RL96-8 / RLCTL2-8 Controllers

smartSMS-NET Sound Masking System
User Guide

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Content

1 Overview

Appropriate for small projects to the biggest installations, the smartSMS-NET sound masking system is simple and highly versatile, without compromise on sound masking performance and quality.

This user manual describes in details how to install the smartSMS-NET rack-mount series of controllers.

The rack-mount series of controller offers powerful amplifiers ideal for larger sound masking systems.

The RL96-8 controller features powerful amplifiers capable of driving up to 12 speakers per zone for a total of 96 loudspeaker per controller.

The RLCTL2-8 controller is a line-level version of the RL96-8 which requires external amplifiers to drive loudspeakers.

Both the RL96-8 and RLCTL2-8 offers an intuitive touch-screen interface for quick adjustments.

2 Specifications

	RL96-8	RLCTL2-8
		
Can be a Project Master?	YES	
Outputs		
Nb. Outputs	8	
Max Speakers/Output	12	75
Max Speakers/Controller	96	600
Sound Masking		
Volume	30 to 92 dBA in 0.1 dB steps and mute	90 dB dynamic in 0.1dB steps and mute
Equalizer	23 1/3 octave bands (63 Hz to 10 kHz) or 500 narrow bands automatic equalizer	
Reference Spectrum	13 pre-set sound-masking reference spectrums, unlimited user defined spectrums	
Volume Ramp-Up	User defined, up to 30 days	
Active Volume Control		
Nb. Inputs[1]	8 (4 shared)	
Max Sensors/Input	6	
Control	Independent sound masking volume adjustment for each output channel	
Masking Volume Change Rate	Adjustable down to 0.1dB steps, updates every 15s	
Active Adjustment Range	User defined; maximum range: -7 to +3 dB relative to reference masking level.	
Music and Paging		
Nb. Inputs[1]	4 (4 shared)	
Mixer	Independent for each output channel	
Volume	30 to 92 dBA in 0.1dB steps and mute	90 dB dynamic in 0.1dB steps and mute
Equalizer	20 1/3rd octave bands	
Volume Control Knobs		
Nb. Inputs	2	
Mixer	Independent for each output channel (Sound Masking and/or Paging and Music)	
Volume Range	User defined	
Emergency Mute Relay		
Function	Mute Sound Masking and Music during an Emergency event	
Touch Screen Interface		
Features	Adjust Sound Masking Volume and Equalizer and Music Volume for every Zone	
Volume Range	20 dB, at 0.5dB step and mute	
Security	User defined passcode	
Volume Schedule		
Schedule	24 hour periods per day, 7 days	
Volume	0.1dB steps	
Transition Ramp	Instant, 2m30, 5min, 10min, or 15min	
Schedule Mixer	Independent for each output channel (Sound Masking and/or Paging and Music)	
Daylight Saving Time	Automatic Adjustment depending on local time zone settings	
Monitoring		
Diagnosis	Automatic	
Reporting	System diagnosis report sent by email and/or stored locally	
Requirement	Computer running Project Manager Software	

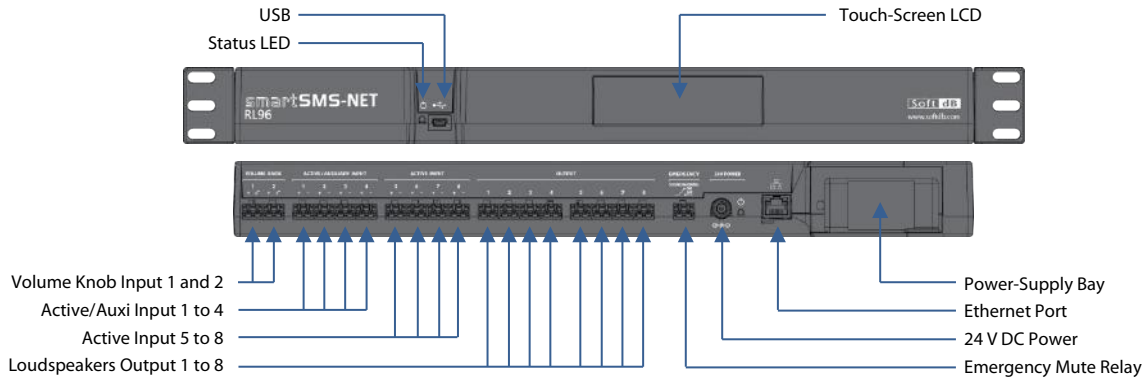
LEED		
Feature	Controller can be put in low-power mode according to daily schedule	No amplifiers
Schedule	7 daily periods per week (user defined)	
Connectivity		
USB	USB 2.0, Mini B connector	
Wifi[2]	802.11b/g/n, WEP 40/64-bits or WPA/WPA2 personal, 450 kbps (Wifi module can be disabled if not required)	
Ethernet	DHCP or Static IP, 350 kbps	
Power		
Input	24 VDC	
Rating	150W	15W
Power-Supply	EA-1050	
Physical		
Dimensions	430mm x 190mm x 44mm (16.9" x 7,5" x 1,75") (1U rack mount brackets)	
Weight	1,7kg (3,8lb), including power pack	
Certifications		
Compliance	ETL Listed 3191772	
Safety	UL 60065 / ULC 60065	
Fire Test	UL 2043	
Electromagnetic	FCC – EN 55103-1&2	

1: A shared input can be an active volume control sensor input OR a paging/music input.

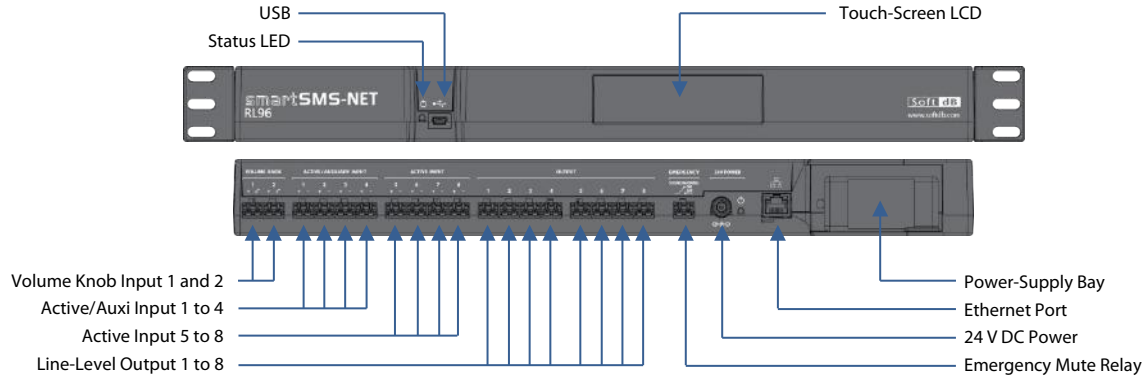
2: Wifi module can be disabled if it's not required

3 Connections

RL96-8ch



RLCTL2-8ch



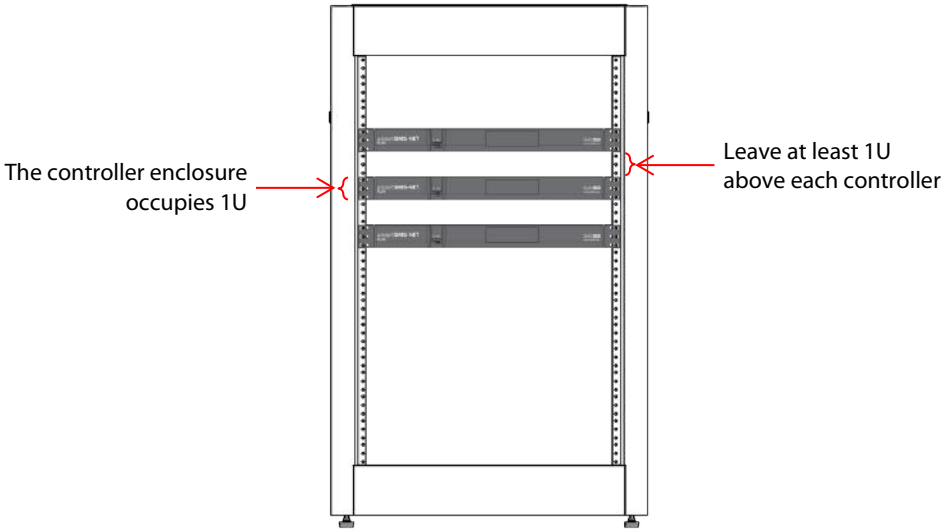
4 Installation

4.1 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.

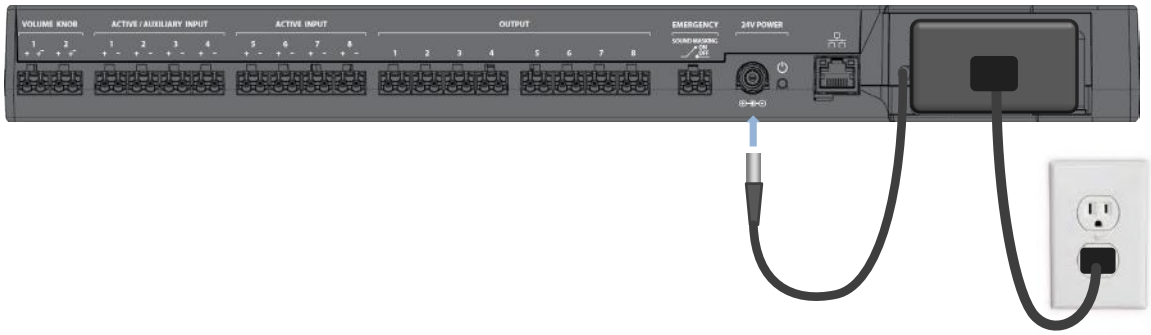
4.2 Securing the Controller

The smartSMS-NET controllers with a rack-mount form factor are designed to be installed in a standard 19" rack-mount cabinet using the provided mounting brackets. The enclosures are 1.7" high and occupy a 1U space. It's recommended to leave some room above each controller to allow air circulation.



4.3 Powering the Controller

The rack-mount controllers are delivered with their own power-supply units. Only one controller can be powered per power-supply unit. Place the power-supply in the dedicated bay.

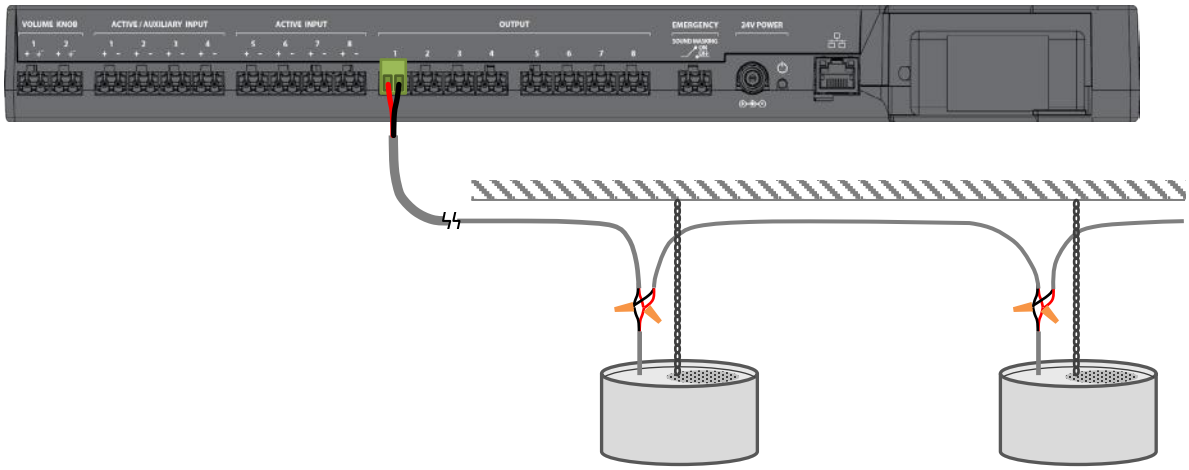


4.4 Connecting Loudspeakers

4.4.1 RL96-8

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 smartSMS-NET 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.



Refer to the Design Guidelines Handbook for guidelines on loudspeaker layout and zone definition according to room characteristics.

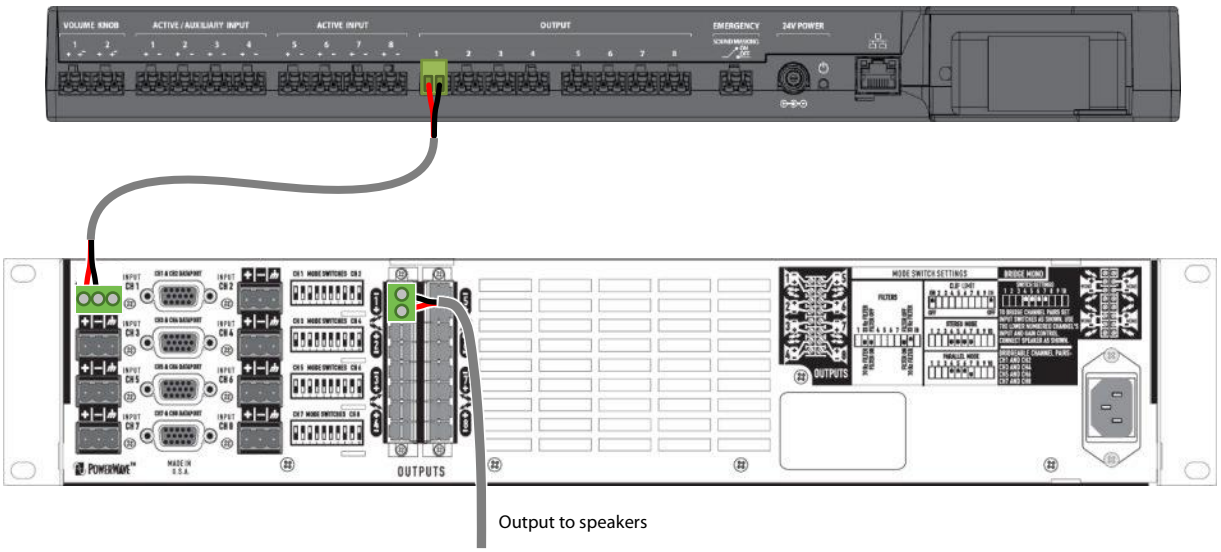
Speaker Load Specifications for RL96-8

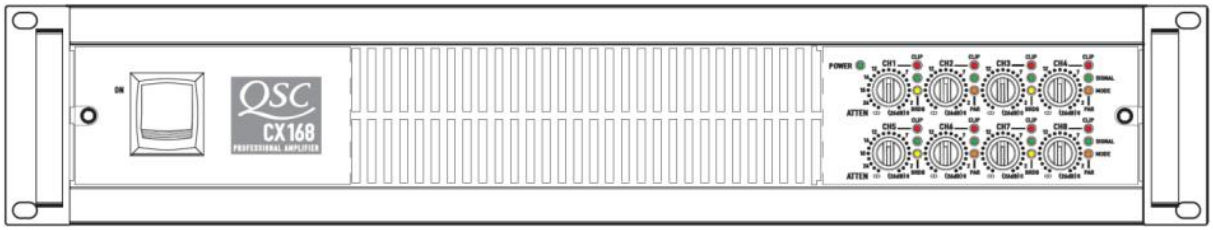
Speaker Model	SMS-STR	SMS-DIR	SMS-SURF4	SMS-FLAT	SMS-HDN	SMS-VIBX
Max. Nb. Speakers per Output	12	12	12	12	6	6
Tap Setting	0dB (4W)	4W	4W	4W	---	0dB

4.4.2 RLCTL2-8

The RLCTL2-8ch does not include power amplifiers. External amplifiers must be used to drive loudspeakers. Recommended amplifiers are models CX168 or CX108V from QSC.

Using the RLCTL-2-8ch paired with an external amplifier allows to increase the number of speakers. Note that the output level may be reduced due to a lower sensitivity tap setting on the speakers.





Speaker Load Specifications for RLCTL2-8 paired with QSC CX108V amplifier (70-Volts)

Speaker Model	SMS-STR	SMS-DIR	SMS-SURF4	SMS-FLAT	SMS-HDN	SMS-VIBX
Max. Nb. Speakers per Output	25	25	25	25	2	0
Tap Setting	-9dB (4W@70V)	4W@70V	4W@70V	4W@70V	-6dB	---

Speaker Load Specifications for RLCTL2-8 paired with QSC CX168 amplifier (8-Ohms)

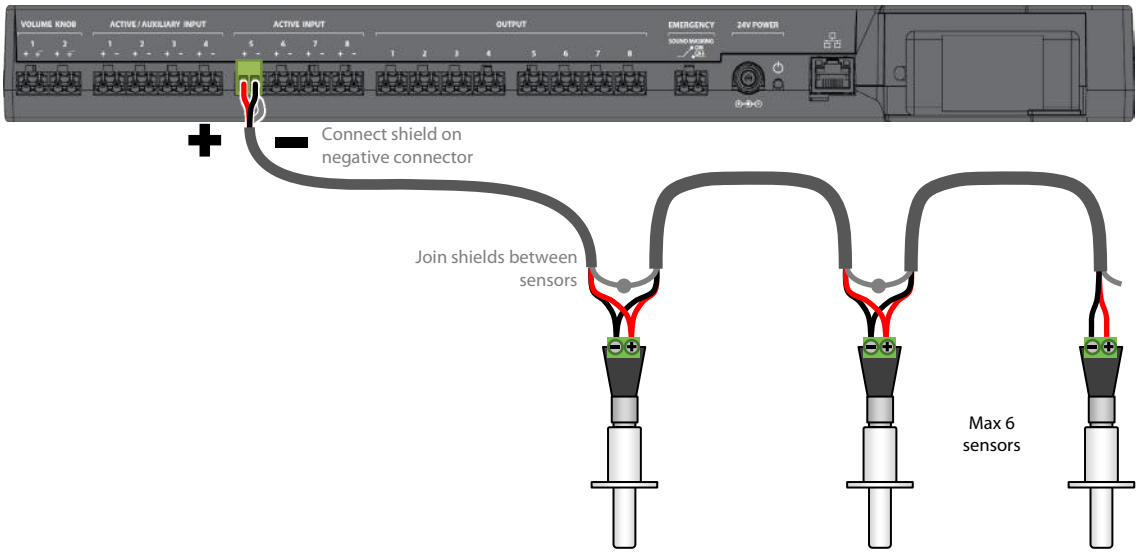
Speaker Model	SMS-STR	SMS-DIR	SMS-SURF4	SMS-FLAT	SMS-HDN	SMS-VIBX
Max. Nb. Speakers per Output	30	30	30	20	8	6
Tap Setting	-3dB (2W@25V)	2W@25V	2W@25V	2W@25V	-3dB	---

NOTE: When using the CX168 amplifier you may have to use a heavier cable gauge to limit losses in the cable.

4.5 Connecting Active Volume Control Sensors

The best location to put the active sound masking volume control sensor is through the acoustic tile. Sensors must be installed, if possible, in a central position to catch most of the noise in the zone.

Connect the sensor with 22 AWG shielded cable and BCN connectors. Up to 6 sensors can be connected on the active input. Connect the shield wire on the negative terminal on the controller end only, do not connect the shield on the sensor terminal and let it float. If many sensors are used, connect the shield between them to ensure continuity.



Note: When a long cable is used, it's recommended to run the cable separate from the speaker lines. A minimal distance on 12 inches between the speaker wires and the volume control cable is recommended.

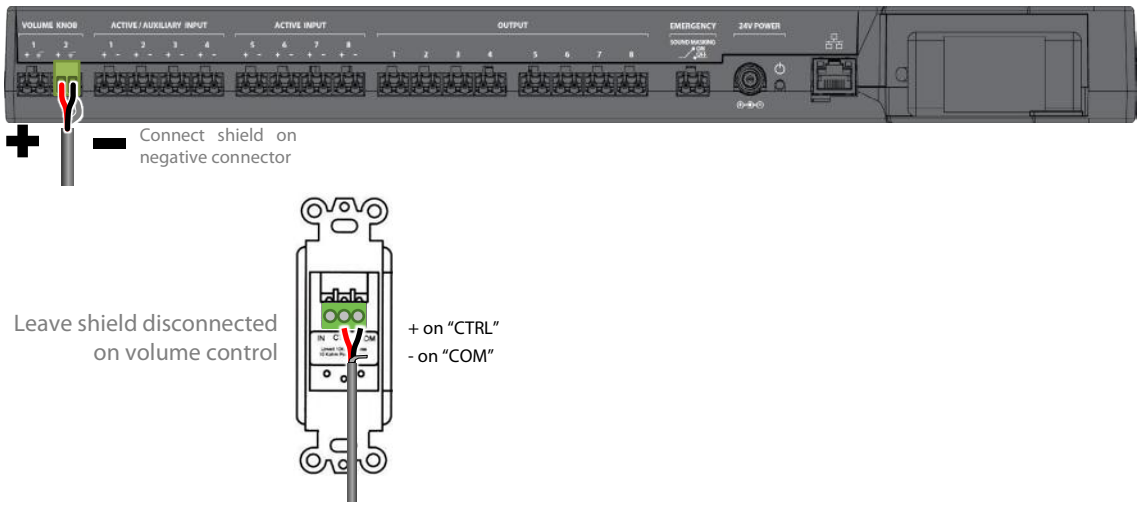
Refer to the Active Control Sensor User Guide for more information on Active Control. Refer to the Design Guidelines Handbook for more information on sensor layout.

4.6 Connecting Volume Control Knobs

Up to two volume control knobs can be connected to control the sound masking volume and/or the music and paging volume. Use the SMS-ZN-VC for this application.

SMS-ZN-VC Zone Volume Control Knob

Use 22 AWG shielded cable to connect the volume controls. Connect the "CTRL" connector to the red wire and the "COM" connector to the black wire. Connect the red wire to the "+" connector on the controller and the black wire on the "-" connector. Connect the shield on the "-" connector on the smartSMS-NET controller side and leave it disconnected on the volume control side.



Note: When a long cable is used, it's recommended to run the cable separate from the speaker lines. A minimal distance on 12 inches between the speaker wires and the volume control cable is recommended.

The volume control input can also be used to turn OFF sound masking and music during a fire alarm. For more information, refer to the Application Note on "How to mute sound masking during a fire alarm".

For some applications, it's useful to have a volume knob directly on the speaker line. For more information, refer to the SMS-ZK-VC speaker volume control.

4.7 Connecting Music and Paging Sources

The auxiliary inputs can be used to connect any line-level music or paging source to the system. The auxiliary input range is ±2 V. Only mono channel sources can be connected (no stereo).

It is recommended to use the auxiliary input 1 for paging as this input features a trigger allowing to lower the volume of masking and music during the public announcement. Refer to the Project Manager User Guide for more information.

Use shielded cable when distributing the auxiliary signal to additional smartSMS-NET controllers. It's recommended to connect the shield to the ground terminal to lower any noise.

When powering multiple units from the same source, ensure that the source is strong enough. Otherwise, use a preamp to increase the signal strength. As an example, an iPod can drive up to 3 smartSMS-NET controllers directly but requires a preamp when driving more than 3 units. Additionally, ground loops and other problems can arise when connecting multiple controller units together. To avoid these problems, a small isolation transformer is available. Refer to the Application Note on the AUX-ISO isolation transformer for more information.

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" .

5 Configuration

5.1 Project Manager Software

The controllers are configured using the smartSMS-NET Project Manager software. The Project Manager software communicates with the controllers using either:

- USB,
- WiFi,
- or Ethernet.

All these communication interfaces can be used transparently on the same project meaning that smartSMS-NET controllers can be connected using USB, Wi-Fi or Ethernet without limitation.

Note that communication is required to change system parameters but is not required for normal operation unless an end-user control panel or system monitoring is required.

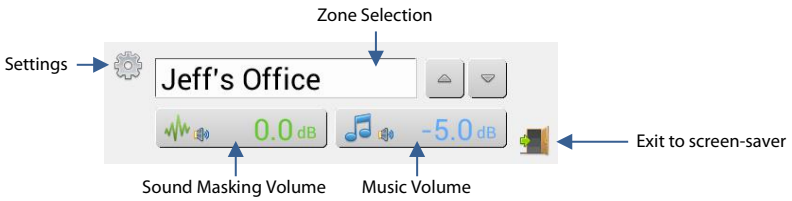
Refer to the smartSMS-NET Project Manager User Guide for more information.

5.2 Touch Screen Interface

The RL96-8 and RLCTL2-8 offers a touch-screen interface that allows adjusting basic parameters directly on the front panel.

5.2.1 Home Interface

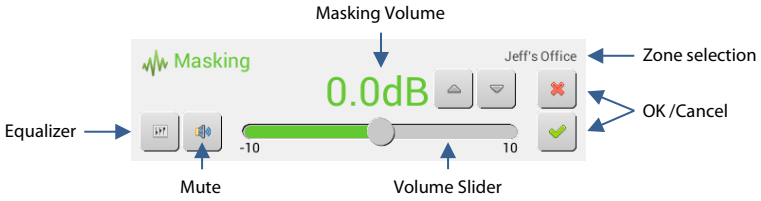
The Home interface allows the user to select the zone and adjust the volume of either masking or music by clicking on the corresponding button.



Note: If zones are defined in the Project Manager Software, the touch-panel will use these zone names. If no zones are defined, the touch-panel will use "Output 1" to "Output 8".

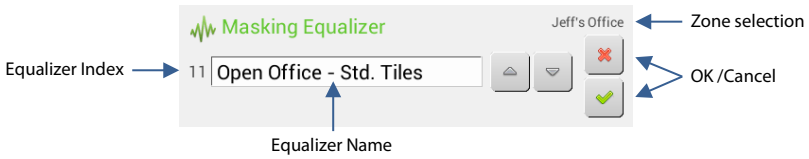
5.2.2 Sound Masking Volume Interface

The Sound Masking Volume interface allows to define the sound masking volume for the selected zone. Drag the cursor or click on the Up/Down buttons to adjust the volume. Click on the Mute button to mute and click on the Equalizer button to go to the Masking Equalizer Interface.



5.2.3 Sound Masking Equalizer Interface

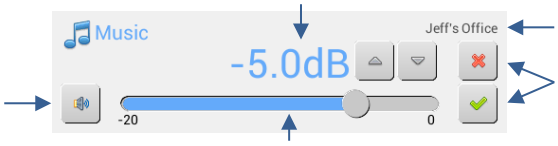
The Sound Masking Equalizer interface allows to define the sound masking equalizer for the selected zone. Use the Up/Down buttons to select the preset Equalizer.



Note: If a custom equalizer is defined in the Project Manager Software, it will be stored as "Custom/Calibration" equalizer.

5.2.4 Music Volume Interface

The Sound Masking Volume interface allows to define the music volume for the selected zone. Drag the cursor or click on the Up/Down buttons to adjust the volume. Click on the Mute button to mute.

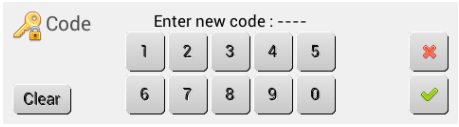


5.2.5 Settings Interface

The Settings interface allows defining an access code, adjusting the display settings such as brightness and accessing the device information such as the serial number.

5.2.6 Pass-Code Interface

The Pass-Code locks the touch-panel to limit modifications to certain users. The pass-code is a 4-digit code and it can be cleared or redefined if the need arise.



5.2.7 Display Interface

The Display interface allows adjusting the display brightness and selecting the idle mode to screen-saver or displaying off.