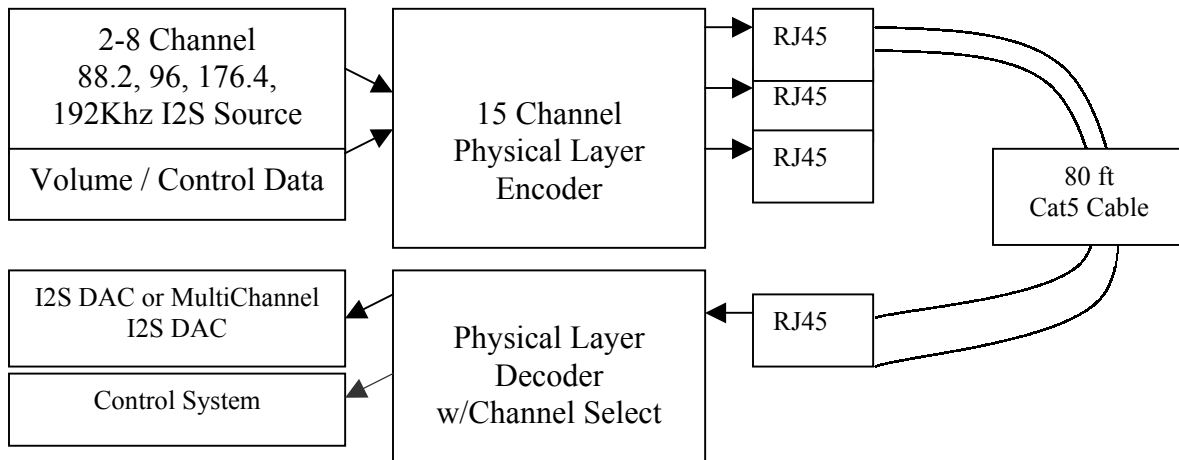


3/1/01

## The MSB Network

The MSB Network is a High Bandwidth, Low Jitter, Multi-channel, Digital Audio Interface, which is ideally suited for today's high-speed Digital Audio transmission needs.



The MSB Network has two components, The Link Layer and the Physical Layer:

The Link Layer specifies the Clock channels, Digital Audio channels and the Volume / Auxiliary channels.

The Digital Audio is specified as 4 stereo digital audio channels (Front, Rear, Center/Sub, and Auxiliary) at 88.2, 96, 176.4, or 192Khz 24-32 bits in length conforming to the industry standard I2S Data Format. These channels must be synchronized to a common L/R clk, Bit clk and Mclk. There are 4 Volume / Auxiliary channels which provide for 32 bits or Auxiliary Data and 16 Bits of Volume Data at the same rate as the Digital Audio Stream. They must also be synchronized to the Digital Audio L/R Clk. In summary the Link Layer contains 15 dedicated channels running at 88.2, 96, 176.4, or 192Khz (1 for Mclk, 1 for Bit clk, 1 for L/R Clk, 4 for 24-32 bit I2S Stereo Audio Data, 4 for 16 bit Volume Control Data, and 4 for 32 bit Auxiliary Data.)

The Physical Layer consists of the Transmission Media and Transmission Data Format.

The Transmission Media is a High Data Rate Category 5 Cabling and RJ45 Connectors. This allows Physical Connections of up to 80 ft in length. 3 Pin XLR connectors and Category 5 Cabling may also be used with a maximum cable length of 20 ft. The RJ45 Connectors allow up to 4 simultaneous MSB Network streams for up to 32 Digital Audio Channels per Cable.

The Transmission Data Format is a 295Mbps serial 250mV Low Voltage Differential signal for excellent jitter and noise rejection with low radiated emissions.

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*World Class Multimedia Components*

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## The MSB 192Khz Upsampler

The MSB 192Khz Upsampler for digital sources combines a 192Khz synchronous upsampler with a MSB Network transmitter. This can be installed in almost any stereo or 6 channel digital audio source. Data Rates of 96Khz or less and 24 bits or less will be upsampled to 192Khz 24 bit data. This data is then encoded with an MSB Network physical layer encoder and output to an external DAC. This upgrade is compatible with DVD Audio sources as well as some SACD sources. This digital audio output makes formats such as DVD Audio and SACD available for conversion on external DACs that would not be available otherwise.

The MSB Upsampler is a high performance Synchronous Digital Audio Upsampler that simultaneously upsamples 44.1, 48, 88.2, or 96Khz Digital Audio to 176.4Khz or 192Khz and converts 16bit, 20bit, and 24bit data of any format to 24bit I2S data. This makes it an ideal companion to the MSB Network.