



KRELL
THE LEADER IN AUDIO ENGINEERING

THERE ARE NO USER-SERVICEABLE PARTS INSIDE ANY KRELL PRODUCT.

Please contact your authorized dealer, distributor, or Krell if you have any questions not addressed in this reference manual.

WARNING: Do not place the component where it could be exposed to dirt or excessive moisture.

The ventilation grids on the top and bottom of the Foundation 4K UHD Processor must be unobstructed at all times. Do not place flammable material on top of or beneath the component.

When making connections to this or any other component, make sure all components are off. Turn off all system power before connecting the Foundation 4K UHD Processor to any other component. Make sure all cable terminations are of the highest quality, free from frayed ends, short circuits or cold solder joints.

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Table of Contents

Introduction	(4)
Getting Started	(5)
Front Panel and Remote Diagram	(6)
Back Panel Diagram	(7)
Connecting the Foundation 4K UHD to your System	(8)
Initial Setup	(9)
Speaker Set-up	(10)
Source Set-up	(11)
Audio Operation	(12)
Network Set-up	(13)
Diagnostic Mode	(13)
Software Version and Update	(14)
Display Setup	(14)
On Screen Display (OSD) Setup	(14)
CEC Operation	(14)
Restore Settings	(14)
Save Settings	(14)
Serial Number	(14)
Operating the Foundation 4K UHD	(15)
Foundation 4K UHD Processor Control	(18)
Foundation 4K UHD Processor RS-232 Feedback	(20)
Warranty	(24)
Service	(25)
Specifications	(26)

Introduction to the KRELL Foundation 4K UHD Processor

The Foundation 4K UHD adds HDMI 2.0 and HDCP 2.2 technology to the award winning Foundation processor. Designed to be upgradeable, existing Foundation processors can be upgraded to the Foundation 4K UHD platform at the Krell facility. The Foundation 4K UHD updates 4 of the 10 HDMI 1.4a inputs to HDMI 2.0/HDCP 2.2 capability. New on screen display functionality adds status messages including volume, active source, video resolution and audio format. System setup is accomplished from the front panel or a network tablet/computer.

Additional functionality has been added to the second HDMI output. The two HDMI video outputs are now independent and can be configured to send different video signals to two individual displays. Both outputs support 4K signals being simultaneously displayed.

Both HDMI outputs feature Audio Return Channel (ARC). With ARC, a display device is able to send audio back down the HDMI cable to the Foundation 4K UHD. Televisions with built-in web streaming capability like Netflix or Pandora, can send the audio signal back to the Foundation 4K UHD use the full home theater system instead of just the TV's speakers.

Featuring the latest digital connectivity, the Foundation 4K UHD maintains Krell's exacting standards for analog audio reproduction.

From decoding the latest lossless audio formats, extensive digital switching, 3DTV pass-through, and more, the Foundation 4K UHD is fully compliant with the digital age. The 7.1-channel processor also features balanced audio outputs, automatic setup and room EQ, and Krell's legendary robust hardware. A slim form factor exudes the Krell aesthetic, while allowing placement in smaller equipment racks.

The Foundation 4K UHD features Krell's Automatic Room Equalization System (ARES), to ensure the best possible performance from every theater. ARES analyzes all the speakers in the system, their location, phase, and distance from each other, to determine the best crossover frequency, delay, and more. In addition, ARES incorporates the acoustics of the room to determine unique EQ curves for each of the 7.1 output channels. Unlike other room EQs, ARES can be programmed to only adjust the troublesome low frequencies, leaving high frequencies unaltered.

The Foundation 4K UHD includes a new Krell development - Intelligent HDMI switching. Intelligent HDMI switching is a combination of circuitry and innovative software that optimizes HDMI operation. Various parameters including the monitor's electronic ID and source video resolution are stored in non-volatile memory. All 10 source inputs are always active so source, channel, video resolution, and audio format changes are instantaneous. The Intelligent HDMI design provides the fastest signal recognition possible.

The Foundation 4K UHD passes video signals directly without any video processing, ensuring bit-for-bit accuracy of the signal, up to 3840x2160. However, to simplify cabling, setup, and use, there is full transcoding of the 2 composite and 3 component analog video inputs to the HDMI outputs.

Krell designed the Foundation 4K UHD with flexibility and ease-of-use in mind, with extensive routing capability of the audio inputs to the various outputs. During setup, the specific paths will be chosen based on how the user intends to use each source, displays, and audio output channels.

The Foundation 4K UHD supports stereo and multichannel DSD decoding via any of the 10 HDMI inputs. Playback options include DSD 2-ch Direct, DSD Stereo, and DSD Multi modes. DSD 2-ch Direct converts a stereo DSD signal to analog and directly passes it to the left and right analog outputs. DSD Stereo first applies any left and right channel crossover configured in the Foundation 4K UHD menu, converts the signal to analog, and then sends it to the left and right outputs. DSD Multi supports multichannel DSD recordings and utilizes all crossovers configured in the Foundation 4K UHD menu. There is no configuration required as the Foundation 4K UHD automatically recognizes a DSD signal and defaults to the last used DSD mode for playback. Pressing the mode button on the remote control or web server interface will cycle through all three DSD modes.

The Foundation 4K UHD will allow owners to take full advantage of the best audio soundtracks available, with decoding of Dolby Digital, Digital Plus, Dolby TrueHD, DTS, DTS-ES Discrete, Matrix, and DTS-HD Master Audio. In addition, a full suite of post-processing modes are included, including Dolby Pro Logic IIx and DTS Neo 6. Krell's proprietary surround modes, Party, General Admission, Front Row, and On Stage, offer a different way to listen to favorite tracks.

The Foundation 4K UHD also offers features that make it perfect for custom installation, such as 3.5mm jacks for IR input and 12-volt trigger input and output, as well as RC-5 and optional rack-mount ears. Additionally, the unit can be controlled with home automation systems via RS-232 or the Krell web server through its Ethernet connection.

Unpacking and Placement

The Foundation 4K UHD Processor is a precision instrument and should be handled with the utmost care when deciding where it is to be placed and while it is being unpacked and finally installed. Make sure installation location is dry and level, and able to provide adequate ventilation. The Foundation 4K UHD Processor runs warm to the touch and requires the bottom and top of the unit be free from obstruction with good circulation of air. Allow a minimum of 3 inches above the unit for proper ventilation. Additional ventilation may be required when the unit occupies the same space with other electronics that generate heat like power amplifiers. Please consult an authorized KRELL dealer or KRELL industries to insure proper installation guidelines.

1. Accessories included

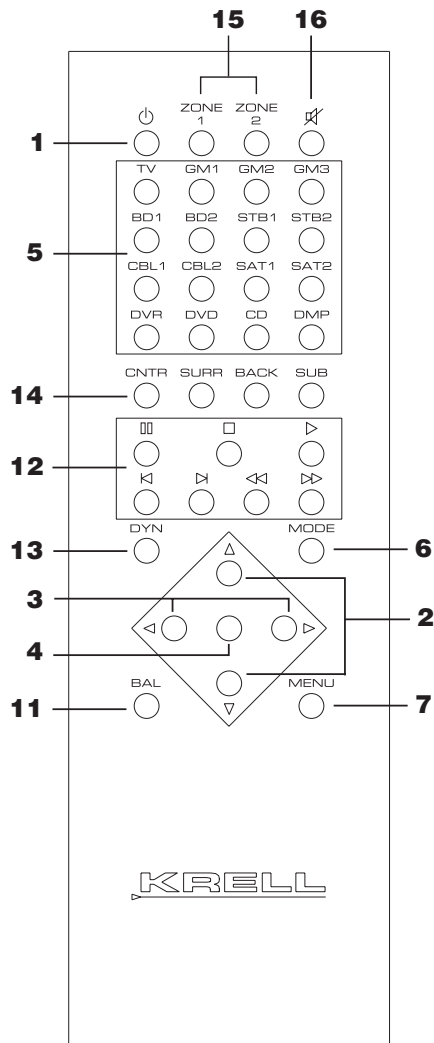
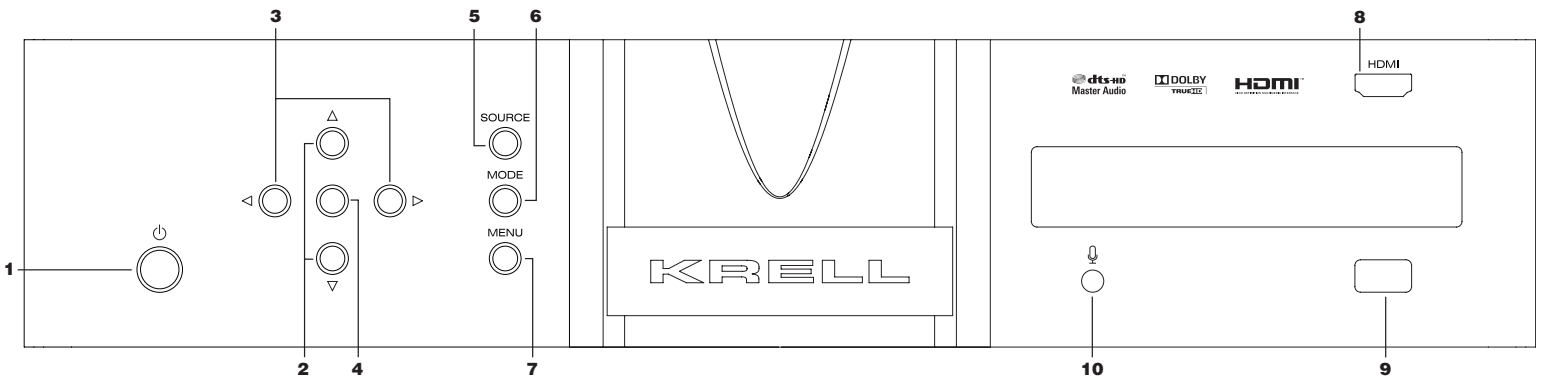
- A. 1 AC Power cord
- B. 1 Handheld Remote control
- C. 1 Trigger cable
- D. 1 CD w/ Owner's reference
- E. 1 Warranty registration card
- F. 2 AAA Batteries
- G. 1 T-10 torx wrench

AC Power Guidelines

The Foundation 4K UHD Processor is designed to work all over the world. The operating voltage is determined at the factory and is specifically set to operate in the country of final destination. The Foundation 4K UHD Processor requires good clean power and doesn't require additional filtration.

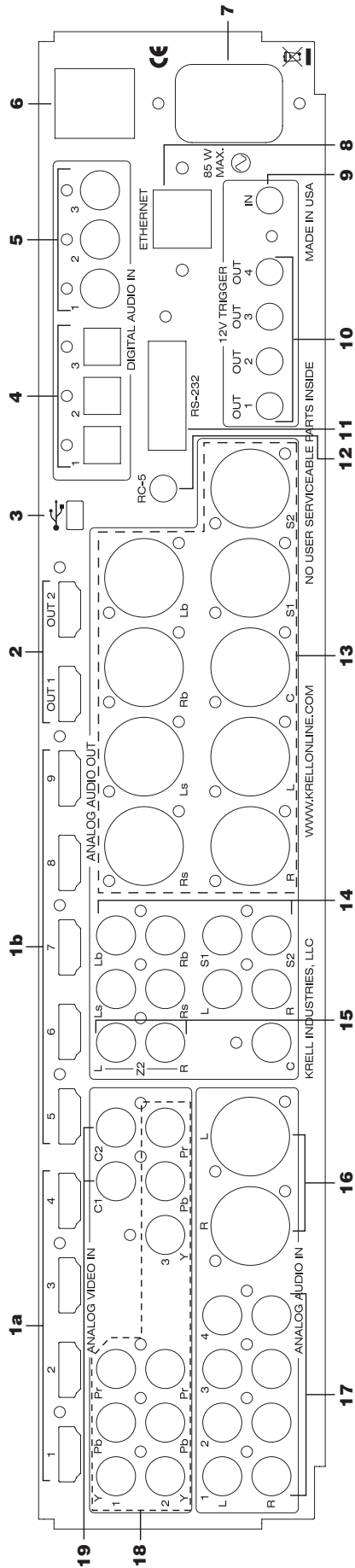
NOTE: The Foundation 4K UHD Processor may not operate correctly when AC regeneration or voltage conversion devices are utilized.

Front Panel and Remote Diagram



- 1 Power Standby Button
- 2 Volume/Navigation Up/Down Button
- 3 Left/Right Navigation Button
- 4 Enter Button
- 5 Source Select Button(s)
- 6 Surround Mode Select Button
- 7 Menu Button
- 8 Front Panel HDMI Input
- 9 IR Receiver Window
- 10 ARES Microphone Input
- 11 Balance Button
- 12 Krell CD Transport Button
- 13 Dynamic Range Select Button
- 14 Channel Adjust Buttons
- 15 Zone Select Buttons
- 16 Mute Button

Back Panel Diagram



- | | | | |
|----|---------------------------------|----|----------------------------|
| 1a | HDMI 2.0, HDCP 2.2 Video Inputs | 10 | 12v Trigger Outputs |
| 1b | HDMI 2.0, HDCP 2.0 Video Inputs | 11 | RS-232 Control Port |
| 2 | HDMI Video Outputs | 12 | RC-5 Control Port |
| 3 | Mini USB | 13 | Balanced Audio Outputs |
| 4 | Optical Digital Inputs | 14 | Single-ended Audio Outputs |
| 5 | Coaxial Digital Inputs | 15 | Zone 2 Analog Outputs |
| 6 | Main Power Switch | 16 | Balanced Analog Inputs |
| 7 | AC Power Cord Receptacle | 17 | Single-ended Analog Inputs |
| 8 | Ethernet RJ-45 Jack | 18 | Component Video Inputs |
| 9 | 12v Trigger Input | 19 | Composite Video Inputs |

Connecting the Foundation 4K UHD to Your System

The Foundation 4K UHD is equipped with 10 HDMI inputs. Four of the HDMI Inputs include HDMI 2.0 with HDCP 2.2 decryption for use with the latest in video content. For older video sources, the Foundation 4K UHD includes 3 component video inputs, and 2 composite inputs. We recommend that you use the HDMI connections to the Foundation 4K UHD, wherever the video source and video monitor both feature HDMI connections.

Video outputs include 2 HDMI outputs. Both HDMI outputs include Audio Return Channel. Audio Return Channel transfers audio from a TV back to the Foundation 4K UHD processor allowing TV audio listening through your home theater system. The TV must be equipped with Audio Return Channel functionality for this feature to work.

This section provides information about connecting the Foundation 4K UHD to your system.

Follow these steps to connect the Foundation 4K UHD to your system:

1. Make sure all power sources and components are off before connecting inputs and outputs.
2. Neatly arrange and organize wiring to and from the Foundation 4K UHD and all components. Separate AC wires from audio cables to prevent hum or other unwanted noise from being introduced into the system.

The Foundation 4K UHD is equipped with balanced and single ended inputs. Krell recommends using balanced interconnect cables. Balanced interconnect cables not only can minimize sonic loss but also are immune to induced noise, especially for installations using long cables. Balanced connections have 6 dB more gain than single ended connections. When level matching is critical, keep this specification in mind. Krell recommends that you use balanced inputs for components that will use the preamp mode.

For stereo analog input sources, connect the right and left outputs of your source components to the inputs on the Foundation 4K UHD. The Foundation 4K UHD is equipped with four sets of single-ended analog audio inputs (S-1 through S-4) via RCA connectors and one set of balanced analog audio inputs via XLR connectors.

The Foundation 4K UHD is equipped with three coaxial digital audio inputs via RCA connectors and three digital EIAJ optical inputs via TosLink connectors. Connect the digital audio output of your source components to the digital inputs on the Foundation 4K UHD.

The Foundation 4K UHD is equipped with a second audio zone. Two different sources may be played simultaneously. Additional wiring is not required as all digital sources, including HDMI based audio, are fed to the Zone 2 analog outputs.

Initial Setup

The Foundation 4K UHD processor features the Krell Automatic Room Equalization System (ARES) to assist in setting up the Foundation 4K UHD for optimal performance. The ARES system includes two operations, the speaker setup portion and the equalization portion. The speaker setup portion of ARES determines the array and position of each speaker in the system. From there, ideal values for speaker crossover, delays relative to the listening position and sound pressure levels are all set automatically.

The second half of ARES is equalization. ARES includes a sophisticated equalization system that calculates flat frequency response for the entire system. The equalization algorithm uses the previously calculated speaker setup data and acquired room characteristics to provide the ideal frequency curves for the speakers in the system.

Individual speaker setup parameters may be edited after the ARES system completes its initial calculations. The ARES equalization process may be run again after the edits have been made.

All configuration options are selected using the front panel display or via a web enabled device such as a PC or tablet. The Foundation 4K UHD and the web enabled device must be connected to the same network to use a web enabled device for setup.

Microphone Setup

Place the included microphone at the listening position close to ear level and away from any obstructions. Plug the microphone into microphone input on the Foundation 4K UHD front panel and proceed with setup.

Front Panel Setup

Press the Menu button on the front panel or the remote control. Navigating the set-up menu is accomplished by using a combination of the up, down, left, right, and enter buttons on the front panel or remote control.

Press the Enter button to select **Speaker Setup**.

Run ARES Spkr Setup

Press the Enter button. The ARES system will send noise signals to all the speakers in the system to determine correct crossover, delay, and output settings. After ARES completes its process, the Foundation 4K UHD returns to the Speaker Setup menu. From there, speaker parameters may be adjusted in the Edit Settings menu or the Equalization part of the ARES system may be run.

Note: If the Foundation 4K UHD does not detect a particular speaker in your system, a message asking for confirmation will appear. This will help determine if a system has been connected properly. The ARES system is designed to perform room correction for home theater systems and only works with configurations that include 5 or 7 main speakers.

Run ARES EQ Setup

Press the Enter button. Select the desired frequency range for the ARES system to evaluate and equalize. ARES can be configured to equalize the entire frequency range or only a smaller portion. For equalization to be applied only to lower frequencies, select the desired frequency and equalization will only be applied to that frequency and below. After selecting the desired range, press Enter. The ARES system will send noise signals to the speakers to determine proper equalization in order to achieve a flat frequency response for the desired frequency range.

Edit Settings

The Foundation will ask for which setup memory, 1, 2, or 3, the edits are to be applied. The Left speaker configuration is displayed. Press the Up or Down button to view other speakers in the system. To edit one of the parameters, press the Enter button, the cursor will start blinking at the Crossover field. Press the Right button to move the cursor to the field to be edited.

Press the Up or Down button to change the value. Press the Enter button to confirm any change and press the Left button to exit the Edit Settings menu.

Crossover frequency edits

To edit the crossover frequency, press the Right button while the cursor is blinking at the Full Range field. Press the Up or Down button to change the value between Full Range, Limited, or None. To choose a crossover point, select Limited and then press the Right button. Press the Up or Down button to view the available frequencies. Press the Enter button to confirm any change. Press the Enter button again to highlight the cursor and move to another field.

Note: None is not an option for the L/R speakers. Left and Right speakers must be present.

Time Delay edits

To edit the delay time (in milliseconds) setting, press the Up or Down button to edit the time delay setting. ARES first determines which speaker is the greatest distance from the listening position and sets the time delay to 0ms. ARES then calculates the time delay setting between this speaker and the remaining speakers in the system. To adjust individual speakers, ARES uses the delay from each speaker to the furthest speaker in the system. For adjustments, each millisecond is equal to one foot of distance between speakers.

Output Level edits

To edit the output level, press the Right button while the cursor is blinking at the output field. Press the Up or Down button to increase or decrease the output level of each speaker. Press the Enter button to confirm changes. Press the Up or Down button to edit additional speakers. Once all edits are complete, press the Left button to save the new settings. A number of messages will appear including "Speaker Setup Succeeded" when the new settings have been saved into memory.

Press the Enter Button to enter the Source Setup sub menu. Use the Up or Down button to select the desired parameter to edit.

Assign Names

Press the Enter Button to see the first source, BD1: Bluray1. Press the Up or Down button to select a different source.

To edit the currently displayed source, press the Enter button and the cursor will begin flashing at the first character field. Use the Up or Down button to change character. Use the Right or Left button to move the blinking cursor to another character and repeat editing procedure. Press Enter to confirm change. Press the Up or Down button to select a different source and repeat editing process.

The edited name will only appear when the Source button is pressed on the remote or front panel. When switching inputs the new source name will also appear on screen and on a web connected device. The factory default will continue to appear on the main display and in menus.

Press the Left button to return to the Source Setup Menu

Assign Input

Press the Up or Down button to select source to edit. Press the Enter button and Vid (video) field will start flashing. Press the Up or Down button to select desired video input.

Press the Right button twice to move cursor to the currently defined input. Press the Up or Down arrow to select the desired input. Z2 (Zone 2) will also use this input. If it is desirable to change the Z2 input for the current device, move the cursor to the Aud (Audio) field and press the Up or Down button to display Z2. Press the Right button to highlight the input options. Press the Up or Down Button to select an input for Z2 operation.

Press the Enter button to confirm changes. Press the Up or Down button to select a different source to edit.

When finished, press the Enter button and then the Left button to return the Source Setup sub menu.

Assign Triggers

Note: The default settings for the triggers is set to On. Follow the procedure below to change any of the triggers' settings.

Press the Enter button and the Trigger field will start flashing. Press the Up or Down button to select trigger to edit.

Press the Right button to move cursor to the source field. Press the Up or Down button to select desired source.

Press the Right button to move cursor to the State field. Press the Up or Down button to either Off or On.

Press the Right button to move cursor to the Delay field. Press the Up or Down button to select the desired trigger time delay.

Press the Right or Left button to move the cursor to the Trigger field or Source field to edit additional parameters.

When finished, press the Enter button and then the Left button to return to the Source Setup sub menu.

Level Trim

The level trim allows for output adjustment between sources.

Press the Enter button and the source field will start flashing. Press the Up or Down button to select a different source to edit.

Press the Enter and the dB field will begin flashing. Press the Up or Down button to increase or decrease output.

Press the Up or Down button to select a different source to edit and repeat the editing process.

When finished, press the Enter button and then the Left button to return the Source Setup sub menu.

Assign Memory

Press the Enter button to enter the Assign Memory sub menu.

The first source, BD1: Bluray1, is displayed along with its assigned memory. Press the Up or Down button to select a different source or press the Enter Button and the Memory field will flash. Press the Up or Down button to change the memory setting. Press Enter to confirm setting. Press the Left button to return to the Source Setup sub menu.

Press the Enter button to enter the Audio Operation sub menu.

Dolby PLIIx Setup

Press the Enter button to enter the Dolby PLIIx sub menu.

CENTER WIDTH

The amount of center output signal can be spread to the left and right channel outputs. The adjustment range is from 0 (lowest) to 7 (highest, effectively mutes the center channel). Press the enter button and the cursor will start blinking. Press the Up or Down button to select the desired value.

Press the Enter button to confirm choice. Press the Up or Down Button to select another parameter to edit.

DIMENSION

The sound field can be moved toward the front or rear loudspeakers, to achieve a more suitable balance from all loudspeakers. The adjustment range is 0 (maximum surround) to 6 (maximum center). The default setting is 3 (neutral). Press the enter button and the cursor will start blinking. Press the Up or Down button to select the desired value.

Press the Enter button to confirm choice. Press the Up or Down Button to select another parameter to edit.

SURROUND MODE

Press the Enter button and the cursor will start blinking. Press the Up or Down button to select between Auto and Manual.

In Auto, the Foundation 4K UHD will engage Dolby Pro Logic IIx anytime an incoming signal is encoded with Dolby Pro Logic IIx. If the signal changes to a non Dolby Pro Logic IIx, the Foundation 4K UHD will revert to the new signal.

In Manual, the Foundation 4K UHD will not add the Dolby Pro Logic IIx decoding automatically. Pressing the Mode button on the remote control until Dolby Pro Logic IIx mode is displayed is the only way to engage Dolby Pro Logic IIx decoding.

Press the enter button to confirm choice and then press the left button to return to the Audio operation menu.

5.1 Surround Output

For 7.1 systems playing back 5.1 encoded content, the Foundation 4K UHD can duplicate the surround channel information in the back channels. The default setting is Surrounds Only. To change to the Surrounds + Backs option, press the Enter button and then the up button. Press the enter button to confirm the selection.

Lip Sync Delay

Lip Sync Delay is a useful tool for systems where the video and audio signals are out of sync. The audio signal needs to be delayed to match the video signal. The Lip Sync Delay range of values is 0 to 200ms. Press the Enter button to activate the Lip Sync Delay setting and then use the up button to adjust. Press the enter button to confirm the desired choice.

DTS Neo:6 Setup

Press the Enter button to enter the DTS Neo:6 sub menu.

DTS NEO: 6 derives a 6.0 signal from two-channel source material. The center gain adjusts the amount of center channel information present in the left and right loudspeakers. The adjustment range is 0 (no center channel information; wide sound field) to 5 (maximum level of center channel information subtracted from the left and right channels; narrow sound field). Press the enter button and the cursor will start blinking. Press the Up or Down button to select the desired value.

Press the Enter button to confirm choice. Press the Up or Down Button to select another parameter to edit.

Audio Operation Continued

Dynamic Range

Press the Enter button and the Mode field will start flashing. Press the Up or Down button to select the desired Dynamic Range setting.

Max/Off is the default and provides maximum dynamic range

Normal/Auto uses any dynamic range information encoded into a source's bit stream

Night/On applies 22dB worth of compression to all incoming signals.

Press the Enter button to confirm choice and then press the left button to return to the Audio operation menu.

EQ

EQ mode turns the ARES EQ on or off. Press the Enter button to enter the EQ sub menu. Press Enter and the Mode field will blink. Press the Up or Down button to select on or off.

Network Setup

Press the Enter button to enter the Network Setup sub menu. Press the up or down button to view the various network parameters. Press the Enter button to see the value for the displayed parameter.

IP Address: The default network discovery is DHCP. If the Foundation 4K UHD is connected to an active network, it automatically acquires an IP address. To enter an IP address manually, change the Foundation 4K UHD to Static IP operation. To change to Static IP operation, press the Enter button at the IP Address sub menu. Press the Up or Down button to change the setting to Static. Press the Enter button to display the IP address. Press the Right button to move the cursor to number to be edited. Press the Enter button again and the selected number of the IP Address will begin blinking. Use the Up or Down button to edit the IP Address value. Press the Enter button to confirm change. Press the Left or Right button to move the cursor to another number in the IP address and repeat editing process.

Use the same process to edit the other network settings.

Note: the MAC Address is a factory set value and is not user editable.

The Foundation 4K UHD processor operation and setup options are available from the built in web server. To use the web server, make sure to connect the Foundation 4K UHD to a network with internet access and acquire an IP address. The IP address can be found in the Network Setup sub menu. Press the Enter button twice to see the IP address of the unit. It should be similar to 192.168.1.009.

To access the web server, type your IP address into the web browser address bar. For the IP address above, the correct address to enter would be: 192.168.1.009.

The Foundation 4K UHD control web page will now appear on your computer or tablet screen. Using your mouse or finger, follow the remote control or front panel instructions to operate the Foundation 4K UHD.

Diagnostic Mode

Diagnostic mode is used for troubleshooting and is disabled as a default. Leave diagnostic mode disabled unless directed by Krell.

Software Version

Press the Enter button to view currently operating Foundation 4K UHD software

Software Update

Press the Enter button to display the Software Update sub menu. Press the Up or Down button to select the method for updating the software. Press the Enter button to select and then the Enter button again to confirm.

Choose the USB option if the Foundation 4K UHD is not connected to the internet and software updates are to be performed by connecting a USB drive to the USB input on the rear panel of the Foundation 4K UHD.

Choose the Network option if the Foundation 4K UHD is connected to the internet. The Foundation 4K UHD will check the Krell update server to determine if a new software update is available.

Display Setup

Backlight Timeout

Backlight Timeout turns off the front panel display after a period of inactivity. The default time setting is Disabled which keeps the display always illuminated. Timeout can be set between 15 and 120 seconds.

Contrast Setup

Three contrast levels are available with level 2 being the default. Press the Enter button to activate the level setting and then use the up or down button to adjust. Press the Enter button to confirm the desired choice.

On Screen Display (OSD) Setup

OSD Operation

The default for OSD operation is ON. To turn OSD operation off, Press the Enter button and use the Up or Down button to change the setting to OFF. Press the Enter button to confirm change.

OSD Timeout

The default timeout for OSD is 3 seconds. The range for OSD Timeout is 1 to 15 seconds. To change the OSD Timeout, press the Enter button to highlight the time field. Press the Up or Down to select a different setting. Press the Enter button to confirm change.

CEC Operation

Consumer Electronics Control (CEC) is an HDMI feature designed to allow the user to control up-to 15 CEC-enabled devices, that are connected through HDMI, by using only one of their remote controls (for example by controlling a television set, set-top box, and DVD player using only the remote control of the TV). The default setting for CEC is Enabled. In some installations, it desirable to have CEC operation disabled.

To disable CEC operation off, Press the Enter button and use the Up or Down button to change the setting to Disabled. Press the Enter button to confirm change.

Restore Settings

Restore Settings will return the Foundation 4K UHD to the original factory settings or to previously saved user settings. Press the Up or Down button to change to User. Press the Enter button to confirm selection. Press the Enter button again to return to factory or user saved settings. The Foundation 4K UHD will display various messages and will eventually return to the standby mode.

Save Settings

Save Settings will save all configuration settings in non volatile memory. Press the Enter button to begin saving process.

Serial Number

Serial number displays the unit's serial number and is not user editable.

Operating the Foundation 4K UHD

After the Foundation 4K UHD is connected to sources and amplifiers, and the system is configured, the Foundation 4K UHD is ready for operation.

1. Insert the AC power cord into the IEC connector on the Foundation 4K UHD. Insert the other end into the AC wall receptacle.
2. Move the back panel power switch into the up (on) position.
3. The red stand-by LED behind the Krell logo plate illuminates.
4. Use either the front panel power button or the remote control power button to power on the Foundation 4K UHD. The blue power LED behind the Krell logo plate illuminates. The Foundation 4K UHD is now in the operational mode.

5. Press a desired source button and the Volume Up and Down button to find a proper listening level.
6. To adjust individual channels, press the CNTR, SURR, BACK, or SUB button and then the Volume Up or Down button to find a proper listening level.
7. To mute all output, press the Mute button. Press the Volume Up or Down, or the Mute button again to unmute the output.
8. To access the dynamic range menu directly, press the DYN button on the remote control to view the Dynamic Range sub menu. Press the Up or Down button to view the available options.

Max/Off is the default and provides maximum dynamic range

Normal/Auto uses any dynamic range information encoded into a source's bit stream

Night/On applies 22dB worth of compression to all incoming signals.

Press the Enter button to select the desired option and Press Enter to return to normal operation.

9. To adjust left to right balance, press the BAL button on the remote control. The Left and Right channels will be displayed. Press the Right button to shift the balance to the right channel in .5dB increments. Alternatively, press the left button to move cursor to the right channel. Press the Right button to shift the balance to the left in .5 dB increments. Press the BAL button again to return to normal operation.
10. To return to stand-by, press the front panel power button or power button again. Krell recommends that the back panel power switch remain up (on) at all times.

Signal Recognition

The Foundation 4K UHD automatically detects the following signals and automatically engages the appropriate operating mode for the following Dolby and DTS signals:

DOLBY TrueHD, DOLBY DIGITAL 5.1, DOLBY DIGITAL 2.0, DOLBY DIGITAL Plus, Dolby Digital EX, Dolby Pro Logic IIx, DTS-HD Master Audio, DTS-HD High Resolution Audio, DTS 5.1, Discrete ES Discrete 6.1, DTS ES Matrix 6.1.

Additional processing modes can be applied to DOLBY DIGITAL 5.1, DOLBY DIGITAL 2.0, DOLBY DIGITAL Plus, Dolby Digital EX, Dolby Pro Logic IIx, and DTS 5.1 incoming signals. Press the Mode button to cycle through the options available for each automatically detected signal.

The additional processing modes are:

Dolby D 5.1

Dolby D 5.1 + SurEX, Dolby D 5.1 + PLIIx Movie, and Dolby D 5.1 + PLIIx Music

Dolby D 5.1 + SurEX creates six full-bandwidth output channels from 5.1-channel sources. This is done using a matrix decoder that derives three surround channels from the two in the original recording. For best results, Dolby Digital EX should be used with movie soundtracks recorded with Dolby Digital Surround EX. All modes listed under Dolby Digital EX, including the default mode you have selected, can be accessed using the Mode button.

Dolby Digital 2.0

Dolby D + PLIIx Movie and Dolby D + PLIIx Music

DTS 5.1

DTS 5.1 Movie and DTS 5.1 Music

PCM and analog modes

A variety of audio modes can be applied to conventional digital and analog signals. The processing modes are:

PREAMP

Select Preamp mode for listening to analog stereo signals with the Foundation 4K UHD operating as an analog stereo preamplifier. Preamp mode bypasses the Foundation 4K UHD's digital circuitry and sends signals from the balanced or single-ended inputs directly to the analog stereo outputs.

STEREO

Select Stereo mode for conventional stereo signals. Use this mode to listen to conventional stereo digital signals through the left and right speakers. If a crossover is set for the left and right speakers, the Foundation will send frequencies above the crossover point to the left and right speakers and frequencies below the crossover point to the subwoofer.

FULL RANGE + SUB

Select Full Range + Sub to play two channel content using the left and right speakers plus the subwoofer. This mode will ignore any crossover configurations and send full range signal to the left and right speakers plus low frequencies to the subwoofer(s).

DOLBY PLIIx MOVIE

The movie mode is the improved counterpart to the original Pro Logic decoder. It is the choice for the majority of Dolby Surround encoded material.

DOLBY PLIIx MUSIC

The music mode is for use with unencoded stereo music recordings. The music mode features dimension and center width controls, see PLII Control, on page XX, to enhance the music surround experience.

DTS Neo:6

DTS Neo:6 provides up to six full-band channels of information from stereo encoded material. 7.1 and 6.1 systems will derive six channels from the signal while 5.1 systems will derive five channels from the signal. DTS Neo:6 includes two modes: DTS NEO:6 CINEMA for two channel matrixed movie material and DTS NEO:6 MUSIC for stereo encoded music material.

Additionally, the Krell Music Surround Modes simulate different soundfield experiences when listening to music. The table below lists the modes and the speakers that operate within each mode:

Krell Music Surround Modes and operating speakers

GENERAL ADMISSION L/R/S/RR

FRONT ROW L/R/S/RR

ON STAGE L/R/C/S/RR

ENHANCED STEREO L/R/C/S

ORCHESTRA L/R/C/S/RR

MEZZANINE L/R/C/S/RR

FULL RANGE + SUB L/R/S

MONOPHONIC C/S

PARTY L/R/C/S/RR

Two Zone Operation

The Foundation 4K UHD has two audio video zones, main and zone 2. You can select a video source or an audio source to play in either the main zone or Zone 2. Note: Zone 2 audio is only two channel.

The Foundation 4K UHD two-zone operation offers a number of listening options.

You can play both zones simultaneously, with the main zone playing a source in one part of the house and zone 2 playing a different (or the same) source in another part of the house.

Play both zones with the Foundation 4K UHD in the stand-by mode:

1. Press the power button until the blue power LED illuminates.
2. Press the input device selection button or button for the source you wish to play.
3. Begin playing the source and adjust the volume to your liking.
4. Press the Zone 2 button.
5. Press the source selection button or button for another source to play in zone 2. Or select the same input device button if you want the same source to play in both zones.
6. Begin playing the source and adjust the volume to your liking.

RS-232 Code Set

1. Preparing for RS-232 Connectivity

The Foundation 4K UHD can be controlled remotely via an RS-232 connection. All of the features and functions of the unit can be accessed via RS-232 command strings.

NOTE: The Foundation 4K UHD can only recognize the “1pwrz” command while in stand-by mode. This insures that the unit is energized and ready to accept command strings. Once the unit is active, then commands can be sent. Feedback can be received when the unit is in stand-by mode.

- A. The Foundation 4K UHD and All Krell components require a straight non-nulling RS-232 cable.

2. Settings

The RS-232 protocol settings for status and control are as follows:

9600 Baud, 8 Data Bits, 1 Stop Bit, No Parity

3. DB-9 Pin-out

- A. Data Carrier Detect
- B. Received Data
- C. Transmitted Data
- D. Data Terminal Ready
- E. Signal Ground
- F. Data Set Ready
- G. Request To Send
- H. Clear To Send
- I. Ring Indicator

Notes

- A. The decode preferences are dependant on the source data, not all formats are available to every input stream.

Foundation 4K UHD Processor Control Continued

COMMAND	RS-232 COMMAND	COMMENTS
Power On	1PWRZ	
Power Off	0PWRZ	
Mute	MUTZ	Mute/Unmute the currently selected zone
Mode	MODZ	
EQ On	1EQZ	
EQ Off	0EQZ	
Zone1 Volume	xxxMVLZ	xxx is volume level 0-150
Zone2 Volume	xxxRVLZ	xxx is volume level 0-150
Status Commands		
Auto status on	ASTEZ	
Auto status off	ASTDZ	
Get status	STAZ	
Source Select		
		Selects source for the current zone
GM1	GM1Z	
GM2	GM2Z	
GM3	GM3Z	
BD1	BD1Z	
BD2	BD2Z	
STB1	STB1Z	
STB2	STB2Z	
CBL1	CBL1Z	
CBL2	CBL2Z	
SAT1	SAT1Z	
SAT2	SAT2Z	
DVD	DVDZ	
DVR	DVRZ	
CD	CDZ	
DMP	DMPZ	
TV	TVZ	
Menu Commands		
Up	UPZ	Also used for volume up for the current zone
Down	DWNZ	Also used for volume down for the current zone
Left	LFTZ	
Right	RGTZ	
Enter	ENTZ	
Menu	MENZ	
Zone Select		
Zone 1	MAINZ	
Zone 2	REMZ	

COMMAND	RS-232 COMMAND	COMMENTS
Level Trims		
Center	CENZ	
Surround	SURZ	
Back	BAKZ	
Sub	SUBZ	
Balance	BALZ	
Center Direct	xxxCVLZ	xxx=0-20 (-10dB to +10dB)
Surround Direct	xxxSRLZ	xxx=0-20 (-10dB to +10dB)
Back Direct	xxxBVLZ	xxx=0-20 (-10dB to +10dB)
Sub Direct	xxxSVLZ	xxx=0-20 (-10dB to +10dB)
Memory Commands		
Memory xxx	xxxMEMZ	Changes memory for current source, xxx = 001-003
Mode Commands		
Mode xxx	xxxMODZ	Changes the current mode, xxx = mode number
000 DD 5.1		Set native mode
001 DD 2.0		Set native mode
002 DD 2.0/PLIIx Movie		
003 DD 2.0/PLIIx Music		
004 (not used)		
005 (not used)		
006 (not used)		
007 (not used)		
008 DTS 5.1		
008 DTS 5.1		Set native mode
009 (not used)		
010 (not used)		
011 Stereo		
012 PLIIx Movie		
013 PLIIx Music		
014 (not used)		
015 (not used)		
016 (not used)		
017 Neo:6 Cinema		
018 Neo:6 Music		
019 Party		
020 General Admission		
021 Front Row		
022 On Stage		
023 Enhanced Stereo		
024 Orchestra		
025 Mezzanine		
026 Full Range + Sub		
027 Mono		
028 Preamp		
029 (not used)		

Foundation 4K UHD Processor RS-232 Feedback

OVERVIEW

The Foundation 4K UHD Processor is equipped with a system that can report back its operational status via the RS-232 port. The system reports its operational status by transmitting a block of status data. The block is configured as 18, 8 bit words. The first and last word always contains hexadecimal code 55 to facilitate message framing and synchronization. When the data block is sent through an RS-232 port, each 8 bit word transmitted will also have 1 stop bit associated with it.

The Status can be activated in 2 ways. The first way is to ask for status to be sent by sending the RS-232 command "STAZ". The second way is to enable auto status by sending the RS-232 command "ASTEZ". Once this command is sent, the Foundation 4K UHD will transmit a status block whenever the status changes. Auto Status is disabled by sending the RS-232 command "ASTDZ". Auto Status remains enabled until AC power is removed or turned off.

RS-232 Port Settings

9600 Baud, 8 Data bits, 1 Stop bit, No Parity

Data Format

18 bytes total, first byte and last byte are framing bytes with a value of 0x55

Byte 1: Framing
Value: 0x55

Byte 2: General Status 1

Bit	7	6	5	4	3	2	1	0
		User Mute		Current Zone	Input Trigger			Main Power

Main Power: 1=On
Input Trigger: 1=12V trigger input active
Current Zone: 0=Main zone, 1=Zone 2
User Mute: 1=user mute active

Byte 3: General Status 2

Bit	7	6	5	4	3	2	1	0
	Menu Mode	Auto Status Enabled		Tigger 4 On	Tigger 34 On	Tigger 2 On	Tigger 1 On	DSP Running

DSP Running: 1=both DSPs out of reset
Trigger On 1-4: 1=12V trigger out is on
Auto Status Enabled: 0=Disabled, 1=Enabled
Menu mode: 1=menu is on

Byte 4: Current Source

Bit	7	6	5	4	3	2	1	0
	Z2 Src 3	Z2 Src 2	Z2 Src 1	Z2 Src 0	MN Src 3	MN Src 2	MN Src 1	MN Src 0

MN Src 3-0: Main Zone Source value

0 BD1	8 GM1
1 BD2	9 GM2
2 STB1	10 GM3
3 STB2	11 DVR
4 CBL1	12 DVD
5 CBL2	13 CD
6 SAT1	14 DMP
7 SAT2	15 TV

Z2 Src 3-0: Zone 2 Source value
(same values as Main Zone source)

Foundation 4K UHD Processor RS-232 Feedback Continued

Byte 5: Main Volume

Bit	7	6	5	4	3	2	1	0
	Vol7	Vol6	Vol5	Vol4	Vol3	Vol2	Vol1	Vol0

Vol 7-0: Main Zone Volume Level

Byte 6: Zone 2 Volume

Bit	7	6	5	4	3	2	1	0
	Vol7	Vol6	Vol5	Vol4	Vol3	Vol2	Vol1	Vol0

Vol 7-0: Zone 2 Volume Level

Byte 7: Video Input

Bit	7	6	5	4	3	2	1	0
	Vid In 7	Vid In 6	Vid In 5	Vid In 4	Vid In 3	Vid In 2	Vid In 1	Vid In 0

Vid In 7-0: video input index

0 None	9 HDMI9
1 HDMI1	10 HDMI10
2 HDMI2	11 YPbPr1
3 HDMI3	12 YPbPr2
4 HDMI4	13 YPbPr3
5 HDMI5	14 Composite1
6 HDMI6	15 Composite2
7 HDMI7	256 Not specified
8 HDMI8	

Byte 8: Main Zone Audio Input

Bit	7	6	5	4	3	2	1	0
	Main Aud 7	Main Aud 6	Main Aud 5	Main Aud 4	Main Aud 3	Main Aud 2	Main Aud 1	Main Aud 0

Main Aud 7-0: Main zone audio input index

0 Coax1	8 Balanced
1 Coax2	9 S1
2 Coax3	10 S2
3 Optical1	11 S3
4 Optical2	12 S4
5 Optical3	13 HDMI
6 ARC1	14 DVI (no audio)
7 ARC2	256 Not specified

Byte 9: Input Stream

Bit	7	6	5	4	3	2	1	0
	Input Strm 7	Input Strm 6	Input Strm 5	Input Strm 4	Input Strm 3	Input Strm 2	Input Strm 1	Input Strm 0

Input Strm 7-0: Audio input stream value

0 Analog	8 AAC X/Y
1 PCM Stereo	9 Dolby Digital 5.1
2 Dolby Digital 2.0	10 Dolby Digital 5.1 Surr. EX encoded
3 Dolby Digital 2.0 Surround encoded	11 DTS 5.1
4 DTS Stereo	12 DTS-ES Discrete 6.1
5 AAC Stereo	13 DTS-ES Matrix 6.1
6 Dolby Digital X/Y	14 DTS 96/24
7 DTS X/Y	15 DTS 96/24 Stereo
16 DTS 96/24 5.1	21 Dolby Digital Plus
17 DTS 96/24 Matrix 6.1	22 Dolby TrueHD
18 AAC 5.1	23 DTS-HD High Resolution
19 PCM 5.1	24 DTS-HD Low Bit Rate
20 PCM 7.1	25 DTS-HD Master Audio

Foundation 4K UHD Processor RS-232 Feedback Continued

Byte 10: Speakers

Bit	7	6	5	4	3	2	1	0
	Back En	Sub En	Surr En	Center En				

Center En: 1=Center speaker present

Surr En: 1=Surround speakers present

Sub En: 1=Subwoofer present

Back En: 1=Back speaker(s) present

Byte 11: PPM mode

Bit	7	6	5	4	3	2	1	0
	PPM 7	PPM 6	PPM 5	PPM 4	PPM 3	PPM 2	PPM 1	PPM 0

PPM 7-0: PPM mode value

0 Native	9 On Stage
1 Preamp	10 Party
2 Stereo	11 Mono
3 Enhanced Stereo	12 Neo:6 Cinema
4 Full Range + Sub	13 Neo:6 Music
5 Front Row	14 PLIIx Movie
6 General Admission	15 PLIIx Music
7 Mezzanine	16 Dolby Digital EX
8 Orchestra	

Byte 12: Main Zone Balance/Dynamic Range Mode

Bit	7	6	5	4	3	2	1	0
		Cmode 1	Cmode 0	Bal 4	Bal 3	Bal 2	Bal 1	Bal 0

Bal 4-0: Balance setting

0 Not used	9 Left -2.0	18 Right -2.5
1 Left -6	10 Left -1.5	19 Right -3.0
2 Left -5.5	11 Left -1.0	20 Right -3.5
3 Left -5.0	12 Left -0.5	21 Right -4.0
4 Left -4.5	13 Centered	22 Right -4.5
5 Left -4.0	14 Right -0.5	23 Right -5.0
6 Left -3.5	15 Right -1.0	24 Right -5.5
7 Left -3.0	16 Right -1.5	25 Right -6.0
8 Left -2.5	17 Right -2.0	

Cmode 1-0: Dynamic range value

Byte 13: Current Memory/EQ on-off

Bit	7	6	5	4	3	2	1	0
	EQ	Mem 1	Mem 0					

Mem 1-0: Current active memory

EQ: 1=EQ on

Foundation 4K UHD Processor RS-232 Feedback Continued

Byte 14: Center Trim

Bit	7	6	5	4	3	2	1	0
	Center Trim 7	Center Trim 6	Center Trim 5	Center Trim 4	Center Trim 3	Center Trim 2	Center Trim 1	Center Trim 0

Center Trim 7-0: Center trim value

0 -10 dB	6 -4 dB	12 +2 dB	18 +8 dB
1 -9 dB	7 -3 dB	13 +3 dB	19 +9 dB
2 -8 dB	8 -2 dB	14 +4 dB	20 +10 dB
3 -7 dB	9 -1 dB	15 +5 dB	
4 -6 dB	10 0 dB	16 +6 dB	
5 -5 dB	11 +1 dB	17 +7 dB	

Byte 15: Surround Trim

Bit	7	6	5	4	3	2	1	0
	Surr Trim 7	Surr Trim 6	Surr Trim 5	Surr Trim 4	Surr Trim 3	Surr Trim 2	Surr Trim 1	Surr Trim 0

Surr Trim 7-0: Surround trim value

(same values as Center Trim)

Byte 16: Back Trim

Bit	7	6	5	4	3	2	1	0
	Back Trim 7	Back Trim 6	Back Trim 5	Back Trim 4	Back Trim 3	Back Trim 2	Back Trim 1	Back Trim 0

Back Trim 7-0: Back trim value

(same values as Center Trim)

Byte 17: Sub Trim

Bit	7	6	5	4	3	2	1	0
	Sub Trim 7	Sub Trim 6	Sub Trim 5	Sub Trim 4	Sub Trim 3	Sub Trim 2	Sub Trim 1	Sub Trim 0

Sub Trim 7-0: Sub trim value

(same values as Center Trim)

Byte 18: Framing

Value: 0x55

Warranty

This Krell product has a limited warranty of five years for parts and labor on circuitry from date of purchase or six years from date of original shipment from the Krell factory. Should this product fail to perform at any time during the warranty, Krell will repair it at no cost to the owner, except as set forth in this warranty.

The warranty does not apply to damage caused by acts of God or nature.

The warranty on this page shall be in lieu of any other warranty, expressed or implied, including, but not limited to, any implied warranty of merchantability or fitness for a particular purpose. There are no warranties which exceed beyond those described in this document. If this product does not perform as warranted herein, the owner's sole remedy shall be repair. In no event will Krell be liable for incidental or consequential damages arising from purchase, use, or inability to use this product, even if Krell has been advised of the possibility of such damages.

Proof of purchase in the form of a bill of sale or receipted invoice substantiating that the unit is within the warranty period must be presented to obtain warranty service. The warranty begins on the date of retail purchase, as noted on the bill of sale or receipted invoice from an authorized Krell dealer or distributor.

The warranty for Krell products is valid only in the country to which they were originally shipped, through the authorized Krell distributor for that country, and at the factory. There may be restrictions on or changes to Krell's warranty because of regulations within a specific country. Please check with your distributor for a complete understanding of the warranty in your country.

If a unit is serviced by a distributor who did not import the unit, there may be a charge for service, even if the product is within the warranty period.

Freight to the factory is your responsibility. Return freight within the United States (U.S.A.) is included in the warranty. If you have purchased your Krell product outside the U.S.A. and wish to have it serviced at the factory, all freight and associated charges to the factory are your responsibility.

Krell will pay return freight to the U.S.A.-based freight forwarder of your choice. Freight and other charges to ship the unit from the freight forwarder to you are also your responsibility.

Krell is not responsible for any damage incurred in transit. Krell will file claims for damages as necessary for units damaged in transit to the factory. You are responsible for filing claims for shipping damages during the return shipment.

Krell does not supply replacement parts and/or products to the owner of the unit. Replacement parts and/or products will be furnished only to the distributor performing service on this unit on an exchange basis only; any parts and/or products returned to Krell for exchange become the property of Krell.

No expressed or implied warranty is made for any Krell product damaged by accident, abuse, misuse, natural or personal disaster, or unauthorized modification.

Any unauthorized voltage conversion, disassembly, component replacement, perforation of chassis, updates, or modifications performed to the unit will void the warranty.

The operating voltage of this unit is determined by the factory and can only be changed by an authorized Krell distributor or at the factory. The voltage for this product in the U.S.A. cannot be changed until six months from the original purchase date.

In the event that Krell receives a product for warranty service that has been modified in any way without Krell authorization, all warranties on that product will be void. The product will be returned to original factory layout specifications at the owner's expense before it is repaired. All repairs required after the product has been returned to original factory specifications will be charged to the customer, at current parts and labor rates.

All operational features, functions, and specifications and policies are subject to change

Return Authorization Procedure

If you believe there is a problem with your component, please contact your dealer, distributor, or the Krell factory to discuss the problem before you return the component for repair. To expedite service, you may wish to complete and e-mail the Service Request Form in the Service section of our website at: www.krellonline.com

To return a product to Krell, please follow this procedure so that we may serve you better:

1. Obtain a Return Authorization Number (R/A number) and shipping address from the Krell Service Department.
2. Insure and accept all liability for loss or damage to the product during shipment to the Krell factory and ensure all freight (shipping) charges are prepaid.
3. The product may also be hand delivered if arrangements with the Service Department have been made in advance. Proof of purchase will be required for warranty validation at the time of hand delivery.

NOTE: Use the original packaging to ensure the safe transit of the product to the factory, dealer, or distributor. Krell may, at its discretion, return a product in new packaging and bill the owner for such packaging if the product received by Krell was boxed in nonstandard packaging or if the original packaging was so damaged that it was unusable. If Krell determines that new packaging is required, the owner will be notified before the product is returned.

To purchase additional packaging, please contact your authorized Krell dealer, distributor, or the Krell Service Department for assistance.

To Contact the Krell Service Department:

Telephone 203-799-9954 Monday-Friday, 9:00 am to 5:00 pm EST

Fax 203-799-9796

E-Mail service@krellonline.com

World Wide Web <http://www.krellonline.com>

Specifications

SIGNAL-TO-NOISE RATIO	"A" Weighted	106 dB
TOTAL HARMONIC DISTORTION (THD)	Unweighted	20 Hz-20 kHz, +0, - 0.003 dB
INPUTS	ANALOG AUDIO	(1) Pair Balanced via XLR connectors (4) Pairs Single-ended via RCA connectors
	DIGITAL AUDIO	(10) HDMI via HDMI connectors (9 on rear, 1 on front) (3) EIAJ optical via Toslink connectors (3) Coaxial via RCA connectors
	DIGITAL VIDEO	(4) HDMI 2.0 with HDCP 2.2 decryption (6) HDMI 2.0 with HDCP 2.0 decryption (5 on rear, 1 on front)
	ANALOG VIDEO	(3) Component Video via RCA connectors (2) Composite Video via RCA connectors
OUTPUTS	ANALOG AUDIO	(9) Balanced via XLR Connectors R, L, C, SR, SL, SBR, SBL, S1, S2 (9) Single-ended via RCA Connectors R, L, C, SR, SL, SBR, SBL, S1, S2 (1) Zone 2 Output (2) Single-ended via RCA Connectors
	DIGITAL AUDIO	(1) EIAJ optical via TosLink connector (1) Coaxial via RCA connector
	DIGITAL VIDEO	(2) HDMI via HDMI connector Both Include Audio Return Channel
CONTROL/UPDATE		(1) IR Receiver for Remote Control (1) RS-232 via DB9 Female Connector Straight Wired (1) RC-5 via 1/8" stereo "trs" Receptacle (1) Ethernet via RJ-45 Connector (1) Mini USB used for firmware updates (1) 12vdc Remote Trigger Input via 1/8" Mono Receptacle (1) 12vdc Remote Trigger Outputs via 1/8" Mono Receptacles

DIGITAL DECODING MODES	<p>Dolby True HD Dolby Digital Plus Dolby Digital 5.1 Dolby Digital EX Dolby Pro Logic IIX</p> <p>DTS-HD Master Audio DTS-HD High Resolution Audio DTS 5.1 DTS ES Discrete 6.1 DTS ES Matrix 6.1 DTS Neo:6</p> <p>PCM 5.1 PCM 7.1</p>
SURROUND ENHANCEMENT MODES	<p>General Admission Front Row On Stage Enhanced Stereo Orchestra Mezzanine Full Range + Sub Monophonic Party</p>
RS-232 DB9 Pin Out	<ol style="list-style-type: none"> 1. Data Carrier Detect 2. Received Data 3. Transmitted Data 4. Data Terminal Ready 5. Signal Ground 6. Data Set Ready 7. Request To Send 8. Clear To Send 9. Ring Indicator
RC-5 pin out	<p>Tip = RC-5 data, Ring = +5 V, Sleeve = GND</p>
XLR Pin Out	<p>Pin 1 (ground) Pin 2 (non-inverting "Hot") Pin 3 (Inverting)</p>

Specifications Cont...

Maximum Input	Balanced 6.3 Vrms Single Ended 3.15 Vrms
Maximum Output	Balanced 16.7Vrms Single Ended 8.35 Vrms
Audio Input Impedance	Balanced 58K Ω Single Ended 58K Ω
Audio Output Impedance	Balanced 100 Ω Single Ended 100 Ω
Power Consumption	Stand-by 2w Operation 59w
DIMENSIONS	Inches (L) 16.83 x (W) 17.06 x (H) 3.47 Centimeters (L) 42.76 x (W) 43.33 x (H) 88.1
WEIGHT	18lbs Unit only 8.16kg Unit only 24lbs Shipping Weight 10.89kg Shipping weight

All operational features, functions and specifications are subject to change without notification.