

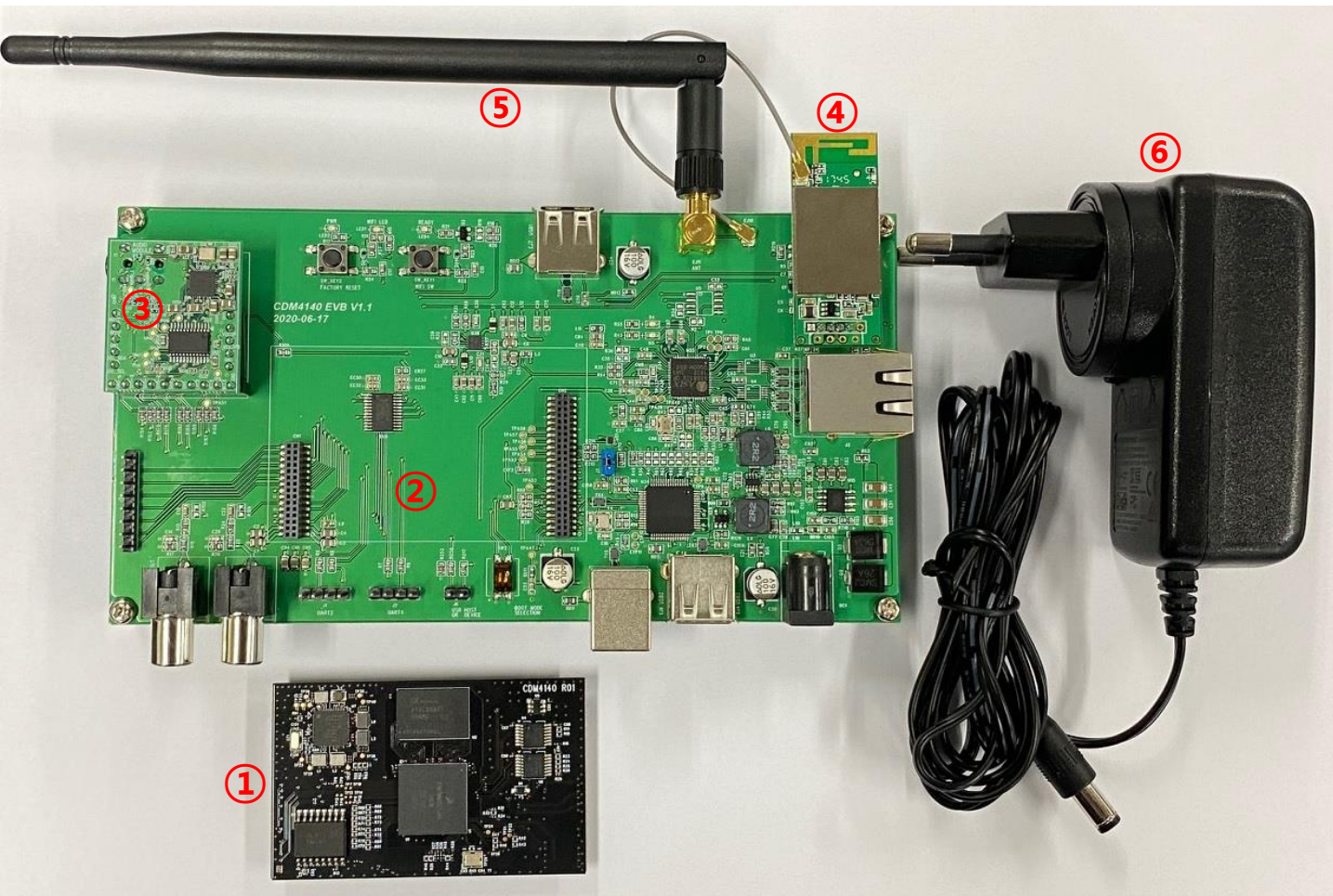


mconnect CDM4140 Evaluation Board User Guide

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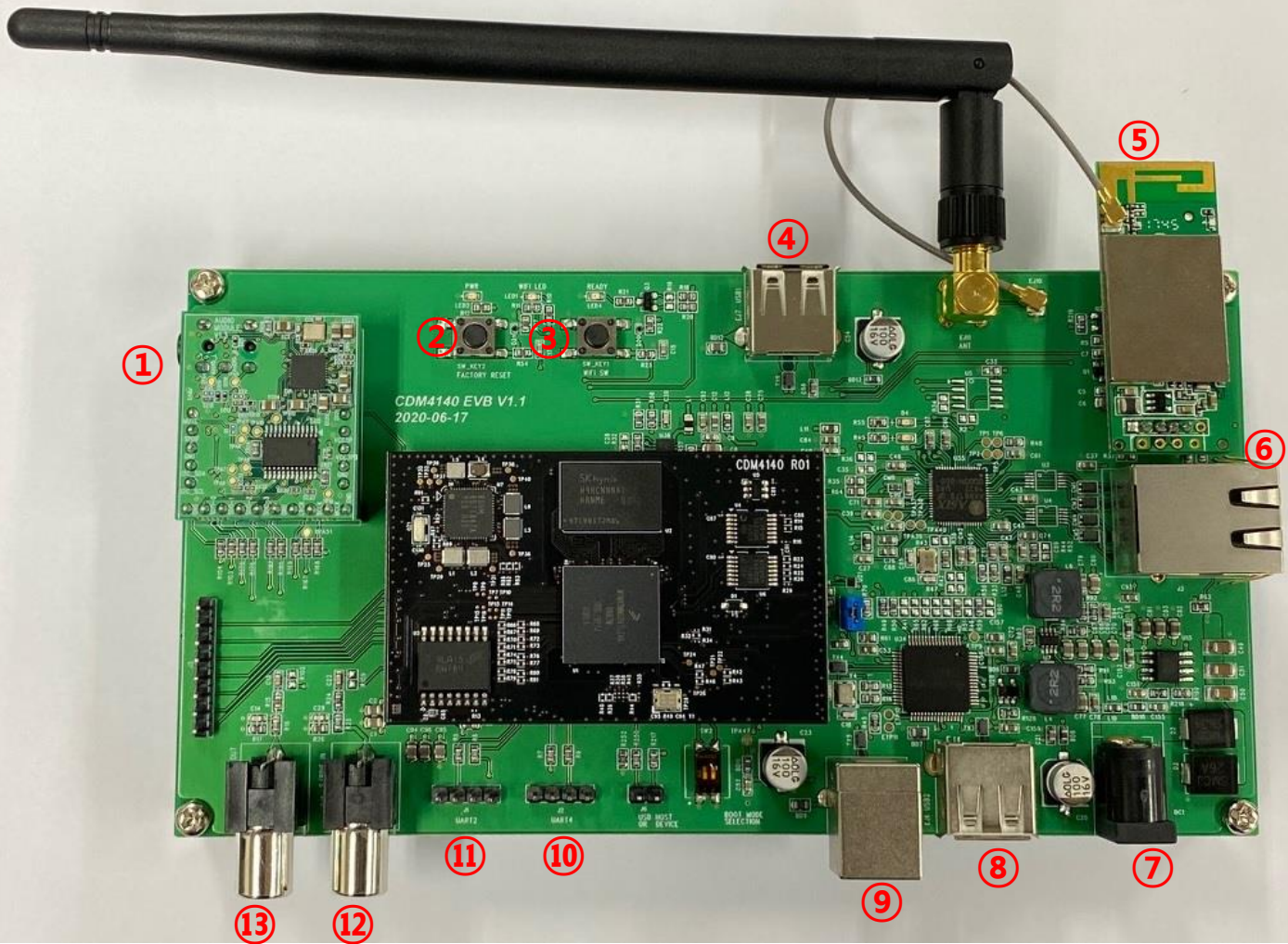
CDM4140 Evaluation Kit Packages



- | | |
|----------------------------|-----------------------|
| ① CDM4140 module | ④ WiFi module |
| ② CDM4140 Evaluation Board | ⑤ WiFi Antenna |
| ③ Audio Module on board | ⑥ Power Adapter 5V/3A |

**** External USB WiFi Dongle can be used instead of WiFi module.***

Evaluation Board Interfaces



- | | | |
|------------------------|----------------------------|-------------------|
| ① Analogue 3.5mm out | ⑥ LAN RJ45 | ⑩ UART4 for comm. |
| ② Factory Reset button | ⑦ DC POWER (5V) | ⑪ UART2 for log |
| ③ WiFi button | ⑧ USB2 A connector | ⑫ * SPDIF in |
| ④ USB1 connector | ⑨ USB2 B connector | ⑬ * SPDIF out |
| ⑤ WiFi module | (For development use only) | |

* Not implemented in standard firmware.

mconnect Control App and PC setup program

“**mconnect Control**” is a dedicated control app for mconnect modules, available on Apple App Store and Google Play Store. End-users can use this app as it is on the app stores to control any mconnect hardware. Also, it is possible to customize this app to provide device specific controls, e.g., input source selection and L/R balance.

mconnect module supports Standard DLNA/UPnP, and any DLNA/UPnP apps can be used to control mconnect modules. But proprietary functions can be provided only by mconnect Control app.

[Proprietary Features of mconnect Control]

- Device Settings: WiFi connection, Firmware update from internet, device name change.
- Multi-room control: Making group of speakers to play music to multiple speakers simultaneously.
- Internet Music Integration with closed API: Deezer and vTuner internet radio
- **Customizing to add device specific controls into the app.** (e.g., Input selection, L/R balance)

❖ **mconnect Control**: For iPhone and Android phones. Provides vertical UI.

❖ **mconnect Control HD**: For iPad and Tablets. Provides horizontal UI.

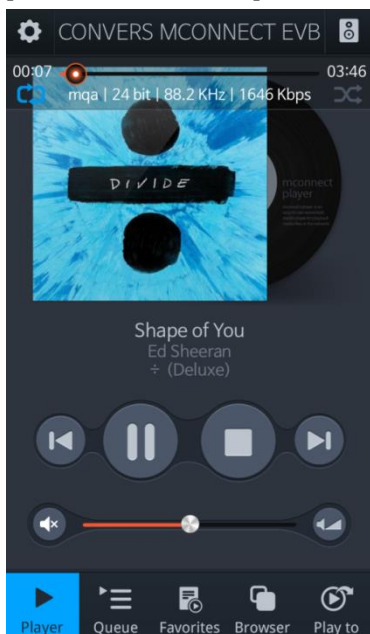
❖ *“mconnect Player” app is also available on Apple Store and Google Play Store.*

mconnect Player is a standard DLNA/UPnP control app, which is working with any DLNA/UPnP compatible devices. TIDAL and Qobuz are integrated in this app.

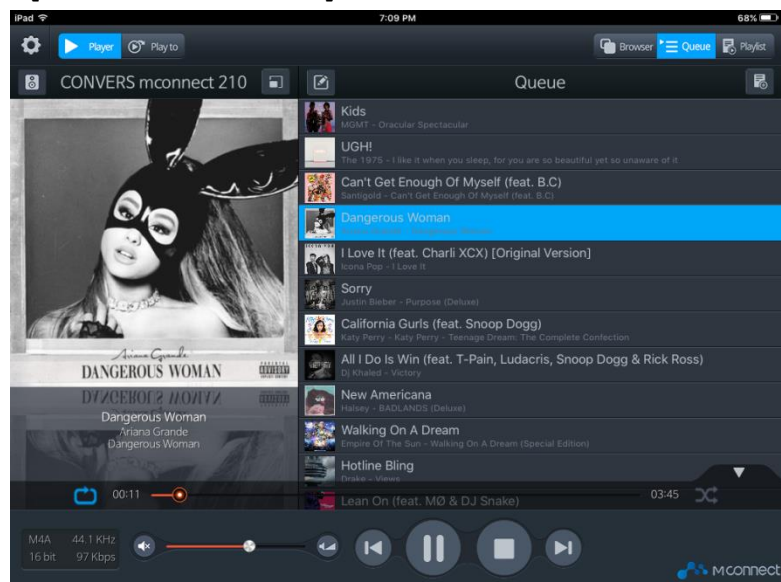
2. PC Setup Program is provided by Conversdigital for developers with mconnect module.

This program is for development purpose, not to distribute consumers. Firmware update can be done by PC setup program. *Setup Program v2.5 and later version is required for CDM4140.

[mconnect Control]



[mconnect Control HD]



Connectivity Protocols and Internet Streaming Music

CDM4140 supports various connectivity protocols and internet music services.

Brief usage guide is as below:

- **Apple AirPlay2**: Apple device (iPhone and iPad) provides AirPlay icon to send music to AirPlay compatible audios. Users can send any music played by iPhone and iPad to remote audios by selecting AirPlay device.
- **Spotify Connect**: Spotify app provides device lists that are compatible with Spotify Connect. Users send Spotify music to Spotify Connect compatible audios, by selecting the audio in the device list at Spotify app.
* The end users need Spotify premium account to use Spotify Connect function.
- **Roon**: Roon is a music player application based on PC. Install the Roon program and then users will find RoonReady devices in Roon's setup screen. By selecting the audio in the device list, users can send music to RoonReady audio.
* The end users need Roon account.
- **MQA**: Master Quality Authenticated(MQA) is a technology to deliver high quality audio with encapsulation so that less bandwidth is needed to transmit while providing high quality by decapsulating at receiver side.
- **TIDAL**: TIDAL is integrated into Conversdigital's mconnect Control & Player app. By using mconnect app, users can send TIDAL music to mconnect embedded audio.
* The end users need TIDAL account.
- **Qobuz** : Qobuz is integrated into Conversdigital's mconnect Control & Player app. By using mconnect app, users can send Qobuz music to mconnect embedded audio.
* The end users need Qobuz account.
- **Deezer** : Deezer is integrated into Conversdigital's mconnect Control app. By using mconnect Control app, users can send Deezer music to mconnect embedded audio.
* The end users need Deezer account.
- **vTuner** (Internet Radio Station list): vTuner station list is integrated into Conversdigital's mconnect Control app. By using mconnect Control app, users can listen to Internet radio stations with mconnect embedded audio.
- **DLNA/UPnP**: DLNA/UPnP is a standard protocol to share media contents across home network. Most of smart devices, such as TVs, SetTopBoxes, Network Storages, Game Consoles, Mobile devices, Windows PCs and networked audios are compatible with DLNA/UPnP. Users can send music in server devices to remote playback devices, e.g., mconnect embedded audio, with DLNA/UPnP control apps.

WiFi and LAN Connection

CDM4140 supports WiFi and Wired LAN connection.

1. LAN Connection

If you want to use LAN, connect EV board to your router with LAN cable.

No further steps are required.

(If you want to use Static IP, please refer to IP setup in following pages.)

2. WiFi Connection

WiFi network connection can be done by below three methods.

- ① Use WPS button.
- ② Activate soft AP mode, and then select a WiFi network with control app or PC setup program.
- ③ Connect LAN cable to your AP router, and then select a WiFi network with control app or PC setup program.

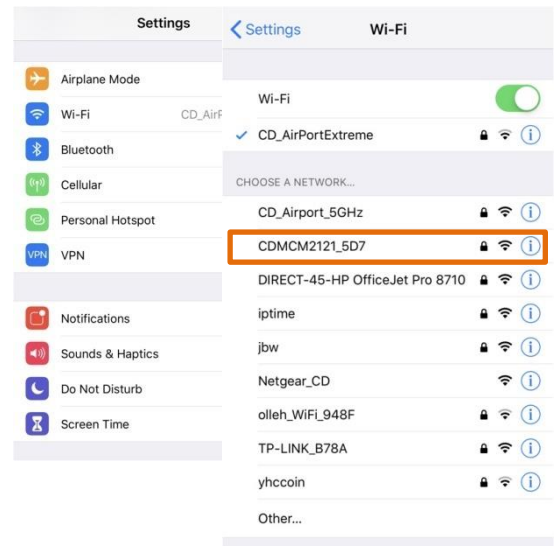
WiFi Connection – 1) Using WPS button

- Press WiFi button on EV board for 8 seconds. The WiFi LED will blink fast.
- Press WPS button on your AP router.
- The EV board will connect to your AP router.

WiFi Connection – 2) Using AP mode with Control app

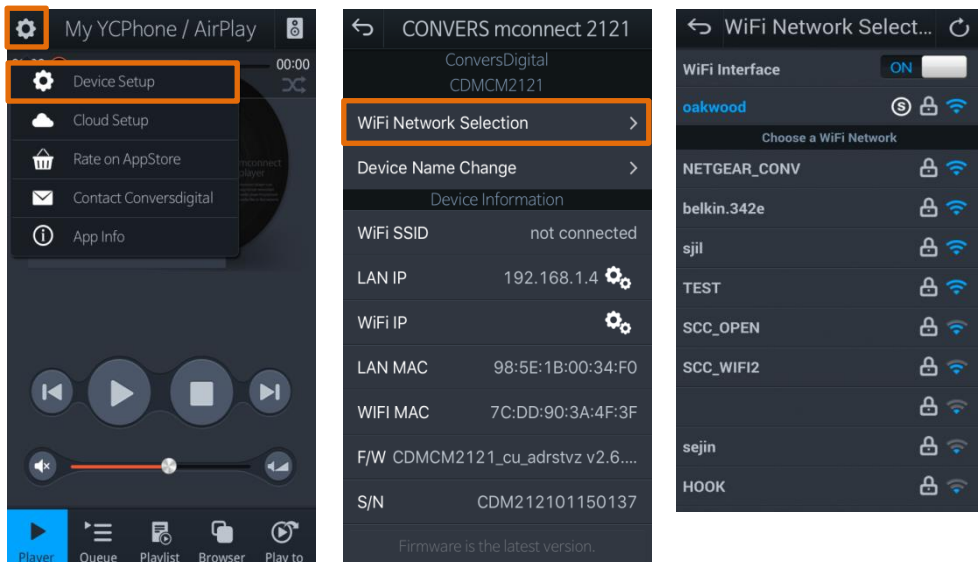
- Press WiFi button on EV board for 2 seconds to activate AP mode.
- You will find a WiFi network of “CDM4140_XXXX” in WiFi list of your mobile device or PC.
- Select the “CDM4140_XXXX” and connect to it.
- The password is “**password**”.

* If you change the device name, the name will be seen instead of “CDM4140”.



[By mconnect Control App]

- Execute mconnect Control app and touch the setup icon on upper left corner.
- Touch “Device Setup” and select the EVB in the list.
- Touch “WiFi Network Selection”.
- Choose a network you want to connect and type in password.



- ✓ Connect your mobile device to the same WiFi network to which CDM4140 EVB is connected.
- ✓ You will find the EVB in “Play to” list of mconnect Control app.
- ✓ Once WiFi connection is established, the EVB will remember the WiFi and connect to it when the EVB will restart.

WiFi Connection – 3) After LAN Connection

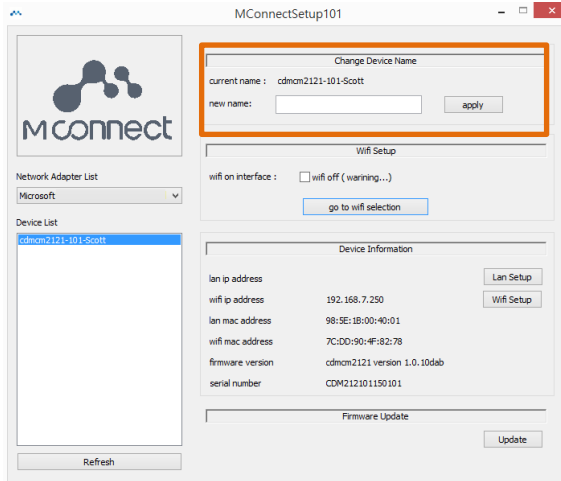
- Connect EV board to your AP router with LAN cable.
 - Connect your mobile phone with mconnect Control app to the same AP router.
 - Execute mconnect Control app.
 - The rest of procedures are same with “Using AP mode” method.
-
- After making WiFi connection, **disconnect the LAN cable and power OFF and ON** the EV board.

Device Name Change

- EVB’s name on the network can be changed by Control app or PC setup program.



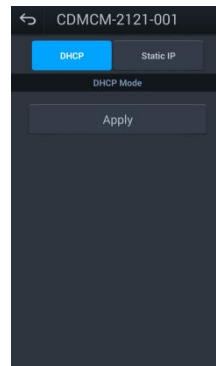
mconnect Control App's Screen



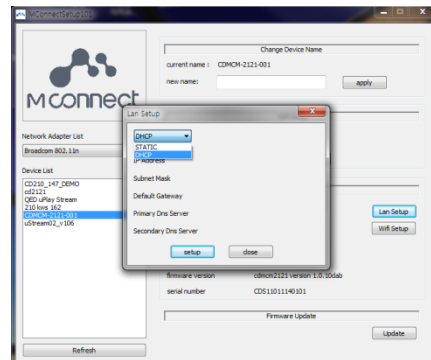
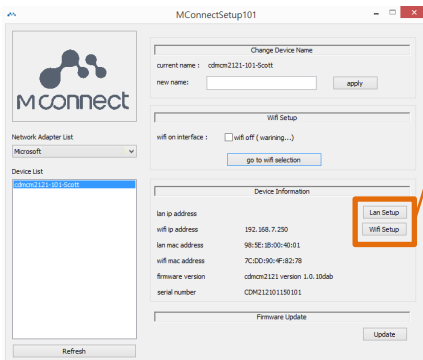
PC Setup Program's Screen

Static IP Setting

- If you want to use static IP, instead of DHCP, it can be done at IP setup screen on Control app or PC setup program.



Select IP setup button



Firmware Update

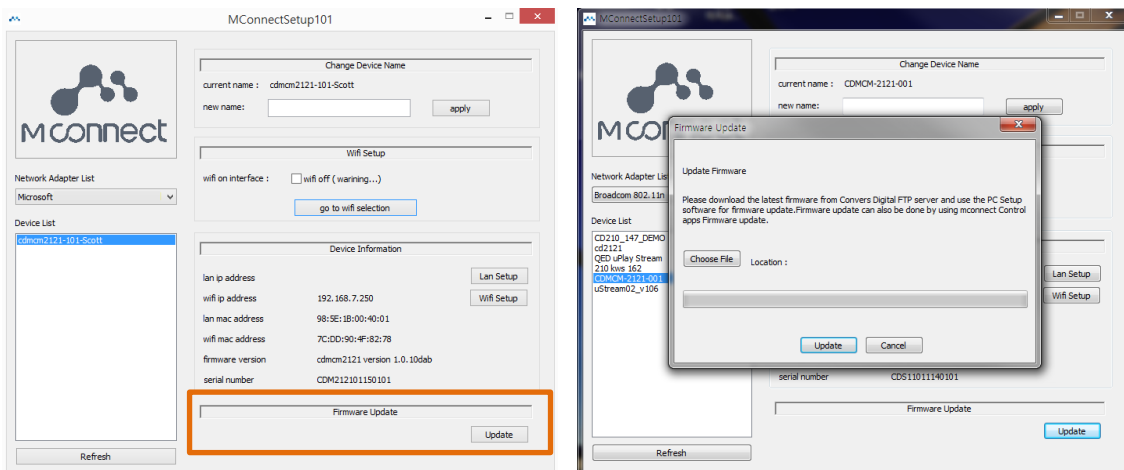
- Firmware update is available via two methods.
 - For End-users:
 - Firmware update via Internet from update server by using mconnect Control app.
 - * The finished products with mconnect module will need own firmware update server.
 - For developers with mconnect hardware:
 - Download new firmware to your PC and then using PC setup program.
 - * Before preparing own update server, and for testing firmware before distributing to End users.

Firmware Update via Internet

- mconnect Control app will show a notice for firmware update when it is available.
- The EV board and your mobile phone need to connect **Internet accessible** network.
- At “Device Setup” screen, mconnect Control app will notify the availability of firmware update.
- If you select “yes” to update firmware, the new firmware will be downloaded to mconnect module from update server and updated.

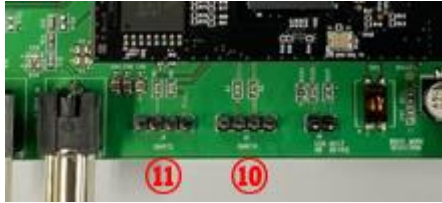
Firmware Update with PC Setup Program

- Download new firmware provided by Conversdigital to your PC.
- Execute PC setup program and click “Firmware Update” button.
- Locate and select new firmware in your PC.



*** DO NOT power off the device during firmware update!!**

UART Interfaces

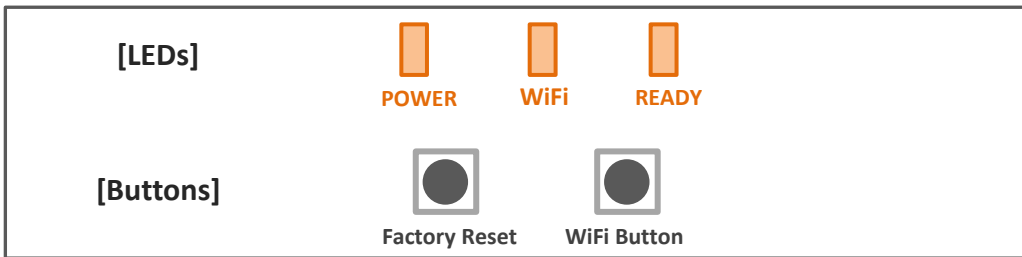


- UART2: For system log from CDM4140.
- UART4: For communication with Host Processor on the product’s board.

* Baud rate: 115200

** There is a comprehensive commands set for exchange information between mconnect module and host processor. Please see the “UART Communication Protocol” document for CDM4140.

Operation of LEDs & Buttons



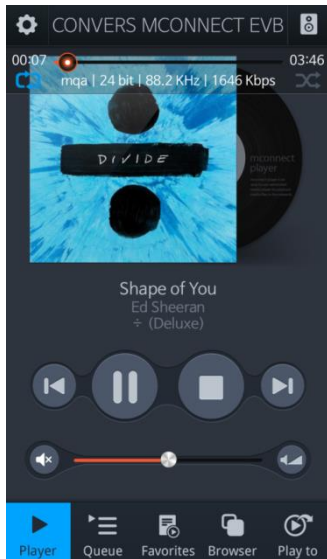
Buttons	Operation
WiFi	- 2 seconds: Activate/Deactivate Soft AP mode (Toggle) - 8 seconds: Activate WPS mode (for 1 minute)
Factory Reset	2 seconds: Factory Reset (Rewrite information set by user with default values.)

EVENT	LED operation
Power ON	Power LED ON
Firmware Booting Completion	Ready LED ON
WiFi Connected	WiFi LED ON
WiFi – Soft AP is activated	WiFi LED blinks slowly
WiFi – WPS is activated	WiFi LED blinks fast
During Firmware Update	WiFi LED and REDAY LED will blink

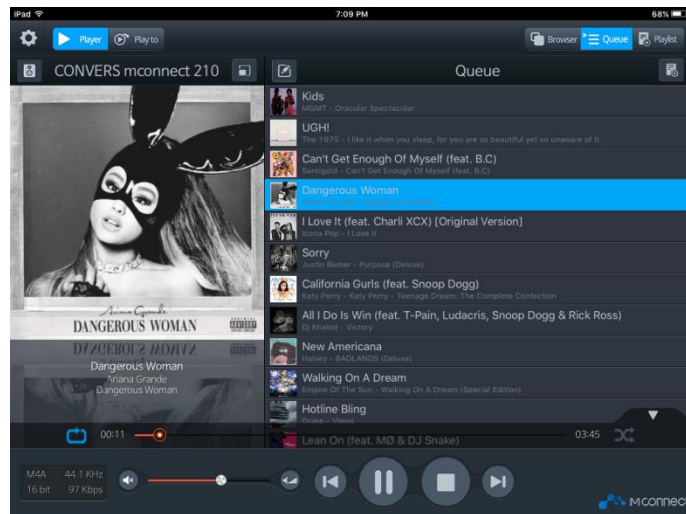
Guide for mconnect Control App

- ❖ **mconnect Control**: For iPhone and Android phones. Provides vertical UI.
- ❖ **mconnect Control HD**: For iPad and Tablets. Provides horizontal UI.

[mconnect Control]

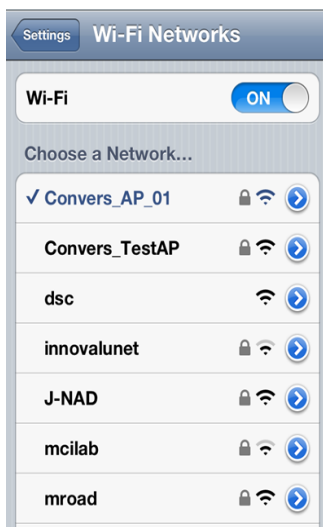


[mconnect Control HD]

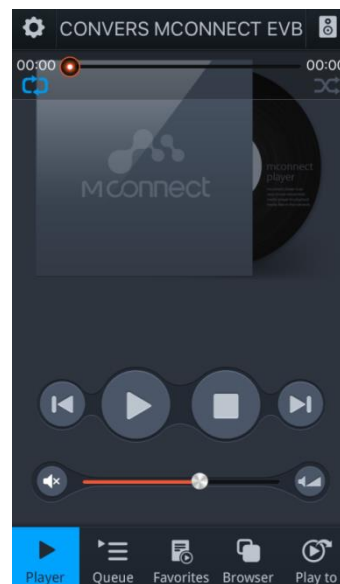


MAKE WiFi CONNECTION and OPEN MCONNECT CONTROL

Connect your mobile device to the same network that mconnect hardware is connected.



Select a Wi-Fi network on the setting menu of your mobile device.
(Same network with other devices are connected.)



Execute mconnect Control on your mobile device.

PLAYER Screen - FUNCTIONAL DESCRIPTIONS

"Setup": Cloud and Sort options.

"SEEK": Move position in a track.

"Device Information": Information for currently selected playback device.

"Device Name": Name of currently selected playback device (a renderer).

"Previous/Play/Stop/Next": Play & stop music, next & previous music.

"Favorites": Bookmarked folders in servers and user created list of tracks.

"Play to": List of playback devices on the network.

"Repeat":

1. Repeat the queue continuously :
2. Repeat the queue once :
3. Repeat current track continuously :

"Shuffle/Sequential": Playback order for tracks in the queue. Shuffled or Sequential order.

"Mute":

"Micro volume control": Control volume with micro control bar.

"Queue": List of music currently playing.

"Browser": List of server devices and Internet Streaming Music & Cloud.

DEVICE SETUP and DEVICE INFORMATION

“Setup”:
Device Setting.
Cloud and Sort options.

- Device Setup
- Cloud Setup
- Sort Tracks
- App Info

“Device Information”:
Information for currently selected playback device.

Gapless playback control is available here.

CONVERS CDMCM-2121

ConversDigital

CDMCM2121

IP : 192.168.7.58

Firmware Version : 3.7.3

Gapless OFF

Service : AirPlay, DMS, MQA, Roon, Spotify, TIDAL, vTuner, Deezer, Qobuz

- Device Setup
- Cloud Setup
- Sort Tracks
- App Info

“Device Setup”:
There will be list of renderer devices on the network. After select a device, the setup screen will be seen.

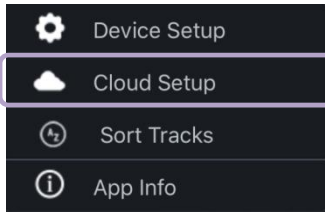
[Device Setup Functions]

- **WiFi Network Selection:** To connect the device to a WiFi network.
- **Device Name Change:** To rename the device on the network.

LAN & WiFi Static IP Setting.

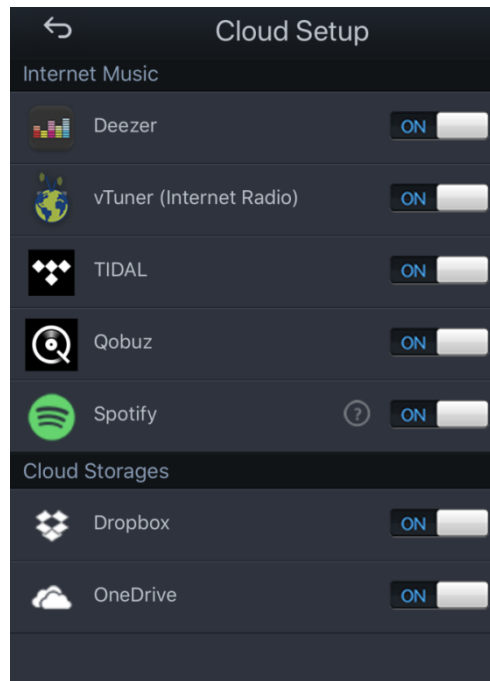
• **Firmware Update :**
If there is new update for the device’s firmware, app will notify and update the firmware.

CLOUD SETUP

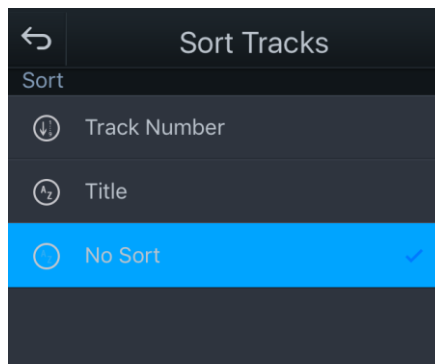
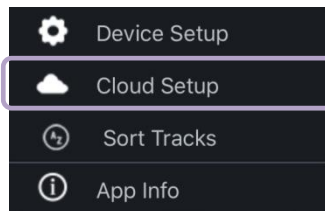


Enable or Disable Internet Music Services and Cloud Storages.

Disabled server will not be seen in the “Browser” screen.



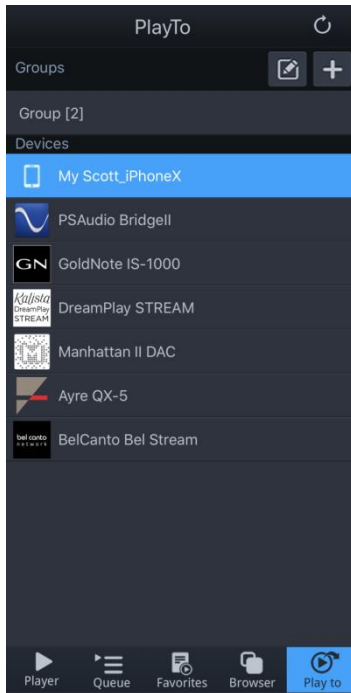
SORT TRACKS



Music tracks in a folder can be sorted by track number and track name.

* Track Sort can be applied to folder by folder. At Favorite Folder list, there is sort option in the menu button.

SELECT A PLAYBACK DEVICE



List of Renderers on the network :

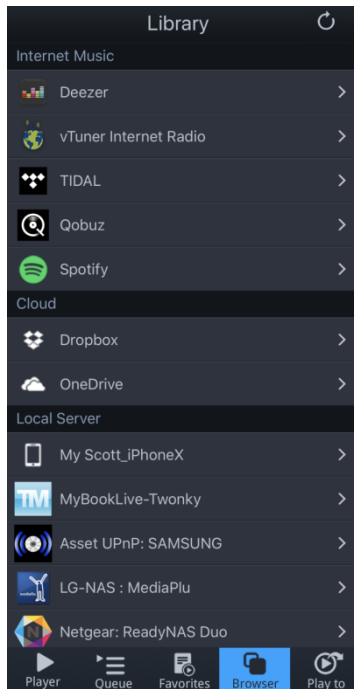
mconnect compatible playback devices are automatically listed in “Play to” screen.

Music will be sent to the selected device.

mconnect app remembers the selected device and automatically selects the device when app is executed again.

* Please be sure that the renderers are connected to the same network with that the mobile device (mconnect app) is connected.

SELECT MUSIC TO PLAY



List of Servers on the network :

You can select music at “Browser” screen.

Music files can be in local servers and Internet servers.

- Internet Streaming Music: **TIDAL, Qobuz and Deezer**
- Internet Radio Stations: **vTuner**
- Internet Cloud: **Dropbox and OneDrive.**
- Local Server: DLNA/UPnP compatible **Network Storages and PCs.**
- Your **mobile device** with mconnect app.

* Spotify icon is the link to execute Spotify App in the mobile device.

STREAMING MUSIC and INTERNET RADIO

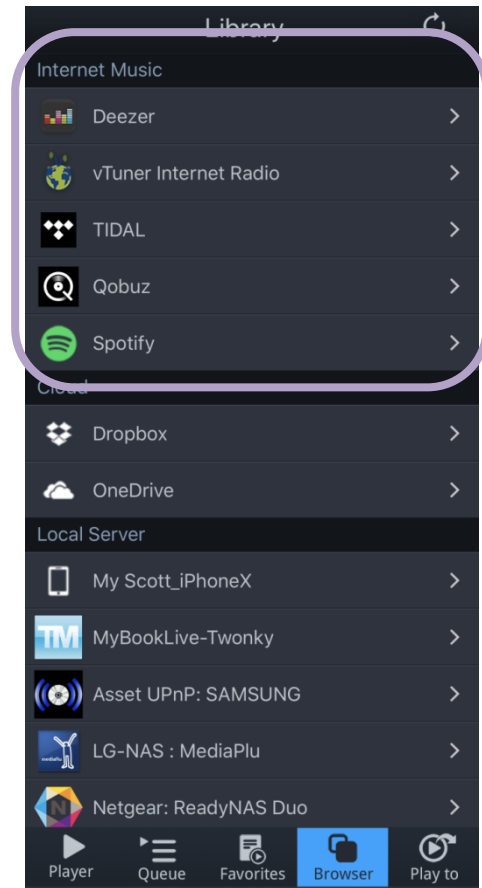
TIDAL, Qobuz and Deezer streaming music services are integrated in mconnect Control.

Streaming music can be sent to playback audios in the “Play to” list.

* You need TIDAL, Qobuz and Deezer account to access the services.

Find and listen to radio broadcasting stations in “**vTuner internet radio**”.

* Spotify icon is the link to execute Spotify App in the mobile device.



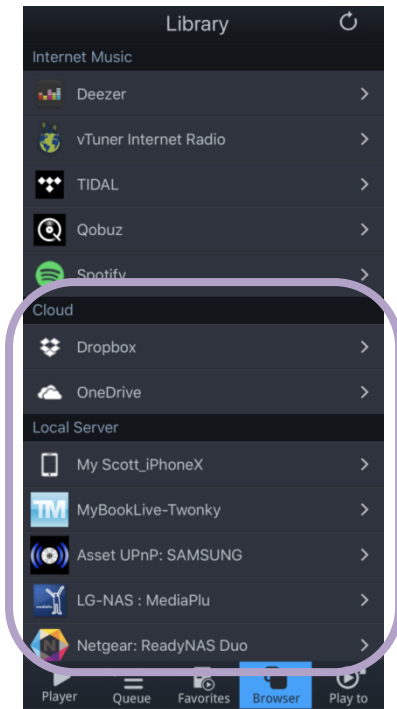
[TIDAL]

[Qobuz]

[Deezer]

[vTuner Internet Radio]

CLOUD and LOCAL SERVERS

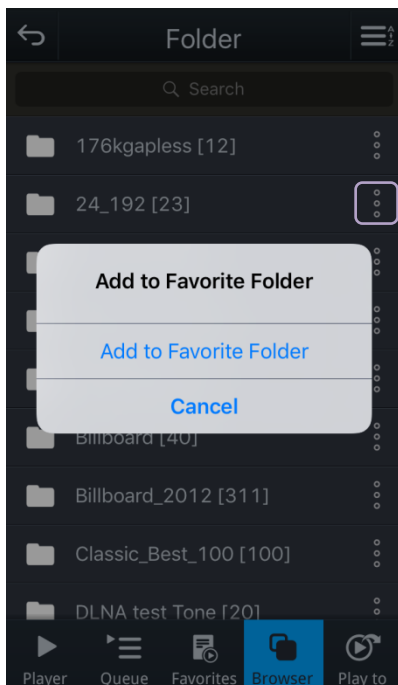


Dropbox and OneDrive are integrated into mconnect app. Music files in the clouds are played by selected devices in the “Play to” list or app itself.

* Dropbox and OneDrive account is needed to access the servers.

DLNA/UPnP compatible Network Storages and PCs will be seen in “Local Server” list.

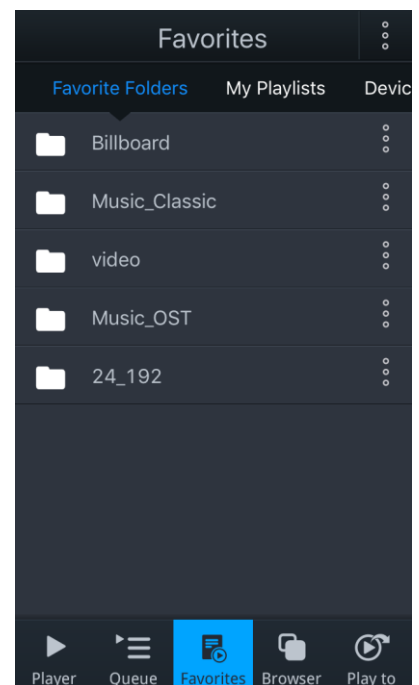
ADD FAVORITE FOLDERS



Add to Favorite Folder:
You will see this button at folder list in Browser screen.

By touching this menu button, you can add the folder to “Favorite Folder” list.

The added folder will be seen in the Favorite Folder list in Favorite screen.

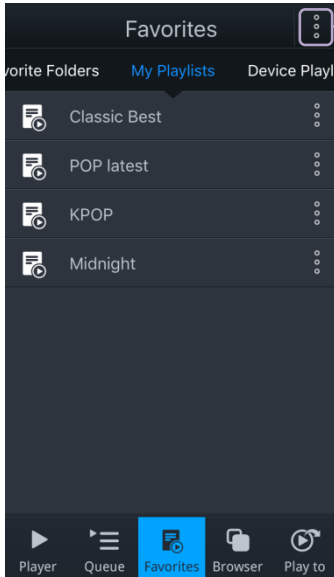


PLAYLIST MANAGEMENT

mconnect Control provides playlist management across servers. Music files stored in different servers can be into playlists.

A Playlist can be created at My Playlist, Browser, Queue, and Favorite Folder screen.

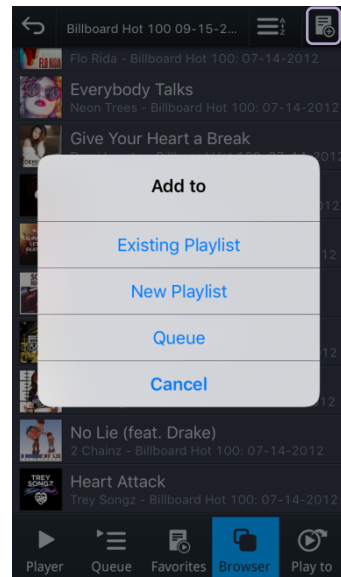
[My Playlist Screen]



Create new Playlist:
New Playlist is created by this button in My Playlist screen.

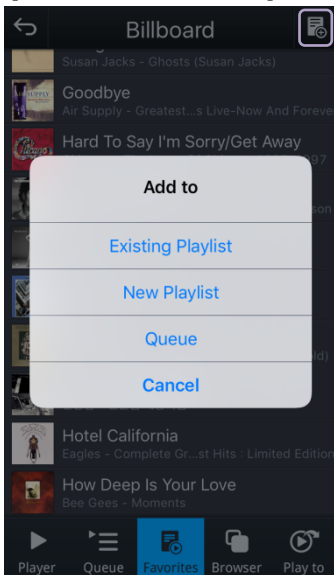
And at the Playlist, tracks can be added from servers.

[Browser Screen]



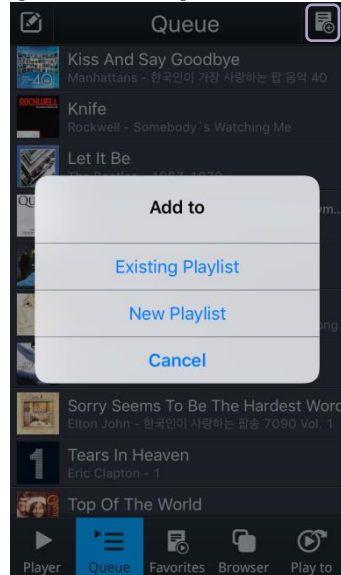
From Browser:
Tracks in Browser list can be added to a Playlist or to Queue.

[Favorite Folder Screen]



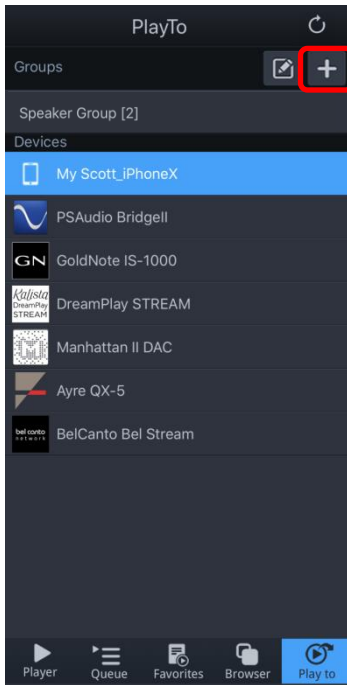
From Favorite Folder:
Tracks in Favorite Folder can be added to a Playlist or to Queue.

[Queue Screen]



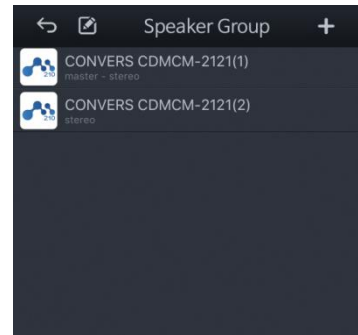
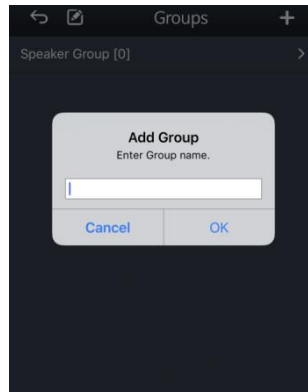
From Queue:
Tracks in Queue can be added to a Playlist.

CREATING A MULTI-ROOM GROUP

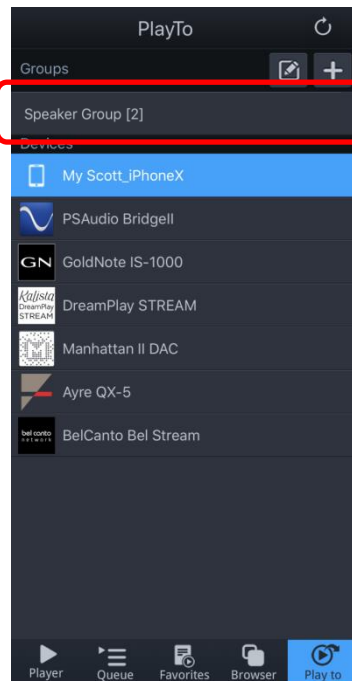


Create new Group of Speakers for Multi-room Playback:

- 1) Touch “+” button at Groups bar in “Play to” screen.
- 2) You will see the “Add Group” window to enter the Group Name.
- 3) After enter into the Group Name, and then select the Group.
- 4) Touch “+” button at the Group screen.
- 5) Select devices to include in the Group at device list window.

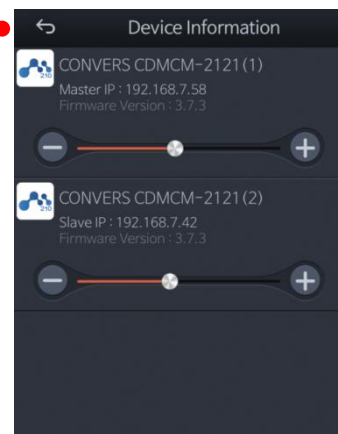
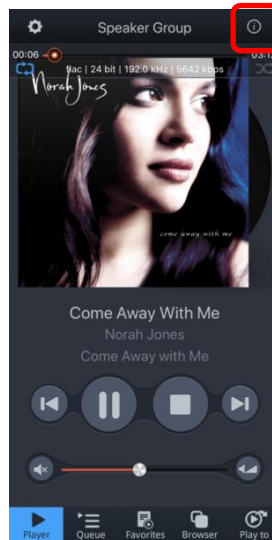


PLAY MUSIC TO THE MULTI-ROOM GROUP



Select the Group as the playback device at “Play to” screen.

Select music to play, then music will be played by all the devices in the Group at the same time with synchronization.



By touching the “Device Info” button, you can see the devices in the Group and control the volume for each device.

If you have further questions, please feel free to contact
Conversdigital's Technical Support:
conversd@conversdigital.com