CobraNet Frequently Asked Questions

Omnitronic NAT series

What actually is CobraNet?

The CobraNet technology combines audio hardware, audio software and common network technology. It is used to digitally transmit audio signals in real time. But, in opposite to formats like MP3, it is an uncompressed audio signal – that is to say there there is no quality loss of sound through CobraNet.

How does CobraNet work?

CobraNet is based on the LAN (Local Area Network) technology including Ethernet network protocol. This is the most common type of network which is used almost everywhere and makes it possible to configure the routing of certain signal paths by software. That means that any signal can be sent from any point to every other point within the network. CobraNet devices are connected via junctions, so called switches, by common network cables of which each is able to transport 64 audio channels in each direction.

What advantages does CobraNet provide?

+ Wiring effort and costs

An analog multi channel transmission needs a lot of wires while CobraNet technology is able to transmit 64 channels in each direction using only one single network cable. That type of wiring saves not only money, it saves as well a lot of time wiring the whole system and the network remains comprehensible.

+ Flexibility

Once being wired a CobraNet system is able to sent signals from each switch to any other. Signal paths can be changed within minutes without moving or supplementing any wire. Configurations can be saved and easily be reloaded by just pushing a button.

+ Reliability

On the one hand a CobraNet line can be double run, so if one fails, there is still another one which takes over automatically. On the other hand, the digital transmission is more robust than the analog one so the quality of sound remains the same, despite long distances.

+ Expandability

Chips of Cirrus Logic company are used as network control, so any CobraNet device of any producer is compatible with another one. The system can, for example, be supplemented with live mixers of the brand Yamaha or JBL active speakers.

What applications CobraNet is made for?

Primarily, the technology can be used for permanent installations to fill large areas with sound, like theaters, exhibition halls or casinos. The bigger the size of the system, the more flexibility is to win with the CobraNet. Exhibition halls, for example, can easily be converted: CobraNet makes it possible to switch between the applications within minutes, so you can play music just at the main hall, or together with the side hall, or send different signals to each hall for two different events. In casinos, the network can be used for background music and, if needed, to make announcements which can be heard everywhere or only in chosen areas.

Can CobraNet be used for musical live applications as well?

Basically, it can be used for that, after all multi-channel live mixers using CobraNet are already available. Depending on the specific application delays are possible, which might be unacceptable for musicians. Recommended are permanent installations in large areas like theaters, casinos etc. See point "What applications CobraNet is made for?".

Omniotrnic NAP-8OUT Audio processor

Are special microphones, speakers or amplifiers needed to use CobraNet?

They are not needed. Any analog signal source can be connected via XLR to those CobraNet devices of Steinigke Showtechnic. On the output side XLR ports for power amplifiers or anything similar are available.

Which types of CobraNet devices are available in the Steinigke product range?

There are two different lines currently available in the product range: transmitters of the NAT series serve as transmitter and receiver in the network. the network can be fed with audio files or produce data output, each by analog and symmetrically executed XLR socket. There are different versions which differ in their number of ports: NAT-22: 2 inputs, 2 outputs; NAT-412: 4 inputs, 12 outputs; NAT-124: 12 inputs, 4 outputs; NAT-16IN: 16 inputs (no outputs); NAT-16OUT: 16 outputs (no inputs).

The processors of the NAP series are needed for the effect rendering right at analog sources or via network for digital ones. The devices include a DSP for quick effect rendering and the effects range from dynamics, routers, mixers to delays and crossover networking up to filters and parametric or geographic EQs. There are again different versions with regard to analog ports: NAP-8CH: without analog in or outputs; NAP-26: 2 inputs, 6 outputs; NAP-8OUT: 8 outputs.

Additionally a 24-channel network switch CNS-24 is available, which serves as junction in the CobraNet. Unlike other common switches the ports are at the back, so a rack-mount option is given. Furthermore, it has no fan which is an advantage for audio applications.

Omnitronic NAT-22 Audio transmitter

How long is the range of CobraNets?

With active elements in between you can prolong it until the transmission causes delays and thus leads to failures in the network. A common CAT-5 copper network wire bridges a distance up to 100 meters without further amplification. Using a fiber-optic cable distances up to 2 kilometers are possible, also special transformers are needed for this.

How large is the bandwidth of CobraNet systems?

The bandwidth of the whole system can hardly be specified, but from one point to the next 64 channels transmit in each direction, so 128 channels all together, by a 100 Mbit CAT-5 wire, at a sampling frequency of 48 kHz and quantization of the audio signal by 20 bit.

How long are the latencies of the system?

By sending packages network delays are necessarily created. Those can be configured between 1.33 ms, 2.66 ms and 5.33 ms. These are delays which are implemented between two devices in the network. Means to accomplish the final delay the respective delay has to be multiplicated with the number of connections and 2 ms have to be added for the conversion from analog to digital and back. All other delays are clearly below 1 ms.

What has to be considered: the smaller the adjusted delay, the bigger is the chance of instabilities in larger systems, because the data size is smaller, but it is sent more often. An exact line for the stability is hardly to be drawn, that depends on the whole system.
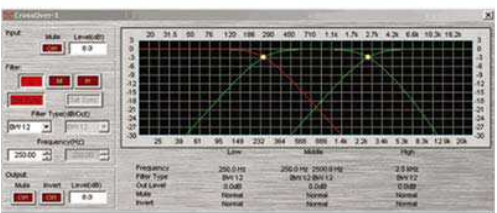
What sampling frequency and quantization does CobraNet use?

CobraNet works with a sampling frequency of 48 kHz ans a quantization of 20 bit.

Does CobraNet need any specific network equipment?

Not at all. All 100 mbit and multicast capable Ethernet devices like switches or hubs can easily be integrated into a CobraNet, although not being intended for audio applications.

If CobraNet uses the Ethernet structure, can it than be integrated into a existing network?

Basically yes, if the network supplies 100mbit and multicast capability. The second is not guaranteed by all networks. It is recommended to establish an own network using CobraNet.

Is a wireless transmission via WLAN possible with CobraNet?

It is possible, but tests show that this kind of operation is error-prone and has a high susceptibility. That is why it is dissuaded.

Can CobraNet devices be controlled over Internet?

Using standard data packages for sending and not TCP/IP, an almost delay-free transmission by hubs and switches is possible, but those packages can not pass routers, therefore CobraNet is limited to local networks.

Can DMX signals be sent via CobraNet?

Unfortunately, DMX signals contain frequency parts which are too high for Cobra networks. This is definitely not possible.

Where can I find additional information about CobraNet?

At the official homepage of the developer Cirrus Logic: http://www.cobranet.info.