



Audio

Installation Manual



Historical

Version	Date	Author	Changes
1.0	2010-10-21		-
1.1	2015-05-14		Minor changes
1.2	2018-09-13		Branding actualization
1.3	2021-07-01		Company data actualization

Index

Historical.....	2
Index.....	2
Introduction.....	3
Audio System.....	3
Cables.....	3
Arquitecture of the Installation.....	4
Connections and Protections.....	5
Configuration.....	7
Measurements and Troubleshooting.....	9

INTRODUCTION

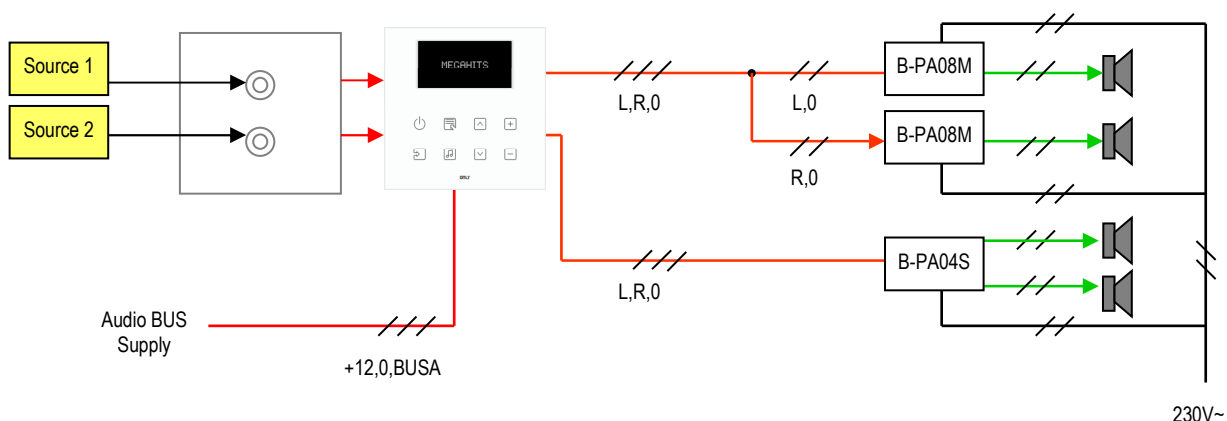
This document is intended to orientate the work of the installer of the ONLY audio system on the site. The next chapters explain how the installation should be made, the precautions to take and the way to test and configure the system.

It is essential to respect it in order to achieve a proper and trouble-free installation.

AUDIO SYSTEM

The installation of an audio system is one of the most critical ones. Just a bad connection of a ground, an inadequate cable or a bad choice of system architecture may compromise immediately the sound quality. Please respect the contents of this manual in order to obtain the desired sound quality.

The ONLY audio system comprises audio units, touch panels with OLED display, amplifiers, power supply and audio BUS driver with connections to the automation BUS.



The audio unit receives the 12V power from the D-PS12V15W installed in the switchboard and the audio BUS that comes from the feeder D-BUSAUDIO.

Two audio inputs by 3.5mm jack or RCA connectors can be fixed on an OT-COVER panel, being then connected by cable to the inputs IN1 and IN2 existing in the audio unit.

The unit C-FMBT-2Z has local FM RDS tuner, 2 stereo audio inputs, volume control for 2 separate zones, Bluetooth, alarm clock and timer.

The amplifier is connected to the end of the output cable, near the speakers, and it is supplied by 230V~.

The unit C-FMBT-C has only one zone (OUT1), the output OUT2 is a line output. This output is intended to distribute the sound for the remaining parts of the facility.

CABLES

All the cables of the audio system must be of the type LIYCY, i.e., shielded cables with a multi-wire shielding.

In a distributed sound installation, it is required that the power supply and BUS (12V, 0V, B) use a different LIYCI cable of the one carrying the audio signals (L, R, GND). Just passing one of them by an external wire or in another cable may cause noise in the installation.

The connection of the shielding to earth must also be carried out on one side of the cable. The shielding should not be used as a conductor for the earth.

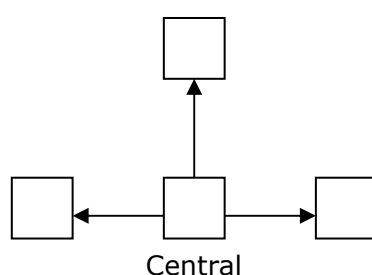
ARCHITECTURE OF THE INSTALLATION

Generally, an audio system pretends to distribute the sound of a local or central source to any part of the house. The distribution of a source to the rest of the house is very critical from the standpoint of cable and noise which can be “caught” by the sound installation.

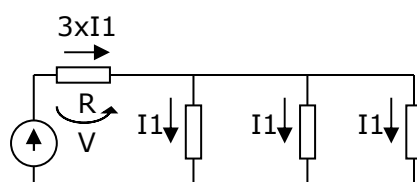
Sound distribution in star form

The sound distribution of the central source to the other units must be done as a “star”, this means that a cable must be connected from the source to each unit in the house, and never a cable connecting one unit with the other and so on.

The previous rule is critical to avoid background noise. If not, the noise from the digital part of a unit will be audible in the next unit, resulting in an annoying background noise in sound, even with the volume set to zero. It is suggested therefore that not only the distribution of the sound signal, but also of the power and BUS is made using the same architecture.



For the distribution of sound through the house it is necessary to understand that a sound source (e.g. CD player) provides a certain electric current (I_1) when connected to a sound unit.



So, if we increase the number of audio units connected to the same source, we are increasing the current we are asking for at input. As the source has a certain impedance R , we have a voltage drop.

$$V = I \times R$$

That is, if we have 3 audio units we have three times more loss at the source than if we had only one unit. This loss is imperceptible for a few units (3 or 4), because normally the input impedance of the audio units is much higher than the output impedance of the source (typically a ratio 1:10).

When more units are used, this loss causes distortion that starts to be audible in the sound.

This effect almost disappears if the output impedance of the source is very low. This lowering is achieved using an intermediate unit equipped with a line buffer.

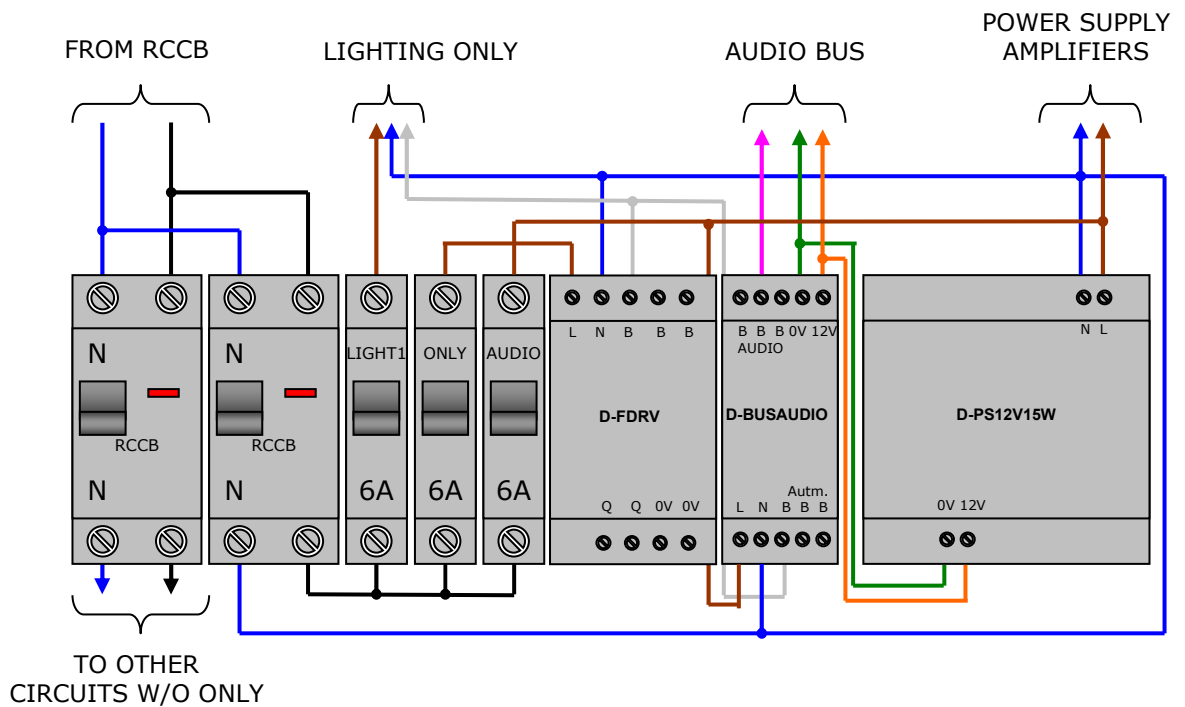
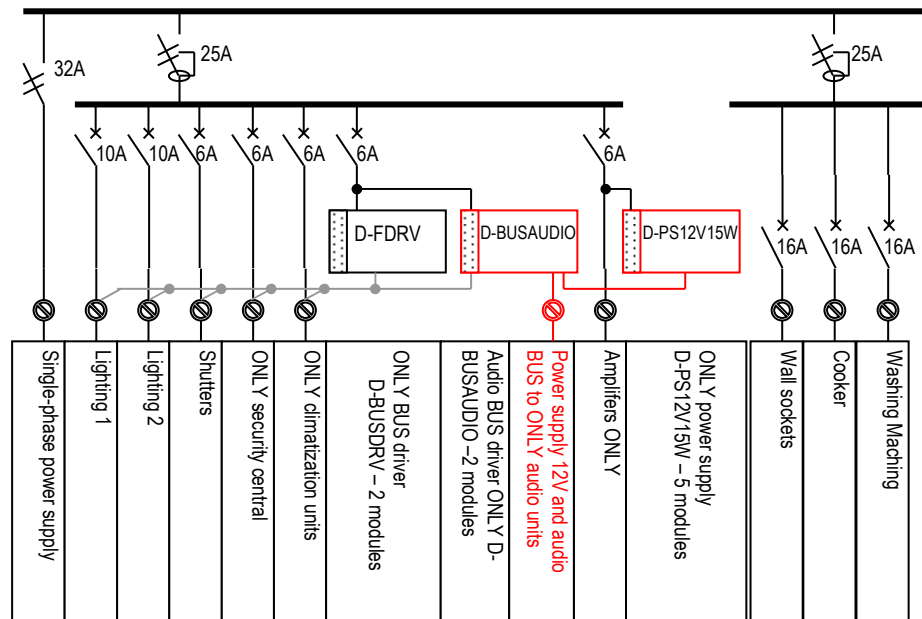
The good news is that all ONLY audio units are equipped with these line buffers, no matter if they are regulated or line level.

In general, a normal audio source (e.g. CD player) can feed up to 4 ONLY audio units without significant quality loss. For more than this, a C-FMBT-C unit should be used as a central, distributing its line output (OUT2) to the other units in the facility. This way the central unit provides the selected audio source to the rest of the facility.

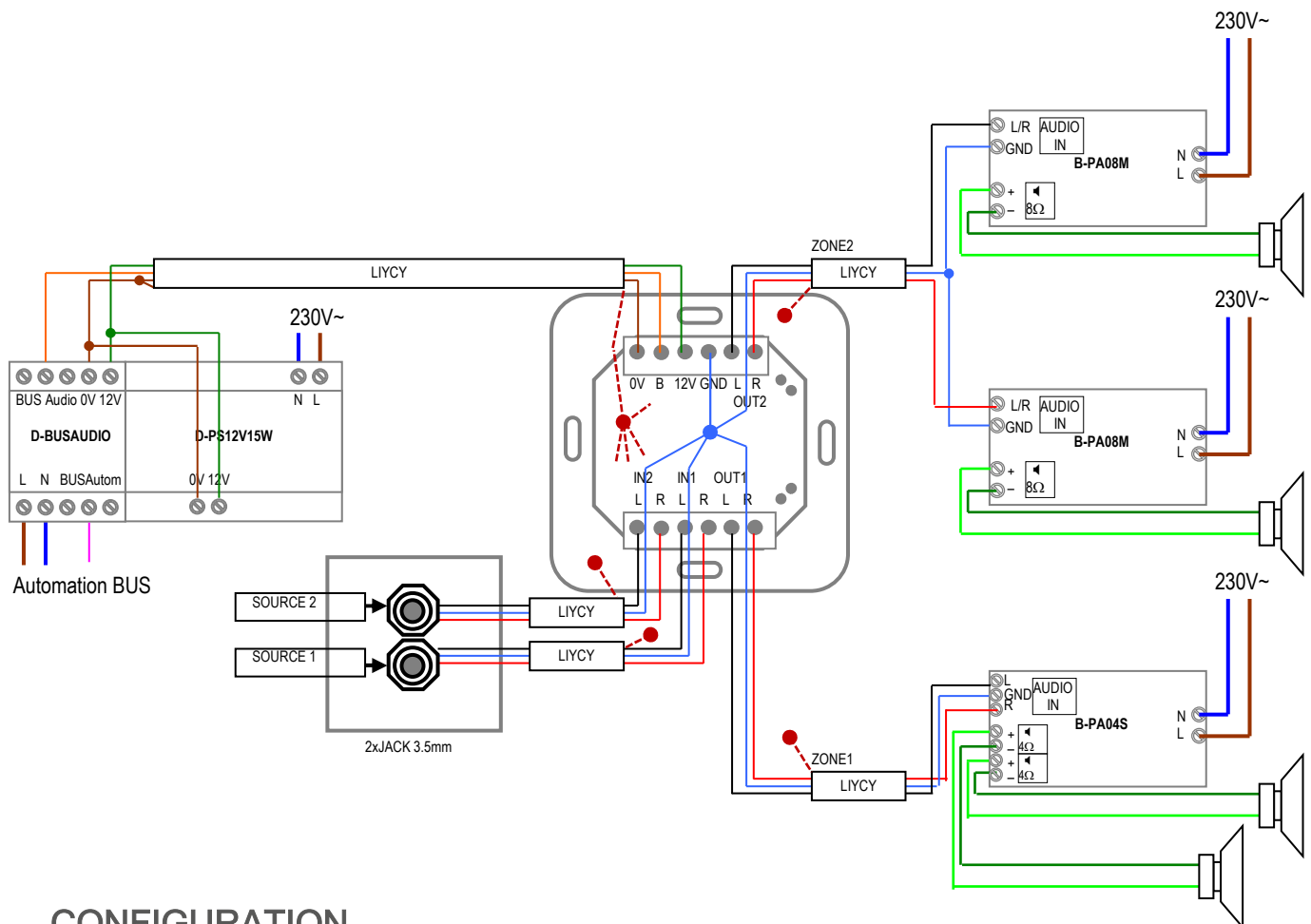
When there is audio on more than one floor, a circuit breaker should be provided in the switchboard to protect the feeding of the amplifiers of the floor: one should never bring phase and neutral of the sound of the lower floor up to this floor.

The units continue to receive the sound BUS at 12V from the downstairs floor.

The diagram of the switchboard is as follows:



Each audio unit has the following connections:



CONFIGURATION

The ONLY audio units can be controlled by the automation buttons, commands from the remote controls, security system or from computers or smart phones. The functions that can be controlled remotely are:

- switching on and off
- Volume control of zone 1
- Volume control of zone 2
- Input selection
- Preset selection

Pressing PROG on the audio unit repeatedly switches between the following possibilities:

- | | |
|----------|--|
| P ON/OFF | programming buttons to switch on, off, scenarios |
| P PRESET | programming buttons to select presets |
| P VOL1 | programming buttons for volume zone 1 |
| P VOL2 | programming buttons for volume zone 2 |
| P INPUT | programming buttons for input selection |

Holding down the PROG key for more than 1 second changes the first letter P to E, allowing erasing instead of programming.

We now present the procedures for the most common cases:

You wish to primarily control the volume of the other side of the bed, for example. For this, proceed as follows:

1. Choose the command ON/UP for the button that you want to turn up the volume and the command OFF/DOWN for the button that you want to lower the volume.
2. Press repeatedly PROG until P VOL1 appears on the display (3 times).
3. Now press the button that you wish to lower the volume.
4. Press again repeatedly PROG until P VOL1 appears on the display (3 times).
5. Now press the button that you wish to turn up the volume.

Even with the unit off, pressing the button that is programmed to turn up the volume switches the unit on and the volume is set to the last selected level before switching off. If you press the button to lower the volume and do not stop before reaching volume 0, the unit is switched off.

To program buttons to control the audio unit in the bathroom (zone 2) proceed as follows:

1. Choose the command ON/UP for the button that you wish to turn up the volume and the command OFF/DOWN for the button that you wish to lower the volume.
2. Press PROG repeatedly until P VOL2 appears on the display (4 times).
3. Now press the button that you wish to lower the volume.
4. Press again repeatedly PROG until P VOL2 appears on the display (4 times).
5. Now press the button that you wish to turn up the volume.

Also, in this case the unit switches the unit on and turns up the volume or lowers the volume and switches off completely.

If you now wish to define a button to select a preset, proceed as follows:

1. Press PROG repeatedly until P PRESET appears on the display (2 times).
2. Now press the button you wish to use to select a preset.

In this case the command that the button sends is irrelevant.

If you now desire to define a button to select an input, proceed as follows:

1. Press PROG repeatedly until P INPUT appears on the display (5 times).
2. Now press the button you wish to select the input.

In this case the command that the button sends is also irrelevant.

If you wish to add an audio unit to the “coming home” scenario, proceed as follows:

1. Choose the command SCENARIO for the button you wish to control the “coming home” scenario.
2. Press PROG until P ON/OFF appears on the display (1 time).
3. Now press the scenario button.
4. Switch on the unit, select the desired preset or input and adjust the volume. If desired, you can also switch on the sound in zone 2 by adjusting the respective volume.
5. Now, keep the scenario button pressed during more than 5 seconds: you will hear a long beep.

From now on, when pressing the scenario button, the preset, the input and the set volume is selected. Note that you can also memorize the scenario with the unit switched off, switching the sound always off whenever the button is pressed.

MEASUREMENTS AND TROUBLESHOOTING

Once all units have been installed and connected the system is ready to receive power supply.

The power supply line to the units must be 12V, as is the case for the BUS line.

If there is a buzz in the sound when the display of the unit is switched on, it is because the digital and analogue grounds are connected: separate them and the noise disappears.

Clicks can appear in the sound when a shutter or light is switched on. To resolve this situation a filter in the respective circuits should be used. Usually, an X2 capacitor 100nF mounted next to the load causing the noise (e.g. lamp or shutter) should filter out the switching noise.