CMS-II
Small Office Sound Masking System

User Guide

V20220414

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1   Introduction

Congratulations for purchasing the **CMS-II** Sound Masking System. This system is a complete sound masking system, simple and easy to use. It is offered at a very competitive cost. The system can generate a good masking spectrum in almost any offices, health care facilities, call centers, etc. The broad range of adjustments allows to use the **CMS**-**II** with either regular plenum loudspeakers, or surface-mounted loudspeakers in areas with drywall ceiling.

Each **CMS-II** controller units provide:

- Up to 12 speakers per channel
- Up to 12 preset EQ (Closed office, Open ceiling, etc.)
- LCD display
- Touch screen control interface
- Manual adjustment of volume
- Manual adjustment of bass and treble
- Stereo music input & mixer
- Fire alarm relay to mute the outputs
- Adjustable ramp-Up (1 day to 4 weeks)
- Password locking code
- Desktop, wall suspended or wall flush mounting

The **CMS-II** unit is shipped with the following components:

- The unit in the desktop format (the back cover can be removed to convert the unit to the wall-mount format).
- A 24 VDC power supply with a circular connector.
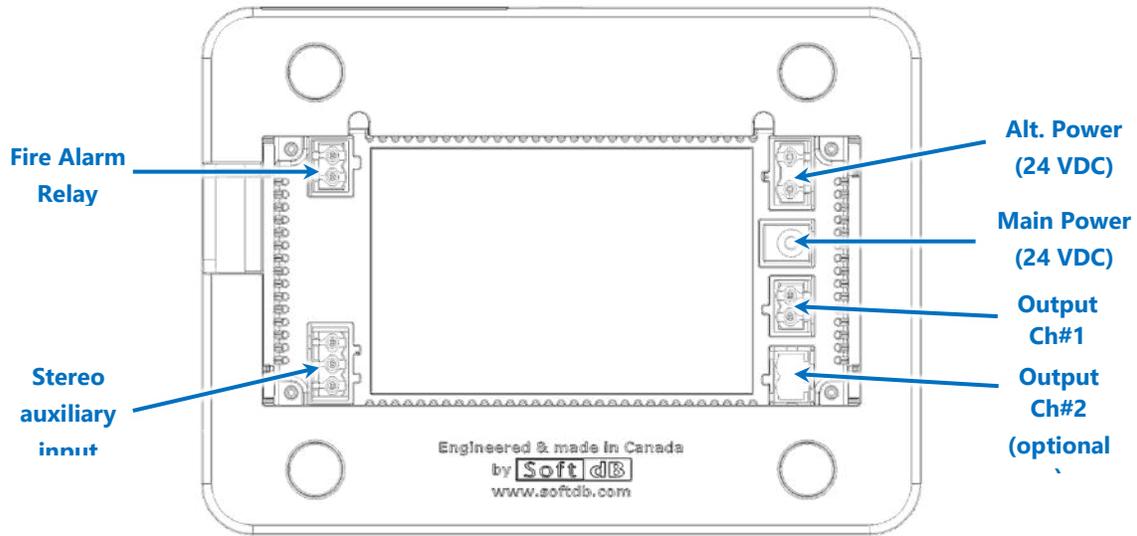- All screw connectors for the inputs and outputs.

2   Specifications

Speaker Outputs (Zones)	CMS-II-2Ch	CMS-II-1Ch
Nb Outputs (Zones)	2	1
Max Nb Speakers/Output[1]	12[1]	
Connector	2-pos. screw terminal	
Sound Masking		
Volume	±10 dB with respect to selected pre-set equalizer	
Equalizer	12 pre-set equalizers to fit the sound masking environment and ±5dB Bass/Treble	
Volume Ramp-Up	User defined, 1day to 4 weeks	
Music and Paging		
Input	1 (Stereo, ±1.5V range)	
Connector	3-pos. screw terminal (Left, Gnd, Right)	
Mixer	Independent for each zone	
Volume	0-100% in 1% step	
Equalizer	±5dB Bass/Treble	
Emergency Mute Relay		
Input	1	
Connector	2-pos. screw terminal, isolated	
Function	Mute sound masking (and music/paging if required), for UL2572 compliance	
Power	CMS-II-2Ch	CMS-II-1Ch
Rated Power	50W	25W
Operating Voltage	24V	
Connectivity	Barrel connector or 2-pos. screw terminal for wall-mount configuration	
Physical		
Size	168mm x 124mm x 47mm (6 5/8" x 4 7/8" x 1 13/16")	
Weight	450g (1.0lb)	
Mounting Configuration	Desktop, Wall-mount (with built-in key-holes), or Flush-mount[2]	
Warranty		
Warranty	5 years	
Certifications – ETL Listed 3191772		
UL 62368– Standard for Audio, Video and Similar Electronic Apparatus – Safety Requirements		
FCC – EN 55103-1&2 – Electromagnetic compatibility-Product family standard for audio, video, audio-visual and entertainment lighting control apparatus for professional use - Part 1: Emissions, Part 2: Immunity		
Related ASTM Standards		
ASTM E1374-06 (11) – Standard Guide for Open Office Acoustics and Applicable ASTM Standards		
ASTM E1573-09 – Standard Test Method for Evaluating Masking Sound in Open Office Using A-Weighted and One-Third Octave Band Sound Pressure Levels		
ASTM E1130-08 – Standard Test Method for Objective Measurement of Speech Privacy in Open Offices Using Articulation Index		
ASTM E2638 – Standard Test Method for Objective Measurement of Speech Privacy Provide by Closed Rooms		

2.1   Connectors Descriptions

2.1.1   Back Connectors

Power (24 VDC)

The **CMS-II** is shipped with a power pack as the default power source. Connect the circular tip of the power pack to the main power connector.

The alternative screw connector can be used to power the **CMS-II** with a remote 24VDC power-supply.

Output Connectors

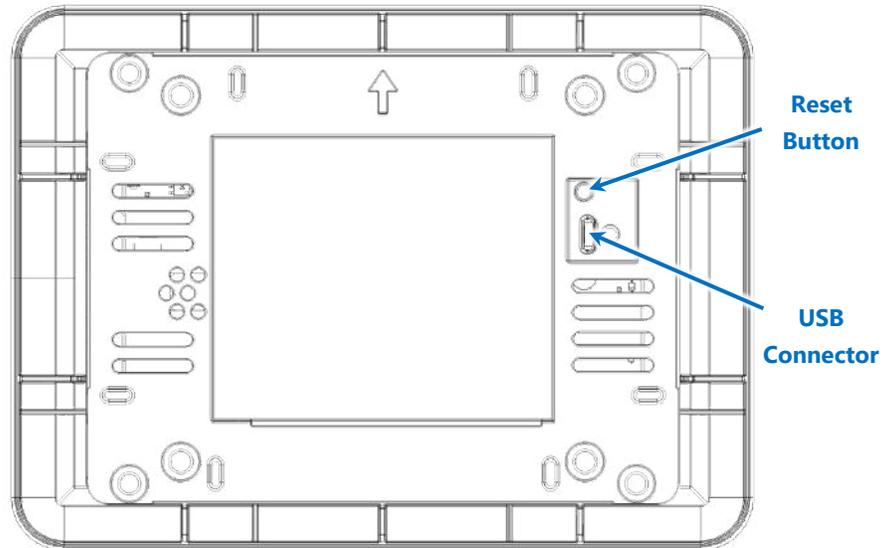Connect the loudspeakers directly to theses connectors.

Stereo Auxiliary Input

Music or paging signal can be fed to the **CMS-II** unit through this connector.

Fire Alarm Relay

This relay mutes the masking and auxiliary signals if closed.

2.1.2 Front Connectors (Under front cover)

USB Connector

This USB connector is under the front cover and it must be used to make firmware update. Contact Soft dB to obtain the PC software to update the firmware.

Reset Control

This button can be used to reset the unit as an alternative to the power recycle if the power pack is not accessible.

3 Installation

3.1 Safety Instructions

- Read and keep these instructions.
- Heed all warnings and follow all instructions contained within this manual.
- Install in accordance with the manufacturer's instructions.
- Clean only with dry cloth.
- Do not install near water.
- Do not block any ventilation openings.
- Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
- Use the power cord with sealed mains plug appropriate for your local main supply as provided with the equipment. If the provided plug does not fit into you outlet contact the manufacturer.
- Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.
- Only use attachments and accessories specified by the manufacturer.
- Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as when the power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.
- Operate the product only with the voltage specified on the unit. Fire and/or electric shock may result if a higher voltage is used.
- Do not modify, kink, or cut the power cord. Do not place the power cord in close proximity to heaters and do not place heavy objects on the power cord and/or the product itself, doing so may result in fire or electrical shock.
- Be sure the installation of this product is stable, avoid slanted surfaces as the product may fall and cause injury, property damage, electrocution and/or fire.
- Do not open the cover.

3.2 Securing the Controller

3.2.1 Desktop Installation

Most **CMS-II** installation will use the desktop version as illustrated below.

For the wall mounted installation, there are two options:

3.2.2 Wall-Mount Installation

Use two screws on the wall and suspend the **CMS-II** unit with the two notches on the back on the unit:

Notch to suspend the unit on the wall

![Soft dB logo]

3.2.3   Flush-Mount Installation

To install the **CMS-II** unit in the wall:

1) Unclip the front cover of the **CMS-II** by grabbing firmly the front cover in one hand and the back cover in the other hand.
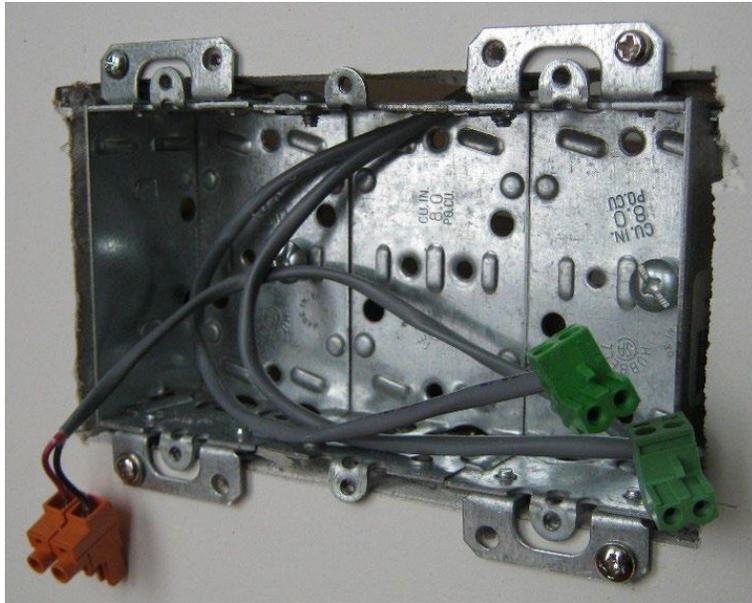

2) Remove the 4 screws like illustrated below. The CMS-II internal board will then be detached from the back cover.

3) Install a 3 gang electrical box in the wall and insert the 24 volt power line and speaker line(s). Terminate the speaker and 24 volt lines with Pheonix connectors.
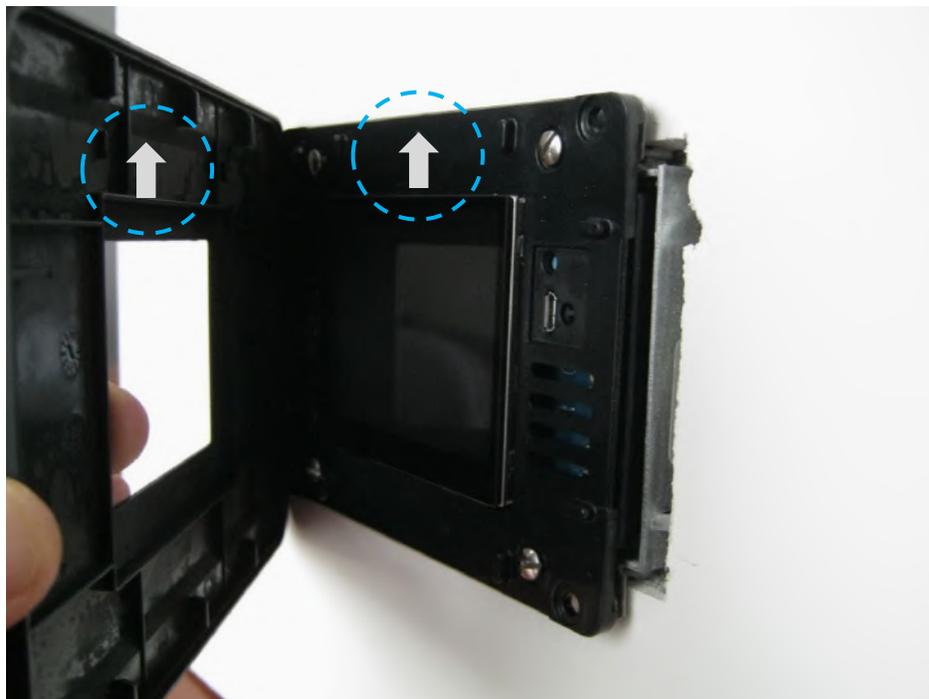

4) Connect the power and speakers connectors to the **CMS-II** internal board.

5) Make sure that the arrow of the CMS-II internal board is up and insert the **CMS-II** internal board in the electrical box using the inner holes as illustrated below. Use standard screw for electrical boxes (*these screws are not provided with the **CMS-II***).

6) Aligned the front cover with the **CMS-II** internal board, making sure that the arrows on both are pointing up. Press firmly to clip the front cover to the **CMS-II** internal board.
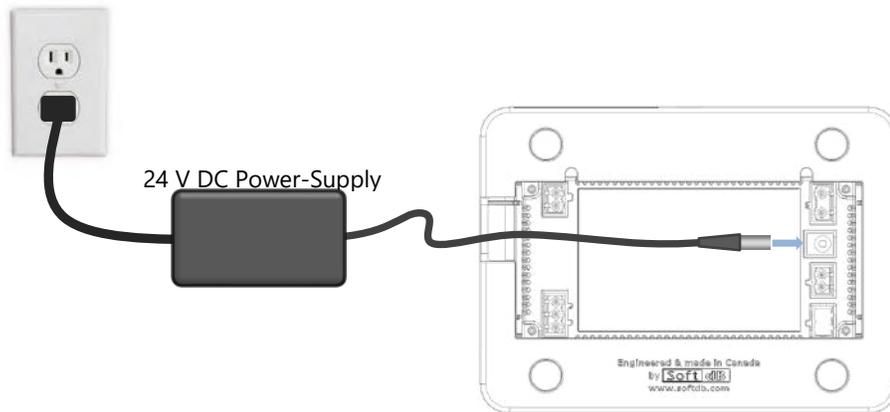
7) End Result

Note: Follow these instructions if you need to re-install the back cover to have a desktop or wall-mount configuration.

1) Remove the **CMS-II** internal board from the 3-gang electrical box or the wall;
2) Re-screw the **CMS-II** internal board to the back cover;
3) Clip the front cover to the back cover by making sure that the arrows of the front cover and internal board are pointing in the same direction and by press firmly on the 4 corners of the back of the unit on a table as illustrated below.

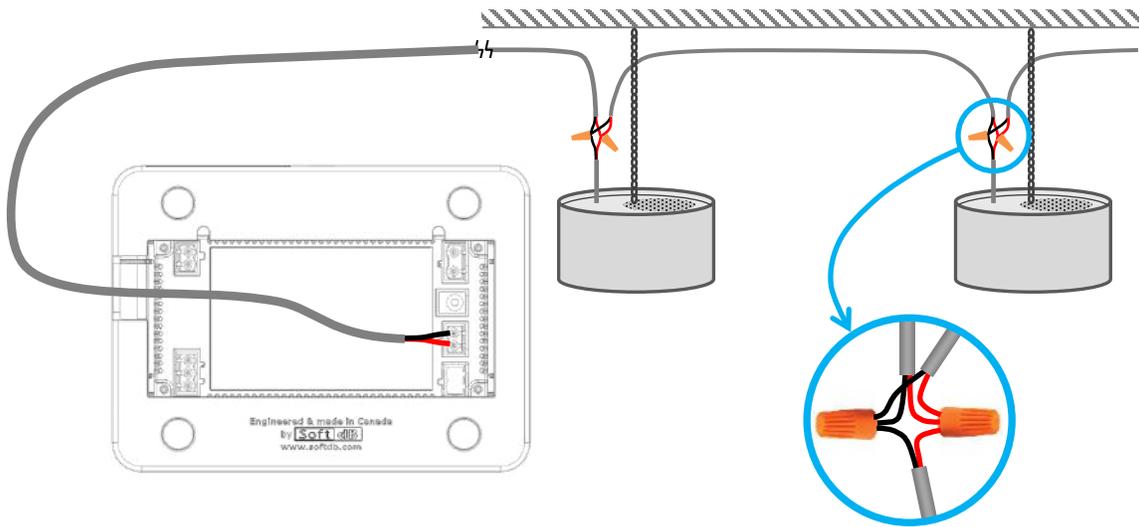## 3.3   Powering the Controller

Connect the barrel connector from the power-supply to the corresponding connector on the controller.

3.4   Connecting Loudspeakers

Sound masking loudspeakers are typically suspended from the deck, above the acoustic ceiling tiles. Different types of loudspeaker can be used depending on the installation requirement. Refer to the loudspeaker user guide for more information.

Use 18-AWG 2-Conductors wire to connect the loudspeakers to the CMS-II controller. Use plenum rated cable and follow local regulations. Typical wire will be 18/2 FT4. All speakers on a channel are connected in parallel using twist-on connectors.
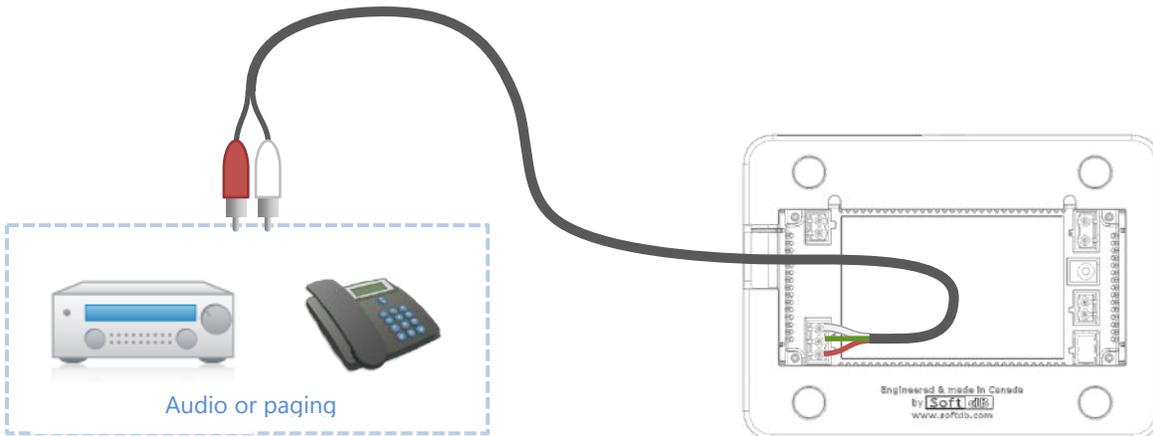

Up to 12 speakers can be connected to each output. Some restrictions apply on certain types of speakers:

Speaker Load Specifications

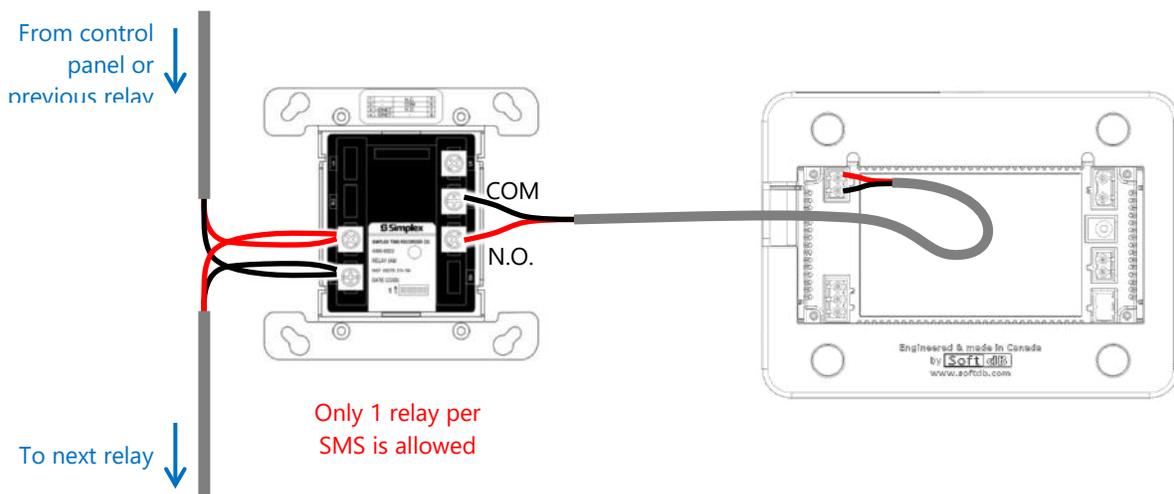| Speaker Model	SMS-STR	SMS-DIR	SMS-SURF4	SMS-FLAT	SMS-HDN	SMS-VIBX
Max. Nb. Speakers per Output	12	12	12	12	6	6
Tap Setting	0dB (4W)	4W	4W	4W	---	0dB

3.5　Connecting Music and Paging Sources

The auxiliary input can be used to connect any line-level music or paging source to the system. The auxiliary input range is ±2 V.

Audio or paging

When telephone paging is required, it is recommended to use a telephone interface such as the BOGEN UTI312. Refer to the Application Note on "Using the Bogen UTI-312 as a paging source for more information".

3.6　Connecting an Emergency Relay

The CMS-II controller can be connected to a Fire Alarm Relay to mute sound masking and music during a fire alarm. This is done by wiring the relay to the Emergency Relay Connector.
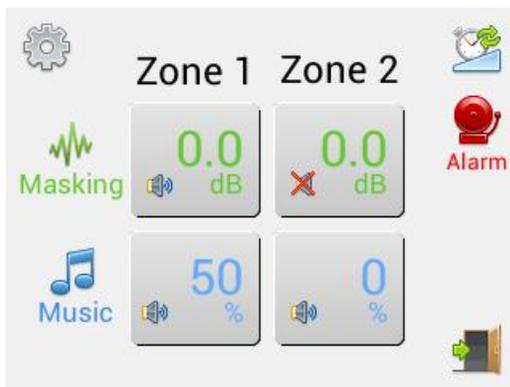

From control panel or previous relay

COM

N.O.

Only 1 relay per SMS is allowed

To next relay

4 Configuration

The CMS-II sound masking controller is configured through the touch panel interface. After the power-up, a screen-saver is started. Click anywhere on the touch screen to enter the home page.

4.1 Home Page

The main page shows the masking and music volumes for all available channels/Zones.

The volumes for the masking are presented in dB and the speaker icon with a red X indicates that the channel is muted. Click on this button to adjust the masking level and EQ.

The music volumes are in % and the speaker icon with a red X indicates that the channel is muted. Click on this button to adjust the music volume and EQ.
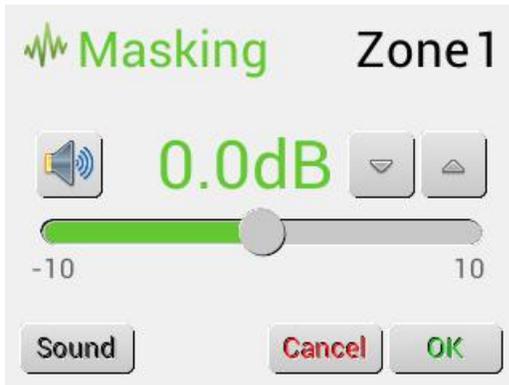
The gear wheel icon can be touched to access advanced set-up page. Available in administrator mode only (see section 4.6.1).

The timer with the ramp and the fire alarm icons are showed if a ramp-up process or if fire alarm relay is triggered respectively.

The open door icon allows returning to the save screen and lock the unit if a pass-code is used (see section 4.6.1)

4.2 Adjusting the Sound Masking Volume

Click on the Zone Masking button from the Home page to enter the Zone Masking Volume page.

The slider or the up/down buttons can be used to change the masking volume in dB.

The speaker button is used to mute or unmute the masking for the selected channel.

The Sound button can be used to select a preset and to adjust the EQ for the masking sound. Available in administrator mode only (see section 4.6.1).

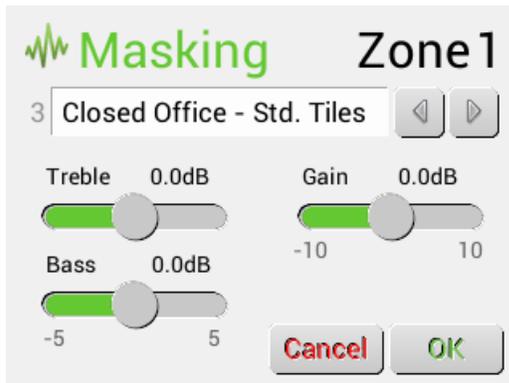Use Cancel or Ok to return to the main page.

4.3 Adjusting the Sound Masking Equalizer

Click on the "Sound" Button from the Masking Volume page to adjust the sound masking equalizer. The sound masking equalizer is adjusted through the selection of a preset along with treble/bass controls.

Use the left/right buttons to select the preset following the characteristics of the installation.

There are 12 presets already installed in the controller:

- Open Office, Standard Tiles
- Open Office, Fiberglass Tiles
- Closed Office, Standard Tiles
- Closed Office, Fiberglass Tiles
- Open Office, Open Ceiling
- Closed Office, Open Ceiling
- High Open Ceiling
- Open Office, Flat Speaker
- Surf Speaker
- HDN Speaker - Drywall
- HDN Speaker - Standard Tiles
- Flat Speaker - Underfloor

The Gain slider is used to adjust the baseline volume for the preset equalizer.

The Treble/Bass sliders are used to make fine adjustments on the masking sound.

Use Cancel or Ok to return to the masking volume page.

4.3.1   Recommended Practice

It is recommended to use the following procedure when adjusting the sound masking volume:

1) Set the main masking volume to 0dB (see section 4.2);
2) Select the preset equalizer from the list according to the characteristics of the installation;
3) Adjust bass and treble to your liking or using a sound level meter;
4) Adjust the gain to your liking or using a sound level meter. The recommended sound masking level should be set between 40 and 45dBA.
5) Click OK to save changes.

This procedure allows to set the baseline volume for the sound masking. The main sound masking volume (see section 4.2) will provide ±10dB of volume range around this baseline sound level.

4.4 Adjusting the Music Volume

Click on the Zone Music button from the Home Page to enter the Zone Music Volume page.

The slider or the up/down buttons can be used to change the music volume (in %). Be sure to have a proper input signal range (see section 4.6.1)

The speaker button is used to mute or unmute the music output for the selected channel.

The Sound button can be used to adjust the EQ of the music output. Available in administrator mode only (see section 4.6.1).

Use Cancel or Ok to return to the main page.

4.5 Adjusting the Music Equalizer

Click on the "Sound" Button from the Music Volume page to adjust the music with treble/bass controls.

The Treble/Bass sliders are used to make the EQ adjustments on the music output.

Use Cancel or Ok to return to the music volume page.

4.6   Advanced Settings

Click on the gear icon from the Home page to go to the Advanced Settings page. The Advanced Settings page is available in admin mode only (see section 4.6.1).
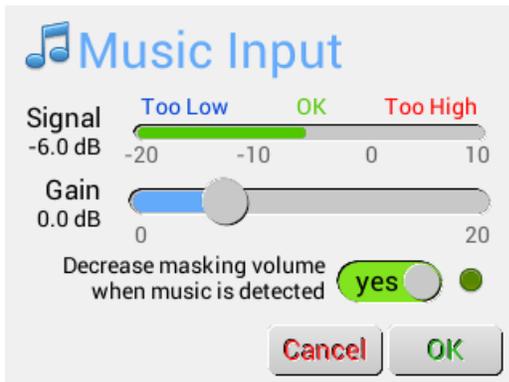
See next sections for a description of all advanced functions.

Click Return button to return in the main page.

4.6.1   Music Input

The range of input signal for the stereo input the must be adjusted to allow generating a proper music/paging output signal. The signal amplitude at the input and the input gain must be adjusted through the following page:

The Signal indicator presents the current level of the input signal in dB. The amplitude of the music/paging source signal and/or the input gain have to be adjusted to obtain an input level between -10 dB and -2 dB (zone named OK).

The Gain slider can be used to boost the input signal level. Be sure to maximize the amplitude of the music/paging source signal before using the Gain slider.

The masking sound can be reduced by -20 dB if an input signal is detected. To do that, set the Decrease masking volume when music is detected to Yes. The small dot will turn light green if the input signal is detected.

Use Cancel or Ok to return to the main advanced set-up page.

4.6.2   Pass-Code

The CMS II is delivered without pass-code. So, by default all the functions are available. A 4-digit code can be added to restrict access. There are two levels of pass-code:

Admin Level: This is the first level that allows all changes on any set-up. If an Admin pass-code is entered, the administrator can also add a User pass-code to accept only the output volumes changes. If no User pass-code is used, the user level is automatically used with a guest session (use the Guest button when pass-code is asked).

User Level: The User level is possible when an Admin pass-code exists and a User pass-code has been added. At the user level, only the masking and music output volumes can be adjusted. An Admin logging must be used to erase, to add or to change the User pass-code.
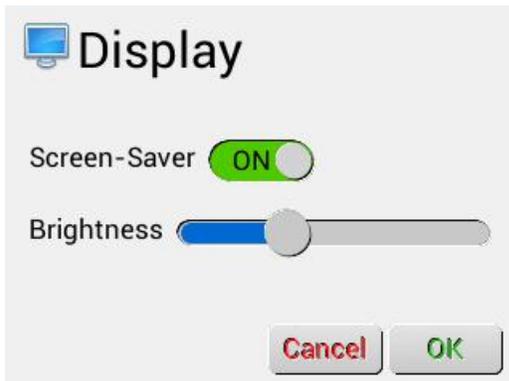

Click on Set button to enter an Admin or User pass-code. Note: to be able to set a User pass-code, an Admin pass-code must have been set before.

Click on Clear button to erase the pass-code. Note: if the Admin pass-code is cleared, the User pass-code is also automatically cleared.

Use Cancel or Ok to return to the main advanced set-up page.

4.6.3   Display

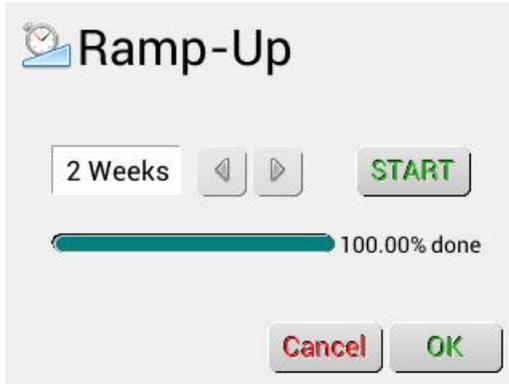The display set-up allows to activate the screen-saver and adjust the screen brightness.

The screen-saver can be turn on or off with this control. After 30s of unused, the **CMS-II** unit starts a screen-saver or simply turns off the display following the set-up of this control.

The brightness of the screen can be adjusted with the slider.

Use Cancel or Ok to return to the main advanced set-up page.

4.6.4 Ramp-Up

When introducing a new masking system on an existing installation, the CMS unit can progressively increase the masking level from -30 dB to the nominal volume.

Ramp-Up

2 Weeks ◁ ▷ START

100.00% done

Cancel   OK

Adjust the ramp-up period with the left/right arrows (between 1 day to 4 weeks).

Click on Start button to start the ramp-up process. The slider will indicate the ramp progression in %. Also, a ramp icon will show-up in the main page of the interface.

Use Cancel or Ok to return to the main advanced set-up page.

4.6.5 Diagnosis

The diagnosis function allows generating a chime signal on the outputs. This function helps to locate the speakers in each zone.

Diagnosis

Zone 1   Zone 2

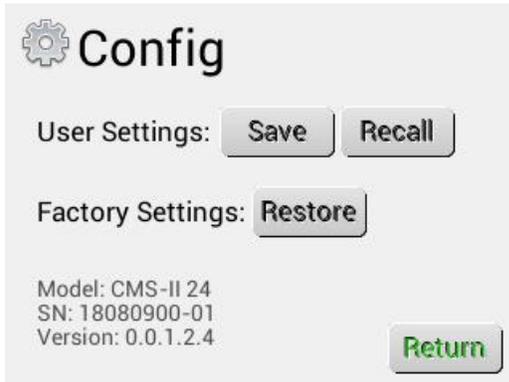Test Chime   START   START

Cancel   OK

Click on Start button to generate a chime test signal to help to determine the location of the speakers in each zone.

Use Cancel or Ok to return to the main advanced set-up page.

4.6.6 Configuration Management

The configuration can be saved in the flash memory of the CMS II unit. This feature can be useful to retrieve the whole configuration of the unit after undesired changes. Soft dB strongly recommends saving the configuration after the installation.

The Save and Recall buttons are used save and recall the whole configuration of the unit.

The Restore button can be used to load the factory set-up. This is the set-up stored in the **CMS-II** unit at the time of the shipping.

Use Cancel or Ok to return to the main advanced set-up page.