OS X Audio -
Realtek ALC AppleHDA [Guide]

Realtek ALC/Desktop: 269(1), 283(1), 885, 887, 888, 892, 898 and 1150 on board audio (1) BRIX/NUC only
Supports OS X: 10.11, 10.10, 10.9 and 10.8
Native AppleHDA

Enables OS X Realtek ALC on board audio for Intel motherboards. El Capitan requires native AppleHDA.kext. Codec specific script edits binaries and installs specific files. Select one **Realtek ALC AppleHDA Audio Installation Method**.

Change Log
1.   v2.4 - 1/21/15: El Capitan/10.11.x update (Details.md deprecated)

Requirements
1.   OS X versions supported
     1.   El Capitan/10.11.x (Disable SIP)
          -     CsrActiveConfig/0x3
     2.   Yosemite/10.10.x (Allow unsigned kexts)
          -     Boot flag: kext-dev-mode=1
     3.   Mavericks/10.9.x
     4.   Mountain Lion/10.8.x
2.   Intel/Desktop motherboards
3.   Native AppleHDA; need native, see Restore native AppleHDA [Guide].pdf
     1.   AppleHDA.kext does not work if newer than the installed OS X version
4.   Audio codec/ALC Injection, see Tools 3. (below), confirms:
     1.   Supported Codecs, see **Realtek Codecs and Applications** (below)
     2.   Supported Audio IDs, see **Audio IDs** (below)
     3.   Working Audio ID Injection, **Audio ID Injection** (below)

Contents
Part 1: Installation
Part 2: Details/Support
Part 3: Troubleshooting

Part 1: Realtek ALC AppleHDA Audio Installation Methods, select one
Remove installed method to install another method
Realtek ALC AppleHDA Scripts
   1.   Download script (select one script, Download/View Raw)
A. audio_cloverALC-110.command.zip
              -    patch kernel cache
              -    no edits to any native AppleHDA.kext file
              -    2-4 files added to Resources folder
B. audio_pikeralphaALC-110.command.zip
              -    patch kernel cache
              -    native AppleHDA.kext (signed)
              -    installs AppleHDAxxx.kext (ex., L/E/AppleHDA892.kext)
              -    Not supported: ALC269 and ALC 283
C. audio_realtekALC-110.command.zip
              -    patch kext in place
              -    edits AppleHDA.kext binaries and adds files
              -    run script after Software Update
   2.   Double Click Downloads/audio_. . .ALC-110.command
   3.   Enter Password
   4.   Answer questions (y/n)
   5.   Restart
Piker-Alpha AppleHDA8series Script
   1.   Download script (see README)
D. Piker-Alpha/AppleHDA8Series.sh (10.10 working, 10.11TBA, 10.11 fix, see below)
              -    AppleHDA.kext alias
                   -    installs AppleHDAxxx.kext (ex., L/E/AppleHDA892.kext)
              -    no edits to any native AppleHDA.kext file
               -    Not supported: ALC269 and ALC 283
   2.   Terminal (select one)
        A.   ALC audio/Clover patch:
             -    $ ./AppleHDA8Series.sh
        B.   ALC audio:
             -    $ ./AppleHDA8Series.sh -b AppleHDA
        C.   ALC audio and HD4600 HDMI audio:
             -    $ ./AppleHDA8Series.sh -b AppleHDA -b AppleHDAController
   3.   Enter Password
   4.   ... choose desired codec: (1-7)
   5.   ... layout-id (y/n)
   6.   Answer questions (y/n)
   7.   10.11 fix, see Credit/lisai9093 (below)
   8.   Restart

Realtek ALC AppleHDA Installation Methods Summary

Method	Purpose	Bootloaders	New Install	OS X Software Update
Reserved				
A. cloverALC Backup: S/L/E/ AppleHDA.kext remove Resources/ .zml files	1. Verify IOReg/HDEF/ AppleHDA.kext 2. Detect codec 3. Add codec files (see 1. above) 4. **Patch cache**	1. Clover (EFI, Legacy or root)	1. Install 2. Restart 3. Boot Flag 4. Restart 5. Run Script 6. Restart	1. Disable SIP 2. Update 3. Enable SIP 4. Restart
B. pikeralpha ALC, Clover/ AppleHDA 8series Backup: NA	1. Install ALC enabler kext: S/L/E/ AppleHDAxxx .kext 2. **Patch cache**	1. Clover (EFI, Legacy or root)	1. Install 2. Restart 3. Boot Flag 4. Restart 5. Run Script 6. Restart	1. Disable SIP 2. Update 3. Enable SIP 4. Restart
C. realtekALC Backup: Desktop/ audio_ALC.../ AppleHDA-orig.kext, rename and install	1. Verify IOReg/ HDEF/Audio ID/ AppleHDA.kext 2. Detect codec 3. Add codec files 4. **Patch binaries**	1. Chameleon 2. Clover (EFI, Legacy or root)	1. Install 2. Restart 3. Boot Flag 4. Audio ID 5. Restart 6. Run Script 7. Restart	1. Disable SIP 2. Update 3. Restart 4. Run Script 5. Enable SIP 6. Restart
D. Piker-Alpha AppleHDA 8series Backup: NA	1. Install ALC enabler kext: S/L/E/ AppleHDAxxx .kext	1. Chameleon 2. Clover (EFI, Legacy or root)	1. Install 2. Restart 3. Boot Flag 4. Restart 5. Run Script 6. Restart	1. Disable SIP 2. Update 3. Enable SIP 4. Restart

Boot Flag
1. El Capitan/10.11.x only/config.plist/RtVariables/CsrActiveConfig/
    A. Disable SIP: CsrActiveConfig/0x3
    B. Enable SIP: CsrActiveConfig/0x0
2. Yosemite/10.10.x only/Boot flag: kext-dev-mode=1
    A. Allow unsigned kexts
3. 10.8.5 and newer, Boot flag npci=0x3000 disables OS X audio, remove

Unsupported/Non-working Realtek ALC AppleHDA.kext
1. 100 Series/Intel High Definition Audio (Workaround requires A, B, C and D)
    A. Rename dsdt/HDAS to HDEF
        i. Clover: Download/config-audio_cloverALC-100series.plist.zip
            - Add config.plist/ACPI/DSDT/Patches/Rename HDAS to HDEF
        ii. ssdt injection (Any bootloader. Select Audio ID and install)
            - Audio ID: 1, ssdt_hdef-1-100-hdas.zip
            - Audio ID: 2, ssdt_hdef-2-100-hdas.zip
            - Audio ID: 3, ssdt_hdef-3-100-hdas.zip
    B. Restart
    C. Install **Realtek ALC Audio** (see **Realtek ALC Installation Methods**)
    D. Restart
2. X99/Intel High Definition Audio (Workaround requires A, B, C, D, E and F)
    A. Install 10.9.5 AppleHDA.kext_v2.6.3
        i. Extract from Mavericks Installer
        ii. MultiBeast 6.5.1 Downloads - tonymacx86.com Skip Step D, below
    B. Rename dsdt/ALSA to HDEF (Select one method)
        i. Clover: Download/config-audio_cloverALC-x99.plist.zip
            - Add config.plist/ACPI/DSDT/Patches/Rename ALZA to HDEF
        ii. ssdt injection (Any bootloader):
            - Audio ID: 1, install ssdt_hdef-1-x99_alza.zip
    C. Restart
    D. Install **Realtek ALC Audio** (see **Realtek ALC Installation Methods**)
    E. Add x99 HD Audio device_id (Select one method)
        i. Clover: Download/config-audio_cloverALC-x99.plist.zip
            - Add config.plist/KernelAndKextPatches/KextsToPatch/ 10.9.4-10.10-/x99 ALC Onboard Audio
        ii. Patched AppleHDA.kext (RealtekALC, MultiBeast 6.5.1 methods)
            - Double Click/audio_alc_x99-hda-100_patch.command.zip
    F. Restart
3. 887_v100101 and earlier
    A. Workaround: try 887 Legacy
4. 888_v100101 and earlier
    A. Workaround: try 888 Legacy
5. Asus P67H67 3xxx BIOS: Phantom codec
    A. Workaround: 2xxx BIOS downgrade, 7/8 Series motherboard upgrade
6. MSI motherboards, pre Sandy Bridge
    A. Workaround: 6/7/8 Series motherboard upgrade
7. AC97 (Front Panel)
    A. Workaround: HD Audio

Part 2: Realtek ALC AppleHDA Audio - Details/Support

Realtek Codecs and Applications

Codec	Same ID	Device_ID	Version	Appli-cation	Audio IDs	Audio Devices
1. **ALC269**		0x10ec0269		BRIX	1	HP, SPDIF
2. **ALC283**		0x10ec0283		NUC/ BRIX Pro	1	HP, Mic
3. **ALC885**	ALC889A	0x10ec0885		Desktop	1	All
4. **ALC887**-L	ALC888B	0x10ec0887	0x002002	Desktop	1/2	All
5. **ALC887**		0x10ec0887	0x003002	Desktop	1/2/3	All
6. **ALC888**-L	ALC888S	0x10ec0888	0x002002	Desktop	1/2	All
7. **ALC888**		0x10ec0888	0x003002	Desktop	1/2/3	All
8. **ALC889**		0x10ec0889		Desktop	1/2	All
9. **ALC892**		0x10ec0892		Desktop	1/2/3	All
10. **ALC898**		0x10ec0899		Desktop	1/2/3	All
11. **ALC1150**		0x10ec0900		Desktop	1/2/3	All

L: Legacy

Audio IDs
1. **Audio ID: 1** (motherboard with 3, 5 or 6 audio ports)
   A. Stereo (2 inputs, 4 outputs), 5.1 analog surround (3 outputs) and 5.1 digital surround (optical)
      a. Front Panel: Pink & Green
      b. Motherboard: Pink, Blue, Green, Orange, Black and SPDIF
2. **Audio ID: 2** (motherboard with 3 audio ports, enables analog surround sound))
   A. Stereo (1 input, 4 outputs), 5.1 analog surround (3 outputs) and 5.1 digital surround (optical)
      a. Front Panel: Pink & Green
      b. Motherboard: Green, Pink (> Orange), Blue (> Black) and SPDIF
3. **Audio ID: 3** (Enables HD3000/HD4000/HD5xx HDMI audio)
   A. Stereo (2 inputs, 3 outputs/) and 5.1 digital surround (optical)
      a. Front Panel: Pink & Green
      b. Motherboard: Pink, Blue, Green, Black and SPDIF
         - no Orange support, see Customization guide/remove SPDIF

Audio ID Injection, audio_ALCInjection
1. HDEF/**kext**/no dsdt/HDAEnablerx.kext, x = 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
5. HDEF/**Chameleon**/Extra/org.chameleon.Boot.plist
   1. HDAEnabler = Yes
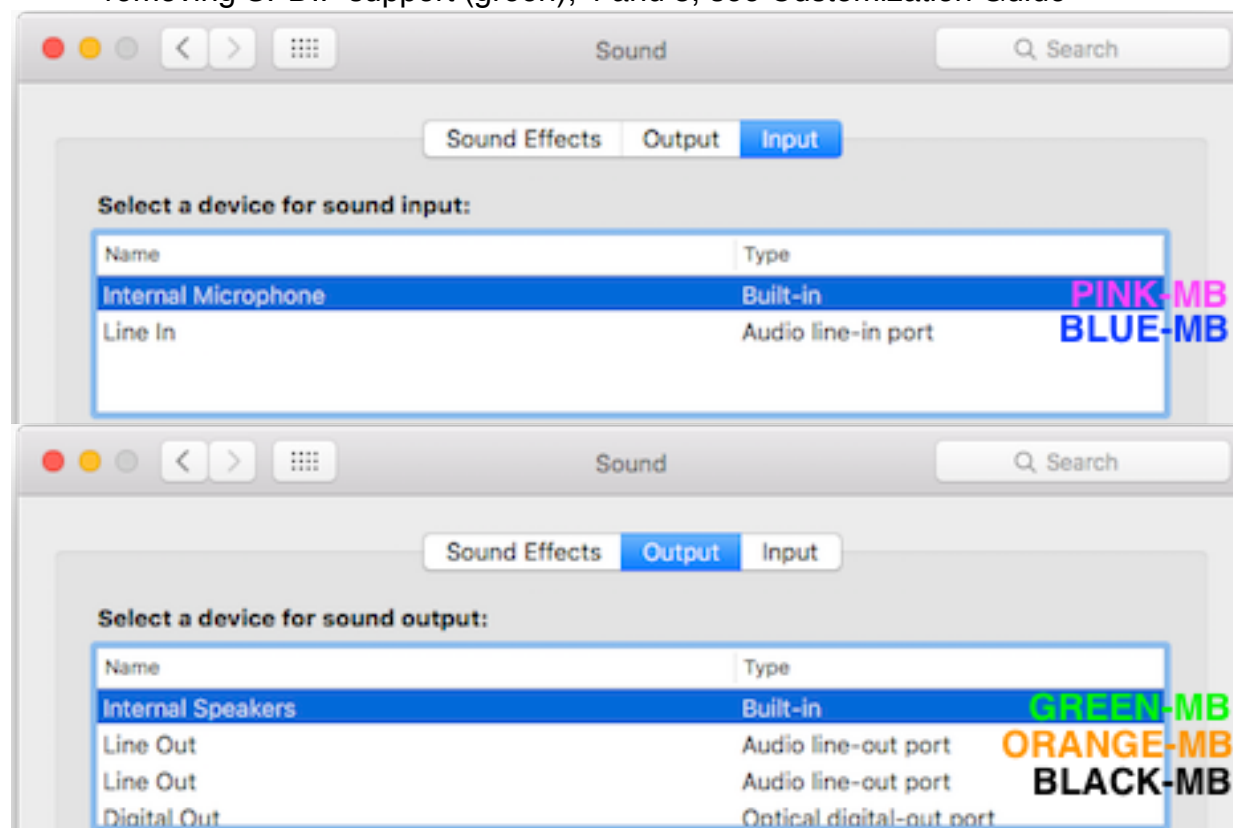   2. HDEFLayoutID = 01000000 or 02000000 or 03000000 (0x = Audio_ID)

System Preferences/Sound Labels (SP/S Label)
Motherboard (**Audio IDs 1**)

Audio Device	Jack	SP/S Label	Surround (3)	Audio Cable
1. Microphone	Pink	Internal Mic (1)		Pink
2, Mic/Device	Blue	Line In		Blue
3. Speaker	Green	Internal Speaker (2)	Front	Green
4. Speaker	Orange	Line Out (1st)	Center/Sub	Orange
5. Speaker	Black	Line Out (2nd)	Side	Black
6. Speaker	Gray	Line Out (3rd) (4)	Rear	Gray
7. Optical Cable	SPDIF	Digital Audio (5)	DD/DTS	
8. Monitor	DP	DisplayPort	DD/DTS	
9. TV/Receiver	HDMI	HDMI	DD/DTS	

Notes
1. Front Panel Mic mutes Motherboard Mic, SP/S Label: Line In replaces Internal Microphone
2. Front Panel Headphone mutes Motherboard Speaker, SP/S Label: Headphone replaces Internal Speakers
3. Analog surround requires Audio MIDI Setup/Aggregate Device, see Surround Sound Guide
4. Gray Support requires AppleHDA.kext edits and removing SPDIF support
5. Separating front and rear pink or green requires AppleHDA.kext edits and and removing SPDIF support (green); 4 and 5, see Customization Guide
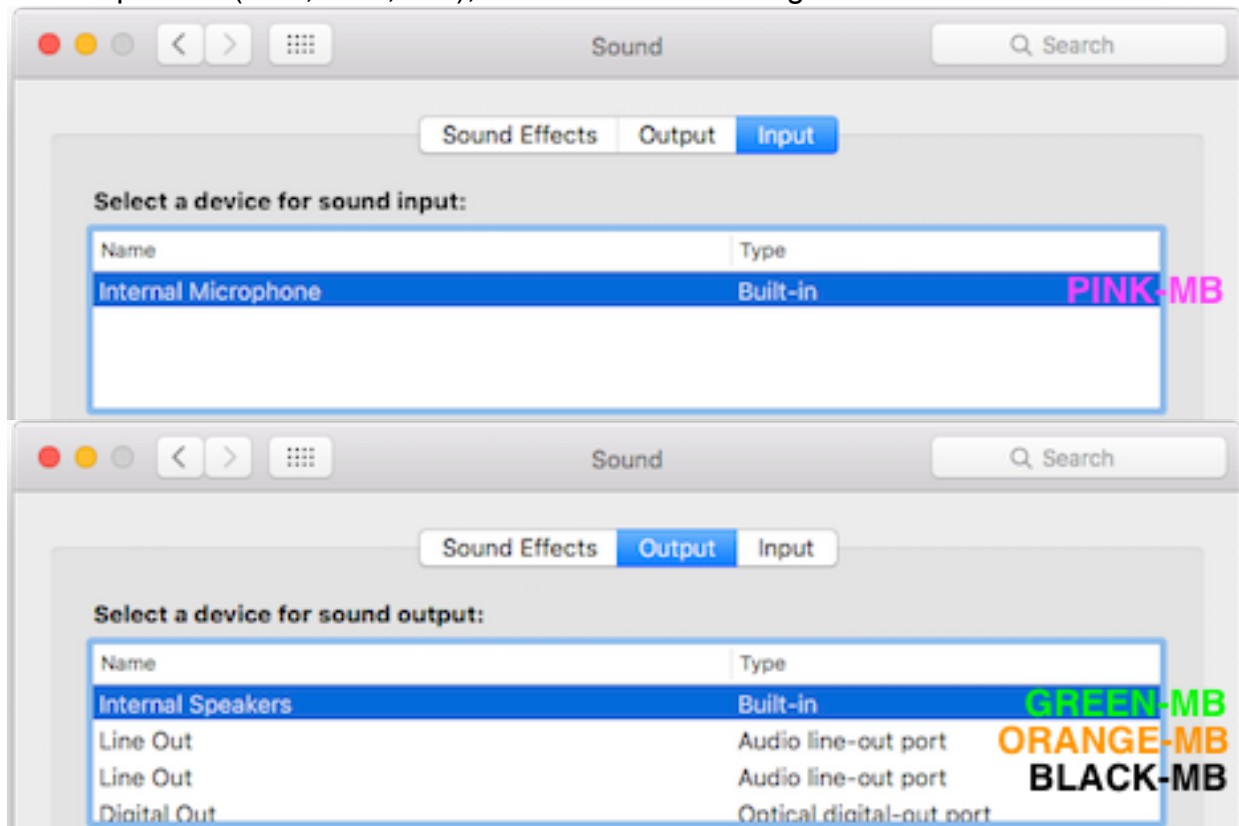
System Information/Audio(Audio ID:1)

	iMac

▼ Hardware
- ATA
- **Audio**
- Bluetooth
- Camera
- Card Reader
- Diagnostics
- Disc Burning
- Ethernet Cards
- Fibre Channel
- FireWire
- Graphics/Displays
- Hardware RAID
- Memory
- NVMExpress
- PCI
- Parallel SCSI
- Power
- Printers
- SAS
- SATA/SATA Express
- SPI
- Storage
- Thunderbolt
- USB

▼ Network
- Firewall
- Locations
- Volumes
- WWAN
- Wi-Fi

▼ Software
- Accessibility
- Applications
- Components
- Developer
- Disabled Software
- Extensions
- Fonts
- Frameworks
- Installations
- Logs
- Managed Client
- Preference Panes
- Printer Software
- Profiles
- Startup Items
- Sync Services

Audio

▼ Devices
- AirPlay
- Built-in Input
- Built-in Line Input
- Built-in Output
- Built-in Line Output
- Built-in Line Output
- Built-in Digital Output
- DisplayPort
- **▼ Intel High Definition Audio**
  - Speaker
  - Line Output
  - Line Output
  - Internal Microphone
  - Line Input
  - Line Input
  - Headphone
  - S/PDIF Optical Digital Audio Output
  - HDMI / DisplayPort Output
  - HDMI / DisplayPort Output

Intel High Definition Audio:

Audio ID: 1

Speaker:

Connection: Internal

Line Output:

Connection: 1/8-Inch Jack

Line Output:

Connection: 1/8-Inch Jack

Internal Microphone:

Connection: Internal

Line Input:

Connection: 1/8-Inch Jack

Line Input:

Connection: 1/8-Inch Jack

Headphone:

Connection: 1/8-Inch Jack

S/PDIF Optical Digital Audio Output:

Connection: Combination Output

HDMI / DisplayPort Output:

Connection: Display

HDMI / DisplayPort Output:

Connection: Display

Motherboard (**Audio IDs 2**, 3 port motherboard audio, surround sound))

Audio Device	Jack	SP/S Label	Surround (2)	Audio Cable
1. Speaker	Green	Internal Speaker (1)	Front	Green
2, Speaker	Pink	Line Out (1st)	Center/Sub	Orange
3. Speaker	Blue	Line Out (2nd)	Side	Black
4. Optical Cable	SPDIF	Digital Audio	DD/DTS	
5. Monitor	DP	DisplayPort	DD/DT	
6. TV/Receiver	HDMI	HDMI	DD/DT	

Notes
1. Front Panel Headphone mutes Motherboard Speaker, SP/S Label: Headphone replaces Internal Speakers
2. Analog surround requires Audio MIDI Setup/Aggregate Device. Analog and digital surround requires surround capable player depending on installation specifics (Plex, Kodi, etc.), see Surround Sound guide

System Information/Audio(Audio ID: 2)

iMac

▼ Hardware
    ATA
    Audio
    Bluetooth
    Camera
    Card Reader
    Diagnostics
    Disc Burning
    Ethernet Cards
    Fibre Channel
    FireWire
    Graphics/Displays
    Hardware RAID
    Memory
    NVMExpress
    PCI
    Parallel SCSI
    Power
    Printers
    SAS
    SATA/SATA Express
    SPI
    Storage
    Thunderbolt
    USB
▼ Network
    Firewall
    Locations
    Volumes
    WWAN
    Wi-Fi
▼ Software
    Accessibility
    Applications
    Components
    Developer
    Disabled Software
    Extensions
    Fonts
    Frameworks
    Installations
    Logs
    Managed Client
    Preference Panes
    Printer Software
    Profiles
    Startup Items
    Sync Services

Audio
  ▼ Devices
    AirPlay
    Built-in Microphone
    Built-in Output
    Built-in Line Output
    Built-in Line Output
    Built-in Digital Output
    DisplayPort
  ▼ Intel High Definition Audio
    Speaker
    Line Output
    Internal Microphone
    Line Output
    Headphone
    S/PDIF Optical Digital Audio Output
    HDMI / DisplayPort Output
    HDMI / DisplayPort Output

Intel High Definition Audio:

  Audio ID: 2

    Speaker:

      Connection: Internal

    Line Output:

      Connection: 1/8-Inch Jack

    Internal Microphone:

      Connection: Internal

    Line Output:

      Connection: 1/8-Inch Jack

    Headphone:

      Connection: 1/8-Inch Jack

    S/PDIF Optical Digital Audio Output:

      Connection: Combination Output

    HDMI / DisplayPort Output:

      Connection: Display

    HDMI / DisplayPort Output:

      Connection: Display
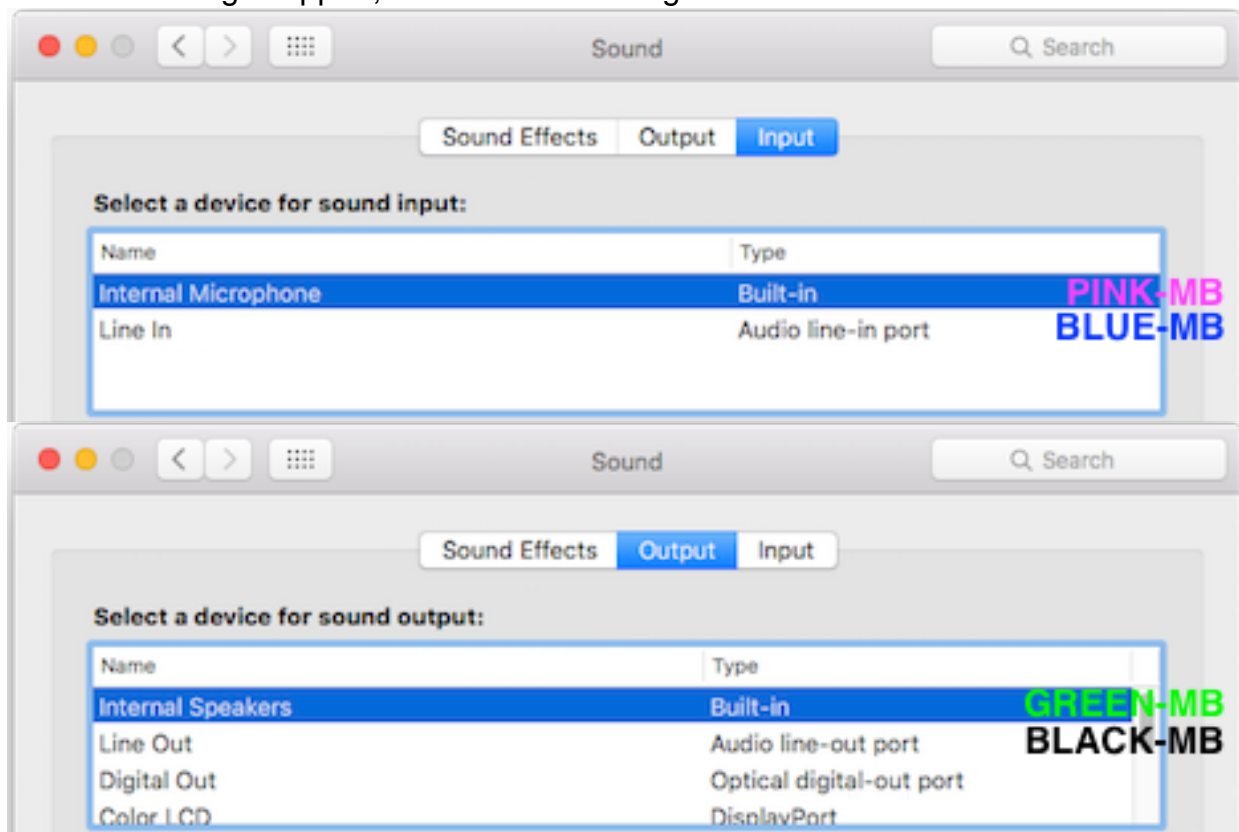
Motherboard (**Audio IDs 3**, mandatory for HD3000/HD4000/HD5xx HDMI audio)

Audio Device	Jack	SP/S Label	Surround (4)	Audio Cable
1. Microphone	Pink	Internal Mic (1)		Pink
2, Mic/Device	Blue	Line In		Blue
3. Speaker	Green	Internal Speaker (2)	Front	Green
4. Speaker	Black	Line Out	Side	Black
5. Optical Cable	SPDIF	Digital Audio	DD/DTS	
6. Monitor	DP	DisplayPort	DD/DTS	
7. TV/Receiver	HDMI	HDMI	DD/DTS	
8. Speaker	Orange	Line Out (3)	Center/Sub	Orange

Notes
1. Front Panel Mic mutes Motherboard Mic, SP/S Label: Line In replaces Internal Microphone (5)
2. Front Panel Headphone mutes Motherboard Speaker, SP/S Label: Headphone replaces Internal Speakers
3. No Orange support, see Customization guide/remove SPDIF

System Information/Audio(Audio ID: 3)

iMac

▼ Hardware
    ATA
    Audio
    Bluetooth
    Camera
    Card Reader
    Diagnostics
    Disc Burning
    Ethernet Cards
    Fibre Channel
    FireWire
    Graphics/Displays
    Hardware RAID
    Memory
    NVMExpress
    PCI
    Parallel SCSI
    Power
    Printers
    SAS
    SATA/SATA Express
    SPI
    Storage
    Thunderbolt
    USB
▼ Network
    Firewall
    Locations
    Volumes
    WWAN
    Wi-Fi
▼ Software
    Accessibility
    Applications
    Components
    Developer
    Disabled Software
    Extensions
    Fonts
    Frameworks
    Installations
    Logs
    Managed Client
    Preference Panes
    Printer Software
    Profiles
    Startup Items
    Sync Services

Audio

▼ Devices
    AirPlay
    Built-in Input
    Built-in Line Input
    Built-in Output
    Built-in Line Output
    Built-in Digital Output
    DisplayPort
▼ Intel High Definition Audio
    Speaker
    Line Output
    Internal Microphone
    Line Input
    Line Input
    Headphone
    S/PDIF Optical Digital Audio Output
    HDMI / DisplayPort Output
    HDMI / DisplayPort Output

Intel High Definition Audio:

  Audio ID: 3

      Speaker:

        Connection: Internal

      Line Output:

        Connection: 1/8-Inch Jack

      Internal Microphone:

        Connection: Internal

      Line Input:

        Connection: 1/8-Inch Jack

      Line Input:

        Connection: 1/8-Inch Jack

      Headphone:

        Connection: 1/8-Inch Jack

      S/PDIF Optical Digital Audio Output:

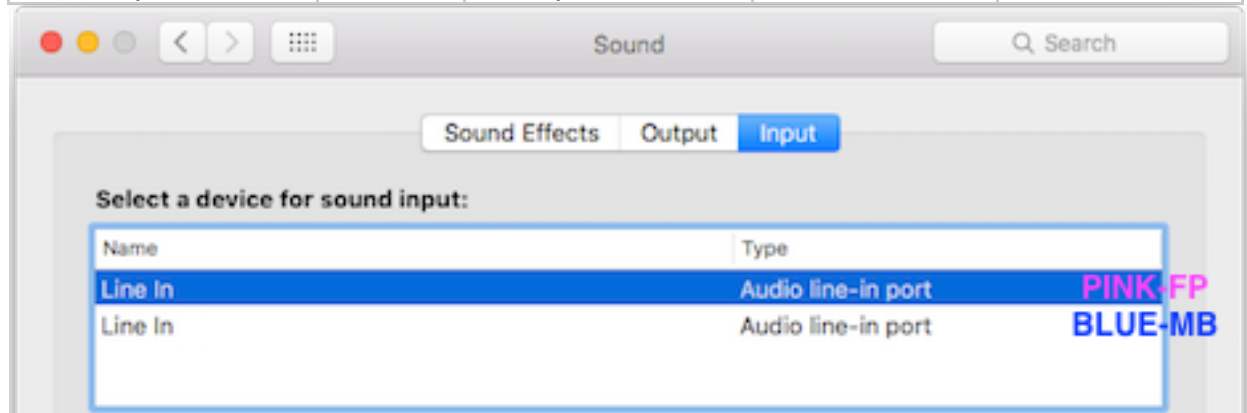   Connection: Combination Output

      HDMI / DisplayPort Output:

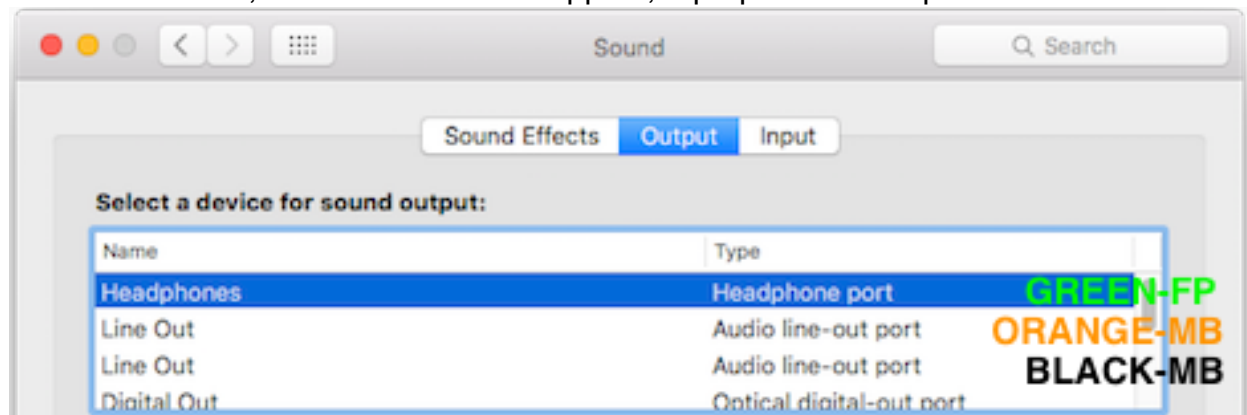   Connection: Display

      HDMI / DisplayPort Output:

        Connection: Display

Front Panel (**Audio IDs 1, 2 or 3**)

Audio Device	Jack	SP/S Label	Surround	Audio Cable
1. Microphone	Pink	Line In (1)		Pink
2. Headphone	Green	Headphones		Green

Note: Audio ID: 2, BLUE-MB does not appear, repurposed to Output/BLACK

Note: Audio ID: 3, ORANGE-MB does not appear; replaced by DP/HDMI audio device

More Information audio_ALC_guides
1. Enhancements
    A. Customization - Realtek ALC AppleHDA [Guide].pdf
        - Manual speaker and headphone selection, Substitute SPDIF-2 Wire Output
    B. Surround Sound - Realtek ALC AppleHDA [Guide].pdf
        - Players, analog, optical, HDMI, USB

Optional Installs
1. Connect Audio Input to Audio Output
    A. Line In - http://www.rogueamoeba.com/freebies/

Uninstall Realtek ALC AppleHDA
1. cloverALC, remove:
    A. S/L/E/AppleHDA.kext and install the native AppleHDA.kext
        - or S/L/E/AppleHDA.kext/Contents/Resources/layout1.zml.zlib, layout2.zml.zlib, layout3.zml.zlib, Platforms.zml.zlib
    B. config.plist/.../KextsToPatch/AppleHDA (3x)
    C. EFI/CLOVER/kexts/10.xx or other/realtekALC.kext
2. pikeralphaALC, remove:
    A. L/E/AppleHDA8xx.kext
    B. config.plist/.../KextsToPatch/AppleHDA (3x)
3. realtekALC, remove:
    A. S/L/E/AppleHDA.kext and install the native AppleHDA.kext
4. pikeralpha AppleHDA8Series, remove:
    A. S/L/E/AppleHDA8xx.kext and install the native AppleHDA.kext

Part 3: Troubleshooting
More Information audio_ALC_guides
   1.   Troubleshooting
       A.   No Audio Devices - Realtek ALC AppleHDA [Guide].pdf
            -   No audio devices, no sound, no codec
       B.   No Sound - Realtek ALC AppleHDA [Guide].pdf
            -   Audio devices present, no sound when selected
       C.   No Audio After Sleep/Wake - Realtek ALC AppleHDA [Fixes].pdf
            -   No audio devices on wake
       D.   Problem Reporting - Realtek ALC AppleHDA [Guide].pdf
            -   Tools, Post to, troubleshooting files

Audio Popping
   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

Problem Reporting
   A.   See Problem Reporting
       1.   Links: **Problem Reporting**/12. Post to
       2.   Attached requested files

Credit
lisai9093, Post #5, AppleHDA for El Capitan discussion
THe KiNG [HOW TO] Patch AppleHDA - Knowledge Base - Project OS X Forums
PikeRAlpha New style of AppleHDA.kext patching for Yosemite | Pike's Universum
abxite http://applelife.ru/...06/#post-353647
TimeWalker75a, Post # 20, No sound after waking from sleep
RevoGirl

toleda
https://github.com/toleda/audio_ALC_guides