

# N8000 NetMax 300 MIPS Digital Matrix Controller



**Electro-Voice**



- Full IRIS-Net Software Support
- 32-Channel Digital Matrix Bus
- 115 dB Dynamic Range
- Full CobraNet or Dante Audio Transport Support
- Supports Ethernet, RS-232, USB, and CAN Communications Protocols

The Electro-Voice NetMax N8000 is an all-purpose digital audio system controller with outstanding performance features. A high quality system design provides excellent audio quality and clear sound, which is achieved by the application of high-end 24 Bit A/D and D/A converters with 120 dB volume range, high-quality input and output circuits in the analog domain and digital signal processing with optimized 48 bit double-precision algorithms. Hence, the N8000 is even particularly suitable for demanding applications in theatres, concert halls, big churches etc. NetMax N8000 is highly flexible due to the modular hardware design, which renders many other applications possible. Four slots with 8-channel audio modules at the rear of the device offer up to 32 local audio channels. Each slot can be equipped either with an audio input module or an audio output module. So, various configurations (e.g. 8-in/8-out, 8-in/16-out, 8-in/24-out, 16-in/ 16-out, 24-in/8-out) can be realized in only one single device. In addition, N8000 can be equipped with a CobraNet or Dante network module. Several N8000 units can be integrated in a network and be connected to a large, sophisticated system. The signal processing in the N8000 is affected on powerful audio signal processors where, depending on the stage of expansion, - up to 8 DSPs are available. The software contains a multitude of freely programmable signal processing components. Among other things, these are filters with all possible

characteristics, parametric and graphic equalizer, matrix router and matrix mixer, delays, dynamic functions, etc. Diverse configurations can be created by combining and connecting these DSP blocks. The powerful signal processing allows complex configurations for the adjustment and control of the sound system, depending on the application or type of event. Thus, the sonic quality of PA speakers, monitor speakers, front fill systems as well as of the sound reinforcement of adjoining rooms, lobbies, areas for the staff etc. can be optimized and tuned individually.

In other words, the N8000 copes with every application - even with large and complex systems absolutely exactly and reliably.

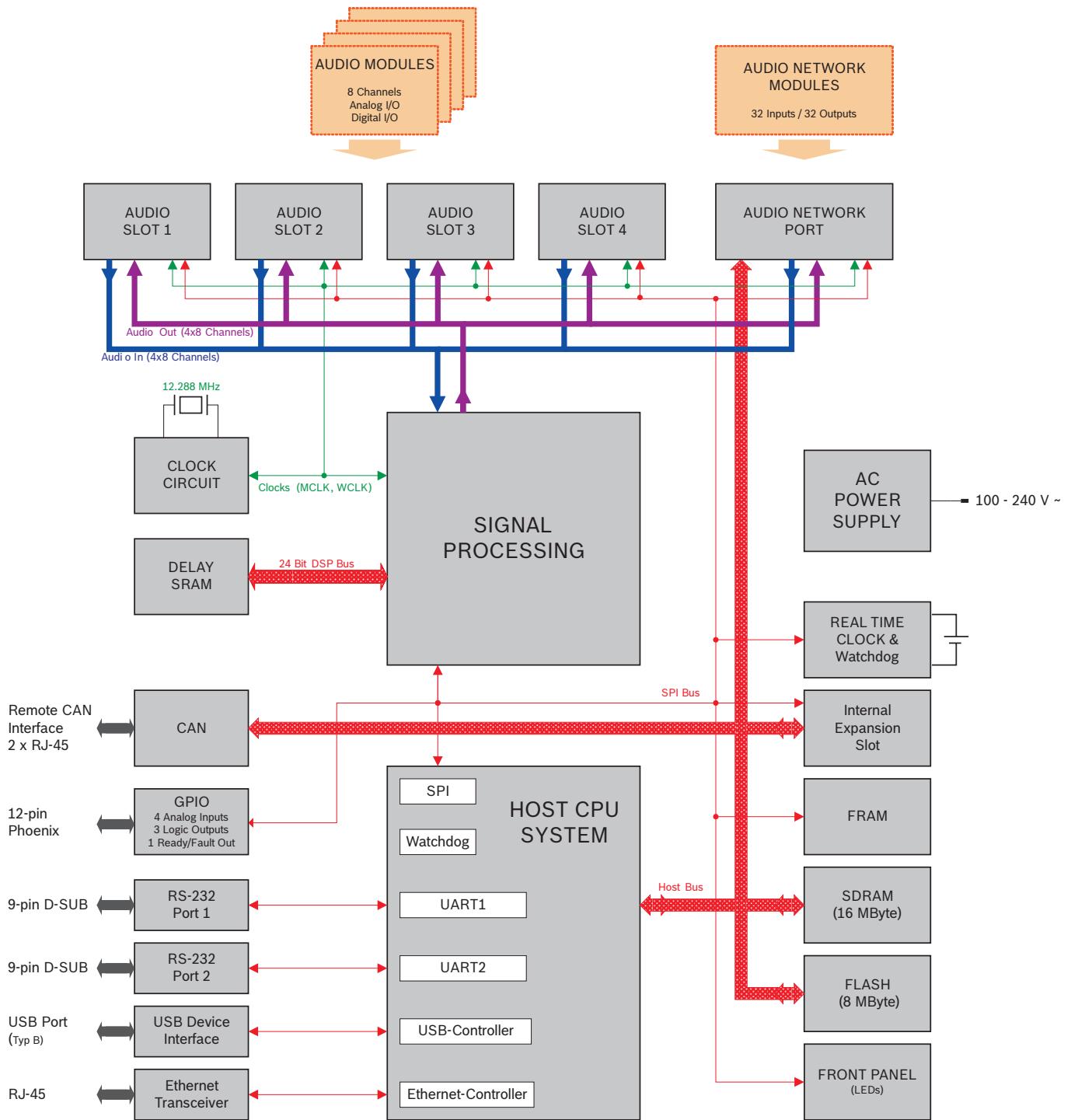
In addition to the audio processing, the NetMax N8000 is equipped with diverse control functions. The scheduling with calendar function makes it possible to program one-time or recurring events. The recurrence can occur annually, monthly, weekly, daily, hourly or even within smaller time intervals. Furthermore, daily programs can be set up and can also be combined to weekly operations. With the event control, reactions to certain events or system states can be configured, e.g. in case of overstepping or undershooting of threshold values. Faults in the device or in the complete NetMax system are detected automatically and can be displayed on the PC screen or transmitted to external sites if necessary.

Faults and other events are recorded in an internal log file with date and time. Furthermore, it can be defined which types of errors or events should be recorded. The log can be read out and displayed on the screen at any time. In the NetMax N8000 individual functions can be integrated into complex operations. For example, several parameters can be set with various values or states in a scene and can be changed manually or automatically at any time.

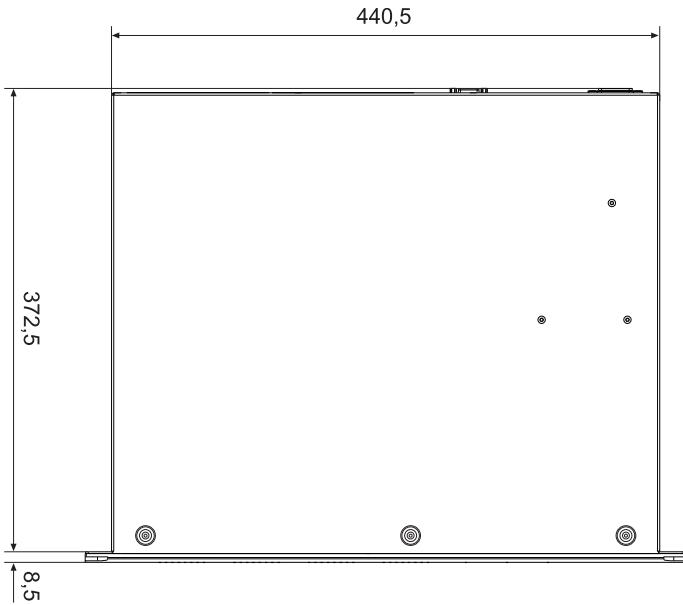
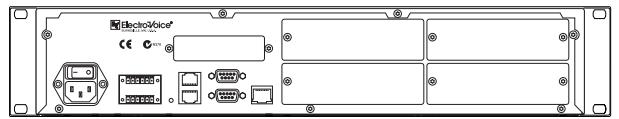
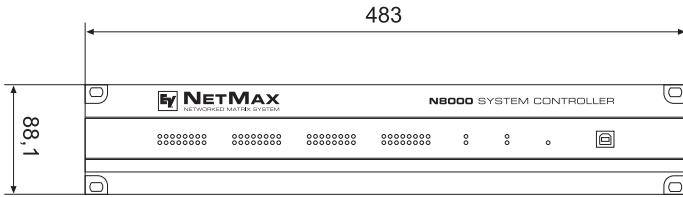
## Technical specifications

Power supply	100-240 V AC, 50/60 Hz
Power consumption	90 W max., (incl. 2 x AI-1, 2 x AO-1, 1 x CM-1 modules)
Audio slots	4 (for AI-1, AO-1, MI-1, DI-1 and/or DO-1 modules)
Network slots	1 (for CM-1 or DM-1 module)
Interfaces	
Ethernet	1 x RJ-45, 10/100 MBit/s
CAN Bus	2 x RJ-45
RS-232	2 x 9pin D-Sub
USB	Type B, front
GPIO control port	
Connector	2 x 6-pole Euro block
Contacts	4 Control Inputs (analog 0-10 V / logic control) 3 Control Outputs (Relay contact to ground) 1 Fault Output (NC Relay contact) 2 Reference Outputs (+10 V, 200 mA / GND)

Signal processing	2 DSPs Standard (150 MHz, 300 MIPS) 1 DSP per Audio Module (100 MHz, 100 MIPS) DSP-1 Extension Module optional (+300 MIPS) DSP-2 Extension Module optional (+1500 MIPS)
Sample rate	
Internal	48 kHz
External	32-192 kHz
Data format	24 Bit linear A/D conversion, 48 Bit processing
Signal delay (at 48 kHz)	
AI-1	66 Samples = 1.375 ms
AO-1	30 Samples = 0.625 ms
2 x DSP	4 Samples = 83,33 µs
Analogue in to analogue out	100 Samples = 2.083 ms
Electromagnetic environment	E1, E2, E3
Inrush current	< 31 Aeff
Inrush current, after five-second power cycle	< 31 Aeff
Operating temperature	0° to 40° C
Product dimensions (Height x Width x Depth)	88.1 mm x 483 mm x 381 mm (19", 2 U)
Net weight	7.35 kg



*Circuit diagram*

*Dimensions*

## Installation/configuration notes

### Architectural specifications

The NetMax N8000 Digital Matrix Processor shall be a modular, network-compatible and freely configurable audio system with which complete system solutions can be constructed. The unit shall integrate all components ranging from the matrix to the speakers including system control and system monitoring in a common audio platform. The configuration, operation and monitoring of the system shall be controlled through the IRIS-Net control software protocol. The central unit shall have up to 32 audio channels, mixer and matrix functions, signal processing and extensive control and monitoring functions. The unit must be able to be networked together via a CobraNet or Dante audio and control network so that a large, decentralized audio system can be assembled. The system shall have comprehensive built in supervision functions to monitor and report failures in all aspects of the systems functions. In addition with the support of compatible IRIS-Net enabled power amplifiers, the unit shall be able to run and measure full impedance frequency sweeps on any speaker line connected to

the unit and indicate if the measurement is out of range of a pre-selected tolerance. The system processor shall also be able to control IRIS-Net compatible amplifiers and distribute DSP functions to the remote amplifiers if necessary. A NetMax system meets all relevant safety requirements. All audio connections, interfaces and processor systems are monitored and displayed in case of fault. By using CobraNet or Dante redundant networks can be assembled.

### Notice!



Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type.

## Ordering information

### N8000 120V DSP audio matrix, 32x32ch frame

Digital signal processing matrix central unit, 4 IO card slots, 1 Network slot, 300 MIPS onboard  
Order number **N8000 120V**

### N8000 230V DSP audio matrix, 32x32ch frame

Netmax N8000 Digital signal processing matrix central unit, 4 IO card slots, 1 Network slot, 300 MIPS onboard  
Order number **N8000 230V**

### Accessories

#### AI-1 Analog line level input module

8 Channel analog line level input card, 100 MIPS DSP onboard  
Order number **AI-1**

#### AO-1 Analog line level output module

AO-1 8 Channel analog line level output card, 100 MIPS DSP onboard  
Order number **AO-1**

#### CM-1 CobraNet module

CobraNet Card, supports up to 32 digital input & 32 digital output channels  
Order number **CM-1**

#### DI-1 Digital input card

8 Channel AES / SPDIF digital input card, 100 MIPS DSP onboard  
Order number **DI-1**

#### DO-1 Digital output card

8 Channel AES digital output card, 100 MIPS DSP onboard  
Order number **DO-1**

#### DSP-1 DSP extention board, 300 MIPS

DSP-1 DSP extender module, adds 300 MIPS DSP power  
Order number **DSP-1**

#### DSP-2 DSP extention board, 1500 MIPS

DSP-2 DSP Extender Module, adds 1500 MIPS DSP power  
Order number **DSP-2**

### MI-1 Analog microphone level input module

MI-1 8 Channel Mic/Line input card, with programmable preamp gain & phantom power  
Order number **MI-1**

### PWS-6 WALLPANEL PWS-6

Wallpanel 6 button module - for use w/ PWS-C controller module  
Order number **PWS-6**

### PDC-121971 TPI-5, 24V, 5.7", TOUCH PANEL

5.7" Touch Panel  
Order number **PDC-121971**

Represented by:

#### Germany:

Bosch Sicherheitssysteme GmbH  
Robert-Bosch-Ring 5  
85630 Grasbrunn  
Germany

[www.electrovoice.com](http://www.electrovoice.com)

Bosch Security Systems, Inc.  
12000 Portland Avenue South  
Burnsville MN 55337  
USA