



Music Integration Manual

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Revision History

Revision	Date	Changes
V0.50	Oct. 27, 2008	▪ Initial public document

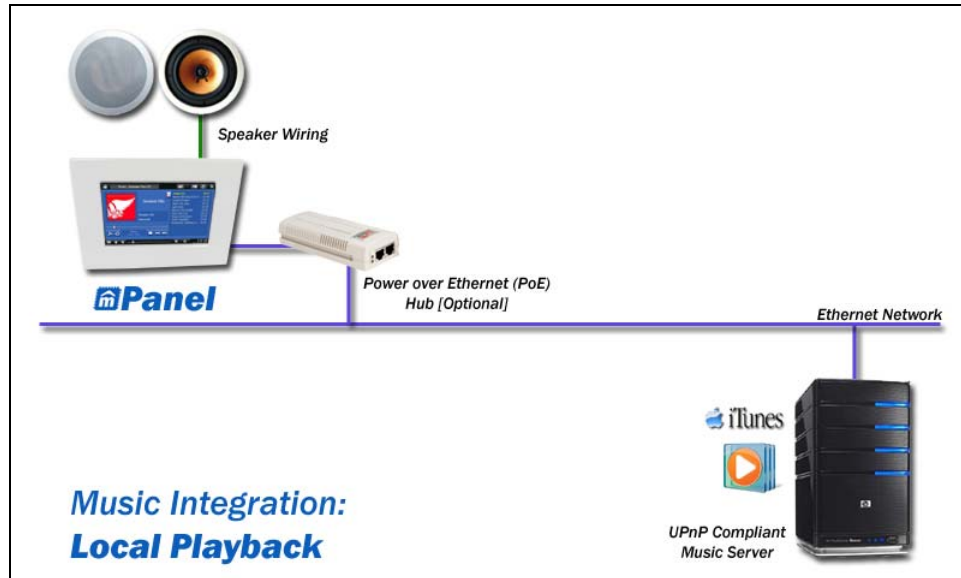
Music Integration Overview

mPanel support multiple music integration models:

- Local playback on the mPanel using the on-board amplifier and attached speakers
- Line out playback to a central amplifier and zoned speakers
- Control and automation of zoned music server/amplification system

Local Music Playback

mPanel can provide local music playback of music residing on music servers located on the local area network.



mPanel provides an integrated user interface to:

- Locate media servers with shared content on the network
- Display a list of albums, playlists and folders available on each server
- Filter content by artist
- Select content for local playback

Selected content is played directly on mPanel's integrated media player. The on-board amplifier outputs up to 20W/channel to attached speakers.

This integration model is best used:

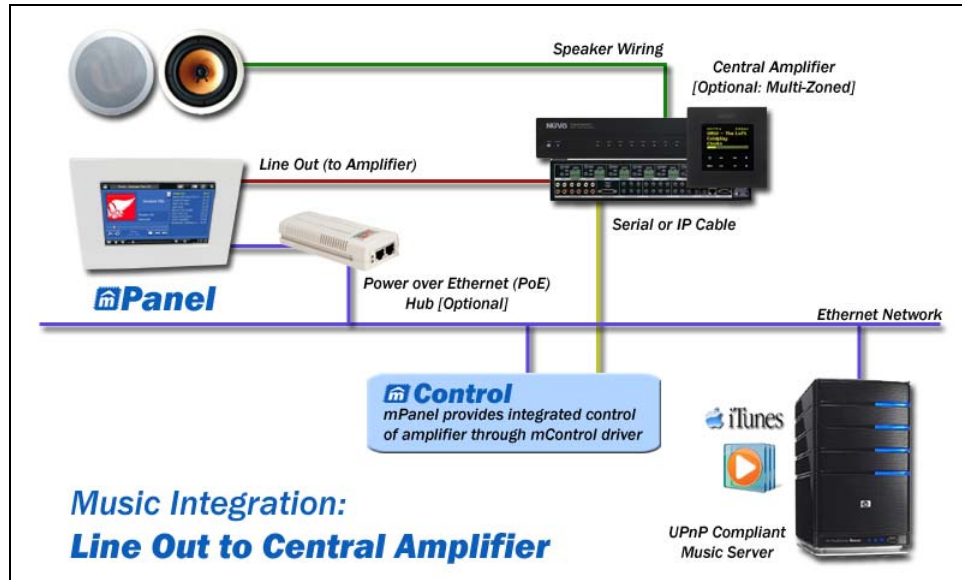
- To quickly and cost-effectively bring music and control to a zone – for example, a kitchen or covered deck
- In homes with a wired networked infrastructure and where it is difficult to set up a centralized music system – for example, home run cabling may be difficult to install. This is typically true for retrofits where running cables to a centralized location is near impossible.

This integration model provides the following benefits:

- Easy to install – only network and speaker connections are essential. Power can be provided over Ethernet connection or via universal power adapter.
- Low-cost option for bringing media to a zone as a result of integrated user interface and music player/amplifier. No additional amplifiers are required.
- Works directly with widely-used media content management systems. For example, media libraries managed by iTunes or Windows Media Player can be accessed via Windows Media Connect's UPnP infrastructure.
- Provides a rich touch user interface for selecting and filtering digital media. Playback includes album art and full media controls.

Line Out to Central Amplifier

mPanel can provide a line output to a centralized amplifier of music residing on music servers located on the local area network. This model support single-zone and multi-zone amplifiers.



mPanel provides an integrated user interface to:

- Locate media servers with shared content on the network
- Display a list of albums, playlists and folders available on each server
- Filter content by artist
- Select content for local playback

Selected content is played directly on mPanel's integrated media player. This playback is then provided on the mPanel's line out interface, which is wired to an audio input channel on the centralized amplifier.

This integration model is best used:

- If a centralized amplifier is being used to power speakers in one or more zones.
- In homes with the line out from an mPanel can be routed to a centralized amplifier. Though this is typically easier to do in a new home installation, this may also be possible in a retrofit, depending on the existing infrastructure.

This integration model provides the following benefits:

- Works directly with widely-used media content management systems. For example, media libraries managed by iTunes or Windows Media Player can be accessed via Windows Media Connect's UPnP infrastructure.
- Provides a rich touch user interface for selecting and filtering digital media. Playback includes album art and full media controls.

This integration strategy can use mControl to provide enhanced control. The mPanel user interface can provide access to an mControl driver for the centralized amplifier¹. An IR, serial or IP connection can relay these commands to the amplifier, allowing for the following functionality:

- Turning on/off the amplifier
- Selecting the input source(s) and output zone(s)

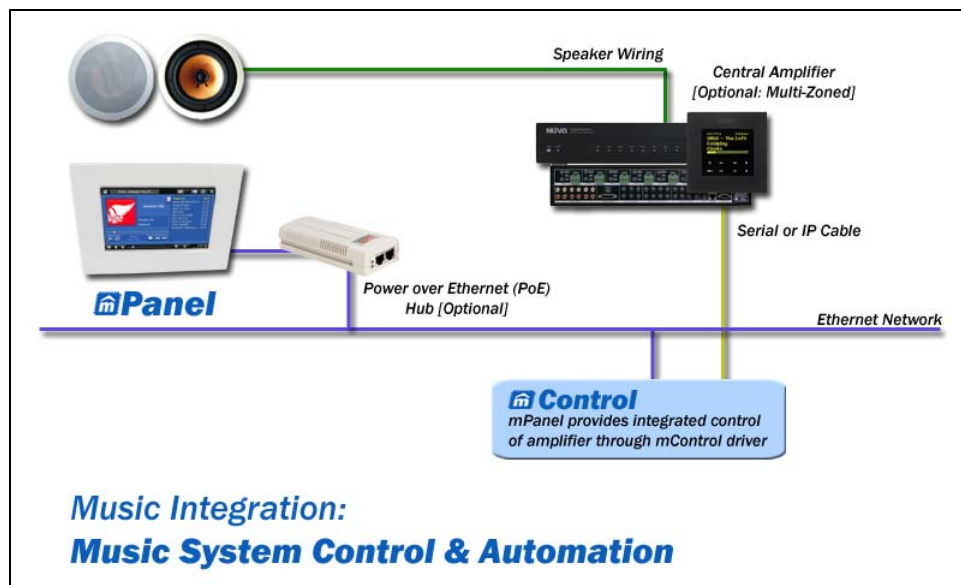
¹ Available Q4 2008 – please contact Embedded Automation for more information

Music System Control and Automation

Many homes now have a full music system, with one or more of the following characteristics:

- Centralized digital music server, typically proprietary in nature
- Multi-output to speakers in zones within the home
- Controllable via serial or IP connection through keypads or remotes

In this scenario, mPanel acts as an enhanced user interface to the music system, supplementing or replacing the music system's own keypad or remote controls.



mPanel provides an integrated user interface to:

- Display a list of albums, playlists and folders available on each server – as provided by the music system
- Filter content by artist
- Select content for playback

Music discovery, selection and playback is coordinated with mControl. mControl acts as an intermediary between mPanel's user interface and the music system's serial or IP control interface.

This integration model is best used:

- If a music system is being used to power speakers in one or more zones. Popular music systems include solutions like the Grand Concerto by NuVo technologies.
- To provide an enhanced user interface to the music system.

This integration model provides the following benefits:

- Provides a rich touch user interface for selecting and filtering digital media. Album art and full media controls are available.

This integration strategy uses mControl to provide enhanced control. The mPanel user interface provide sends and receives commands mControl driver for the music system². An serial or IP connection relays these commands to the amplifier, allowing for the following functionality:

- Turning on/off the music system
- Initiating and controlling playback
- Selecting the input source(s) and output zone(s)

² Available Q1 2009 – please contact Embedded Automation for more information