



## Capabilities - Realtek ALC AppleHDA

For Realtek ALC885 through ALC1150 on board audio codecs

### Realtek ALC Audio ID Configurations

Device	Port	Location	Notes	Audio ID: 1	Audio ID: 2	Audio ID: 3
1. <b>Mic</b>	Pink	Rear	1 & 2 Linked	Yes	Line Out (Center/Sub)	Yes
2. <b>Mic</b> (LineIn)	Pink	Front	2 Mutes 1	Yes	Yes	Yes
3. <b>LineIn</b>	Blue	Rear		Yes	LineOut (Rear)	Yes
4. <b>SPDIFIn</b>	Yellow	Rear	Optional			
5. <b>Speakers</b> (Front)	Green	Rear	5 & 6 Linked	Yes	Yes	Yes
6. <b>Headphones</b>	Green	Front	6 Mutes 5	Yes	Yes	Yes
7. <b>LineOut</b> (Center/Sub)	Orange	Rear		Yes	Not Available	No
8. <b>LineOut</b> (Rear)	Black	Rear		Yes	Not Available	Yes
9. <b>LineOut</b> (Side)	Grey	Rear		Optional	Not Available	No
10. <b>SPDIFOut</b>	Orange	Rear	Stereo/DD/DTS	Yes	Yes	Yes
11. <b>HDMI/DP</b>		Rear	Edits Required	HD4600+/ AMD/ Nvidia	HD4600+/ AMD/Nvidia	HD3000/ HD4000/ AMD/Nvidia

## Change Log

1. v2.0 - 12//20/2014 - Yosemite
2. v1.0 - 10//8/2013 - Mavericks 1st Release

[toleda/audio\\_ALC\\_guides](#)

**Screenshots**, see [toleda/audio\\_ALC\\_guides](#)

- A. Screenshots - Realtek ALC AppleHDA\_v2.pdf

## Requirements

- A. OS X versions supported:
  1. Yosemite/10.10/AppleHDA.kext\_v266.5 and newer, see **Notes A** and **B**, below
  2. Mavericks/10.9/AppleHDA.kext\_v2.5.2 and newer, see **Notes A** and **B**, below
  3. Mountain Lion/10.8.5/AppleHDA.kext\_v2.4.7, see **Notes A** and **B**, below
  4. Mountain Lion/10.8.4/AppleHDA.kext\_v2.3.7
- B. Realtek ALC, one of the following Device\_ID - Codec Name
  1. Supported motherboard on board audio codecs
    1. 10ec0885 - ALC885/ALC889a
    2. 10ec0887 (v100202 and v100302) - ALC887/ALC888b
    3. 10ec0888 (v100202 and v100302) - ALC888/ALC888s
    4. 10ec0889 - ALC889
    5. 10ec0892 - ALC892
    6. 10ec0899 - ALC898
    7. 10ec0900 - ALC1150 - 10.8.5 or newer
  2. Verification, see **Notes C**, below
- C. Supported Audio-IDs (Audio\_ID = layout-id), select one
  1. Audio\_ID: 1 - 5/6 port Realtek ALC onboard audio and HD4600+/AMD/Nvidia HDMI audio
  2. Audio\_ID: 2 - 3 port Realtek ALC onboard audio and HD4600+/AMD/Nvidia HDMI audio
  3. Audio\_ID: 3 - 3/5/6 port Realtek ALC onboard audio and HD3000/HD4000/AMD/Nvidia HDMI audio
  4. Audio\_IDs: 1 and 2 support analog 5.1 surround sound, 3 does not
  5. Audio\_IDs: 1, 2 and 3 require HDMI audio dsdt edits/ssdts for HDMI audio
- D. Audio\_ID Injection
  1. Supported Realtek ALC Injection methods
    1. MultiBeast, see Realtek ALC AppleHDA.kext Installation, below
    2. Installation, see [toleda/audio\\_ALCInjection](#)
      1. HDEF/kext/No dsdt/HDAEnabler\_.kext = Audio\_ID
      2. HDEF/dsdt/layout-id = Audio\_ID
      3. HDEF/ssdt/layout-id = Audio\_ID
      4. HDEF/Clover/Config.plist/Devices/Audio/Inject = Audio\_ID
  2. Verification, see Notes C, below

**Audio ID Injection techniques for the Realtek ALC AppleHDA.kext; select one and**

## install

- A. HDEF/kext/No dsdt/audio enabler = Audio\_ID, see [Guide] Add HDEF-kext.pdf
  - 1. [toleda/audio\\_kext\\_enabler](#)
    - 1. Audio\_ID = 1/HDAEnabler1.kext
    - 2. Audio\_ID = 2/HDAEnabler2.kext
    - 3. Audio\_ID = 3;NA
- B. HDEF/dsdt/layout-id = Audio\_ID, see [Guide] Add or Edit HDEF-dsdt.pdf
  - 1. [toleda/audio\\_ALCInjection](#)
    - 1. Audio\_ID = 1/layout-id: 0x01, 0x00, 0x00, 0x00, 0x00
    - 2. Audio\_ID = 2/layout-id: 0x02, 0x00, 0x00, 0x00, 0x00
    - 3. Audio\_ID = 3, see dsdt/HD3000/HD4000 HDMI audio
- C. HDEF/ssdt/layout-id = Audio\_ID, see [Guide] Add HDEF-ssdt.pdf
  - 1. [toleda/audio\\_ssdt\\_enabler](#)
    - 1. Audio\_ID = 1/layout-id: 0x01, 0x00, 0x00, 0x00, 0x00
    - 2. Audio\_ID = 2/layout-id: 0x02, 0x00, 0x00, 0x00, 0x00
    - 3. Audio\_ID = 3, see dsdt/HD3000/HD4000 HDMI audio
- D. HDEF/Clover/Config.plist/Devices/Audio, see [Guide] Add HDEF-Clover.pdf
  - 1. [toleda/audio\\_ALCInjection](#)
    - 1. Audio\_ID = 1/Inject=1
    - 2. Audio\_ID = 2/Inject=2
    - 3. Audio\_ID = 3, see dsdt/HD3000/HD4000 HDMI audio
- E. HDEF/Chameleon Installer/Customize/Setting/
  - 1. [Chameleon 2.3svn Official PKG Installer & Binaries](#)
    - 1. Audio\_ID = 1/HDEF Layout/1
    - 2. Audio\_ID = 2/HDEF Layout/2
    - 3. Audio\_ID = 3, see dsdt/HD3000/HD4000 HDMI audio
- F. HDEF/Chimera 3.0 or newer/org.chameleon.Boot.plist, add
  - 1. [How to Use HDAEnabler module with Chimera](#)
    - 1. Audio\_ID = 1/HDAEnabler=Yes and HDEFLayoutID=01000000
    - 2. Audio\_ID = 2/HDAEnabler=Yes and HDEFLayoutID=02000000
    - 3. Audio\_ID = 3, see dsdt/HD3000/HD4000 HDMI audio

## Realtek ALC AppleHDA.kext Installation

- A. **MultiBeast** - Installs patched Realtek ALC AppleHDA.kext
  - 1. MultiBeast must be run after each Software update to restore Realtek ALCxxx audio
  - 2. **Yosemite/MultiBeast 7.0 and newer**, [Downloads - tonymacx86.com](#)
    - 1. MultiBeast/Drivers/Audio/Realtek ALCxxx
      - 1. ALC887/888b Legacy v100202
      - 2. ALC887/888b Current v100302
      - 3. ALC888 Legacy v100202
      - 4. ALC888 Current v100302
      - 5. ALC885/889a
      - 6. ALC892
      - 7. ALC898
      - 8. ALC1150
    - 2. Audio Options (select one)

1. Optional 3 Port (5.1) Audio (Audio ID: 2)
  2. Optional HD3000/HD4000 HDMI Audio (Audio ID: 3)
  3. Optional EFI Installed Bootloader Support (Clover)
  4. Optional HDAEnabler (kext)
    1. Audio ID: 1
    2. Audio ID: 2
  3. **Mavericks/10.9.5/MultiBeast 6.5.0**, see [Downloads - tonymacx86.com](http://tonymacx86.com/Downloads)
  4. **Mountain Lion/10.8.5/MultiBeast 5.5.5**, see [Downloads - tonymacx86.com](http://tonymacx86.com/Downloads)
  5. **MultiBeast Archives/all other versions**, [Downloads - tonymacx86.com](http://tonymacx86.com/Downloads)
- B. **realtekALC/patch in place**: script detects the codec and patches the native AppleHDA.kext for ALC onboard audio.
1. Run the same script to restore audio after Software Update.
  2. realtekALC/patch in place
    1. Bootloaders: Chimera, Chameleon, Clover
    2. Software Update: run same script after update restart
    3. More Info: [toleda/audio\\_RealtekALC](http://toleda/audio_RealtekALC)
    4. Installation - realtekALC
      1. Download: (View Raw) [audio\\_realtekALC-100.command.zip](http://toleda/audio_realtekALC-100.command.zip)
      2. Double click: Downloads/audio\_realtekALC-100.command
      3. Password?
      4. Confirm Realtek ALCxxx (y/n): (885, 887, 888, 889, 892, 898, 1150 only)
      5. Legacy\_v100202 (y/n): (887, 888 only)
      6. Enable HD4600 HDMI audio (y/n): (887, 892, 898, 1150 only)
      7. Verify Patched AppleHDA kext installed
        1. S/L/E/AppleHDA.kext\_vx.x-toledaALCxxx
      8. Restart
      9. Verify ALC onboard audio
        1. System Preferences/Sound/Output/select audio device
- C. **Piker-Alpha AppleHDA8series**: installs an audio support kext for ALC onboard audio. AppleHDA.kext remains native. Credit: Piker-Alpha
1. Technique survives most Software Updates.
  2. Piker-Alpha AppleHDA8series
    1. Bootloaders: Chimera, Chameleon, Clover
    2. Software Update: persistent, no action required
    3. More Info: [toleda/audio\\_pikeralphaALC](http://toleda/audio_pikeralphaALC)
    4. Installation - AppleHDA8Series
      1. [Piker-Alpha/AppleHDA8Series.sh](http://Piker-Alpha/AppleHDA8Series.sh)
      2. Download Zip
      3. \$ cd Downloads/AppleHDA8Series.sh-master
      4. Chameleon/Chimera/Clover - no AppleHDA binary patch
        1. \$ ./AppleHDA8Series.sh -b AppleHDA
        2. \$ ./AppleHDA8Series.sh -b AppleHDA -b AppleHDAController

5. Clover - with AppleHDA kext patch(es)
    1. \$ ./AppleHDA8Series.sh
  6. Password
  7. Codec
  8. Layout
  9. Install S/L/E
  10. Reboot
  11. Verify ALC AppleHDA8Series kext installed
    1. S/L/E/AppleHDAxxx
  12. Verify ALC onboard audio
    1. System Preferences/Sound/Output/select audio device
- D. cloverALC/Clover patched: automatically detects codec and installs all audio files and patches for ALC onboard audio. Credit: abxite
1. Audio persists after most Software Updates. Install once and done.
  2. cloverALC/Clover patched
    1. Bootloaders: Clover
    2. Software Update: persistent, no action required
    3. More Info: [toleda/audio\\_CloverALC](https://toleda.github.io/audio_CloverALC/)
    4. Installation - cloverALC
      1. Download: (View Raw) [audio\\_cloverALC-100.command.zip](https://raw.githubusercontent.com/toleda/cloverALC/master/audio_cloverALC-100.command.zip)
      2. Double click Downloads/audio\_cloverALC-100.command
      3. Password?
      4. Confirm Realtek ALCxxx (y/n): (885, 887, 888, 889, 892, 898, 1150 only)
      5. Legacy\_v100202 (y/n): (887, 888 only)
      6. Clover Audio ID injection (y/n):
      7. Restart
      8. Verify ALC onboard audio
        1. System Preferences/Sound/Output/select audio device

## Notes

- A. 10.8.5 and newer, Boot flag npci=0x3000 disables audio
  1. Remove npci=0x3000 from Extra/org.chameleon.Boot.plist
- B. AppleHDA.kext version matters
  1. AppleHDA.kext can be the same as or earlier than the installed OS X version
  2. AppleHDA.kext does not work if newer than the installed OS X version
    1. 10.8.5 AppleHDA.kext installed in 10.8.4 OS X - no audio devices
- C. Audio codec verification/DPCIManager see **Tools B**.
  1. See Status/Codec ID/Revision, note Codec ID
  2. Verify **Requirements**/2. Realtek ALC/1. Supported audio codecs, above
- D. Audio\_ID Verification/IORRegistryExplorer see **Tools C**.
  1. Search: HDEF
  2. Locate: layout-id (right pane, scroll down)
  3. Verify:
    - <01 00 00 00> or

- <02 00 00 00> or
- <03 00 00 00>
- 5. Sound Assertions (line varies by version)
  1. MaximumBootBeepVolume/Sound assertion in AppleHDAEngine at line 581
    1. See Dmitry, [AppleIntelFramebufferAzul.kext \(part III\) I Pike's Universum](#)
    2. Ignore

### Unsupported/Non working Realtek ALC AppleHDA.kext

- A. 887\_v100201 and earlier
- B. 888\_v100201 and earlier
- C. Asus P67H67 3xxx BIOS: Phantom codec
  1. Workaround: 2xxx BIOS downgrade, 7/8 Series upgrade
- D. MSI motherboards, pre Sandy Bridge
  1. Workaround: 6/7/8 Series upgrade
- E. AC97 (Front Panel)
  1. Workaround: HD Audio

### Realtek ALC Speakers

- A. Audio ID: 1 and 3, match speaker connector color to same motherboard/case port color
- B. Audio ID: 2 (3 port motherboard audio)
  1. Plug black connector into blue motherboard port for rear speakers
  2. Plug green connector into green motherboard port for front speakers
  3. Plug orange connector into pink motherboard port for center/sub speakers
  4. Front panel: Match connector color to same case port color

### Optional Installs

- A. Configure 5.1 Surround Sound Aggregate Device (Not available with Audio ID: 3)
  1. Applications/Utilities/Audio MIDI Setup
  2. See [tonymacx86 - How to enable 5.1-channel analogue audio in OS X](#)
- B. Connect Audio Input to Audio Output
  1. Line In - <http://www.rogueamoeba.com/freebies/>

### OS X Surround Sound, see [toleda/audio\\_ALC\\_guides](#)

- A. Surround Sound - Realtek ALC - AppleHDA [Guide]
- B. OS X volume control and mute (On screen display, System Preferences/Sound, keyboard, mouse, Apple Remote, etc.)
  1. Supports volume control/mute for connected analog stereo speakers only
  2. No volume control/mute support for digital audio or aggregate devices
  3. Use the controls and/or remote for the audio device attached making sound
  4. For DD/DTS, Windows is the same
  5. For experts, [Controlling Your Monitor with OSX: DDC Panel](#)
- C. OS X Surround Sound requires
  1. DD/DTS source (movies, iTunes/AC3, etc.)

2. DD/DTS player (Plex, XBMC, Boxee, VLC - see 5 below)
3. DD/DTS sound system (Receiver, TV, surround speaker system, etc.)
4. Audio MIDI Setup/Audio Devices/Digital Output/ always shows 2 Channel Stereo.
5. VLC/SPDIF/encoded digital audio is not supported

**Customization**, see [ttoleda/audio\\_ALC\\_guides](http://ttoleda/audio_ALC_guides)

- A. Customization - Realtek ALC AppleHDA\_v2.pdf
  1. Add SPDIFIn
  2. Manual Mic and Front Mic Selection
  3. Manual Speaker and Headphone Selection
  4. Add Boost to input (Mic/Rear. Mic/Front and/or Line In)
  5. Substitute Gray (Side) for Black (Rear)
  6. Add Line Out (Gray/Rear -Rear Speakers) for analog 7.1 Surround Sound
  7. Substitute SPDIF-2 Wire Output
  8. SPDIF Optical Output/Encoded Digital Audio - Not supported in 10.9
  9. HDMI audio (AMD/Nvidia/HD3000/HD4000)
  10. 2x HD3000/HD4000 HDMI Audio

**Audio Popping Solution**

- A. Symptoms
  1. After a short period of no audio, the amp is turned down/quieted to eliminate static/noise. When the audio signal returns, the amp is powered up causing a pop.
- B. Work Around:
  1. [Turn Off Your Mac's Volume Pop Sound with a Click](#)
  2. Digital audio (HDMI, optical, USB, etc.)
  3. Black or orange ports
  4. Anti pop software
  5. Macpro3,1 system definition

**USB Start Up Solution**

- A. Symptoms
  1. Long boot
  2. Delayed working keyboard and mouse
- B. Work Around
  1. Remove S/L/E/HDAEnabler....kext (Enabler1, 2, 889, etc.)
  2. Install an alternate audio enabler
- C. Alternate Audio Enablers, see Audio ID Injection above
  1. dsdt/HDEF
  2. ssdt/HDEF
- D. Finish installation
  1. Rebuilt kernel cache, DPCIManager, **Tools B.**

**Tools**

- A. [MaciASL](#)
- B. [DPCIManager](#)

- C. IORegistry Explorer (choose one)
  - 1. [IORegistryExplorer\\_v2.1.zip](#)
  - 2. [IOJones](#)
- D. Kext Install utilities, i.e., Kext Wizard, Kext Utility, DPCIManager, etc.

**Troubleshooting** [toleda/audio\\_ALC\\_guides](#)

- A. No Audio Devices - Realtek ALC AppleHDA\_v2.pdf
- B. No Audio After Sleep - Realtek ALC AppleHDA.pdf
- C. No Sound - Realtek ALC AppleHDA\_v2.pdf

**Problem Reporting**

- A. [toleda/audio\\_RealtekALC/README/Problem Reporting](#)

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[https://github.com/toleda/audio\\_ALC\\_guides](https://github.com/toleda/audio_ALC_guides)