

NIKEF

LSX

Owner's Manual

EN

This manual explains setup, preparation and operation of the LSX Music System

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I– Introduction

About This Manual

- Illustrations of English language menu screens, options, accessories and instructions are used
- This manual is specific to features available in the United States and Canada
 - Options and features in other regions may vary
- Due to product improvements, specifications and appearance are subject to change without notice

Icons and their meanings



Indicates use precautions and feature limitations



Indicates tips and hints to help get the most out of your product

Accessories

The following items are included with your LSX Wireless Music System:



Remote Control
(1)



Cat6 Ethernet Cable
(1)



Cloverleaf AC power cable
(2)



Features

Here's what you can do with your new LSX Wireless Music System!

Your new LSX Wireless Music System has been designed to give you the ultimate audio experience in a simple to setup and operate package.

CONNECTIONS & DEVICES

LSX can be connected to a wide variety of devices, including devices and applications for wireless streaming such as NAS (Networked Attached Storage) servers, TIDAL™, Spotify Connect™, televisions and Digital Optical audio devices, Bluetooth™ devices and standard line-level audio devices such as turntables, CD players and cassette decks.

TRUE STEREO WIRELESS PLAYBACK

Using KEF's proprietary on-board network Wi-Fi, the Left and Right channels deliver True Stereo without an interspeaker connection, allowing you to set up your speakers in almost any position without cable limitations. (page 12)

ALL THE MUSIC IN THE WORLD

TIDAL and Spotify Connect allow you to access virtually all the music in the world simply and easily. (page 21)

CUSTOMIZED SOUND

Via the DSP (Digital Sound Processor) on-board the LSX, you can tailor the sound of your units to your taste or to correct audio problems within your listening area. (page 18)

MULTI-ROOM CONTROL

With Apple Airplay2™ and Roon™ you can control multiple devices throughout your home. (page 22,23).

MULTIPLE WIRELESS CONNECTIONS

LSX can be connected to your home network wirelessly or via the on-board Ethernet connection.



In crowded networking environments, such as an apartment building or office space, using the Ethernet cable may provide a more stable network connection for streaming.

“Sit Anywhere” TECHNOLOGY

KEF's patented Uni-Q speaker allows you to sit virtually anywhere and hear your music or other audio program clearly, just as the artists who created it intended.

HIGH RESOLUTION STREAMING

Listen to high-resolution music and audio files at 96kHz/24-bit resolution in Cable Mode. (page 12)

Home Automation Integration

LSX is compatible with standard home automation software platforms. (Appen. 3 pg 31)

CONTROL & STREAM APPS

Install KEF's Control and Stream apps on your Apple™ or Android™ device to access all LS family streaming, control and DSP features.

2 – First Time Setup

OPENING THE BOX AND REMOVING THE SPEAKERS

After unsealing the packing material, carefully lift your speakers out of the box.



Lift the speakers from the side only! Lifting or handling the speakers from the front may cause damage to the Uni-Q drivers.

DOWNLOAD THE APPS

Download the KEF Control and Stream apps to your mobile or handheld device.



In order to setup your LSX for standard operation, you must connect them to the KEF Control App via a wireless network connection.

CONNECTING TO POWER

Remove the (2) cloverleaf AC power cables from the Accessories box and connect both speakers to power.

DISTANCE BETWEEN SPEAKERS

- For the best stereo soundstage place the speakers between 3 and 8 feet (1-3m) apart
- **Wireless Mode:** Up to 15 feet (3m)
- **Cable Mode:** Up to 24 feet (8m).

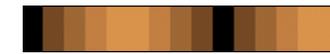
Opening the Box & Unpacking the Speakers

INDICATOR



While waiting to on-board, the Master speaker indicator will slowly alternate between amber and white.

While LSX is connecting to your network the Master Speaker



indicator will turn amber and pulse on and off.

OPEN KEF CONTROL APP

Master speaker indicator slowly flashing between amber and white.

- The HELLO! screen will appear – please select KEF LSX
- If connecting LSX for the first time, please select **NEXT**
- If LSX has previously been connected to your network, please select **CONNECT TO EXISTING**.
- From your device's Wi-Fi setup page please select LSX



For first time setup it may take as long as 5 minutes for your network to find and connect to the LSX.

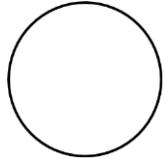


iOS devices require that you leave the KEF Control App by pressing the **HOME** button and entering the **SETTINGS** page. Once you have selected the LSX from this page, please return to the KEF Control app.

- Choose your Wi-Fi network. Be sure to connect device and LSX to the same network
- Enter your network password and press **NEXT**
- You may rename your speaker. This is helpful for users with more than one networked KEF product

- The LSX will now reboot. The app will indicate when the speakers have rebooted and when they have connected to your network.
- Once connection is successfully completed, the app will advance to the next screen. Press **LET'S START**.

INDICATOR



The indicator on the Master speaker will now be lit solid white, indicating your speakers are in Wi-Fi mode.

On-Screen Instructions

The KEF Control App will now guide you through a short tutorial on app operation.

To play music press **OPEN KEF STREAM**.



If there are any available firmware updates for your LSX the app will prompt you to update your system.

In order to keep your LSX running with the latest firmware, please be sure to update your speakers when prompted. For instructions on updating your firmware please see page 24.

YOU ARE NOW READY TO LISTEN!

Once you have successfully connected your LSX to your local network and the KEF Control and Stream apps, you are now able to set sound profiles for your various listening sources. Please see page 19 for further information.

REMOTE CONTROL

The included Remote Control performs the following functions:

- Power On/Off
- Input Select
- Volume +/-
- Mute
- Pause/Play
- Skip Track



When using streaming services such as Spotify Connect or Tidal, or devices such as CD players, the Pause/Play and Skip Track functions will not be operable from the LSX remote.

The Remote Control range is approximately 30° on either side of the Master speaker indicator. With fresh batteries the Remote Control range is approximately 20 feet (6m).

The battery is a standard lithium disk battery catalog number CR2032. To avoid damage to the remote, please replace with the same type and number.

Using A Universal Remote Control

KEF remote codes have been published to the major Universal Remote Control manufacturers.

Please see Appendix C for a list of remote codes.

3 – Controls & Connections



- **BT PAIRING** Press when pairing LSX to a Bluetooth device.
 - **M/S PAIRING** Use in conjunction with the corresponding button on a slave speaker to facilitate master/slave pairing. Can be used in the event pairing fails, or if the user decides to use a different LSX slave speaker.
 - **RESET** Performs LSX system factory reset, including clearing of network information. The reset button is below the arrow, the reset indicator above it. Press and hold **RESET** button until **RESET INDICATOR** flashes. Reset is complete when indicator stops flashing.
 - **OPTICAL TOSLINK** optical audio cable input for connection to television optical output. May also be used for audio devices with optical outputs such as CD players.
 - **AUX** Analog audio input. Connect to audio devices such as turntables, tape decks or CD players.
-  Analog signals will be converted to a digital stream by the LSX on-board Analog-to-Digital convertor allowing KEF's DSP to maintain the highest possible audio quality from all connected devices.
- **SUB** Standard RCA-type connector for external subwoofer connection.
 - **NETWORK** Standard Ethernet connection (Cat6 or greater) for direct connection to local network router.
 - **SV = 2A OUT** USB-A type connector for device charging.
 - **TO SLAVE** Interspeaker connection output to Slave speaker for **CABLE MODE**.
 - **AC** Connect to AC power

Slave Speaker

The LSX slave speaker contains the slave **M/S PAIRING** button, the interspeaker cable connection for **CABLE MODE**, and the AC power cable connector.



In normal operation, the indicator on the front panel of the Slave speaker will not be lit.

4 – Audio Specifications

THE UNI-Q



LSX features the patented Uni-Q driver for crystal clear audio reproduction no matter where you are situated.

The new 4” Uni-Q driver array is the same signature KEF technology used throughout KEF’s speaker line.

Uni-Q has been in constant development since 1988. Through precise positioning of the drivers, all frequencies are produced from the same point in space.

The effect is an amazing spread of sound. Uni-Q eliminates the tiny ‘HiFi sweet spot’ that only allows one or two listeners to hear the music in its highest quality. Coupled with an extremely natural response, the beauty of the sound is enjoyed equally by everyone in the room.

AMPLIFIERS

LSX contains four amplifiers, 2 in each cabinet, in a Dual-Mono Bi-Amp configuration.

One 70W Class D amplifier in each cabinet powers the bass and mid-range frequencies.

One 30W Class D amplifier in each cabinet powers the high-frequencies.

Total system power is 200W (100WPC RMS)

MUSIC INTEGRITY ENGINE™ & DSP

KEF's bespoke DSP (Digital Signal Processor), the Music Integrity Engine™ is designed specifically for the LSX driver and cabinet, allowing LSX to reproduce audio as cleanly and purely as is expected from the LS family of products.

Each cabinet contains its own on-board DSP for precise reproduction and control of the audio output. A precise on-board clock controls the timing between the left and right channels, whether in Cable Mode or when using KEF's proprietary on-board Wi-Fi network for complete wireless operation.

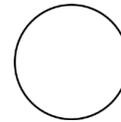
Each cabinet also contains the same audiophile-quality DAC as found in the LS50 Wireless.

Consult the section on the KEF Control and Audio Profiles for information on getting the highest quality audio output possible through use of the DSP and Music Integrity Engine. (pg 19)

WAYS TO CONNECT

LSX easily connects to your music players, storage devices and streaming platforms. For complete information on each connection method please consult the corresponding section for each.

Here is a quick list of all the ways to connect your LSX:



Wi-Fi and Ethernet



Spotify Connect
▲ Spotify Premium required



Bluetooth



TOSLINK Optical



Analog AUX

5 – KEF Control App

KEF CONTROL APP



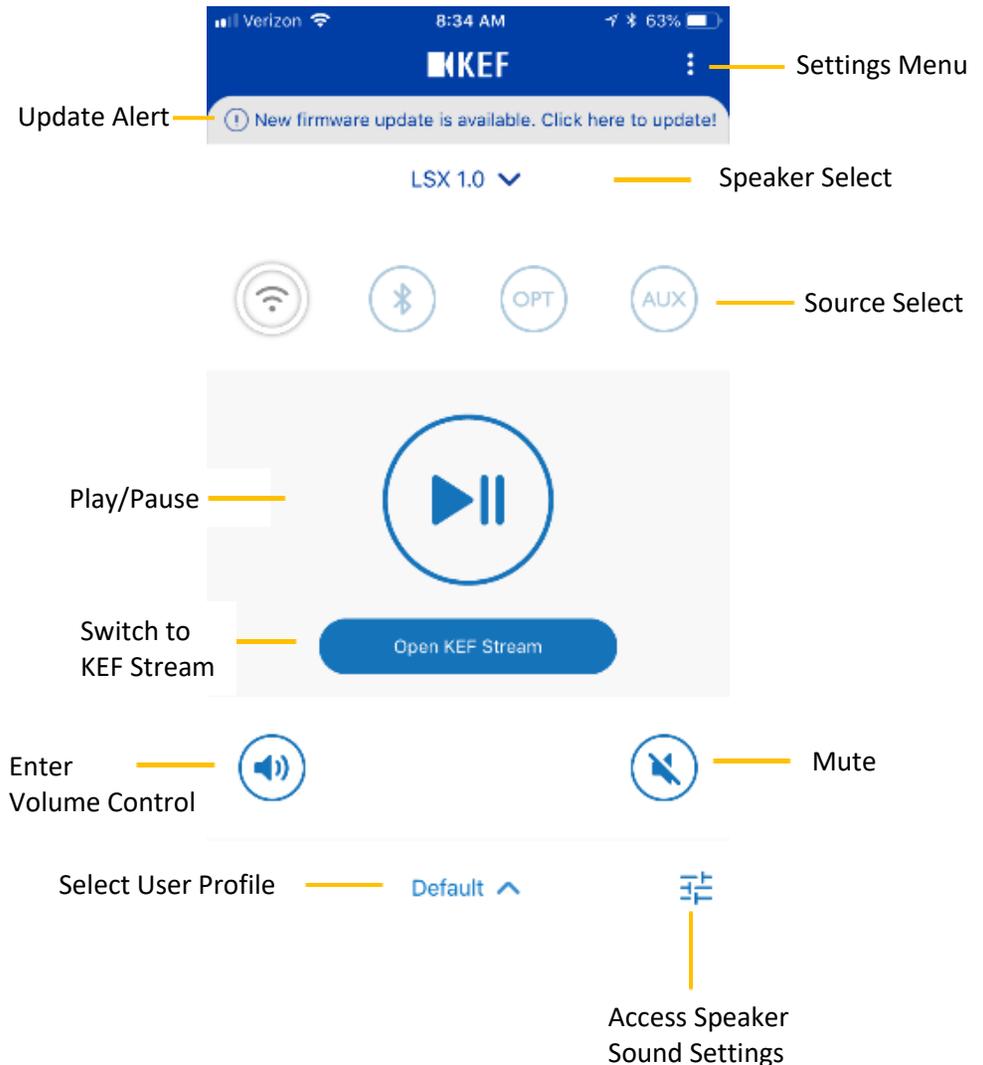
The KEF Control App acts as a remote control for your LSX. The Control App also serves to maintain network communications between LSX and your local network.

- System Control (Standby, Source Select)
- Speaker sound settings and profiles
- Speaker left/right assignment setting
- Over-the-Air firmware updates
- User profiles and individual sound settings

The KEF Control app is available as a free download from either the Apple App Store or Google Play.

 From time-to-time KEF releases updates to the KEF Control and Stream Apps. These updates contain improvements and new features. It is recommended that you update your app as these releases become available.

KEF Control App



KEF Control App

Settings Menu: Access Cable Mode, Inverse L/R Speakers, adjust Standby Mode, Volume Settings, Speaker Info, Firmware Update information.

Update Alert: Informs that a new firmware update is available. It is recommended that firmware updates are installed as soon as they become available. (pg 24)

Speaker Select: Allows connection to more than one LS family networked device.

Source Select: Select the output source for LSX playback.

Play/Pause: Allows for simple playback control from KEF Control app.

Open KEF Stream: Leave the Control app and enter the Stream app for music playback.

Open Volume Control: Press to fine tune output volume. Volume can also be controlled via the device's hardware volume controls (rocker switches).

Mute: Toggle the mute function on/off.

Select User Profile: Multiple sound setting profiles can be saved for individual taste, types of music or room locations.

Access Speaker Sound Settings: Set and adjust DSP sound settings.

KEF Control App

CABLE MODE

With the proprietary on-board 2.4GHz network the left and right channels are not tethered by a cable for 48kHz/24-bit streaming. For high-resolution 96kHz/24-bit resolution streaming, switch **CABLE MODE** on and attach the Cat6 interspeaker cable included in the LSX accessories pack.



CABLE MODE must be selected in the Control App and the interspeaker cable must be connected for high-resolution playback. If **CABLE MODE** is selected and the cable is not connected the LSX will not output music. If the cable is connected but **CABLE MODE** is switched off the LSX will playback in 48kHz/24-bit resolution.

INVERSE L/R SPEAKERS

The Master Speaker default is set to the Left channel and the Slave speaker is set to the Right. If you need to switch the Master to the Right channel / Slave to Left switch **INVERSE L/R SPEAKERS** to the on position.



This feature allows you to maintain the original mix settings between the Left and Right channels in setups where you would like to direct connect your Ethernet to your network (for example) via but are limited by cable length or room setup limitations.

STANDBY MODE

STANDBY MODE allows you to select how long before your LSX will enter standby when idle. Factory default is 20 minutes. This control allows you to set the LSX to enter standby after 20 minutes or 60 minutes of idle time. You can also disable standby by selecting **Never** which will keep your LSX powered on regardless of activity.

KEF Control App

VOLUME SETTINGS

HARDWARE VOLUME BUTTONS

Occasionally you may encounter a situation where the setting for the number of volume steps between the KEF Control app and the streaming service you are using are different. This may cause the volume to jump unexpectedly while adjusting the volume using the hardware volume controls (device rocker switches).

If this occurs, disable the hardware volume control to eliminate the issue.

VOLUME BUTTON SENSITIVITY

This allows you to set the volume step movement for each single press of the device rocker switches.

ENABLE LIMITATION

When switched on, this setting allows you to limit the maximum output volume. The settings are in percentages.

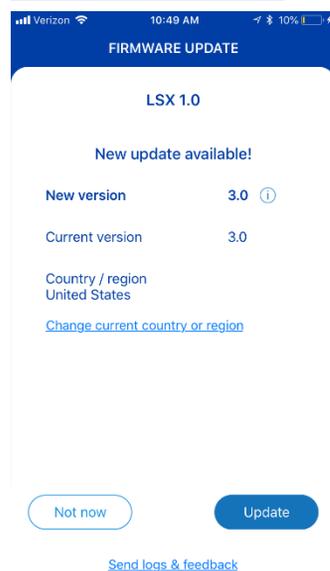
SPEAKER INFO

Access default product information. In the event your LSX needs service or support some of this information may need to be supplied to our Support Team.

- **Speaker Name:** The name you gave your speakers during the onboarding process
- **MAC Address:** (Media Access Control address) is the network address of the device
- **IP Address:** Internet Protocol address of your LSX
- **Speaker Serial No.:** The factory issued serial number of your LSX
- **Firmware Version:** The current loaded and operating firmware in your system

- **Forget Speaker:** Select this when resetting your speaker or if you need to re-onboard your LSX. This will erase all stored information in the Control app

FIRMWARE UPDATE



This screen alerts you to new firmware releases. Select **UPDATE** to download the latest firmware to your LSX. (pg 24)



The interspeaker cable must be connected to perform firmware updates.



In order to keep your LSX operating optimally, please be sure to update the firmware as soon as possible after updates become available.

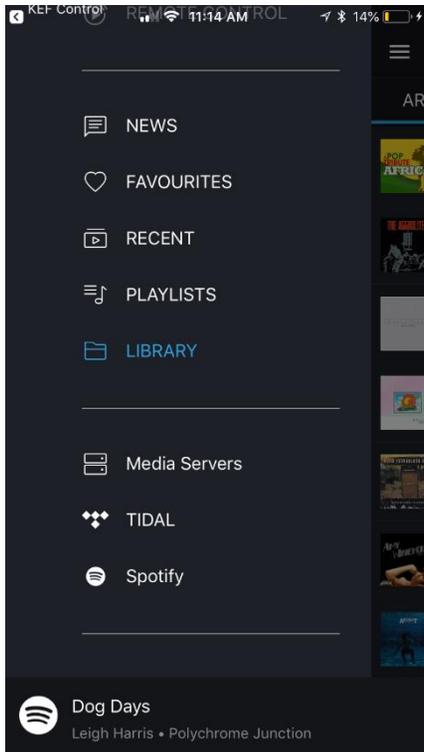
SEND LOGS & FEEDBACK

In the event you encounter a problem with your LSX, please contact our Support Team and send our Development Team a log of the activity at the time of the failure or issue. (pg 31)

This information is extremely helpful to our Support Techs in diagnosing the issue. Feedback from the field is also an invaluable aid to our Development Team.

6 – KEF Stream App

The KEF Stream App controls streaming from your device, server or other network-enabled storage devices.



NEWS: Connect to KEF on the web.

FAVOURITES: Keep track of your favorite tracks stored on your device.

RECENT: Maintains a list of your recently played tracks on your device.

PLAYLISTS: Keep track of and build new playlists on the device and access them here.

LIBRARY: Lists the tracks available on the device.

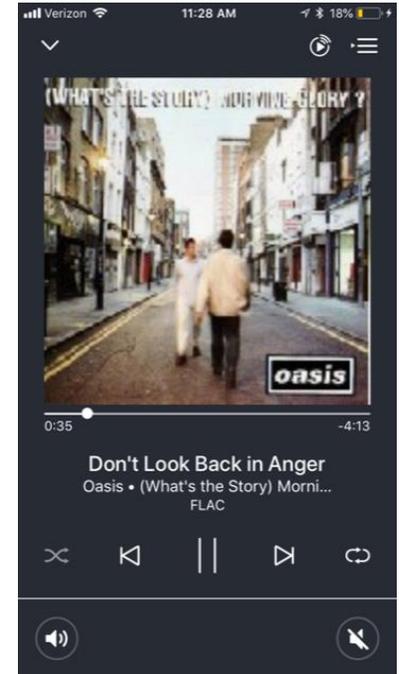
KEF Stream App

MEDIA SERVERS

Directly access and play your tracks from your network connected storage devices. These devices may include a Network Attached Storage device (NAS Server), a connected PC or other storage device that resides on the same network as your LSX.

From the main screen you can:

- Access the Control App
- Check the queue
- Check the file type
- Set Shuffle Mode
- Set Repeat Mode
- Pause, Skip Fwd & Back
- Adjust the Volume
- Mute the output



TIDAL

Please consult the TIDAL section for details on using TIDAL via the KEF Stream app and for other ways to access TIDAL via your LSX. (pg 21)

SPOTIFY CONNECT

Please consult the Spotify Connect section for details on using Spotify Connect via the KEF Stream app and for other ways to access Spotify Connect via your LSX. (pg 21)

7 – Wi-Fi Operation

For optimal performance it's important that your wireless network be as fast and free of interference as possible. Streaming operation and app function are affected by slow network speeds, over-crowding and other network interference issues.

LSX uses the following connection protocols:



Digital Living Network Alliance (DLNA) is a digital media sharing protocol established by Sony which includes promoter members such as Samsung, Google, LG, Microsoft, Panasonic, KEF, etc. In order to allow connection to the largest number of home entertainment devices, LSX uses the DLNA protocol.



Managed by the Open Connectivity Foundation (OCF), UPnP is a series of networking protocols that allow wireless devices to automatically discover each other when plugged into a network.

When UPnP devices are plugged into a network working configurations with other devices are automatically established.

Once added to a UPnP network a device sends a “discover” request asking if there are any other devices it can connect to.

MINIMUM ROUTER REQUIREMENTS

- 802.11n Compatible
- Simultaneous 2.4GHz/5GHz dual-band operation
- Minimum 54Mbps 5GHz transmission speed

ROUTER REQUIREMENTS

There are two router bands available on most current network equipment – 2.4GHz and 5GHz. Most standard routers supplied by your cable or internet provider will be Dual-Band routers that contain both frequency bands.

For large data transfer operations like music streaming, the 5GHz band is generally a better option. In most homes and offices, the 2.4GHz band tends to be crowded, (e.g. devices such as Smart appliances, baby monitors, and other connected devices typically default to the 2.4GHz band).

The 5GHz band is generally a better choice for streaming because of data speeds and lower usage, however, if your speakers are set up far from your router (another floor, the other side of your building, etc.) it is often advisable to use the 2.4GHz band. The 5GHz band has a shorter range with weaker signal strength than the 2.4GHz band.

For proper wireless operation, 54Mbps is the minimum allowable bandwidth, however, for optimal performance a bandwidth of 1500Mbps should be considered the minimum. MU-MIMO capability is necessary. Contact your internet provider for further information on your equipment's capabilities.

Bandwidth

Bandwidth is the amount of data transferred measured in seconds. A bandwidth of 1500Mbps indicates your network is capable of transferring 1500 million bits of data per second.

MU-MIMO

Multi-user - multiple input/multiple output. MIMO is a wireless communication technology that allows a set of users or wireless terminals, each with one or more antennas, to communicate with each other on a network.

Network Tips



When on-boarding your speakers, be sure to connect them to the same network as your device (phone, tablet, etc.).



2.4GHz band: To avoid cross-interference and channel contention issues avoid using Channel 1. Check your routers operation manual for information on how to select channels.



2.4GHz band: All channels are available but for optimal performance channels 6 and 11 are recommended.



In crowded network environments it is advisable to use the Ethernet connection from your router to avoid network failures such as drop-outs during streaming.



There are apps available that allow you to check which channels are available and what your network signal strength is. These may help you set up the best possible streaming environment for your LSX.

8 – Bluetooth

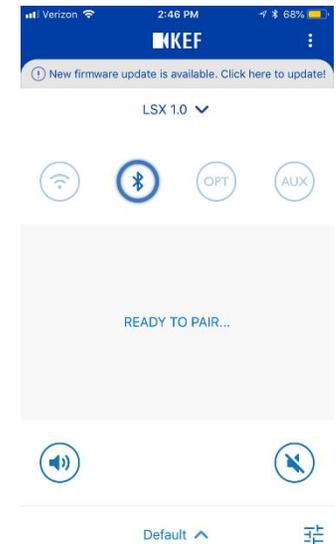
INDICATOR



LSX features Qualcomm's aptX codec for near-CD quality wireless streaming from an aptX compatible device. If the source device is not aptX compatible the higher compression of Bluetooth 4.0 will be transmitted and decoded.

CONNECT TO BLUETOOTH

Select the Bluetooth icon from the KEF Connect App homepage. LSX will enter pairing mode.



For first time connection you may have to enter your device's Bluetooth menu and select LSX.

In the event you encounter a problem pairing your device to LSX, there is a **Bluetooth Pairing** button on the rear of the Master speaker. The **BT PAIRING** indicator blinks during search mode. Press and hold the **BT PAIRING** button until the indicator stops blinking, which indicates a device has been paired to LSX.

9 – Optical

INDICATOR



Select the **OPT** input from the KEF Connect app homepage.



LSX supports connection to 96kHz/24-bit digital sources. Optical digital sources include televisions, DVD players, CD players, etc. Connection is made via a standard TOSLINK cable (not included).



For use with a television, DVD, or streaming service such as Netflix, Hulu, etc.) the audio stream from the source device must be set to PCM (two-channel stereo mode).



Latency via the optical input is extremely low and should not be noticeable, even in wireless mode.

CONNECTING A USB DEVICE TO LSX

If you would like to connect a USB audio device such as a PC or laptop to LSX, use a commercially available USB-to-Optical converter (not included) and select the Optical input as described above.

10 – AUX & Analog Inputs

INDICATOR



Select the **AUX** input from the KEF Connect app homepage.



LSX supports standard 3.5mm stereo input jacks for connection to your analog devices (turntables, tape decks, Smartphone headphone outputs).



There are a variety of connection adapters available for connecting the 3.5mm stereo cable to standard RCA-type pin jacks. The cable converter shown below is necessary for connecting LSX to a standard turntable phono connection, analog tape deck, or other similar device.



For use with a turntable you may need to install a phono-stage pre-amp between LSX and the device.

II – Digital Signal Processor

LSX is a digital music system utilizing a Digital Signal Processor (DSP) to prepare either a digital or analog audio input for playback. By using a DSP, we are able to use an active crossover network, pre-amp, and equalization settings in the digital domain without introducing unwanted phase and noise errors common in the analog domain.

MUSIC INTEGRITY ENGINE™

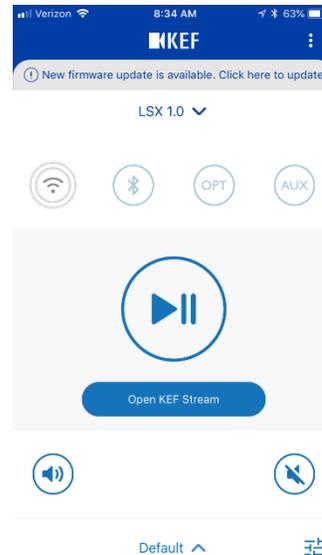
In a multi-driver system such as LSX, the audio signal must be split by frequency and sent to the driver that can best handle that frequency (e.g. the high frequencies are sent to the HF driver (tweeter) and the low frequencies are sent to the MF/bass driver). Crossovers introduce small amounts of phase shift during this operation which causes some signals to be out-of-phase with others changing the final output by introducing time-smearing and phase distortion.

KEF's **MUSIC INTEGRITY ENGINE™** works in conjunction with our point-source Uni-Q to eliminate this phase distortion. This engineering feat, added to the DSP, allows LSX to produce near-perfection in time-alignment and musical reproduction.



You can toggle the Phase Correction operation on and off in the KEF Control App: Advanced Mode>Phase Correction.

DSP Sound Profiles



LSX is tuned at the factory for audiophile-quality reproduction right out of the box. You can enjoy incredible sound without making any adjustments to the DSP.

However, to tune LSX to your liking or to correct audio issues in your listening space, the KEF Control App allows you to adjust certain frequencies to further enhance your audio enjoyment.

Press here for Sound Profiles.

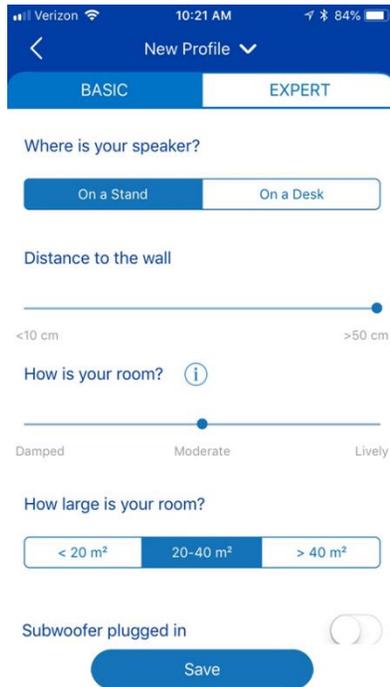
Once you have entered the **Audio Signature** page on the KEF Control App, press **Add New Profile**.

You can choose between two setting types: **BASIC** and **EXPERT**. Both perform the same function approached from different directions. **BASIC** allows users who don't want to spend a lot of time learning technical terms to set their LSX for optimal performance, while **EXPERT** uses terminology familiar to users with some audio setup experience.

Regardless of which method you choose, the result will be the same – audio output tailored to your taste or individual room requirements.

BASIC SOUND SETTINGS

For detailed explanations on the individual setting adjustments, please consult the [EXPERT SOUND SETTINGS](#) section.



Where Is Your Speaker?

On a Stand/On a Desk: Bass and midrange response will vary depending whether the speakers are placed on a desk or tabletop. (Advanced: Desk Mode)

Distance to the wall

Bass response can be affected by the speakers' proximity to a wall (especially behind them). This setting adjusts to compensate for that. (Advanced: Wall Mode)

How is your room?

Damped rooms tend to reduce bass response, while **Lively** rooms will accentuate high frequencies making them sound harsh. This setting compensates for that. (Advanced: Treble Trim)

How large is your room?

In smaller rooms bass can get overwhelming, changing the balance of an audio program, while in larger rooms the bass may get lost, resulting in too much treble. (Advanced: Bass Extension)

Subwoofer plugged in

Please consult Section 16 – Subwoofer Operation for details on this setting.

EXPERT SOUND SETTINGS

Desk Mode

A horizontal surface in front of a speaker can act as an additional front baffle altering the frequency response of the speaker. The **Desk Mode** adjustment attenuates frequencies centered at approximately 180Hz (50Hz to 500Hz) in 1/2 dB steps to compensate for reflections when the speakers are set on a table or desktop.

Wall Mode

LSX is a rear-ported speaker, meaning that bass frequencies emanate from the rear of the speaker, enhancing overall bass response. In some setups, when the speakers are placed close to a rear wall or enclosure, bass response can be artificially elevated. The **Wall Mode** adjustment attenuates frequencies from approximately 300Hz and below (the bass region) in 1/2 dB steps to minimize or eliminate artificial bass response caused by reflections from the rear wall or vertical surface.

Treble Trim

Room environments vary, depending on several factors, from lively to dampened. The **Treble Trim** adjustment boosts or attenuates frequencies from 900Hz and above (the mid- and high-frequency region) in 1/2 dB steps to compensate for your room's sonic environment.

Room Types

Lively	High ceilings, hard surfaces like marble, hardwood floors and glass. Furnishings are not large.
Moderate	A mixture between the two.
Dampened	Low ceilings, carpeted floors, heavy drapes, walls with art and decorations. Furnishings are large and cushioned heavily.

Subwoofer and Bass Settings

Phase Correction

Please refer to the **MUSIC INTEGRITY ENGINE™** section for more information on this option.

Bass Extension

Less	Attenuates bass response. Useful for listening at louder levels in smaller rooms.
Extra	Boosts bass response. Useful for listening at lower levels in larger rooms.

High-pass Mode

When using an external subwoofer, this setting allows you to finely tune the frequency cut-off for frequencies sent to the LSX drivers. The minimum high-pass setting is 50Hz and the maximum is 120Hz. Use in conjunction with the **Sub out low-pass frequency** setting to fine tune the relationship between the subwoofer and the LSX.

Sub out low-pass frequency

This is the frequency at which the signal is sent to the subwoofer and not to the LSX drivers. Frequencies below the set point will be sent to the subwoofer. The higher the set point the more bass (in frequency) is sent to the subwoofer.



For best results when using this setting, set the crossover control on the subwoofer to its highest position and control the crossover output from the KEF Control App.

Sub gain

Allows you to control the subwoofer volume from the KEF Control App.



For best results, turn the volume control on the subwoofer past the highest position you would be likely to use. This will allow you to control the volume of the subwoofer from the KEF Control App.

Sub polarity

This setting adjusts for setups where the subwoofer output is not in the same phase as the LSX output.

For example, in an extreme condition, a subwoofer may be set up facing the LSX. This would cause the subwoofer to be 180° out-of-phase with the LSX output which would diminish bass response noticeably. For this condition, the polarity selected would be -.



There are several other factors that affect subwoofer polarity. For best results, switch between the two settings while playing the same audio output and let your ears determine whether the polarity should be set to + or -.

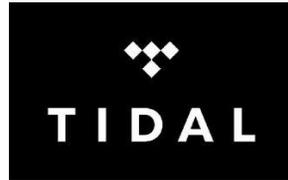
Saving Your Custom Profiles

After you are satisfied with your adjustments, select the **Save** option. Multiple profiles can be saved for future reference.



Different programs and sources may be mixed and mastered differently and will therefore sound different on your speakers. You may want to save separate profiles for louder music, television programs, or any of your other sources and preferences.

12 – TIDAL



About TIDAL

TIDAL is a subscription-based music, podcast and video streaming service that offers access to over 60 million music tracks and 240,000 videos. TIDAL features lossless audio, exclusive content and special features.

TIDAL is accessed via the KEF Stream App main page.

Selecting TIDAL will redirect you to the TIDAL main page for your account. TIDAL streams to the LSX via Wi-Fi.



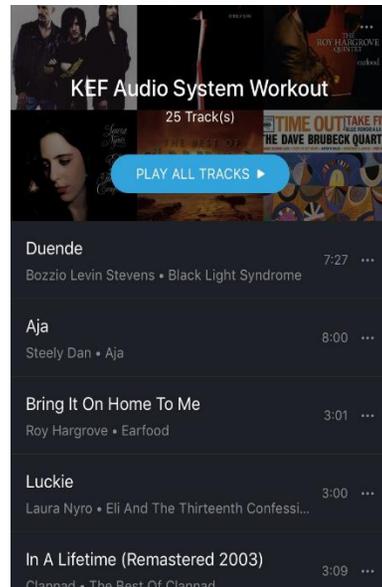
To access TIDAL via the KEF Control App and LSX, you must have a separate TIDAL account.



For the best streaming experience, select **HiFi** in the TIDAL settings (**Wi-Fi Streaming Quality**).



TIDAL content does not download. In crowded network environments, or with a router that cannot keep up with the bitrates necessary for High Resolution streaming, dropouts and delays may occur. In this event, please select either the **Normal** or **High** streaming quality settings.



13 – Spotify Connect



Indicator



About Spotify Connect

Available with a Spotify Premium subscription for streaming CD quality music via Wi-Fi to LSX. Spotify Connect offers higher resolution streaming via the LSX Wi-Fi connection when compared to the Bluetooth connection.

How to Connect

From the KEF Stream App, select **Spotify** then select **Open Spotify**. You will be directed to your Spotify Premium account home page. Spotify Connect can also be accessed from your desktop Spotify app.

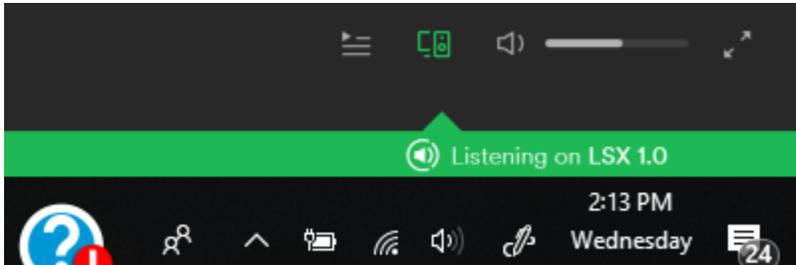
Once you have opened Spotify Connect you can select LSX from the **Available Devices** menu at the bottom of the screen.

Select LSX from the **Devices Available** menu.

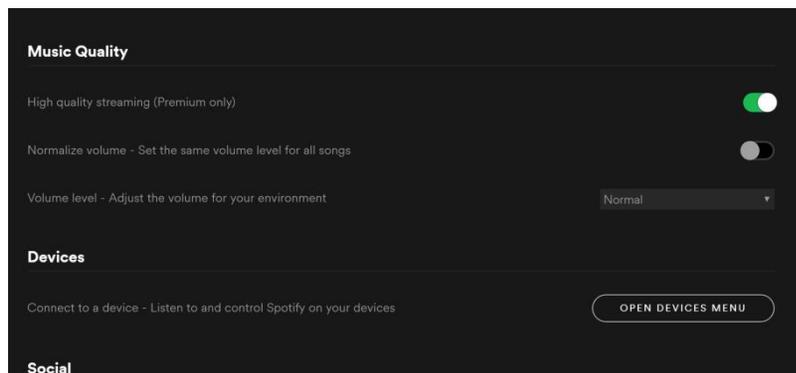


Spotify Connect From a Desktop Device

Spotify Connect can also be accessed from your desktop PC. Simply select the LSX from the **Devices Available** menu.



From your desktop, select **High Quality Streaming** which allows streaming bitrates up to 320kbps. This setting allows up to CD quality streaming.



14 – Roon



About Roon

Roon is a powerful application that uses the computing power in your desktop device to stream high-resolution files up to 192kHz/24-bit resolution (96kHz/24-bit with LSX), while using the power of the Internet to compile photographs, biographical material, reviews and the latest news from the artists you are listening to.

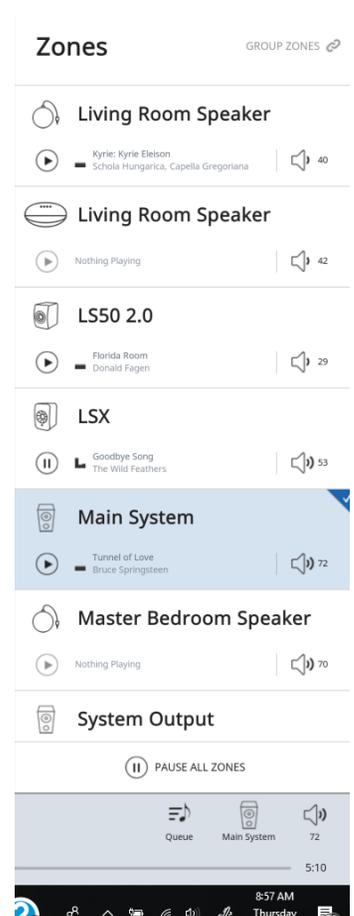
LSX communicates with Roon and your desktop device via Wi-Fi.

Roon is a subscription-based service that can be purchased separately.

Connect your entire library (desktop storage, NAS server, etc.) via Roon, which also allows for multiple systems throughout your home to be controlled from the desktop platform.

TIDAL is also available through the Roon application.

For more information on Roon please visit www.roonlabs.com



15 – Apple AirPlay 2

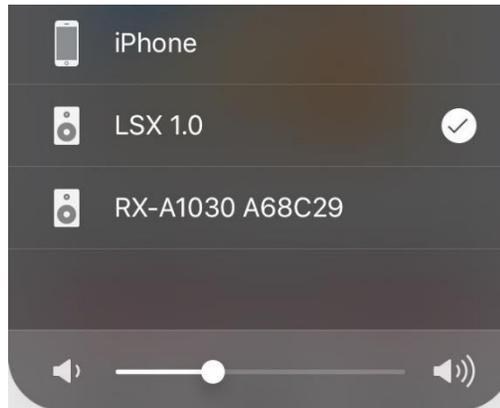


AirPlay 2

ABOUT AIRPLAY 2

Apple AirPlay 2 allows multi-room streaming from your Apple device (iPhone, iPad, HomePod, etc.).

To stream music via AirPlay2, simply connect LSX to the same network as your sending device. From the Music app on your Apple device, choose LSX.



AirPlay 2 will then stream the music stored on your device directly to LSX.



Be sure you have the latest LSX firmware loaded for AirPlay 2 operation.



Apple Airplay2 works as a simple Send/Receive network. Your receiving device will appear here.



16 – Subwoofer Operation

EXTERNAL SUBWOOFER CONNECTION

Connect an external subwoofer (such as KEF Kube) to LSX via a simple RCA-type pin jack located on the rear of the Master speaker.

Subwoofer volume, crossover and phase can be controlled from the KEF Control App.



KEF CONTROL BASIC

From the KEF Control app in **BASIC** mode select **Subwoofer Plugged In**. From the **BASIC** menu you can control the overall subwoofer volume via the **Subwoofer Volume** slider.

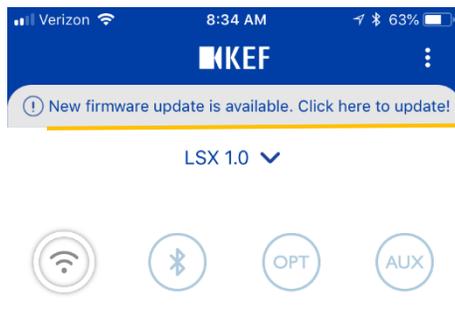
Use the **Speaker/subwoofer balance** slider to control how much bass is sent to the subwoofer or LSX. With the slider set all the way to the right (**Subwoofer**) the connected subwoofer will handle all of the bass frequencies. With the slider set all the way to the left (**Speaker**) LSX will handle all but the lowest bass frequencies.

Please refer to **Section 11** (Page 20 – LSX DSP Expert Mode Settings) for details on external subwoofer operation and the KEF Control App.

17 – Updating the Firmware

⚠ The KEF Control App will automatically alert you to available firmware updates. It is recommended that you update the firmware as soon as possible after your new out-of-the-box LSX has been successfully on-boarded and is up and running.

⚠ Always update the app and the firmware when new versions become available. New features and general app/firmware improvements are released via these updates.



The KEF Control App will notify you when firmware updates are available.

KEF Control and Stream Apps

As new versions of the KEF Control and KEF Stream Apps are released please update via the Apple App Store or Google Play.



HOW TO UPDATE THE FIRMWARE

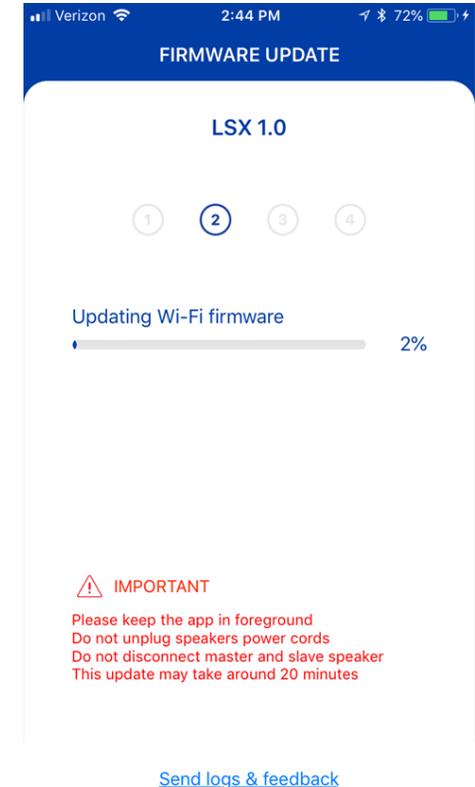
LSX features Over-the-Air firmware update capabilities, meaning that once LSX is connected to a network, you do not need to connect a cable from your host device (desktop, etc.) to update the firmware.

⚠ The interspeaker cable connecting the Master to the Slave speakers MUST be connected in order to update the firmware.

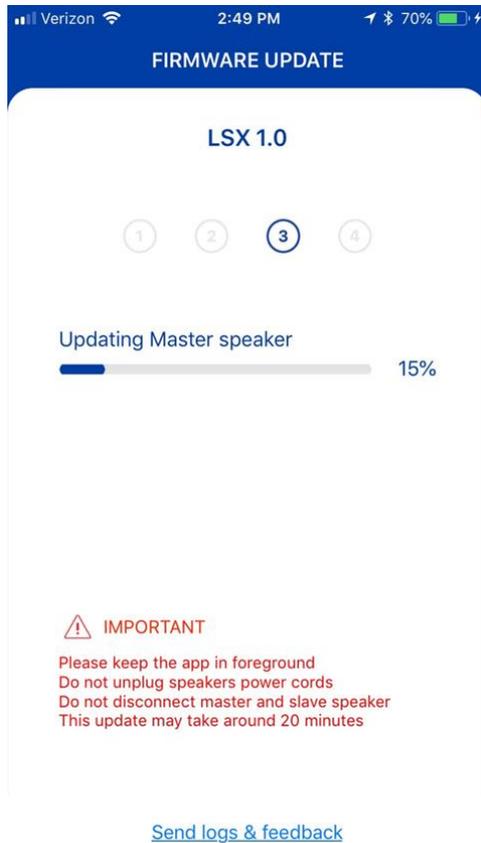
1. From the KEF Control App **FIRMWARE UPDATE** page select **UPDATE**.

2. The update will begin

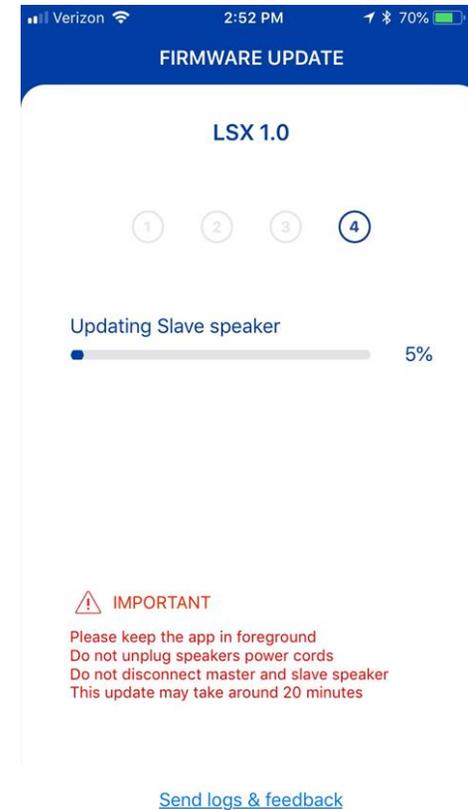
The KEF Control App will keep you posted as the operation progresses.



3. **DO NOT** unplug or turn off your LSX during the update!

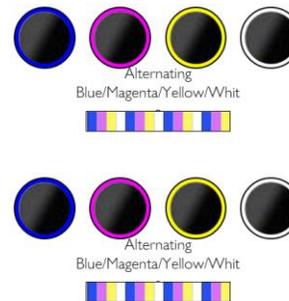


4. Depending on network environment and the size of the update, the update may take up to 20 minutes to complete.



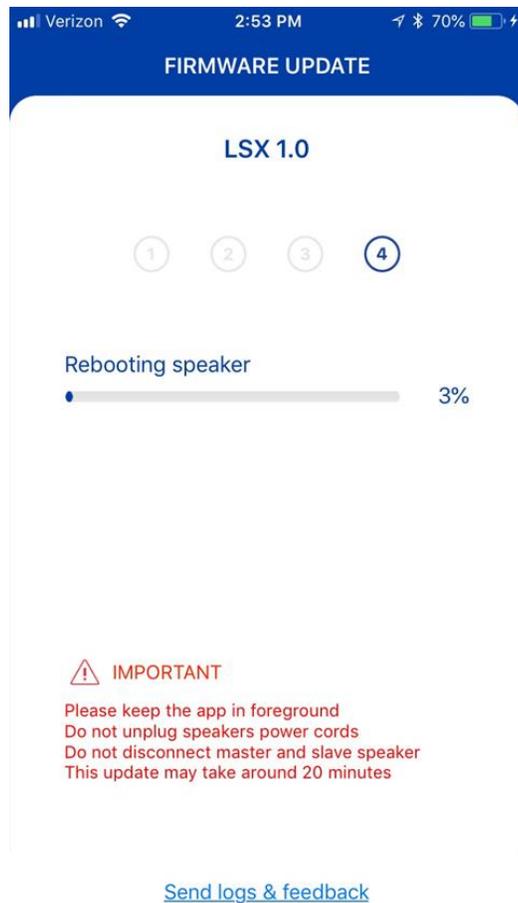
The update will not be affected by an incoming phone call or text during the operation. Avoid allowing your device to enter sleep mode during the update operation.

INDICATORS

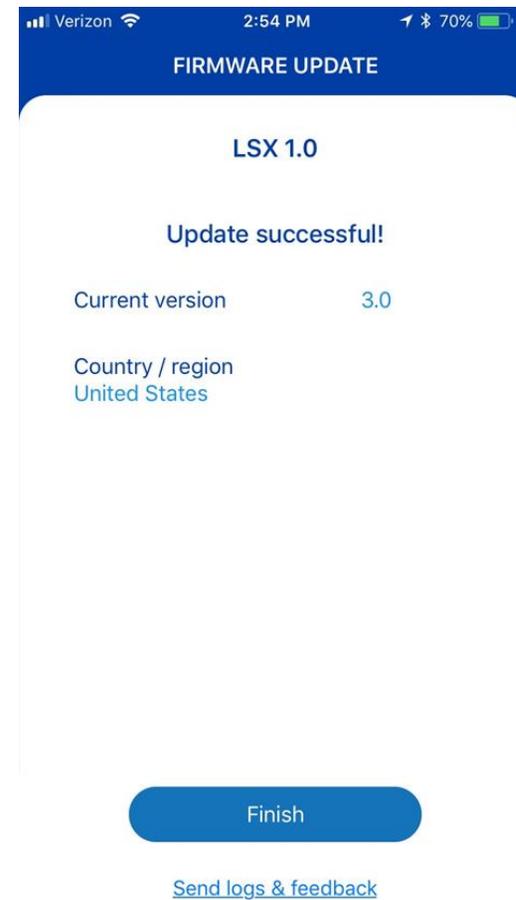


During the update operation the LSX indicators will alternate sequentially.

4. After the firmware has been successfully updated, LSX will reboot to allow the update to take effect.



4. After the update is complete and the speakers have been re-booted the operation is complete.



If for any reason, the update fails at any point during the procedure, please send a log to our Development and Support team.

18 – Care & Cleaning

LSX comes in five designer versions – Modern Lifestyle White, Red Contemporary, **MYS** Olive Green, Blue Contemporary and Classic Audiophile Black.

The Modern Lifestyle White comes in a gloss lacquered version; the other versions feature a Kvadrat fabric wrap.

CARING FOR THE MODERN LIFESTYLE WHITE

Use a soft cloth and a mild surface cleaner designed for use with plastic. Gently dry with a soft cloth.

CARING FOR THE KVADRAT FABRIC

To keep the fabric looking vibrant and fresh, vacuum frequently with a soft brush attachment.

Gently remove any hardened residues or liquids. Vacuum any loose particles prior to further cleaning.

Soak up liquid spills with an absorbent cloth or paper towel. Do not rub the cloth to avoid leaving further residue in the fabric.

Remove non-greasy stains by carefully dabbing the stain with a lint-free cloth or sponge dampened warm water.

Edge marks can be avoided by dabbing gently in circular motions toward the center of the stain with a clean lint-free cloth.

Remove greasy stains by using appropriate detergents or solvents. Be sure to test stain removal agents on an inconspicuous area first. Follow all manufacturer instructions.



Do not scrub the fabric as this may damage the fabric or result in loss of color.



Do not use detergents, cleaning agents, or cloth intended for hard surfaces.



Do not use any cleaning solution or liquid to clean the Uni-Q Driver or the surround around it. Gently vacuum accumulated dust as needed and wipe with a dry, soft, lint-free cloth.

20 – Troubleshooting Guide

LSX has been designed and tested for years of trouble-free operation, but occasionally problems may occur. Most likely the cause of the trouble can be easily identified and solved. In the event you have questions, concerns or are unable to solve any issue with your LSX, please contact our Customer Support Team at (732) 683-2356 or via email at info.us@kef.com

1. Network Unavailable – Can I Still Operate LSX?

In order to take advantage of all available features, LSX must be connected to a home network with a live internet connection.

If you do not have a network available, it is possible to disable network functionality during speaker set-up.

1. Hold the remote control source button for 5 seconds
2. The indicator on the Master speaker will turn from orange/white to orange/blue
3. In this mode, only Bluetooth, Optical and Aux will be selectable as sources using the remote control
4. A factory reset is required to restore network functionality

2. Control App Cannot Find My LSX During On-Boarding

1. Perform a factory reset by holding the reset button on the back of the Master speaker for ~5 seconds until the Reset LED flashes orange
2. Wait until the reset LED indicator stops flashing
3. Exit the KEF Control App
4. Unplug the power cable from the Master speaker and wait ~60 seconds before plugging it back in

5. The Master speaker indicator should be alternating orange/white, indicating LSX is in setup mode
6. It may take up to 1 minute for LSX to become discoverable
7. Enter the KEF Control app and select **Setup New Speaker** and follow the on-screen instructions

If the problem persists, please check the following:

- The LSX broadcasts on 2.4GHz via channel 1. If your router is also broadcasting on 2.4GHz via channel 1, LSX will not be discoverable
- Change your router to another channel (please see your router manual for details)
- Disable any VPN apps on your phone, as they may interfere with Wi-Fi detection
- If the problem persists, please send a log with a description of the problem from inside KEF Control app: Settings > Send Logs & Feedback or contact support@kef.com

3. My LSX does not appear on my network

Make sure the speaker is powered on and has been successfully onboarded to your network. The Master speaker indicator will be lit solid orange. If not, please refer to Item 2 in this section.

1. In the KEF Control app: Navigate to **Add new speaker > Connect to existing > Search again.**
2. Make sure your smartphone is connected to the same network as LSX
3. Select your speaker and press **Connect**

If the Master speaker indicator is pulsing orange, ensure that your router is powered on and connected.

4. When connected to a television, I only get a high-pitched squeal from my speakers.

LSX is a two-channel stereo system and cannot decode streaming service or video programs are encoded in Dolby™ or DTS™. Switch the output of your service or television to PCM.

MASTER SPEAKER INDICATOR ALARMS AND CODES

Amber. Blinking on and off.



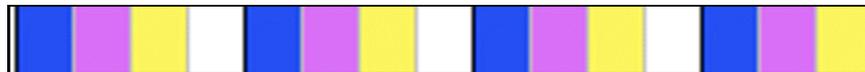
Connection Error. Check your network connections and setup then refer to Item 2 in this Section. If problem persists, contact Customer Service.

Green. Pulsing.



Connecting to Spotify.

Alternating Blue/Magenta/Yellow/White



Firmware update mode.

Red. Blinking.



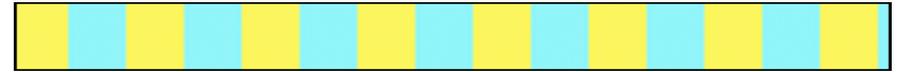
Firmware Upgrade Failed. Restart procedure. If problem persists contact Customer Service.

Alternating Blue/White.

Bluetooth Pairing mode.



Alternating Yellow/Cyan.



Error. Indicates the Slave speaker is not connected or has not been found. Check KEF Control App to make sure Cable Mode is not selected. If Cable Mode is selected, disable or connect the interspeaker cable. If this condition has existed for several minutes, you may need to perform a factory reset.

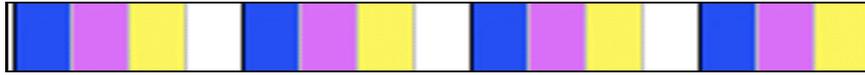
Red. Blinking.



Master Speaker Error. Check cable connections, power off and on. If that does not correct error, unplug for >10 minutes, reconnect to power and perform factory reset.

Slave Speaker Indicator Alarms and Codes

Alternating Blue/Magenta/Yellow/White



Firmware update mode.

Red. Blinking.



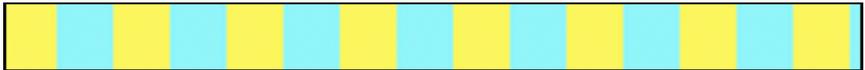
Firmware Upgrade Failed. Restart procedure. If problem persists contact Customer Service.

Alternating Blue/White.

Bluetooth Pairing mode.



Alternating Yellow/Cyan.



Error. Slave speaker not connected to Master speaker. Ensure Cable Mode is not selected without interspeaker cable being connected.

Red. Blinking.



Slave Speaker Error. Power off and on. If that does not correct error, unplug for >10 minutes, reconnect to power and perform factory reset.

REPORTING ISSUES

17:44 17:44

Cancel Feedback Send Cancel Feedback Send

To: dev@kef.com Country: hk

Cc/Bcc, From: Device info:
Device: iPhone10,6
iOS version: 11.4
App version: 1.0.0 (69)

Subject: Feedback

Speaker info:
Name: LS50W 9/F
MAC address: 841715008CE3
Firmware:
<module>p6.2001806070.105039</module>
><system>3.0.0</system>
<DSP>0.54</DSP>
Master serial number: --
Slave serial number: --

Please give a short description of the issue you are encountering:

com.cognia...16 01-17.log

Networked products are complicated and often issues may appear to be related to the LSX system while they are results of network problems.

If any irregular activity is noticed, please utilize the **Send logs & feedback** feature in either the KEF Control or KEF Stream. This will open an email as shown above. Important information concerning the LSX and App operation at the time leading up to the failure or anomaly will be automatically populated.

Please describe in as much detail as possible what happened and the physical setup of the relevant equipment in the section below the Subject line.

Appendices

APPENDIX A – DIGITAL MUSIC RESOLUTION

High Resolution

High-Resolution Audio is sampled at 96kHz/24-bit and above. Resolutions up to 192kHz/24-bit are the current standard for consideration as high-resolution.

The standard resolution for TOSLINK digital optical audio is 96kHz/24-bit.

LSX will stream audio information up to 96kHz/24-bit in **Cable Mode**. Higher resolutions will be downsampled to 96kHz/24-bit.

Standard Resolution

Resolutions below 96kHz/24-bit are considered standard resolution.

Television broadcast standard resolution is 48kHz/24-bit.

CD standard resolution (Red Book) is 44.1kHz/16-bit.

aptX Bluetooth resolution is standard up to 48kHz/24-bit.

LSX converts analog program material to 96kHz/24-bit before streaming. (Playback will be set to 48kHz/24-bit for wireless streaming (not in **Cable Mode**))

APPENDIX B – TCP/IP CONTROL DRIVERS

LSX can be integrated into the following Home Automation platforms:

Control 4, RTi, Crestron, Elan

Drivers are available as direct downloads from Intrinsic (Dev)

<https://www.intrinsicdev.co.uk/>



SAVANT Available from Savant (www.savant.com). The LS control driver is downloaded directly as part of Savant's software suite.

Contact your authorized dealer/integrator or installer for information on how to add LSX to your Home Automation platform.

The following commands can be controlled via the Home Automation drivers:

- Volume +/-
- Input
- Play/Pause/Skip
 - (native to device; not available for 3rd party streaming services)

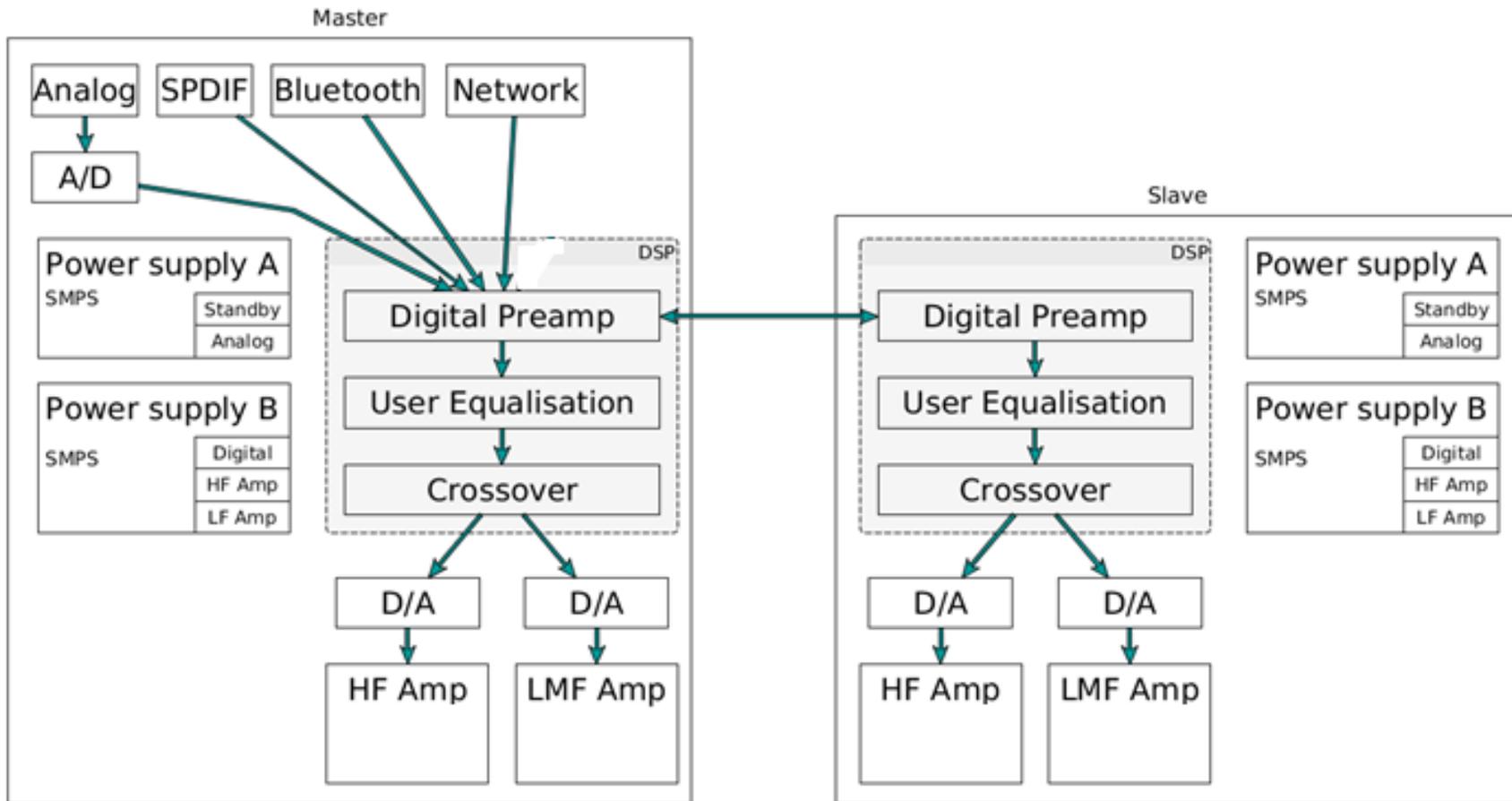
APPENDIX C – IR UNIVERSAL REMOTE CODES

LSX can be connected to your Universal Remote Control via the following codes.

Codes are also published to the major US manufacturers and can be found in each corresponding database.

Command	NEC Code	Function	Notes
AUX (Source)	0x02	Discrete	
Bluetooth (Source)	0x2A	Discrete	
Bluetooth Pairing	0x98	Discrete	
Mute	0x48	Discrete	
Mute / Unmute	0x20	Toggle	
Next	0x52	Toggle	Bluetooth mode only
Optical (Source)	0x0A	Discrete	
Pause	0x70	Discrete	
Play	0x6A	Discrete	
Play/Pause	0x18	Toggle	Bluetooth & Wi-Fi only
Power Off	0x3A	Discrete	
Power On	0x38	Discrete	
Power On/Off	0x40	Toggle	
Previous	0xD2	Toggle	Bluetooth only
Source Selection	0x58	Toggle	
Unmute	0x4A	Discrete	
USB (Source)	0x1A	Discrete	
Volume -	0xA0	Toggle	
Volume +	0x60	Toggle	
Volume Preset	0x78	Discrete	30% All Sources
Wi-Fi (Source)	0x30	Discrete	

APPENDIX D – SYSTEM BLOCK DIAGRAM



APPENDIX E – SYSTEM SPECIFICATIONS

Model	LSX	
Drive units	Uni-Q driver array: HF: 19mm (0.75in.) aluminium dome LF/MF: 115mm (4.5in.) magnesium/aluminium alloy cone	
Frequency range (-6dB) Measured at 85dB/1m	49Hz - 47kHz Depending on speaker settings	
Frequency response (±3dB) Measured at 85dB/1m	54Hz - 28kHz Depending on speaker settings	
Power input	100 – 240VAC 50/60Hz	
Amplifier output power	LF: 70W HF: 30W	
Max SPL	102dB	
Dimension (HWD)	240 x 155 x 180mm (9.5 x 6.1 x 7.1in.)	
Input resolution	Support up to 192kHz/ 24bit Depending on source resolution	
Master and Slave speaker connection:	Wireless: Propriety connection 2.4GHz (transmit 48kHz/24bit) Wired: RJ45 Ethernet (transmit 96kHz/24bit) Depending on connection settings	
	Master Speaker	Slave Speaker
Inputs	2.4GHz/5GHz Dual-band Wi-Fi network Bluetooth 4.2 with aptX® codec TOSLINK Optical 3.5mm Auxiliary Input RJ45 Ethernet (For network)	Not Applicable
Output	Subwoofer output 5V2A DC Output	Not Applicable
Wi-Fi Network standard	IEEE 802.11a/b/g/n	Not Applicable
Wi-Fi Network Frequency band	Dual-band 2.4GHz/ 5 GHz	Not Applicable
Bluetooth range	10m	Not Applicable
Bluetooth memory	8 devices	Not Applicable
Weight	3.6kg (7.9lbs)	3.5kg (7.7lbs)

Trademarks

Android™ is a registered trademark of Google LLC

 **MUSIC** Registered trademark of Apple, Inc.



App Store is a service mark of Apple, Inc.



AirPlay 2

AirPlay2 API manufactured under license from Apple, Inc. Indicates this product is designed under license to operate with AirPlay2.

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aptX is a trademark of Qualcomm Technologies International, Ltd., registered in the United States and other countries.

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Dawes – Stories Don't End ©2013 HUB Records, UMG, WMG, Audiam

Oasis – (What's the Story) Morning Glory? ©1995 Creation Records, SME

The Replacements – Pleased to Meet Me ©1987 Sire Records

Main Sites

KEF Global Site: www.KEF.com

KEF US: www.us.KEF.com

KEF Canada: www.ca.kef.com

KEF Direct: www.kefdirect.com

Product Support and Downloads

<http://us.kef.com/product-support>

KEF Technical Publications
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Doc Revision R01

LSX Owner's Manual