmission

With the help of a programme selector on the PA center, a sound signal (e.g. tuner, cassette recorder, CD player, speaker microphone, etc.) can be transmitted to individual loudspeakers or speaker zones. It is also possible to control these programmes by a microphone station, provided the station is equipped appropriately. For PA centers with combined speaker zones and different transmission programmes, the switching has to be carried out by adequate switching elements (matrix) analogically or digitally.

*

9.) Pilot tone monitoring

The highest strain on the PA center's power amplifiers is during alarm transmissions.

In order to achieve additional security for the PA center's alert, it is often of advantage to monitor the functioning of the power amplifiers with a pilot tone system (generator and decoder with automatic switching).

In case of a fault, the system switches fully automatically to an additional power amplifier (backup amplifier). This backup amplifier then takes over the place of the dropped out amplifier until a service technician has repaired the damage.

*

LOUDSPEAKERS

It is not possible within the limits of these “tips and clues for 100V PA technology” to present all relevant information and explanations.

However, we may illustrate and make understandable many important points and problems occurring with the installation of 100V PA systems.

*

1.) Arrangement of speakers

When planning a PA system, it is the main aim to achieve a consistent acoustic irradiation and understandability within the room or area to be provided.

The loudspeakers should be installed in equal intervals in order to avoid areas with unpleasantly high loudness. Most of the commonly used cone speakers show an angle of beam spread of 90° at the -6 dB points in the medium frequency range. Taking this fact into consideration, the loudspeakers can be arranged in such a way that the listener will always stay in the range of at least one speaker.

As far as outdoor systems are concerned, sometimes neighbouring areas are also irradiated acoustically, which is often felt as an annoyance. By using reflex horn speakers and their accurate positioning and orientation, such disturbances can be avoided or at least minimized.

Horn speakers usually radiate within an angle of 30° in the medium frequency range, whereby it is possible to obtain the wanted directivity.

*

2.) Nominal load capacity

The nominal load capacity of a loudspeaker is the power a speaker can carry without noticeable distortions or damage to the system.

The power output of a loudspeaker (in W) is only conditionally suited for judging its achievable volume, the more so as in many cases - caused by the “power and watts mania” in consumer electronics - partly unreliable work is done.

Thus, the indication of the sound pressure in dB at 1W/1m is much more honest and meaningful, especially if also the loudspeaker’s frequency range is incorporated in the judgment of its quality. However, here the adjustment of the single parameters is very important, too, as e.g. a very high sound pressure alone does not reveal very much.

*

3.) Sound pressure

Sound pressure is typically specified in -dB at 1 kHz and for a power supply of 1 W at 1m distance from the sound source.

Exact information on a speaker system’s quality can only be given by means of a measuring diagram (course of the sound pressure over the complete frequency range).

By the way, the sound pressure of 100V loudspeakers normally is considerably higher than of Hi-Fi loudspeakers:

- ▶ Hi-Fi loudspeaker ca. 85-90 -dB at 1W/1m
- ▶ 100V loudspeaker ca. 90-100 -dB at 1W/1m.

*

4.) The 100V PA technology

As already mentioned, loudspeakers with so-called 100V sound output transformers are normally being used with 100V PA technology. The output of the amplifier is increased within its sound output transformer to a nominal voltage of 100V.

This 100V AF signal is then distributed through the line network to the single loudspeakers. Next, the sound output transformer within the loudspeaker lowers this AF signal to an appropriate voltage, so that the connected speaker is provided exactly with its designated nominal rating and impedance.

Big advantages of the 100V PA technology are among other things:

a) Smooth switching on of the loudspeakers:

100V loudspeakers are simply connected in parallel, regardless of their power input and impedance. However, the total power of all connected loudspeakers must not exceed the nominal rating of the corresponding amplifier. Otherwise the amplifier will be out of order after a while.

b) Bigger circuit lengths possible:

Because of the higher voltage transmitted with 100V PA technology (compared to the low impedance technology used in consumer electronics), the losses within the line network are comparatively small.

The 100V PA technology makes it possible to run very long lines, even with a comparatively small wire diameter, e.g. 2 x 0.75 mm.

c) Small wire diameter sufficient:

With 100V technology, less power is lost in the line network than usually with the conventional architecture of consumer electronics or even “professional sound”. Therefore, a smaller wire diameter is sufficient even for demanding 100V PA installations.

Normally cable types IYSt 2 x 0.75 or similar are used. As the case arises, details should be discussed with an expert.

However, it can be said basically that speaker line lengths of 500m and more are trouble-free for 100V technology.

*

5.) Crosstalk effect

If several speaker lines are carried by one single cable, the danger arises that the signal of one line is transferred capacitively to another.

It may occur by this means, that a loudspeaker, not at all addressed, suddenly and quietly transfers an external calling signal. As far as systems with several programs are concerned, even different programs may be transmitted to the same speaker.

As this effect depends on the cable type used, as well as on the line’s length and on the supplied power, a solution of the problem should be discussed with an expert.

Please note: For each signal, one pair of wires, belonging together and stranded with each other, should be used.

*

6.) Wall and ceiling built-in loudspeakers

These types of loudspeakers are well-suited for a local acoustic irradiation of large sales areas, halls, etc., but also for smaller rooms.

They are available in many different models, e.g. for flush-mounting and surface mounting, round, oblong, square, with a pervious grille, made of plastic, full metal, etc.

The load rating of wall and ceiling built-in loudspeakers normally ranges between 6 and 20 W.

*

7.) Column speakers

These are usually applied in larger rooms, whereas several column speakers are combined and hung up in the middle of a

room. Very often column speakers are mounted onto stands in order to combine them with mobile amplifier systems. The load rating normally ranges between 20 and 100 W.

*

8.) Horn speakers

Horn speakers are usually installed for call and alarm transmissions, where a high sound pressure as well as a robust construction are required. They are used especially outdoors, but also in large halls, garages, etc.

Horn speakers are only conditionally utilisable for transmission of music, as their frequency range is very limited both in the lower and higher bandwidths.

The load rating normally ranges between 10 and 50 W.

*

9.) Speakers with coaxial chassis

Coaxial chassis are usually fitted in wall and ceiling built-in loudspeakers, if high or highest playback quality is desired by the customer.

During the last few years, the market trend has gone more and more in the direction, where building owners and their architects and planners respectively demand wall and ceiling built-in loudspeakers with coaxial chassis. The reason for this development is that, for a comparatively small additional charge, practically Hi-Fi playback quality can be achieved for 100 V PA systems.

The load rating of such speakers normally ranges between 10 and 30 W.

*

10.) Ball speakers

This type of loudspeaker is used wherever it is not possible to employ ceiling built-in loudspeakers because of a too high ceiling level.

Normally, ball loudspeakers feature an adjustable suspension length of up to 4 m or more, so that the problem of high ceilings and therefore the result of too low sound pressure at the listeners' level (ear level) can be compensated.

It should also be mentioned, that especially ball loudspeakers are often desired by building owners or their architects for optical and design reasons.

The load rating normally ranges between 10 and 30 W.

*

11.) Sound projectors

Sound projectors are also mainly fitted where the demand by building owners for optical or design reasons is made.

Irrespective of this fact, sound projectors have the advantage of a stronger sound bundling compared to ordinary cabinet or built-in loudspeakers and are therefore absolutely suited for the application with ambitious 100 V PA systems. They are usually equipped with an ordinary cone chassis or even a coaxial chassis.

Several sound projector models are designed so, that they may also be used outdoor, as e.g. in baths, sports fields, beer gardens, etc.

The load rating normally ranges between 10 and 30 W.

*

12.) 100 V Pro-Sound speakers

During the last few years, the demand of building owners and planners for high and highest transmission quality has grown also for 100 V PA systems.

On the part of loudspeakers, this demand can be satisfied with so-called 100 V Pro-Sound speakers. These loudspeakers are

available in all kinds of variations, forms and colours, because here the design is also very important.

However, all 100 V Pro-Sound loudspeakers have in common a 2-way system (woofer and tweeter). They normally have their roots in the Hi-Fi or pro-sound technology, but are furnished with appropriate 100 V transformers.

The load rating normally ranges between 20 and 60 W.

*

13.) Volume control

Our volume controls are regulated by a 100 V transmitter as well as by an 11-stage switch (10 steps, each for -3 dB, one step for zero position), which are both installed in a box (in the case of surface mounting). For flush-mounting these volume controls are composed in such a way, that they can be inserted into customary 55 mm mount sockets. Besides, the switches are overwindable to avoid wilful destruction.

The volume controls are available in various power categories between 6 and 50 W, with or without built-in emergency call relay.

*

14.) Digital impedance tester ZS-2

The digital impedance tester ZS-2 allows you to measure and control the impedances of speaker lines.

The measuring is done by a 1 kHz proof generator and is shown directly on the LCD display. The device has three measurement ranges, which can be switched manually. The steps are: 200 ohms, 2 kohms and 20 kohms.

Such an impedance tester is indispensable for every company dealing with 100 V PA technology.

*

General introduction into professional sound systems

The following tips, explanations and illustrations intend to facilitate the planning and thus the selection of PA sound systems for you.

Planning of sound systems:

Before the actual definition of an acoustic irradiation conception, basic information has to be acquired. Insufficient data would lead to making a customer-oriented planning nearly impossible. This often results in costly amendments after the installation took place, in order to ensure the actually desired utilisation. It is therefore basically reasonable to obtain extensive information serving as a foundation for every acoustic irradiation conception.

Important fundamental information:

1. Architecture (installation possibilities)

- Where can speaker systems be placed and mounted respectively?
- Are there any line-of-sight obstructions to be considered?
- How heavily can the hanging spots be stressed?
- Are there any objects in the room that may influence the sound projection negatively (e.g. low-hanging illuminants)?

2. Optical integration

- Are there any limitations concerning the selection of speaker systems in terms of dimension, colour, etc.?
- Have the loudspeaker systems to be hidden behind the panelling, etc.?
- Is it possible to inconspicuously implement the necessary cable ducts?

3. Budget

- How high is the purchase?
- Is it possible to find out the size of the budget? Without information on the available budget, a precise planning is hardly feasible.

4. Profile of requirements

- What does the utilisation profile (focuses) of the sound system look like? Are there any specifications to be considered respectively?
- Is the utilisation profile actually practicable in regard of the budget and/or the room's nature? (e.g. "I'd like to have Hi-Fi sound with 115 dB sound pressure in all places, but the loudspeakers can only be installed beneath the stage.")

Basic components of any sound system

Every sound system is, in its simplest form, composed of a signal source, an amplifier and a loudspeaker. In order to improve the quality and to adapt to the relevant room, other audio components are integrated, depending on the tasks that have been set. According to circumstances and requirements, these components are systematically chosen and adjusted exactly to the room that is to be irradiated acoustically.

Pro-Sound system

Systems for high-performance acoustic irradiation in town halls, stadiums and arenas, which primarily serve for the transmission of music and orators, are called Pro-Sound systems.

This kind of acoustic irradiation demands a great deal of the equal level distribution and the frequency response. In many projects, alarm system and high-performance acoustic irradiation are linked with each other for financial reasons. It is important, that in such cases the requirements of the EN 60849 are applied to the whole system. Pro-Sound systems use low-impedance technology in order to achieve good transmission qualities in the bass range. Unlike 100 V PA systems, which only operate in MONO, Pro-Sound systems for the most part use STEREO. A stereo signal is sensibly used, only if at least two loudspeakers as well as two power amplifiers are supplied and if the listener is in an adequate position and distance to the speakers. Ideally, the listener should form an equilateral triangle with the loudspeakers (see fig. 1).

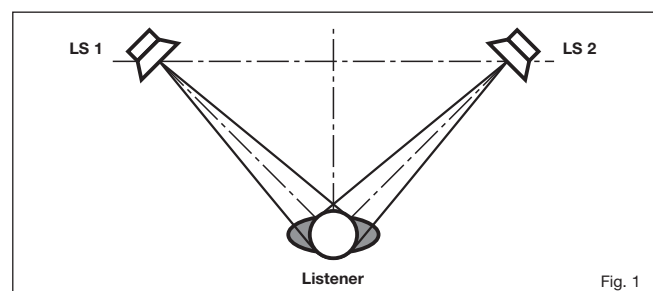


Fig. 1

PA-Systems

Basically, there are two kinds of PA systems: the passive and the active version.

1. The passive system:

This is the simplest way of frequency segmentation. The full range signal is sent into the power amplifier and then arrives at the separating filter, which is located between the power amplifier and the individual loudspeakers and consists of spools, condensers and resistors. Passive separating filters are often directly implemented inside a loudspeaker. The advantages to active systems are small technical effort and compactness. However, a big disadvantage arises from the fact that the frequency segmentation is carried out behind the power amplifier, and therefore the full output power runs through the separating filter. Consequently, large analogue components are necessary, which heat up very strongly, caused by the energy input, so that the performance is reduced.

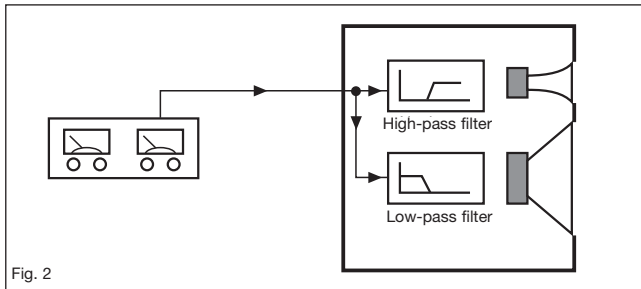


Fig. 2

2. The active system

Here, in contrast to the passive version, the separating filter is located in front of the power amplifier. The following significant advantages result out of this: Smaller components (IC) are used. No heating takes place. Several features are possible such as level control, mute, phasing turner, and the cut-off-frequency can be adjusted.

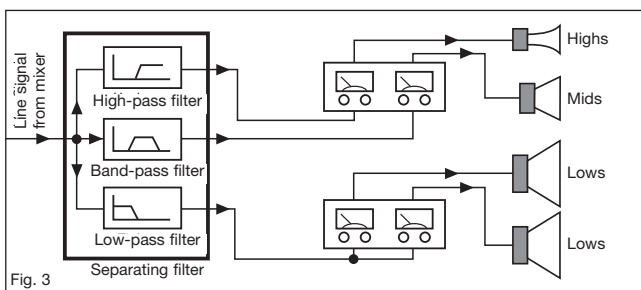


Fig. 3

The rule of thumb for 3-way power segmentation is: Approx. 10% of the power are used for the tweeter, approx. 30% for the mids and approx. 60% for the woofer.

The widespread opinion, that the speaker's load rating has to be higher than the output power sent out from the amplifier, is wrong. It should be exactly vice versa in order to avoid damages to the loudspeakers. The output power of the amplifier should be a little higher than the designation of the loudspeakers (consider headroom and clipping). Furthermore, one should bear in mind that the cables from the power amplifier to the speaker ought to be as short as possible. It is therefore better to use two amp-racks for large systems.

Assembling of loudspeakers

If loudspeaker boxes are piled on top of each other, periodically the deletion of frequencies occurs. The offset of the speakers is equivalent to half the wavelength of the first deleted frequency (see fig. 4). It is therefore essential to install the loudspeaker cabinets flush mount.

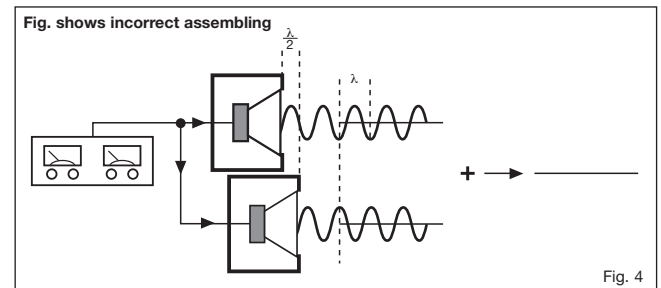


Fig. 4

Sound pressure level (SPL - dBA)

The sound pressure level is an important requirement for the planning of a room's acoustic irradiation. The following chart (fig. 5) shows, which requirements are made to power amplifiers and loudspeakers in order to implement the project sizes realistically.

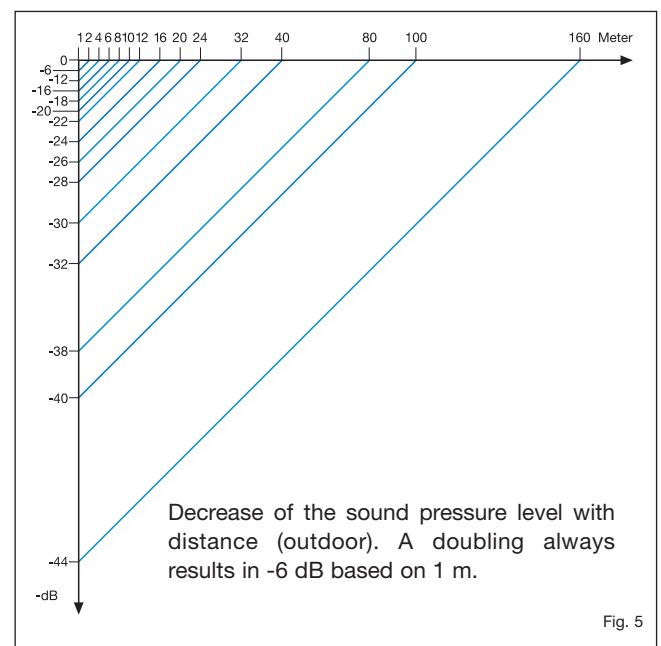


Fig. 5

Sound control

The application of various kinds of mixers not only depends on the number of channels and aux lines, but also on the sound control. The most common mixers for disco applications or live mixers mostly have a 2- or 3-band sound control for individual channels: one control for lows, mids and highs. A decrease or an increase of a certain frequency can be generated within a frequency range predefined by the manufacturer, with these controls.

This kind of sound control is sufficient for DJ mixers, as mostly canned music is used.

In order to equalize e.g. a (singing) microphone and, if necessary, to filter unwanted feedbacks or characteristics of the voice, regarding live acoustic irradiation, a so-called "(semi-)

parametric” sound control is required. Here are the parameters frequency (f) and gain (g) for semi-parametric sound control and additionally the filter quality (Q-factor) for full-parametric sound control. The frequency controller defines the frequency to be edited, and the gain controller determines, whether this frequency is to be intensified or toned down. The Q-factor finally defines, to what extent close-by frequencies are to be intensified or toned down along with the adjustment.

Calibration

- ▶ **With analyzer:** Reference is a pink noise on the PA (each side individually). Then position the measuring microphone, e.g. at the F.O.H., and compare which frequencies are intensified or toned down. This procedure is only appropriate for reference calibration, as it is not adapted to our hearing
- ▶ **However, the most perfect procedure is using our human ear.** A well-known and good sounding, matching music style CD, serves as reference. The EQ is now adjusted in such a way that the sound is good. Different parts of the CD may be used: e.g. a part for lows only, another part for highs only and so on. **Note: Always play the CD in mono, each side individually.** For the monitor adjustment, it is important to find the feedback frequencies. Procedure: Take the microphone and put your hand ball-shaped around the microphone’s basket or draw the microphone past the monitor speaker (please only apply latter method when using ear-plugs). Then intensify each frequency individually on the equalizer and test until it will start to whistle. These whistling frequencies are now to be toned down.

Hum

Often a hum is on the system. In case it is a low-frequent and full humming noise, the reason mostly being a so-called “humming loop” or “earth loop”. It may occur whenever two or more devices are connected with earth over two different points. The “classic” case: a lights control panel and a sound mixer are both attached to the same power supply line, i.e. the same phase. A control cable runs from the lights control panel across the hall to the dimmer, which is located on stage and is connected to another phase of the power supply. One earth is the protective earth conductor of the power supply, the other one results from the connection of the lights control panel and the dimmer by the control cable. Emerging potential differences lead to a “network hum” in the loudspeaker. This problem can be eliminated by avoiding one of the two earth connections. The unfortunately popular taping of the protective earth in the power socket is both prohibited and **EXTREMELY DANGEROUS!**

The problem can be corrected either by connecting the lights control panel together with the dimmer to one phase, i.e. one collective power supply, or by disrupting the earth connection of the control cable with a ground-lift-adapter.

RMS (Root-Mean-Square)

RMS is used for specification of power. This value “RMS” is determined by frequencies of the full acoustic range. The value normally amounts to approx. 60 % of the indicated load rating.

Clipping

Clipping means oversteering of the power amplifier by too high input levels. The output signal reaches the modulation limits specified by the supplying DC voltages, whereby the signal peaks are simply cut off. The output signal is distorted compared to the input signal. By oversteer, high-frequent harmonic waves and additional DC voltage proportions are added to the output signal, which can become dangerous, especially to the tweeters.

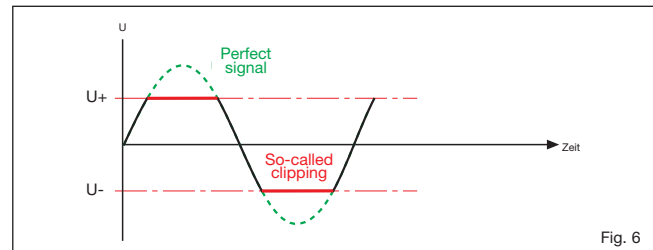
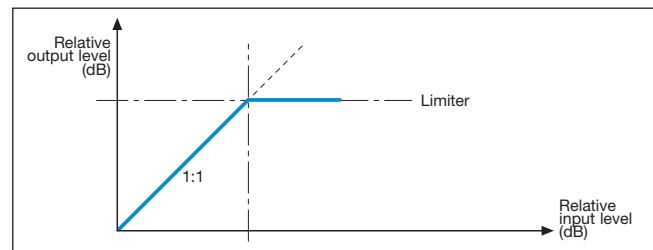


Fig. 6

Limiter

Limiters protect devices and loudspeakers against oversteer and damages to the whole system resulting from this. Distortion abruptly occurs with all-transistor power amplifiers (in systems where a raspy distorted sound is not wanted). This operating range has to be prevented, either by a headroom large enough (reserve at least 10 dB) or by an adjusting amplifier. Therefore, (multi-band) limiters are often installed in front of the amplifier. However, a dynamic compression will result out of it. In the field of Rock & Pop music this device is also called oversteer protective switch, as it protects the loudspeakers from destruction.



PA

PA is the abbreviation for public address. This also applies to the 100V technology in the broadest sense. In Germany, 100 V PA systems with the facility of selective calls stand for paging systems.

FOH

F.O.H. – Front of house – is the position of the main mixer, where the sound of a concert or a band is mixed. In most cases, it is located in the centre of the room.

General introduction into mobile audio technology

The following tips, explanations and illustrations are to give you an understanding and facilitate the planning, installation and use of mobile PA systems.

First we would like to mention that battery-/mains-operated mobile technology for the user means:
Laymen proof handling, small material cost (one-point or two-point acoustic irradiation), mains-independence, cable-free operation and a very fast assembly and disassembly.

In most cases, these factors only allow a commercial acoustic irradiation, if at all, possible at great cost with labour involving PA systems. We would like to give you some typical examples for the application of mobile-sound technology in the following, which, by the way, you will find again in the second part of this “guideline” supplemented by schematic drawings and explanations.

- Sports fields and halls
- Open air and indoor baths
- Churches, chapels and cemeteries
- Conference rooms and administration buildings
- Supermarkets and big stores

BASIC INFORMATION ON THE INSTALLING OF MOBILE SYSTEMS:

Mobile systems and their applications

Speeches, panel discussions, conferences as well as musical performances are normally amplified for the audience by a PA system in order to be sufficiently understandable and loud. Generally, PA systems are not used for the performance of classical music and theatrical performance. Additional acoustic irradiation has proven to be indispensable for presentations of easy listening, lectures, discussions, training courses and conferences.

The reasons for this are very distinctive audience expectations as well as different degrees of required attention. RCS has developed specific PA systems for this purpose. The requirement of a PA system is to supply every listener equally with sufficient direct sound. In doing so, a sound impression, as natural as possible, is generated. A particular and consistently recurring problem in practice is to avoid feedbacks while amplifying sound waves. RCS' PA systems are especially developed for handling the problems that may be expected.

Installation and placing the mobile systems

A professionally assembled sound system should be installed accurately and inconspicuously. Please place your loudspeaker systems so that they do not stand in corridors or areas, which are accessible. In most cases, you will install your speakers near the side walls and pointing to the audience. This kind of assembly has several advantages: The coupling of the sound produced within the loudspeakers to the side walls improves your presentation, and the speakers are less visible. Please lay all cables out of sight, and tape them at accessible points to the floor in such a way, that nobody trips or stumbles (please avoid laying mains and

speaker cables parallel to microphone cables). Please remember, when adjusting the volume, that part of the sound is absorbed by the audience in the room.

*

PLEASE NOTE:

Because of the audience noise in the background, an additional higher sound pressure is required.

Start up mobile systems:

1. Check all connectors.
2. Adjust all volume controls to 0.
3. Switch your active system to ON. If other units are connected to your system, switch these on first.
4. Talk into your microphone or start your player. Now turn the AUX/Line or the (wireless) MIC volume control slowly to the right, and adjust to the required volume. Regulate the different inputs against each other, as you wish for your desired presentation.
5. Adjust the equalizer controls to optimal playback quality. When using a wireless microphone, note that feedback problems may occur, if you are in front of the loudspeakers. Please pay attention to the wireless microphone instruction manual.

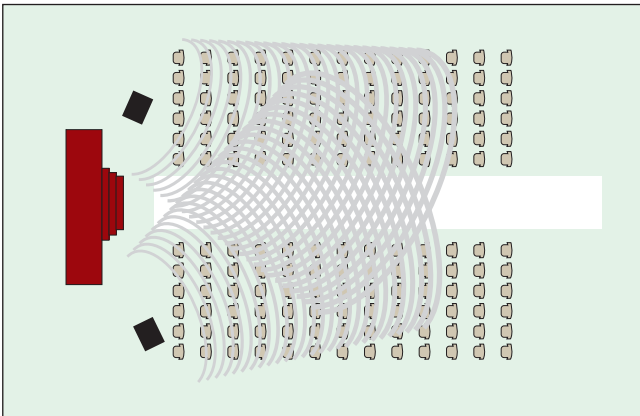
Correct installation of mobile systems

The correct assembly of the loudspeakers is most important when installing a mobile-sound system. The speakers are preferably positioned in such a way that the addressed audience is in their main irradiating direction.

Please note the following principles for installation:

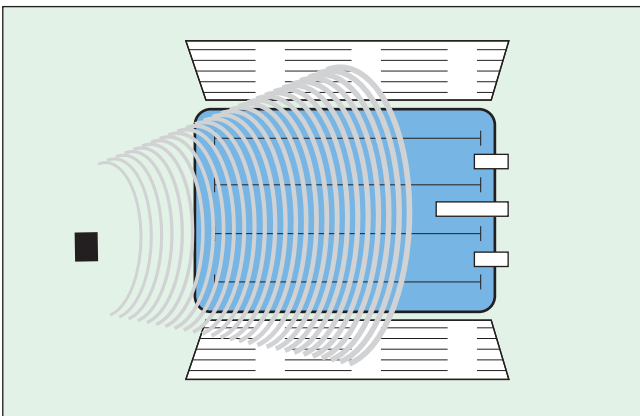
- Install your sound system in such a way that the moderator talks towards the audience. The acoustic location of the moderator is improved thereby.
- Square rooms, round rooms or rooms with a lot of glass are generally problematic. Here, many reflections falsify the sound characteristics and affect the understandability of speech. You will probably have to experiment a little from room to room in order to minimize the reflections of the sound. Inside such rooms, it is recommended to operate with the lowest possible volume in order to avoid reflections. To achieve better results in these rooms, use more highs and less lows.

EVENT WITH 1000 PEOPLE



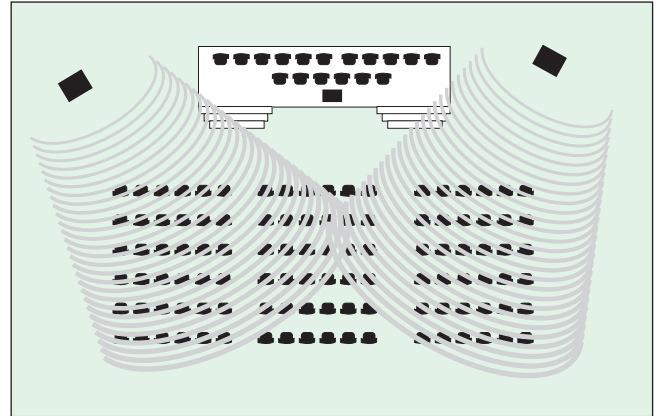
- Some specific characteristics arise with outdoor events. It is calculated that the audience at outdoor events generates a sound pressure level of approximately 75 dB, with an upward tendency. For a sufficient understandability of speech, the loudspeaker level has to be approx. 10 dB higher. To be on the safe side, the possibility of 95 dB should be provided.

BATHS WITH 2500 PEOPLE



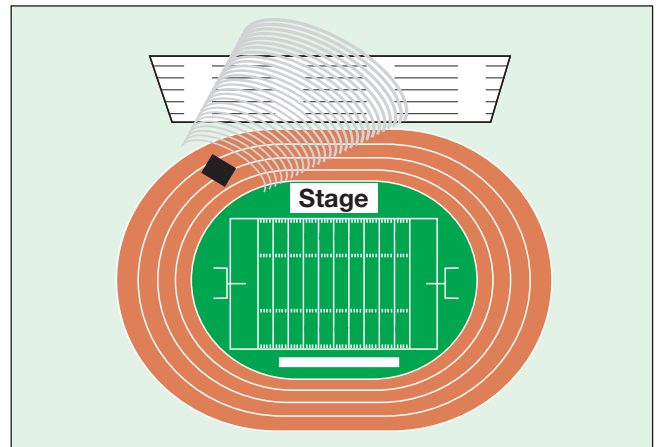
- On larger outdoor areas and low volume, good results are achieved with decentralised public address, meaning the application of more than one loudspeaker.

PANEL DISCUSSION WITH 2500 PEOPLE



- In wide or long rooms, it is often an advantage to use an additional speaker. Place the additional speaker approximately in the centre to your audience, and adjust it to the same irradiative direction as your main speaker.

OPEN-AIR WITH 2500 PEOPLE



- Central acoustic irradiations normally are the best possibility to work without problems. They have the advantage of easy installation and are free of disturbing echo, as long as there are no reflective surfaces.

*

A few words on feedback

If possible, always position your microphone behind the loudspeakers. Feedback is a whistling, screaming and very penetrative noise, which activates itself. If both a microphone and a loudspeaker are located in the same room, a self activation of the PA system by acoustic feedback may occur. The condition for acoustic feedback is a closed transmission circuit. The microphone picks up a noise, which then is amplified and radiated by the loudspeaker.

The sound waves of the loudspeaker are picked up by the microphone, are further amplified and again fed to the speaker and so on. If the sound coming from the speaker at the microphone has a slightly higher level than the primary noise, self activation by feedback may occur. A noise generated by feedback can cause the destruction of your system.

In order to avoid feedback, make sure your volume control is set to 0, when you connect a microphone to your amplifier. Whenever feedback occurs, remove the microphone from the speakers and reduce the volume with the control switch.

1. Make sure that as little direct sound as possible is attained from the loudspeakers to the microphones.
2. Place the microphones in such a way that they do not cross the loudspeakers' main irradiating direction. (Note that e.g. walls reflect sound)

*

Wireless microphone systems

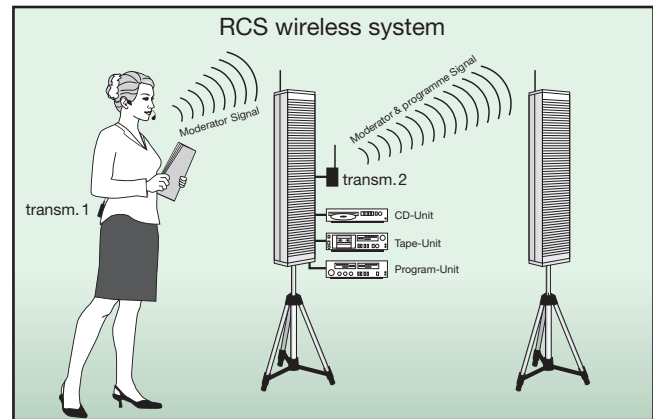
Wireless systems are especially popular in show business. The artist has complete freedom of movement without leaving the absorbing area of the microphone. The application of wireless transmission is advisable, whenever a microphone cable handicaps the performance, or for visual reasons. Over the past years, the transmission and reception technology of these devices has been improved to such an extent, that today it does justice to nearly all high quality standards and guarantees very high operating safety when handled properly. Main application areas are events and live coverages.

For quality reasons, all of RCS' wireless systems use a HF transmission method with frequency modulation. Nevertheless, disturbances may occur here too occasionally. Reflections at metallic objects occur under unfavorable conditions especially in closed rooms as well as in rooms containing decorations. These reflections can result in so-called field strength alterations at the receiver position.

*

Installation of a wireless microphone

In all areas working with speaker systems, microphones with wireless high-frequency transmission, so-called wireless microphones, are increasingly used for bypassing short distances. The cable connection between microphone and amplifier is substituted by a wireless transmission and receiver system.



Please always proceed according to the basic rules to achieve perfect results:

1. Transmitter and receiver antennas should be fully extracted.
2. Do not place metallic objects near the antennas!
3. Do not touch the antenna of a wireless hand microphone with your hand!
4. Do not coil up the whip antenna of a lavalier transmitter (it has to dangle loosely)!
5. Always start a presentation with full batteries!
6. Always keep the required distance to the receiver!

*

Handling, care and maintenance of a mobile system with rechargeable battery

- The battery must not be discharged below its critical discharging condition. This cannot occur with RCS' systems, as they feature an automatic protection device.
- The battery has to be charged up to 95% with high electricity, the remaining 5% with low electricity. This regulation is also automatically adopted by the implemented RCS electronics.
- Whenever the device is stored, the system's battery has to be in fully charged condition. Therefore, always store your system in charged condition, or else the battery could be damaged.

Operating time per charge

The operating time per charge depends on the sort of programme (music/speech), on the volume and on the application of an auxiliary speaker. In order to simulate an average application, tests with music on a 50% service cycle (30 seconds on, 30 seconds off) were made at the manufacturer's factory.

Low volume	6 to 8 hours
Medium volume	2 to 4 hours
Full volume before clipping	1/2 to 2 hours

PLEASE NOTE: As the durability of rechargeable batteries depends only on the power extraction, do not let exaggerated information in some manufacturers' advertisements misguide you!

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