

NETWORK
UPGRADE
FOR THE
LINK DAC III

REV #3 (6/2001)

USERS MANUAL



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Thank you for purchasing the “Network Upgrade” for your LINK DAC. I am sure you will be very pleased with it. It adds the following new features to your LINK as well as improved performance.

Jitter Reduction

Upsampling to 96k or 132k

Balanced AES/EBU Input

MSB 192k Network Input

If you ordered the option factory installed, we have included a storage and shipping box for the upgrade in case you ever wish to remove the upgrade. Please retain this box.

JITTER REDUCTION

Dramatic Jitter Reduction is added to the LINK when this upgrade is installed, whether upsampling is turned on or off. It is applied to any source except the 192k Network Input.

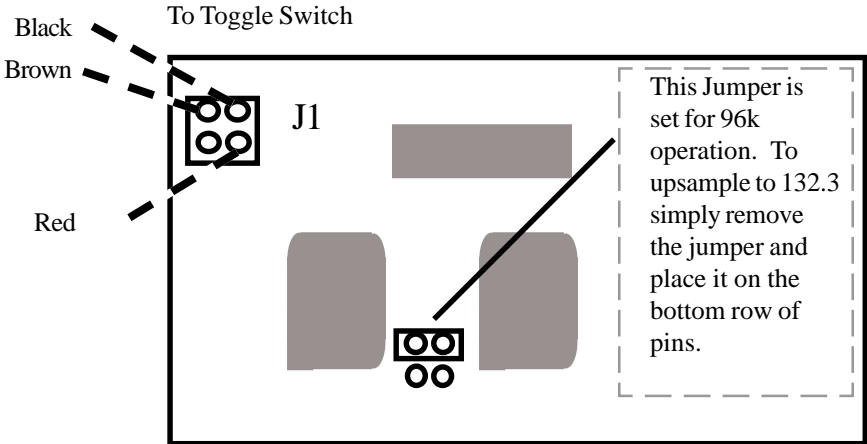
BASIC UPSAMPLING

The toggle switch installed on the rear of the LINK allows upsampling to be turned on or off. The option LED on the front panel indicates “Upsampling on”. The basic upsampling provides a new digitally sampled signal at 96 kHz. This signal is decoded by the internal LINK DAC at 96K and the 96K LED will also light up ONLY when an active source is being played. When no source is active, such as when a CD is paused, the input LED will light, but the frequency LED will not light. As soon as play is resumed the frequency LED will again light up. This is different from a LINK DAC without upsampling. It indicates frequency even if the source is not actively playing.

HIGHER RATE SAMPLING

Your new upsampling board has the capability to upsample to 96 kHz or 132.3 kHz. The upgrade is configured to upsample to 96 kHz from MSB. An extra oscillator is installed on the upsampling board, and can be selected instead of the standard oscillator to increase the sampling rate from 96 kHz to 132.3 kHz (3 times the CD rate of 44.1 kHz). This is the highest rate the LINK III can upsample to. No frequency LED lights up when the 132 kHz frequency is selected. Admittedly, we are driving both the decoder and DAC beyond their design limits, but our experience at normal room temperature conditions has shown the higher speed upgrade too works very well. If your environment is too hot (the LINK sits on top of your amplifier), you may need to install the normal 96K oscillator.

To change the frequency, follow the instructions to open the cover of the LINK. Inside the LINK notice the small upsampling board installed in the main board, shown below. Two jumper positions are available between the large metal oscillaface.



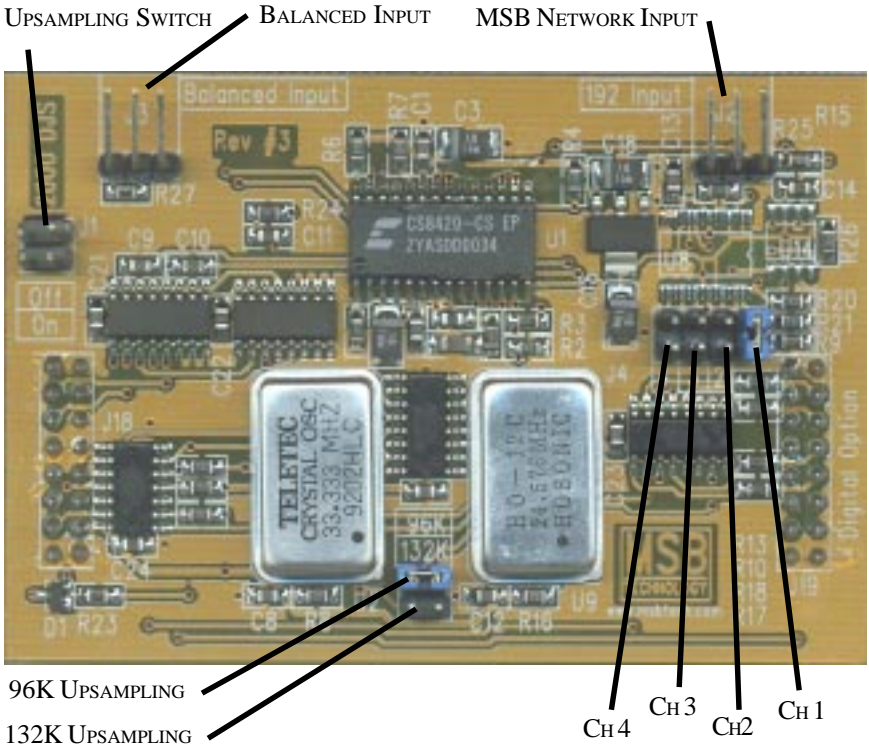
tors. They are labeled 96K and 132K. As shipped, the jumper is located in the 96K position. Remove the jumper and move to the 132K position.

BALANCED INPUT SELECTION

This upgrade adds an XLR input. The XLR input can be used as either an AES/EBU balanced digital audio input or as the MSB Network (192 kHz) input. As an AES/EBU input it can be attached to any standard transport that provides a XLR digital output. It can handle all the same sources as the single-ended inputs but with better audio quality.

The balanced input has the highest input selection priority. Over our many years of producing high-end audio products we have found that the AES/EBU balanced professional digital audio format consistently outperforms all others for tonal accuracy, focus and image stability. As all DACs derive their clocks from the incoming digital bit stream, the quality and accuracy of the source, transport and interconnections are very important. This format offers the lowest jitter for two reasons. First, because the actual voltage level of the signal is 10 times greater than SP-DIFF. Secondly, as a balanced system, noise rejection is complete. Noise on a digital interface shifts the digital translations, increasing jitter. If you do not have a good transport with a balanced digital output, MSB offers a balanced digital output upgrade to any digital source.

As an MSB Network Input, it can only be attached to Transports with MSB Network outputs, which include DVD-A transports with the MSB modification or any digital source with the MSB 192 kHz upsampler upgrade. Although the MSB Network operating at 192kHz uses the same connector as a balanced digital audio connection, several significant differences exist. Most importantly, the cable must be of a twisted pair construction, not of a coaxial nature. Wire such as CAT5 is perfect for the MSB Network. Most audiophile balanced cables will NOT work with



This results in greatly improved performance, even with CD playback. It must be connected with a twisted pair cable such as CAT5.

To change the input, open the cover. Unplug the cable running from the XLR connector to the Upsampling board and switch to the adjacent connector. From the factory it is plugged into the connector labeled “Balanced Input”. For the MSB Network, move it to the connector labeled “192 Input” (see diagram).

MSB NETWORK CHANNEL SELECTION

The MSB Network supports 4 stereo channels of 192k data at once. Any DAC can be configured to decode any of these 4 channels. For example, when an upgraded DVD player is playing a DTS music CD, one DAC can be configured to Channel 1 and will receive the front channels. A second DAC can be attached to the same wire at the same time and by selecting Channel 2 will receive and decode the rear channels. The 3rd channel is for the front and sub channels if you want to use them. The 4th channel is for future formats which may come along. Move the jumper located on the upsampling board as shown in the diagram to select the channel.

More than one DAC can be attached to the same cable by taking advantage of a DAC with both an input and output like the Platinum to create a daisy chain configu-

ration. A MSB Network output upgrade provides three identical connectors allowing three DACs to be driven at once, each set up for a different channel.



HDCD UPGRADE

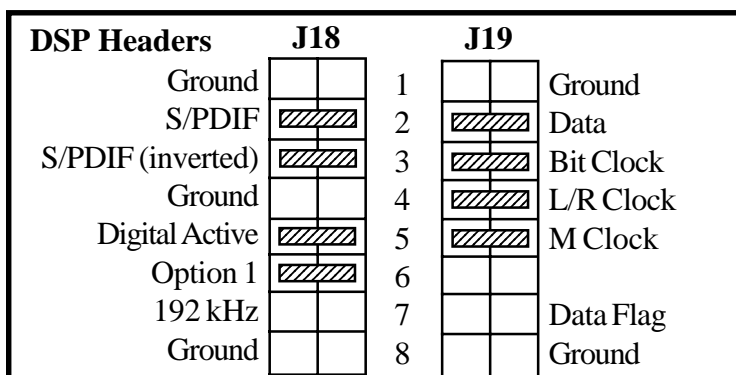
The HDCD can be installed at the same time as the upsampling upgrade as long as it is configured for 96k not 132k upsampling. HDCD cannot be used with the 192k input without a special upgrade by MSB. If you order HDCD and want it to be compatible with the MSB Network you must specify so in your order. An additional fee may apply.

OTHER UPGRADES

This upgrade is compatible with the GOLD, NELSON and standard LINK DAC IIIs, and works with the Virtual 3d upgrade. It replaces the Upsampling upgrade for the LINK. If you have not already tried the P1000 power base, this is another clear performance booster for any LINK. To go even beyond, please consider the Nelson, Gold or Platinum LINK. MSB generally offers a trade-in credit when upgrading to the next level DAC.

REMOVAL OF UPGRADE

If ever the upgrade is removed, jumpers must be installed on the upgrade headers to make the LINK work. The position of those jumpers is shown in the diagram.



NORMAL POSITION OF LINK III JUMPERS

INSTALLATION

This section describes how to install the Upsampling Upgrade in a LINK III. Disregard this section if the upgrade was factory installed.

LINK III PREPARATION

Place the LINK III on a soft surface like a tablecloth or carpet. Disconnect the power supply. Remove the three philips screws on the back edge of the cover. Turn the LINK over and remove the three philips screws from the front edge of the cover. Carefully separate the base from the cover. Pick up the base and flip it over, placing it inside the cover. Take care not to disconnect the ribbon cable to the front panel. Place the LINK so that the RCA connectors are facing AWAY from you. This way all the diagrams will be oriented correctly.

REMOVE THE JUMPERS AND INSTALL THE BOARD

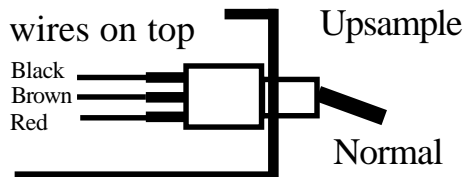
Two headers can be seen in the middle of the LINK III board. They are labeled J18 and J19. Four jumpers are installed as shown. Remove these jumpers. Tape them to the inside of the base so they will not be lost. Install the upgrade board by plugging its two sockets into these two headers. The board should be oriented so the writing is in the same direction as on the LINK board. Make sure the pins line up both up and down and right and left. It is very easy to shift the board one pin position in any direction. Before seating the board, inspect from all directions to confirm position. The board can then be pressed down firmly.

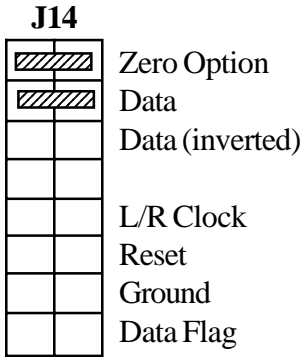
XLR INSTALLATION

On the back of the LINK III is a large hole with a plastic plug in it, next to the optical input. Remove the plastic plug. Install the XLR connector in the hole and attach with the screws provided. Plug the connector into the Network board with the holes in the connector facing up as shown. Select either the "Balanced Input" or the "192 Input" depending on the function desired. If the connector is plugged in upside down, it will not operate correctly.

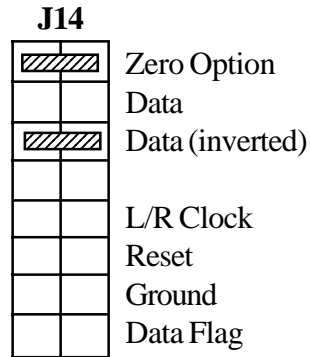
SWITCH INSTALLATION

On the back of the LINK III is a 1/4" hole with a plastic plug in it, next to the power connector. Remove the plastic plug. Install the switch in the hole oriented as shown. Plug the switch into J1 "Off" on the new Network board. The connector is oriented in J1 as shown on page 3. Some DACs already have a switch installed. It is used to change the phase. Unless it is the same as the new switch supplied, remove it and replace it with the new switch. Jumpers should be installed in the location the switch was





NORMAL PHASE



INVERTED PHASE

removed from as shown. Select the phase you want with the jumpers. The switch now is used for upsampling, not phase invert.

REASSEMBLE THE LINK III

Flip the base over, taking the twist out of the ribbon cable going to the front panel board. Slide the base into the front flange, aligning the base and front. Install the three philips screws in the bottom front. Flip the LINK over and install the three screws in the cover.

TEST UPGRADE

If anything does not conform to this test procedure, immediately disconnect the power and call or email MSB for help. Plug power into the LINK III. The power light should come on. Apply a digital source. The source should be indicated with an LED and you should hear a small click. You should immediately hear audio from the analog outputs. As you turn the toggle switch on and off, the option LED should turn on and off. Music should be heard in either position. The frequency display should indicate 96K when the music is actually heard, and when the switch is on, and indicate the normal source frequency when the switch is off. Test the balanced input with a balanced source if configured for AES/EBU digital. It should work as described above. If configured for 192k, the balanced input must be attached to an MSB source with an MSB cable. The 192k LED will light and music will be heard. The upsampling switch will have no effect.

TROUBLESHOOTING

If the balanced input does not work:

1. Check that the XLR connector is plugged in to the pins labeled “Balanced Input” not the connector labeled “192 Input”.
2. Check that the connector is oriented the right way. The side of the connector with the pins exposed should face up. The ground pin of the XLR should aim toward the center of the board.
3. See if resistor R27 has been removed. Removal of this resistor may be necessary with some transports.

If the 192 k input does not work:

1. Check that the XLR is connected to the connector labeled “192 input” and the exposed pin side of the connector is oriented up.
2. Check that both of the ICs just below the connector are populated. The picture on page 3 shows these chips missing. If they are missing on your board, call MSB for a replacement. Some early boards were produced without these chips and show up from time to time.
3. Make sure the source is an MSB 192 output and the cable is an MSB cable.

MORE WAYS TO ACHIEVE INCREDIBLE SOUND... FROM MSB

192K UPSAMPLER UPGRADE

This upgrade installs in most digital products and provides a 192 kHz audio output compatible with the LINK III family of DACs. Installs in DVD-A players, standard DVD, CD, LD players as well as DSS systems. All sources are upsampled to 192 kHz. Multi-channel output also possible on DTS and Dolby Digital equipped players. **\$585**