



**Busch-AudioWorld®**

**Manual for  
Electrical Specialists**

# Introduction

Designed for separate rooms – the multiroom sound system. Whether from the radio or hi-fi system – you can now enjoy music in every room of the house. And the special thing is that you only need, for example, one system with a central unit, amplifier inserts and the right speakers, if necessary. Programmes and volumes can be set individually in each room. Busch-AudioWorld® opens up new listening dimensions. The range of products is suitable for both private residential projects and commercial environments e.g. doctors' surgeries, offices and various types of shop premises.

The heart of the system is a compact central unit which is designed as a mini hi-fi component. This central unit is equipped with a stereo radio tuner which has a memory facility for up to 8 radio stations. In addition, it has connections for external music sources e.g. a stereo system or MP3 player. The Busch-AudioWorld®

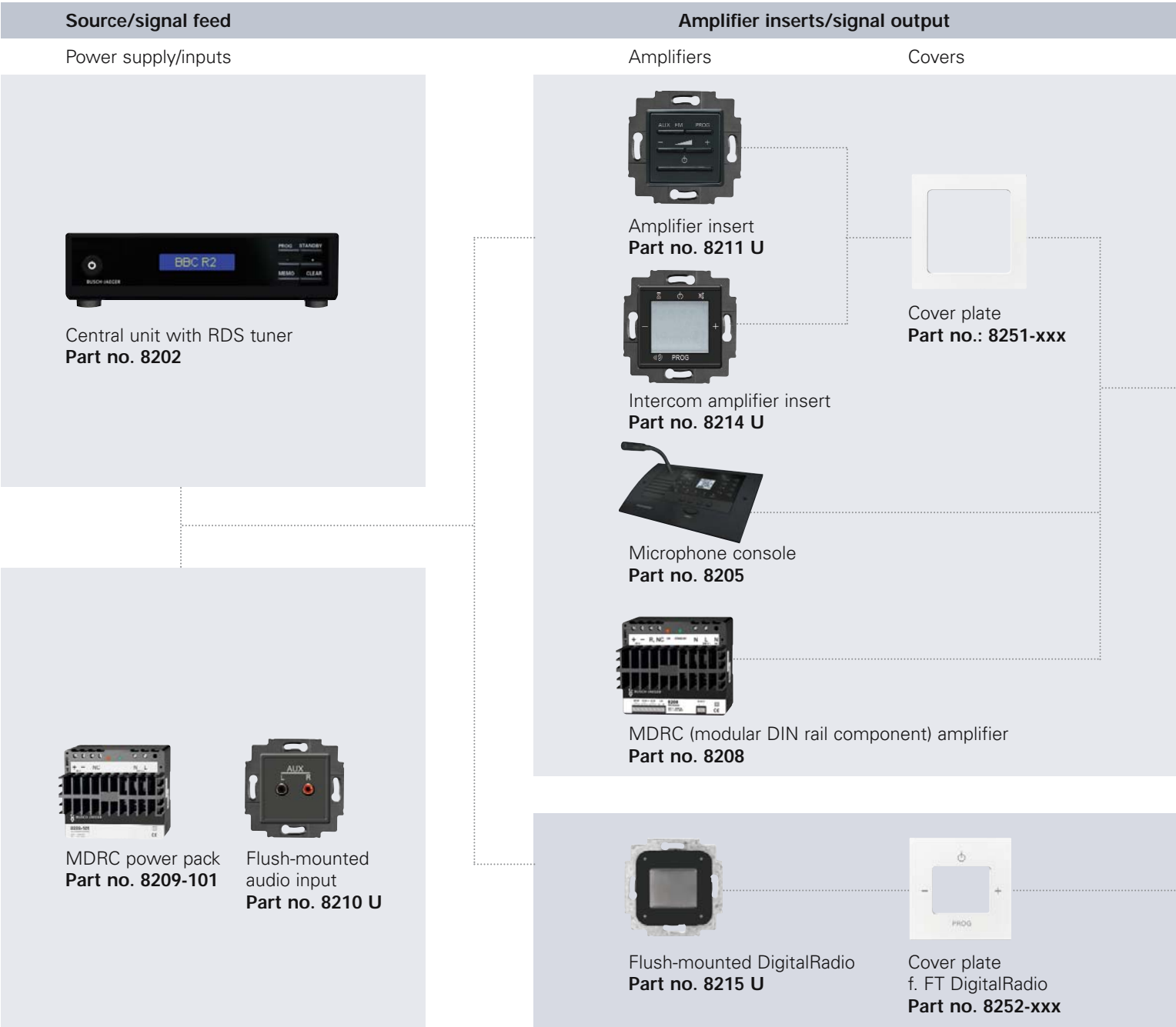
central unit is controlled from the device itself as well as via the system amplifier inserts. Operation of the entire system is simple and intuitive. After connecting the central unit and saving the desired radio stations, Busch-AudioWorld® is controlled exclusively via the operating modules in the individual rooms.

The amplifier inserts allow for individual adjustment of the volume to suit the room situation, regardless of the values set in the hi-fi system.



# System overview

The Busch-Jaeger audio system with unlimited possibilities. The system components can be combined individually and supplemented according to requirements.



## Speakers

### Speakers



Speaker insert 2"  
**Part no. 8221 U**



Built-in speaker 5"  
**Part no. 8222 EB**



Moisture-proof speaker 5"  
**Part no. 8224 EB**

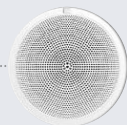
### Speaker covers



Cover plate  
**Part no. 8251-xxx**



Speaker grille, metal clad  
**Part no. 8228**



Speaker grille, plastic  
**Part no. 8227**



Speaker insert 2"  
f. FT DigitalRadio  
**Part no. 8223 U**



Cover plate  
f. Speaker insert 2"  
**Part no. 8253-xxx**

**For primary usage as a music system** in large rooms, the central unit with RDS tuner is already equipped with comprehensive accessories such as its own power pack and audio input.

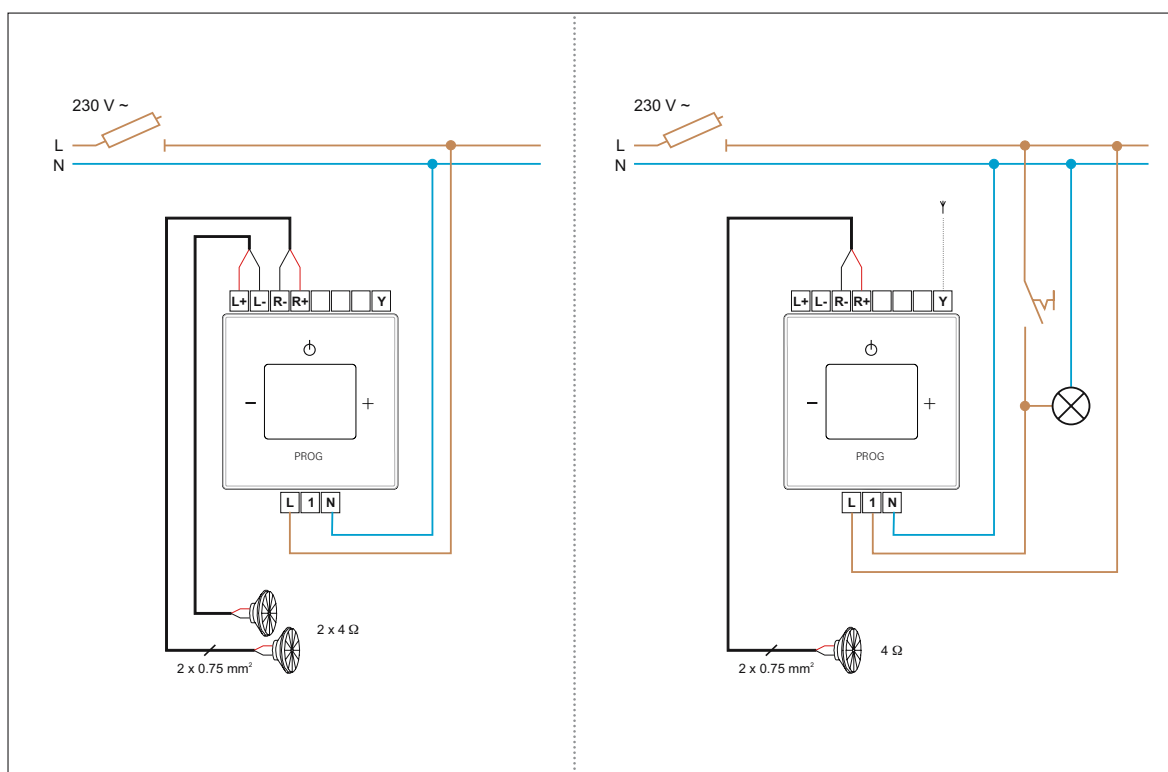
# FT DigitalRadio. The universal solution for every possible use in residential and functional buildings.

Busch-AudioWorld® FT DigitalRadio. The flush-mounted DigitalRadio represents the ideal solution for smaller rooms such as waiting rooms or for the kitchen or bathroom at home. Combined with suitable speaker inserts, it provides a space-saving alternative to conventional hi-fi components.



Kitchen

Bathroom



### Installation:

Installed in an FT box, the FT DigitalRadio can provide mono or stereo sound. The 8223 U speaker inserts are perfectly matched to the radio and can either be connected in combination or in a single styling frame using the supplied connecting lines. Alternatively, speakers from third-party manufacturers can also be used. The optional terminals for the AudioBus allow an external source to be played through the Busch-AudioWorld® system.

### Commissioning:

The setup procedure must be performed when commissioning

the device or after a reset. This allows all of the important parameters of the device to be specified and the automatic search run/memory space pre-configuration to be started. The device is then ready to use.

### Function:

The FT DigitalRadio is operated using a multi-function rocker switch. The device can be switched ON/OFF, the volume can be controlled and programmes can be re-routed intuitively by briefly pressing the corresponding button. Depending on the status of the device, additional functions such as the automatic power-

off function, alarm activation and the user menu can be selected by pressing and holding down the corresponding button. In the bathroom, it is possible to set the FT DigitalRadio to be switched on and off via the light switch using the subsidiary input of the device.

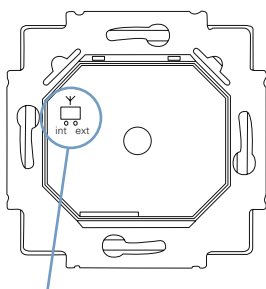
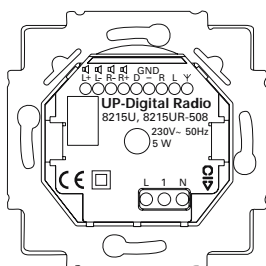
### Antenna:



The antenna integrated in the FT DigitalRadio is optimally suited to the possible installation situations. Depending on local variations in reception quality, it may be necessary to connect an external antenna. A wire antenna of approx. 70 cm in length, an existing house antenna

or a cable (TV) connection can be used for this purpose. The antenna selection switch (see picture) must be adjusted accordingly.

### Tip:

The FT DigitalRadio is also available as a ready-to-fit complete set for the future® linear switch range under part no. 8220-84.

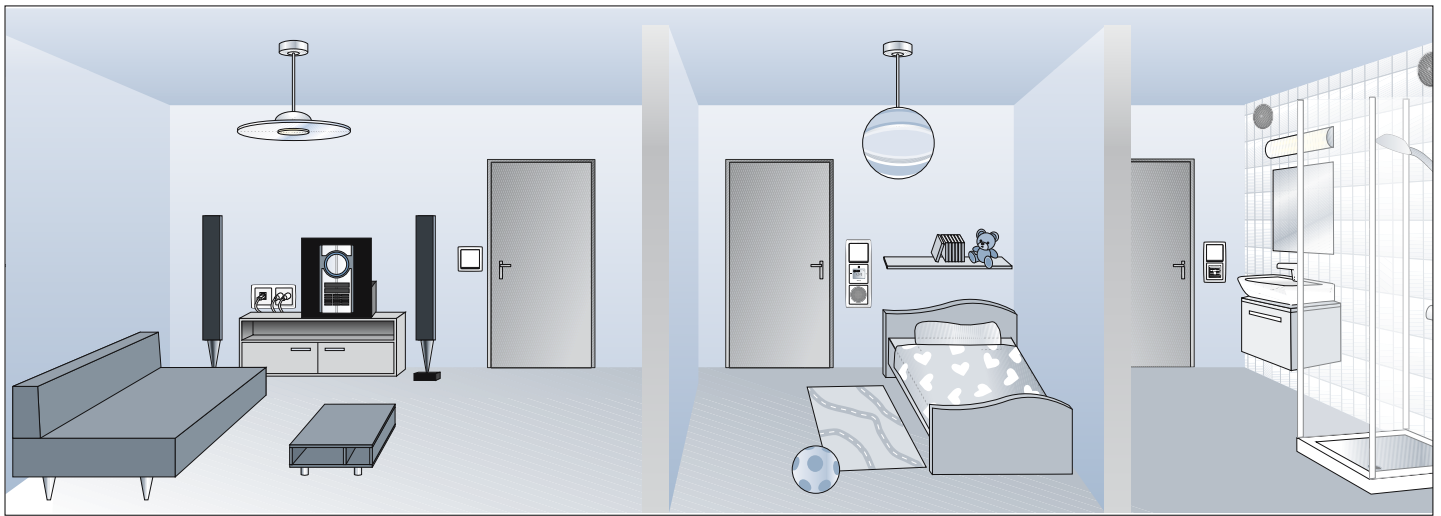


-  Internal antenna
-  Additional antenna

Terminal:	Meaning:	Conductor colour (if using J-Y(St)Y)
Y	Connection for external antenna	–
L	Left input, AudioBus	yellow or green
R	Right input, AudioBus	white, (twisted with yellow or green)
-	GND AudioBus (ground for L/R input terminals)	blue
D	Control information, AudioBus	brown
R+	Speaker output (+), right	red/black (depending on cable type used)
R-	Speaker output (-), right	black (depending on cable type used)
L+	Speaker output (+), left	red/black (depending on cable type used)
L-	Speaker output (-), left	black (depending on cable type used)

# One solution. Many possible uses. Music in living rooms.

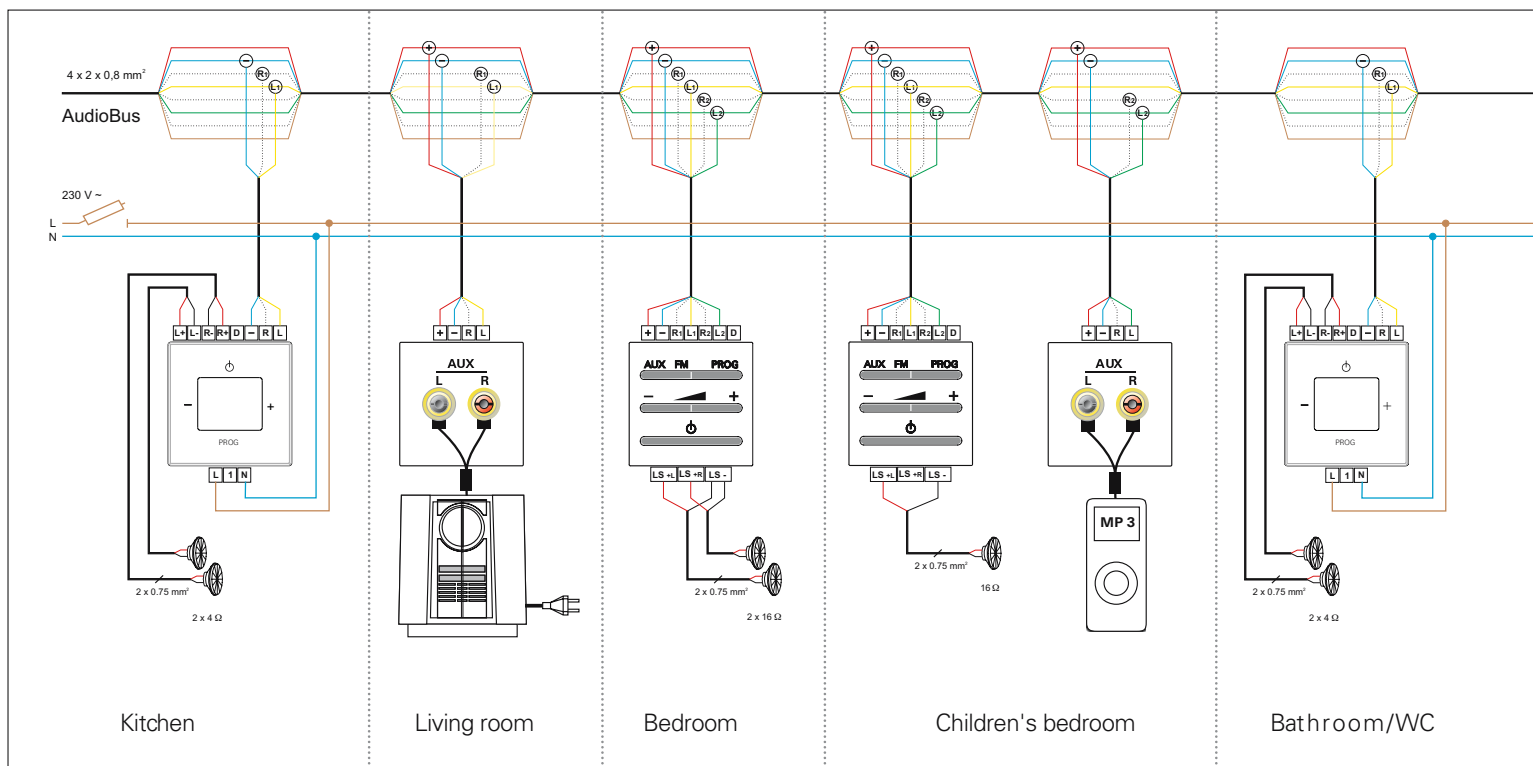
Busch-AudioWorld® is a complete system with perfectly matched components. It is the ideal solution for varied applications in the residential sector.



Living room

Children's bedroom

Bathroom





### Installation:

An external CD/DVD player or an existing hi-fi system can be connected as a source for the sound system via the cinch connections of the audio input.

The connection to the amplifier inserts installed in the individual rooms or to the FT DigitalRadio is made with an 8-wire telephone cable of type 4x2x0.8 [J-Y(ST)-Y] set up in a bus, star or tree structure. In the individual rooms, there are either speaker inserts or built-in speakers. The connection to the amplifier inserts or radio is made using conventional speaker cables<sup>1) 2)</sup>

2 x 0.75 mm<sup>2</sup> or with 2 wires of the telephone cable<sup>2)</sup> used previously. Either mono or stereo operation must be set by positioning a jumper

on the amplifier inserts or in the setup program of the FT DigitalRadio. Pre-configuration of system channel I or II on the FT DigitalRadio is performed by connecting wires L1/R1 or L2/R2. If the reception conditions for radio stations are problematic, connection of an external antenna is recommended, as described on page 5.

### Commissioning:

Commissioning of the FT DigitalRadio is described on the previous pages. No other settings are required apart from these.

### Function:

The amplifier inserts and radio are switched on by pressing the ON push switch. The red back-ground illumination of the button and the activation

of the display indicate that the device is operating. Using the selection switches (+ and -), the desired volume in the respective room can be set. Pressing the AUX/FM push switch switches back and forth between system channels I & II on the amplifier insert. If a radio station fed in by a central unit is selected as the music source (system channel II), the radio station can be re-routed at the central unit via the PROG push switch. On the FT DigitalRadio, playback of the external source is achieved by selecting programme slot 9 (AUX) via the PROG push switch.

If no external source is connected or if it does not supply a signal for an extended period of time, programme slot 9

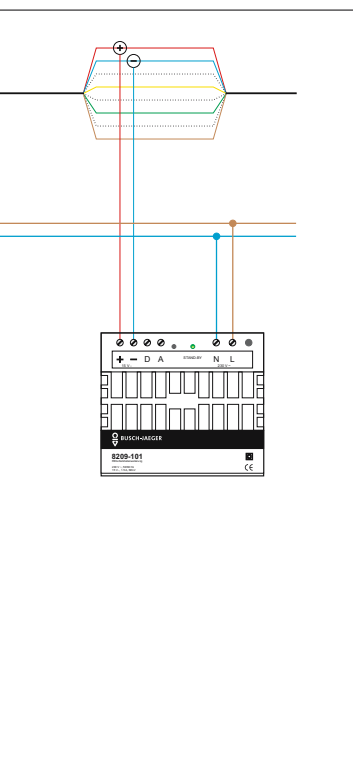
is hidden during programme selection.

### Tip 1:

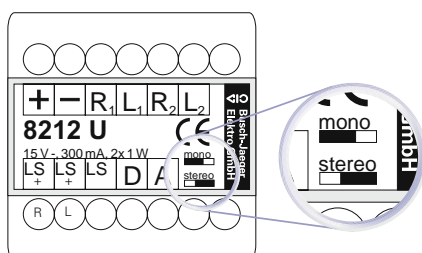
If re-routing of the radio station is to be suppressed in individual rooms, the "D" terminal must not be connected to the amplifier inserts.

### Tip 2:

For some rooms, such as a bedroom, the use of the power-off (automatic sleep) function integrated in every amplifier insert may be useful. Pressing and holding (> 5 s) the ON push switch when the device is operating activates automatic power-off after a predetermined period of time. Activation of the power-off function is indicated by a yellow LED or on the display.



Wire:	Wire diameter: (minimum)	Meaning:	RJ 45 Assignment:	Colour (if using J-Y(St)Y red)
+	0.8 mm	Operating voltage (+ terminal), 15 V -	8	blue
-	0.8 mm	Operating voltage (- terminal), 15 V -, ground	7	white (yellow)
R <sub>1</sub>	0.6 mm	Audio signal right, channel 1	6	yellow
L <sub>1</sub>	0.6 mm	Audio signal left, channel 1	5	white (green)
R <sub>2</sub>	0.6 mm	Audio signal right, channel 2	4	green
L <sub>2</sub>	0.6 mm	Audio signal left, channel 2	3	white (brown)
A	0.6 mm	Voice signal (for broadcasting)	2	brown
D	0.6 mm	Control information for programme re-routing and broadcasting	1	red/black (depending on cable type used)
LS +L	0.75 mm <sup>2</sup>	Speaker output (+), left	-	red/black (depending on cable type used)
LS +R	0.75 mm <sup>2</sup>	Speaker output (+), right	-	black (depending on cable type used)
LS -	0.75 mm <sup>2</sup>	Speaker output (-), left and right	-	black (depending on cable type used)



### Note:

<sup>1)</sup> Connecting lines of 40 cm length are included with the 8223 U speaker inserts.

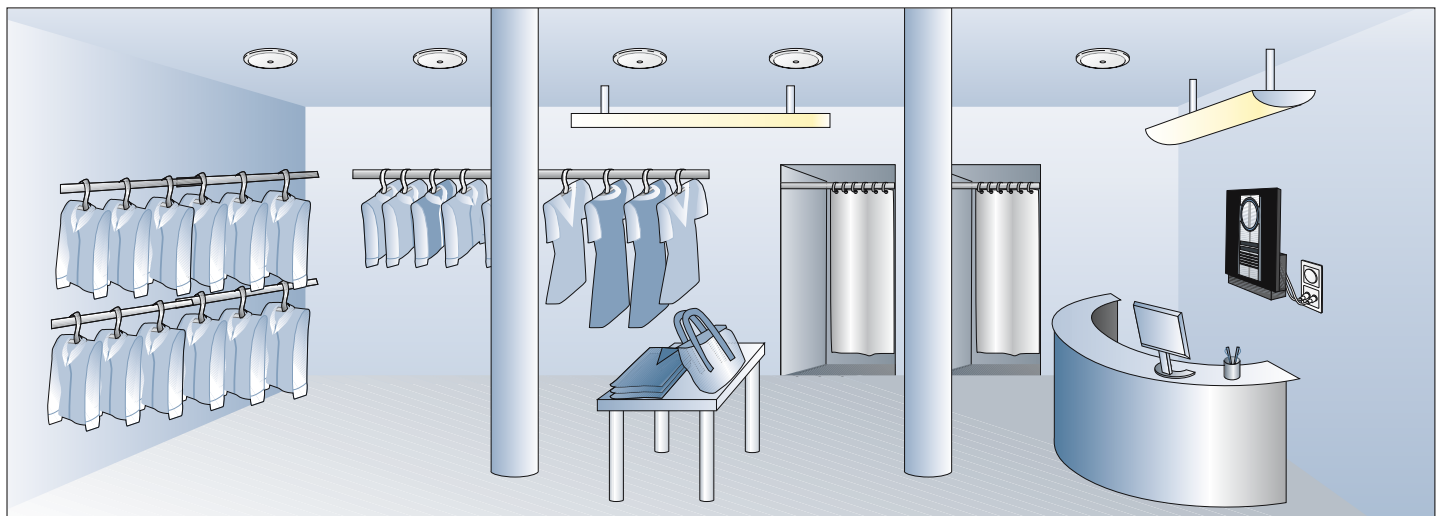
<sup>2)</sup> It is important to ensure that the insulation of the speaker connecting lines is sufficiently thick for the FT DigitalRadio.



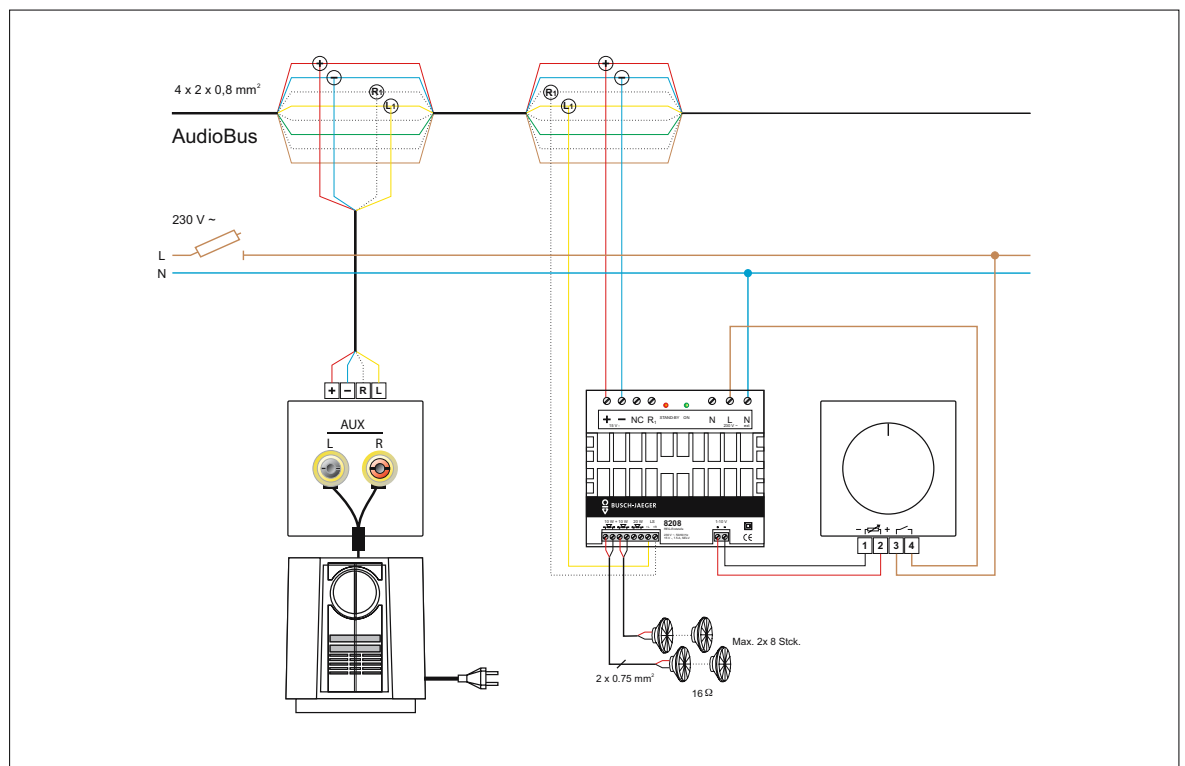
# On shop premises. Busch-AudioWorld® as a special solution for background music.

Busch-AudioWorld® is an easy-to-use and well-suited solution

for background music on shop premises e.g. boutiques.



Boutique



### Installation:

As shown in the application example, the MDRC amplifier 8208 can be controlled directly via the 1–10 V interface or alternatively via an amplifier insert. In both cases, the operating voltage for the audio input or amplifier insert is supplied via the AudioBus and fed by the MDRC amplifier. In stereo mode, up to 2x8 speakers with an output of 2x10 W can be connected. If higher outputs are required, the MDRC amplifier can be operated at 20 W in the bridge circuit. 2 MDRC amplifiers are then required for a stereo signal.

The terminals NC (not connected) and R1 (standby circuit, only required in combination with central unit) are not used in the application examples described here.

### Function:

In the first application example, the volume is controlled and the MDRC amplifier is switched on and off via the electronic potentiometer insert 2112 U-101. A signal source such as a DVD player or MP3 player can be played back with this setup.

If you wish to play back two different signal sources, as shown in the application example

below, the volume is controlled via the amplifier insert using the +/- push switches.

The AUX/FM push switch is used to switch the system channel i.e. signal source I or II. On the other hand, the PROG push switch is not operational in this example. Switching off the amplifier insert causes the MDRC amplifier to mute the connected speakers.

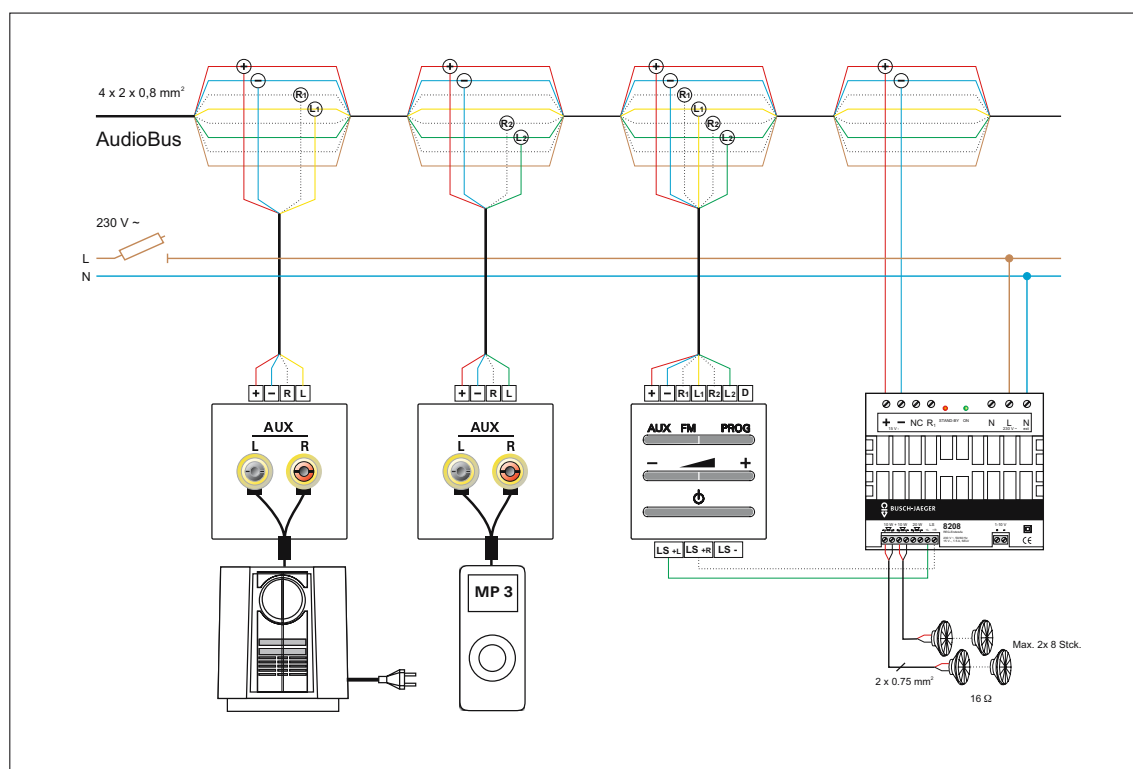
### Tip:

The 1–10 V control input of the MDRC amplifier can also be used for actuators from the building control product range. This allows the volume to be controlled

via Busch Powernet® KNX or Busch installation bus® KNX.

### Note:

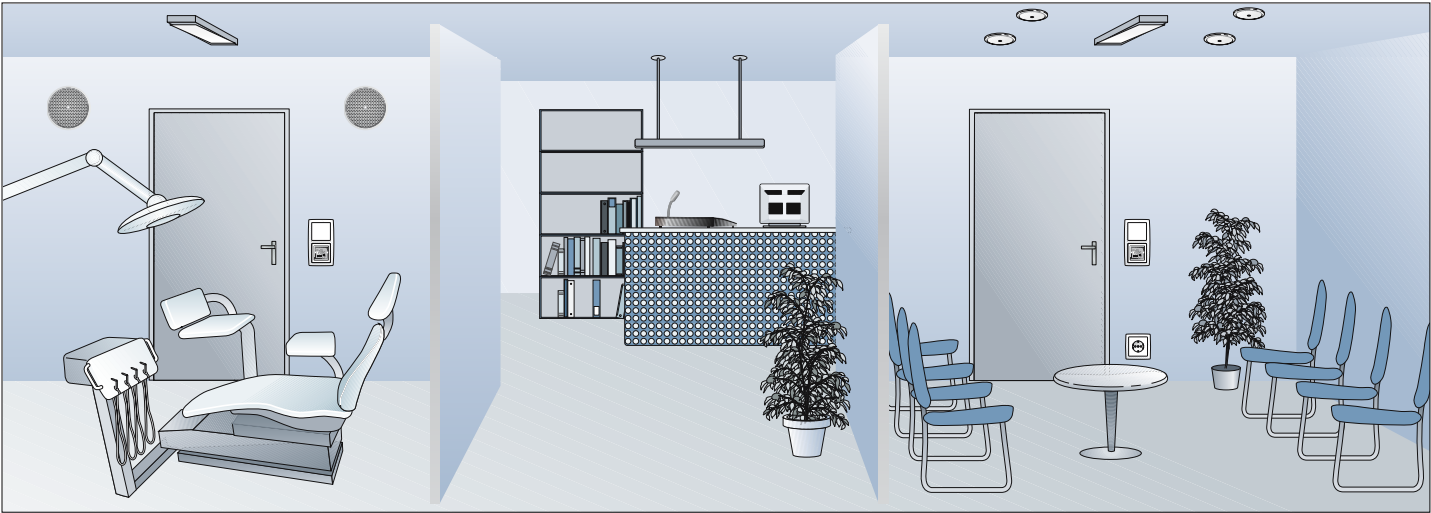
When connecting the neutral conductor, the N<sub>ext</sub> screw terminal must be used. The N-terminal is only used when operated with a central unit.



# Background music and voice announcements for doctors' surgeries and waiting rooms.

Busch-AudioWorld® offers many possible uses for the commercial sector.

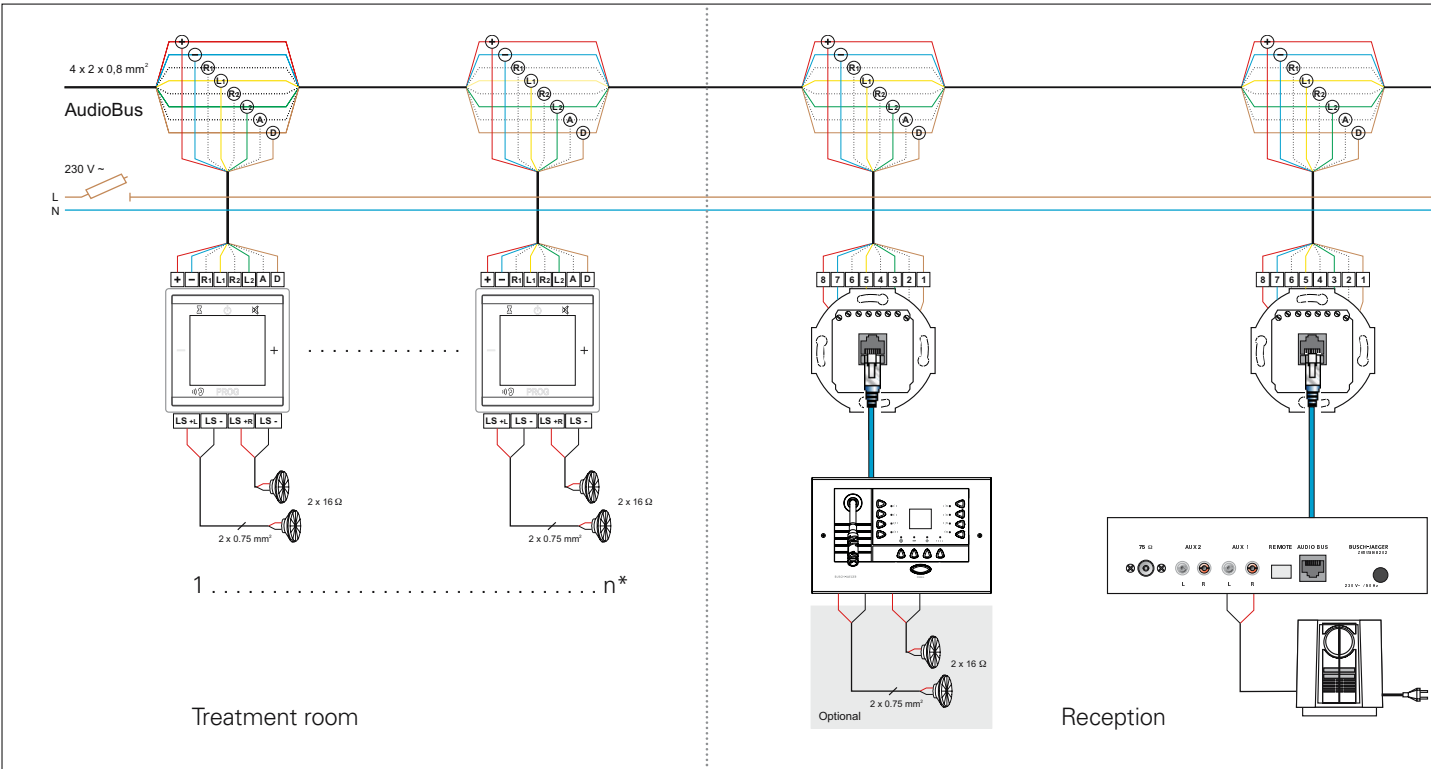
In doctors' surgeries or legal practices, it makes everyday work easier and allows for additional comfort.



Treatment room

Reception

Waiting room



Treatment room

Reception

\* Please note the table on system sizes.

Background music is today part of our expected experience in most doctors' surgeries and waiting rooms. To calm the mind, e.g. before entering the dentist's treatment room, or simply just to avoid the feeling of boredom while you wait, the Busch-AudioWorld® multiroom sound system is part of the comfortable equipment in any practice. The intercom function integrated into this system makes it possible to issue an announcement in up to 15 different zones or to make a broadcast to all intercom units of the system. This can be used, for example, to provide the patients in the waiting room with all of the information they need

or an announcement can be made from the consulting room to the reception area and vice versa. Communication between consulting rooms is also possible.

**Installation:**  
The Busch-AudioWorld® multiroom system can operate up to 5 system amplifiers from a central unit. The system can be extended to cover up to 20 rooms by installing MDRC power packs. The power packs are installed in suitable locations and are then simply wired in parallel to the AudioBus.

**Commissioning:**  
The setup procedure of the respective device must be performed when a device is commissioned or after a

reset. This allows all of the important parameters of the device to be set and a call zone to be assigned. For intercom amplifiers, the operating mode of the room monitoring function (transmitter or receiver) is also defined.

**Function:**  
When the "speak" button on the microphone console is pressed (the display surface must be pressed on the intercom amplifier), a brief audio signal prompts the user to speak. The background music in the previously selected call zone fades out and the voice message is output, even if the unit is switched off. A call zone can consist of one or more rooms.

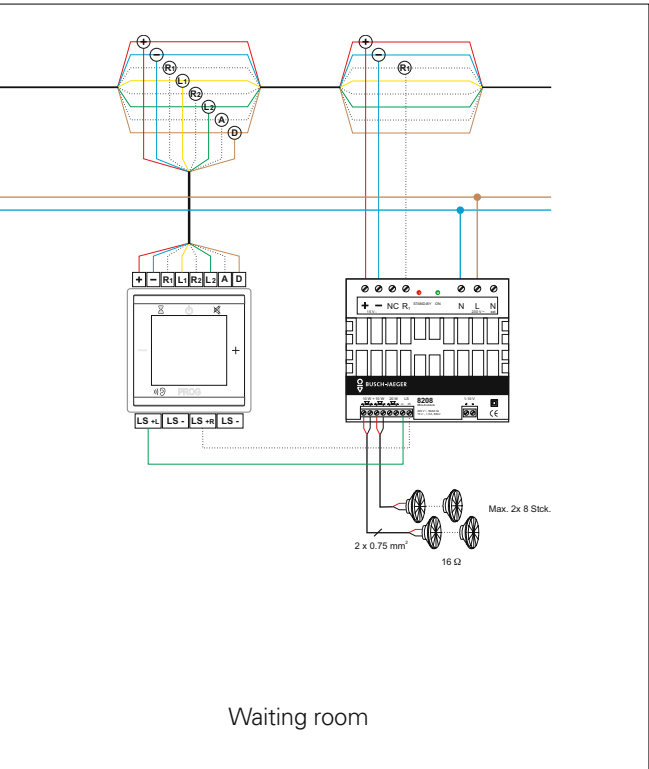
A "Do not disturb" function can be activated in the menu to prevent unwanted calls. A symbol appears on the display to indicate that the "Do not disturb" function is active on this device.

The programme/channel switching, room monitoring, alarm and automatic power-off functions can also be used.

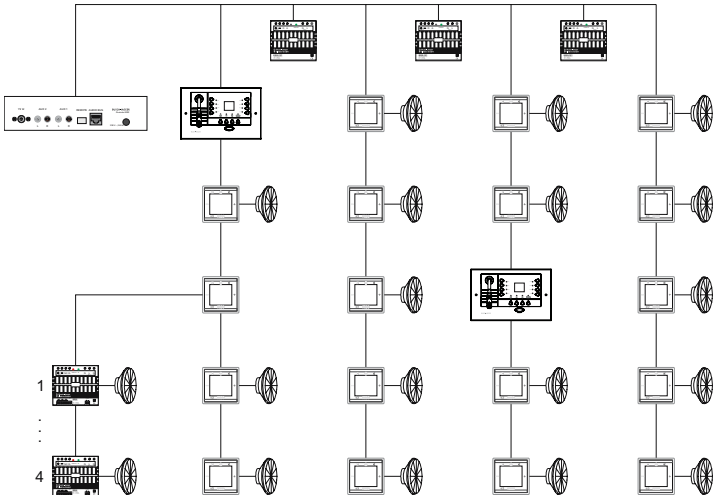
**Tip:**  
To avoid feedback, the broadcasting volume can be set separately for each intercom amplifier insert. The +/- push switches are used to adjust the intercom volume during an announcement. This volume value is stored regardless of the vol-

ume for background music.

**Note:**  
When an intercom amplifier insert is installed in a plastic surface-mounted housing, this can change the acoustic properties during voice transmission.



Schematic diagram



System size:

Number of rooms	Required MDRC power packs	Use of MDRC amplifiers possible
5	-	yes
10	1	yes
15	2	yes
20	3	yes

# Technical data

	<p>Central unit with RDS tuner</p> <p>Part no.: 8202</p>  <p>Central unit in desktop design for setting up multiroom sound systems. With integrated FM-RDS tuner (provides a central radio station to the system), 8 radio stations can be saved, 2 separate stereo audio channels and an additional voice channel. 2 external sources can be connected via cinch jacks (1 source can be used as alternative to the tuner). Operating voltage supply for max. 4 amplifier inserts, can be extended with MDRC power pack. Central intercom and time management system.</p> <p>With automatic surge recognition.</p>	<p>MDRC power pack</p> <p>Part no.: 8209-101</p>  <p>Power pack in series connection. To extend the max. number of amplifier inserts to at a central unit by 5 additional devices. Parallel connection to central unit feed conduit possible. Standalone operation possible i.e. can be used without central unit.</p> <p>Max. 3 additional MDRC power packs possible per system.</p>	<p>MDRC (modular DIN rail component) amplifier</p> <p>Part no.: 8208</p>  <p>Amplifier and power pack for installation on mounting rails. For extending system up to 16 speakers in combination with amplifier inserts (booster operation). Integrated 1–10 V interface for volume control. Bridge operation possible. Automatic mono/stereo detection and standby function.</p> <p>Max. 4 MDRC amplifiers possible per system amplifier (8205, 8211 U, 8214 U).</p>	<p>Busch electronic potentiometer insert</p> <p>Part no.: 2112 U-101</p>  <p>Potentiometer insert with rotary control for controlling electronic devices with 0/1–10 V control output.</p> <p>Can be used for volume control and to switch amplifier ON/OFF in combination with MDRC amplifier.</p>
Operating voltage:	230 V ~ ±10 %, 50 Hz	230 V ~ ±10 %, 50 Hz	230 V ~ ±10 %, 50 Hz	230 V ~ ±10 %, 50 Hz
Rated current max.:	1.2 A at 15 V -, SELV	1.5 A at 15 V -, SELV	1.5 A at 15 V -, SELV	4 A
Power loss:	< 5 W/VA	< 4 W/VA	< 5 W/VA	0 W/VA
Input sensitivity:	1 V <sub>ss</sub> , cinch connection	-	1.5 V <sub>ss</sub> AudioBus	0/1–10 V -, 50 mA
Power:	-	-	2 x 10 W (2 ) or 1 x 20 W (4 )	700 W/VA
Speaker impedance:	-	-	2 bis 16 for stereo 4 bis 16 for mono	-
Frequency response:	-	-	20 Hz to 20 KHz	-
Reception frequency:	87.50 – 100.80 MHz	-	-	-
Connections:	AudioBus: RJ 45 jack Antenna: IEC plug NF: 4x Cinch	Screw terminals for 2 lines, max. 6 mm <sup>2</sup>	Power supply: screw terminals for max. 2 x 6 mm <sup>2</sup> , signal lines: max. 4.5 mm <sup>2</sup>	Screw terminals for 2 lines, max. 2.5 mm <sup>2</sup>
Installation type:	-	Latching onto 35 mm DIN rails	Latching onto 35 mm DIN rails	Screw-type terminals, with claw
Protection type:	IP 20	IP 20	IP 20	IP 20
Colour:	Front: plexiglass Upper shell/lower shell/rear: aluminium, black anodised	black	black	black
Temperature range:	5°C to 40°C	5°C to 40°C	5°C to 40°C	0°C to 35°C
Dimensions (H x W x L):	53 x 203 x 201 mm	110 x 125 x 70 mm, 7 TE	110 x 125 x 70 mm, 7 TE	71 x 71 x 33 mm
Installation depth:	-	-	-	33 mm

# Preamplifiers/amplifiers

Microphone console	Amplifier insert	Intercom amplifier insert with display	FM audio input	FT DigitalRadio
Part no.: 8205	Part no.: 8211 U	Part no.: 8214 U	Part no.: 8210 U	Part no.: 8215 U
				
System amplifier with desk-mounted design. With gooseneck microphone and display (RDS-capable). For voice announcements to 15 individual call zones and broadcast function. The device has 8 push switches for direct call zone preselection. For individual volume control and switching between system channels I & II (radio or external music source). Re-routing of central radio programme possible. With sound control function, automatic mono/stereo detection and shutoff of internal speaker when external speakers connected. With time display and room monitoring function.	Flush-mounted system amplifier insert for individual volume control and switching between system channels I & II (radio or external music source). Re-routing of central radio programme possible. Mono/stereo operation selectable via link. With automatic sound correction (loudness) and selectable power-off function after 30 min. (automatic sleep function).  With adapter ring for cover plate 8251-xxx	Flush-mounted system amplifier insert with intercom function. With integrated microphone and display (RDS-capable). For voice announcements to 15 individual call zones and broadcast function. For individual volume control and switching between system channels I & II (radio or external music source). Re-routing of central radio programme possible. With sound control function, automatic mono/stereo detection, time display and room monitoring function. With additional programmable alarm and power-off function (automatic sleep function).  With adapter ring for cover plate 8251-xxx	Audio input for external music source feed e.g. CD/DVD or MP3 player to Busch-AudioWorld® system. Can also be used combination with FT DigitalRadio.  With adapter ring for cover plate 8251-xxx  <b>Note:</b> The corresponding channel lines (R1/L1 or R2/L2) must be disconnected at the universal data connection box when combined with a central unit.	Illuminable FM stereo RDS tuner with 8 memory spaces and external input for connecting an additional music source. Time display, programmable alarm and power-off function. Mono and stereo operation possible. Connection of external antenna possible. Used in combination with a Busch-AudioWorld® system as amplifier insert.  <b>Note:</b> Also available as a set with speaker insert 8223 U, twin styling frame and corresponding cover plates under part no. 8210-84.
15 V -, SELV 200 mA -	15 V -, SELV 275 mA -	15 V -, SELV 120 mA -	15 V -, SELV 40 mA -	230 V ~ ±10 %, 50 Hz
-	-	-	-	< 0.5 W/VA
3 V <sub>SS</sub>	3 V <sub>SS</sub>	3 V <sub>SS</sub>	1 V <sub>SS</sub>	3 V <sub>SS</sub>
2 x 1 W (RMS)	2 x 1 W (RMS)	2 x 1 W (RMS)	-	2 x 2 W (RMS)
8 to 16	8 to 16	8 to 16	-	4 to 8
40 Hz to 17 KHz	58 Hz to 17 KHz	20 Hz to 20 KHz	20 Hz to 20 KHz	100 Hz to 10 KHz
-	-	-	-	87.50 – 100.80 MHz
AudioBus: RJ 45 jack Speaker: Screw connector.	Screw terminals for max. 4.5 mm <sup>2</sup> -	Screw terminals for max. 4.5 mm <sup>2</sup> -	NF: 2 Cinch jacks AudioBus: screw terminals for max. 4.5 mm <sup>2</sup> -	Power supply: screw terminals for max. 1 x 2.5 mm <sup>2</sup> , signal lines: screw terminals for max. 2 x 0.5 mm <sup>2</sup>
-	Screw-type terminals, without claw	Screw-type terminals, without claw	Screw-type terminals, without claw	Screw-type terminals, without claw
IP 20	IP 20	IP 20	IP 20	IP 20
Front: aluminium, black	anthracite (as RAL 7021)	anthracite (similar to RAL 7021)	anthracite (as RAL 7021)	-
5°C to 40°C	5°C to 40°C	5°C to 40°C	5°C to 40°C	5°C to 40°C
85 x 248 x 175 mm	71 x 71 x 49 mm	71 x 71 x 49 mm	71 x 71 x 49 mm	71 x 71 x 36 mm
85 mm	32 mm	36 mm	34 mm	34 mm

# Speakers

Speaker insert  
2"  
Part no.:  
8223 U



Flush-mounted speaker insert, matched to FT DigitalRadio 8215 U. For installation in flush boxes as per DIN 49073-1.

Incl. 40 cm speaker connecting line

**Note:**  
Suitable cover is cover plate 8253-xxx

Speaker insert  
2"  
Part no.:  
8221 U



Flush-mounted speaker insert with broadband characteristic for installation in flush boxes as per DIN 49073-1. Matched to amplifier insert and intercom amplifier insert.

Incl. adapter ring

**Note:**  
Suitable cover is cover plate 8251-xxx

Built-in speaker  
5"  
Part no.:  
8222 EB



Built-in speaker with broadband characteristic for installation in flush-mounted boxes 8229/1 or hollow wall installation rings 8229/2. Matched to amplifier insert and intercom amplifier insert.

**Note:**  
Suitable cover is speaker grille 8228

Moisture-proof speaker  
5"  
Part no.:  
8224 EB








Moisture-proof built-in speaker with plastic membrane and broadband characteristic. Specially designed for use in moist areas such as showers, swimming baths, saunas and outside areas. For installation in flush-mounted boxes 8229/1 or hollow wall installation rings 8229/2. Matched to amplifier insert and intercom amplifier insert.

**Note:**  
Suitable cover is speaker grille 8227

Power:	2 W (RMS)	2 W (RMS)	6 W (RMS)	7 W (RMS)
Speaker impedance:	4	16	16	16
Frequency response:	200 to 20,000 Hz	150 to 16,000 Hz	72 to 12,000 Hz	84 to 16,500 Hz
Audio pressure:	87 dB (1W, 1m)	83 dB (1 W, 1 m)	93 dB (1 W, 1 m)	93 dB (1W, 1m)
Angle of radiation:	150° (at 4 kHz)	150° (at 4 kHz)	100° (at 4 kHz)	100° (at 4 kHz)
Connections:	Connectors for cable lugs  Screw-type terminals, without claw	Connection terminals for max. 4.5 mm <sup>2</sup>	Screw terminals for 2 lines, max. 1.5 mm <sup>2</sup>	Screw terminals for 2 lines, max. 1.5 mm <sup>2</sup>
Installation type:		Screw-type terminals, without claw	Latching into FT installation box 8229/1 and hollow wall installation ring 8229/2	Latching into FT installation box 8229/1 and hollow wall installation ring 8229/2
Colour:	black	anthracite (as RAL 7021)	grey	grey
Protection type:	IP 20	IP 20	IP 20	IP 20
Temperature range:	0°C to 40°C	5°C to 40°C	5°C to 40°C	-20°C to 55°C
Dimensions (H x W x L):	71 x 71 x 32 mm	71 x 71 x 49 mm	Ø 148 x 69 mm	Ø 148 x 69 mm
Drilling dimension:	-	-	-	-
Installation depth:	32 mm	34 mm	-	-



# Accessories

<p>Cover plate</p> <p>Part no.: 8251-xxx</p>  <p>Cover plate for amplifier/speaker insert and audio input.</p> <p>The cover plate is available for the following switch ranges:</p> <ul style="list-style-type: none"> <li>- Busch Duro 2000® SI</li> <li>- Busch Duro® SI Linear</li> <li>- Reflex SI</li> <li>- Reflex SI Linear</li> <li>- future® linear</li> <li>- <i>alpha exclusive</i>®</li> <li>- <i>alpha nea</i>®</li> <li>- solo®</li> <li>- Busch <i>axcent</i>®</li> <li>- pure stainless steel</li> <li>- carat®</li> </ul> <p><b>Note:</b> Installation is carried out via the adapter rings supplied with the built-in units.</p>	<p>Cover plate</p> <p>Part no.: 8252-xxx</p>  <p>Cover plate for FT DigitalRadio 8215 U.</p> <p>The cover plate is available for the following switch ranges:</p> <ul style="list-style-type: none"> <li>- Busch Duro 2000® SI</li> <li>- Busch Duro® SI Linear</li> <li>- Reflex SI</li> <li>- Reflex SI Linear</li> <li>- future® linear</li> <li>- <i>alpha exclusive</i>®</li> <li>- <i>alpha nea</i>®</li> <li>- solo®</li> <li>- <i>impuls</i></li> <li>- Busch <i>axcent</i>®</li> <li>- pure stainless steel</li> <li>- carat®</li> </ul>	<p>Cover plate</p> <p>Part no.: 8253-xxx</p>  <p>Cover plate for speaker insert 8223 U.</p> <p>The cover plate is available for the following switch ranges:</p> <ul style="list-style-type: none"> <li>- Busch Duro 2000® SI</li> <li>- Busch Duro® SI Linear</li> <li>- Reflex SI</li> <li>- Reflex SI Linear</li> <li>- future® linear</li> <li>- <i>alpha exclusive</i>®</li> <li>- <i>alpha nea</i>®</li> <li>- solo®</li> <li>- <i>impuls</i></li> <li>- Busch <i>axcent</i>®</li> <li>- pure stainless steel</li> <li>- carat®</li> </ul>	<p>Speaker grille, metal clad</p> <p>Part no.: 8228</p>  <p>Metal protective grille to cover the built-in speaker</p>	<p>Speaker grille, plastic</p> <p>Part no.: 8227</p>  <p>Plastic protective grille to cover the moisture-proof speaker 5". Specially designed for use in moist areas such as showers, swimming baths, saunas and outside areas.</p>
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-
Latching via adapter ring	Latching on to control cover	Spring catch	central screw-type terminals	central screw-type terminals
As FM range	As FM range	As FM range	white	white
-	-	-	IP 20	IP 20
-	-	-	5°C to 40°C	5°C to 40°C
-	-	-	ø 185 x 15 mm	ø 185 x 15 mm
-	-	-	-	-
-	-	-	-	-

# Accessories

## Flush-mounted wall box

Part no.:  
8229/1



Flush-mounted installation box for mounting one built-in speaker 8222 EB or moisture-proof speaker 8224 EB. The built-in speaker is latched into the box. The flush mounted installation box can be locked with the blind cover 8229/3 during pre-installation.

## Hollow wall installation

Part no.:  
8229/2



Installation ring for hollow wall mounting of built-in speaker 8222 EB or moisture-proof speaker 8224 EB. The speaker is latched into the installation ring. The hollow wall installation ring can be locked with the blind cover 8229/3 during pre-installation.

**Note:**  
Suitable for wall thicknesses of 5 to 35 mm or 35 to 55 mm (depending on the installation of the spring struts)

## Blind plate

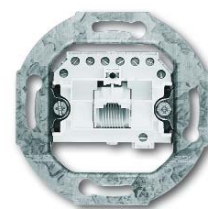
Part no.:  
8229/3



Dummy cover for covering pre-assembled flush-mounted installation boxes and hollow wall installation rings

## Universal data connection box with down-leading outlet

Part no.:  
0213



RJ 45 connection box, 8-pin, with down-leading outlet. For connecting central unit or microphone console to AudioBus.

The maximum electrical load of the contacts is 1.2 A.

**Note:**  
To fit cover plate 1803-xxx.

Connections:	-	-	-	Screw contacts for max. 0.75 mm <sup>2</sup>
Installation type:	Flush-mounted, optional via 3 screw holes	Spring struts, optional via 3 screw holes	Rotary latch	Screw and strut mounting
Colour:	white	grey	white	As FM range
Protection type:	IP 20	IP 20	IP 20	IP 20
Temperature range:	5°C to 40°C	5°C to 40°C	5°C to 40°C	5°C to 40°C
Dimensions (H x W x L):	ø 174 x 84 mm	ø 174 x 105 mm	ø 170 x 31 mm	71 x 71 x 29 mm
Drilling dimension:	ø 174 mm	ø 160 mm	-	-
Installation depth:	84 mm	110 mm	-	22 mm

# Accessories

Cover plate for universal data connection boxes  
Part no.: 1803-xxx



Cover plate for universal data connection boxes with down-leading outlet 0213.

The cover plate is available for the following switch ranges:

- Busch Duro 2000® SI
- Busch Duro® SI Linear
- Reflex SI
- Reflex SI Linear
- future® linear
- *alpha exclusive*®
- *alpha nea*®
- solo®
- *impuls*
- Busch *axcent*®
- pure stainless steel
- carat®

Cover plate with retaining ring  
Part no.: 2147 U-21x  
Part no.: 1751-xxx



Stereo speaker connection insert as per DIN 41529:1988-01, with centre plate for assembly in flush boxes as per DIN 49073-1.

For connection of 2 external speakers to amplifier inserts.

The cover plate is available for the following switch ranges:

- Busch Duro 2000® SI
- Busch Duro® SI Linear
- Reflex SI
- Reflex SI Linear
- future® linear
- *alpha exclusive*®
- *alpha nea*®
- solo®
- *impuls*
- Busch *axcent*®
- pure stainless steel
- carat®

Speaker connection box<sup>1)</sup>  
Part no.: 0247



Speaker connection insert with connection terminals for installation in flush boxes as per DIN 49073-1.

For connection of external speakers to amplifier inserts. Terminals (poles) labelled in colour

**Note:**  
Suitable for cover plate 2539-21x or 1766-xx.

Stereo speaker connection box  
Part no.: 0248



Stereo speaker connection insert with connection terminals for installation in flush boxes as per DIN 49073-1.

For connection of 2 external speakers to amplifier inserts. Terminals (poles) labelled in colour

**Note:**  
Suitable for cover plate 2539-21x or 1766-xx.

Cover plate for German telephone TAE insert  
Part no.: 2539-21x  
Part no.: 1766-xxx



Cover plate for German telephone TAE inserts and speaker connection box 0247/0248.

The cover plate is available for the following switch ranges:

- Busch Duro 2000® SI
- Busch Duro® SI Linear
- Reflex SI
- Reflex SI Linear
- future® linear
- *alpha exclusive*®
- *alpha nea*®
- solo®
- *impuls*
- Busch *axcent*®
- pure stainless steel
- carat®

-	Rear screw contacts for max. 4 mm <sup>2</sup> , single wired	Rear screw contacts for max. 10 mm <sup>2</sup> , front connection terminals	Rear screw contacts for max. 10 mm <sup>2</sup> , front connection terminals	-
Screw-type terminals	Screw and strut mounting	Screw and strut mounting	Screw and strut mounting	Screw-type terminals
As FM range	As FM range	-	-	As FM range
-	IP 20	IP 20	IP 20	-
-	-	-	-	-
-	71 x 71 x 31 mm	71 x 71 x 43 mm	71 x 71 x 43 mm	-
-	-	-	-	-
-	23 mm	31 mm	31 mm	-