From the introduction of the first IRIS (Intelligent Remote Integrated Supervision) software platform for amplifiers in 2002, EV has been developing a robust audio control protocol and new innovative audio hardware. The first was the RL line of remote controlled amplifier products. These amplifiers offered an amazing level of user control and monitoring, which brought reliability and ease of use to a wide range of users. Now EV is introducing the NetMax™ N8000, a comprehensive digital audio system controller — the next link in the IRIS-Net audio processing chain.

IRIS-Net is EV’s answer to the ever-increasing complexity of audio system designs. It is a comprehensive software platform, which encompasses a huge array of control options. All aspects of the audio chain are under its supervision and control. The key areas of signal processing, supervision and signal routing are all manipulated under its shell.

The new NetMax N8000 is the central player in the IRIS-Net solution. It offers an extremely flexible hardware platform that allows for field level customization of the unit to nearly any application. This customization goes far beyond what is available today from other platforms. Everything from the matrix size and configuration to the processing power can be customized in the field, making it easy to design the best solution value for the customer.

Distributed vs. Central processing – The N8000 and IRIS-Net gives you both!

Now you don’t have to make the choice as to where your processing power resides. IRIS-Net gives you the ability to choose BOTH! IRIS-Net enables you to process all or part of the audio signal in a central component, like the NetMax N8000 or to conduct the processing and supervision remotely at the amplifier. This gives the system designer incredible flexibility in designing the system. You can now design the system for the ultimate in reliability or design for efficiency and value. The IRIS-Net solution gives you all the hardware and software pieces to accomplish both objectives.

Open Architecture – Extensively Tested

The IRIS-Net software platform has been extensively tested in a variety of venues. Even prior to its introduction the system hardware and software underwent extensive testing and scrutiny. The software interface and hardware component design were made with the user and designer in mind. The open architecture of the hardware and IRIS-Net user protocol allow for the seamless functioning of external devices within IRIS-Net and its hardware components.
The EV NetMax N8000 is an extremely flexible audio control processor for a wide range of applications. Presented in a compact 2RU configuration, you can configure the N8000 in a number of ways to fit the need at hand. By simply selecting the right combination of I/O cards, the N8000 matrix can be configured IN THE FIELD to one of 6 layouts. In addition, up to a full 32 channels of digital audio are available when you can add CobraNet™ functionality to any of these configurations for extended flexibility.

Superior Audio Performance

The N8000 provides the same legendary audio dynamic range as our amplifiers and signal processors. Superior A/D and D/A conversion technology and wideband electronics ensure that the NetMax N8000 will be transparent in the audio chain.

Optional extended processing power
Up To 1000 MIPS

The N8000’s processing power can be enhanced by simply plugging in an additional processor. This comes in handy if your application calls for future expansion. You only need to purchase the processing power needed today, knowing that the system can be upgraded at any time.

Multiple N8000 units can be networked together to provide an extended “super matrix” for complex audio processing tasks. Several examples of the power of a multi-processor NetMax system are shown in the following pages.

Easy Interface To The Outside World

The N8000 can be configured from the web, an Ethernet connection using IRIS-Net, an RS-232 interface or a common USB link. In addition, the N8000 can talk through its integrated CAN bus with any compatible IRIS-Net hardware such as the Electro-Voice RL/RT amplifier series. For even more flexibility the N8000 comes equipped with a GPIO network so it can control and be controlled through simple logic signals and contact closures.

Beyond Audio Processing

In addition to the sophisticated audio functions of the NetMax N8000, it is also equipped with diverse control functions. The clock/calendar scheduling system makes it possible to program one-time or recurring events. The schedule options are varied and can be set to occur annually, monthly, weekly, daily, hourly or even within smaller time intervals. In addition, daily programs can be set up.

With the event control, reactions to certain events or system states can be configured including changing entire system parameters at the touch of a button or schedule.

Full System Monitoring

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. In addition, you can define which types of errors or events should be recorded. The log can be read out and displayed on the screen at any time. When used in conjunction with Electro-Voice RL series amplifiers, the NetMax system has the ability to monitor the amplifier, speaker line and speaker through a sophisticated impedance monitoring protocol.
Comprehensive Control

IRIS-Net provides the system designer with a comprehensive and easy-to-use interface to control any aspect of the NetMax N8000 digital matrix or RL amplifier. From assigning macros, setting schedules, running system checks or setting up channel equalization it can all be done from this one interface.

Visually Based Signal Routing

The main design module gives a comprehensive view of the overall system design as it is being built. You can “drill down” in each element to control all functions in the unit.

Comprehensive DSP control

IRIS-Net provides a broad array of DSP tools that enable the designer to control nearly any aspect of the audio signal, filters, delays and EQ parameters, along with many other functions that are easily available and can be quickly configured.

The N8000 Built In Browser Interface

The N8000 comes equipped with a built in graphical control interface accessible through any web browser. This interface allows for full system control of a variety of system control functions and parameters. The interface is also equipped with sophisticated security protection to protect against unauthorized operation.

Comprehensive Macro Functionality

In the NetMax N8000 single functions can be integrated in complex operations. Thus, several parameters can be filed with the corresponding values or states in a scene and can be changed manually or automatically at any time. For example, several functions combined into a single scene preset and can be changed manually or automatically at any time.
**House of Worship**

In this example, audio signal from the main Front of House mixer is routed and processed separately by the NetMax N8000 for main loudspeakers, stage monitors, under balconies and distributed lobby speakers as well as assistive listening devices. All loudspeakers are powered using EV CPS Series amplifiers. The N8000 allows for storage and recall of different routing, level and EQ settings for a variety of events via the control PC.

**Concert Hall**

Theaters and performance venues present unique signal processing challenges. The many types of loudspeakers and locations can require a very high number of DSP channels for signal processing. NetMax allows the flexibility to address the DSP needs for each loudspeaker type and position. IRIS-Net can be configured with multiple GUI layers that can be password protected to only allow access to specific areas of the DSP chain. This allows guest engineers to adjust the PA system to suit their needs without having access to critical DSP processing like crossovers or limiters.
In casinos and similar venues, routing flexibility, supervision and reliability are key aspects of a sound system. NetMax allows a variety of signals to be routed to any combination of zones within the casino via CobraNet, each with individual DSP. Using managed switches allows the CobraNet and Ethernet to be configured in a ring topology for additional redundancy. A contact closure from the fire alarm panel allows muting of all sound system loudspeakers in the event of an emergency. Using NetMax in conjunction with the Precision Series Remote Control amplifiers allows real-time monitoring of all system components, including electronics, cable and loudspeakers remotely from a single control PC. In the theater, another PC is connected via a UCC-1 to allow control, monitoring and supervision of the theater’s PA system in parallel with the main control PC.
Convention Center

Convention centers have needs for highly reliable distributed sound systems as well as flexibility for redistributing audio for needs that may change on a daily basis. NetMax allows large scale distribution and monitoring of audio signals via CobraNet to any or all zones, as well as the ability to unite or separate audio paths for room combining scenarios at the touch of a button. Use of the Precision Series Remote Control Amplifiers allow monitoring and control of all audio components in the venue from a single remote location.
Stadiums have the need for multi-zone sound reinforcement, individual announcements with different priorities and multiple music and advertising signals, all while maintaining high safety and redundancy standards. NetMax is able to integrate with Dynacord Professional™ systems to provide all messaging and paging needs for the PA system.

Redundancy is achieved using managed switches with ring capabilities to distribute both primary and secondary CobraNet audio and control data. This results in multiple layers of redundancy in the event of a failure.
Multimedia

Presentation and training rooms typically feature multiple AV sources that need to be distributed to multiple sources individually or simultaneously. Integration of these different types of sources can be a challenge for an installer, but NetMax offers a unique solution to these challenges. In addition to signal processing and distribution, the N8000 offers Ethernet, RS-232, contact closure inputs, contact closure outputs and VCA inputs to allow a high level of integration possibilities with new or existing AV equipment ranging from a relay-driven projector or lighting sources to existing multimedia control systems.

Expansion Options

The N8000 provides incredible flexibility in system design. Several hardware options are available which enable the N8000 to perform a variety of complex tasks including automatic microphone mixing, extended DSP functions, etc, all the while maintaining full communication with other IRIS-Net equipped components.

**AI-1 / MI-1**

The AI-1 is an eight-channel analog input module for the NetMax System Controller. Audio signals are connected via screw lockable Euro block connectors. A-to-D conversion is handled by high performance linear 24-bit converters. Internally the signals are processed in 48-bit word length.

The MI-1 is a Microphone Input Module for the NetMax System Controller. The module provides a variety of microphone input functions and extended mixing features to greatly enhance the power of the N8000 in numerous applications.

**AO-1**

The AO-1 is an eight-channel analog output module for the NetMax System Controller. As with the other modules, the AO-1 offers eight high quality audio signals via screw-lockable Euro block connectors. D-to-A conversion is handled by high performance linear 24-bit converters. Internally the signals are processed in 48-bit word length.

**DI-1 / DO-1**

8 channel AES/EBU digital input (DI-1) and output (DO-1) cards.

**AI-1 / MI-1**

The AI-1 is an eight-channel analog input module for the NetMax System Controller. Audio signals are connected via screw lockable Euro block connectors. A-to-D conversion is handled by high performance linear 24-bit converters. Internally the signals are processed in 48-bit word length.

**AO-1**

The AO-1 is an eight-channel analog output module for the NetMax System Controller. As with the other modules, the AO-1 offers eight high quality audio signals via screw-lockable Euro block connectors. D-to-A conversion is handled by high performance linear 24-bit converters. Internally the signals are processed in 48-bit word length.

**CM-1**

The CM-1 is a CobraNet Extension Module for the NetMax System Controller. The module provides 32 input and 32 output FULLY LICENSED channels of CobraNet compatible audio signals for extending the system capability.

**DSP-1**

The DSP-1 is a DSP Extension Module for the NetMax System Controller. The module provides additional DSPs for extending the signal processing capacity and RAM banks to provide the power to create longer delay times or additional delay lines among other functions.
The CPS Class-H High Efficiency Series

In any NetMax system, when onboard DSP and supervision is not required, these proven power amplifiers offer our legendary performance and reliability in a new compact, lightweight format. This is made possible by incorporating a highly efficient Class-H design, which results in substantially less heat being generated. This allows the overall size of the amplifier to be reduced substantially without sacrificing performance or reliability. In addition, new features enhance the operational flexibility in many of your installations. And all of this is coupled to our comprehensive protection package present in all EV CPS amplifiers.

All four models are capable of remote control activation with adjustable power-on delay times saving time and money in larger installs with central power distribution. These features make them ideal amplifiers to a NetMax N8000 system where central DSP processing is desired. The specifications speak for themselves. Four models are available ranging from 400 watts/channel all the way up to 1100 watts per channel into 4 ohms.

**CPS 2.4**

The CPS 2.4 is ideal for smaller full range systems or larger mid/high frequency amplification in larger installations. The CPS 2.4 is an ideal companion to the popular EVID line of premium surface mount and ceiling speaker systems.

**CPS 2.6**

The workhorse of the line. Its 600 watts of compact power is perfect for mid level full range installs.

**CPS 2.8**

At 800 watts per channel the CPS 2.8 is the best values in the line. It can power a wide range of speaker cabinets either in multi-way or full range modes for a large range of fixed installation jobs.

**CPS 2.11**

No power amplifier on the market can offer such a high level of power performance and reliability. At 1100 watts/channel the CPS 2.11 can power large stage, theatre and auditorium type installations with ease.

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**RL Series Specifications**

<table>
<thead>
<tr>
<th></th>
<th>P900 RL</th>
<th>P1200 RL</th>
<th>P3000 RL</th>
<th>P900 RT</th>
<th>P1200 RT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dimensions (Height x Width x Depth)</td>
<td>7.1 x 13.8 x 18.6&quot;</td>
<td>9.9 x 13.1 x 18.6&quot;</td>
<td>14.1 x 13.8 x 18.6&quot;</td>
<td>7.1 x 13.8 x 18.6&quot;</td>
<td>9.9 x 13.1 x 18.6&quot;</td>
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<tr>
<td>Power Requirement</td>
<td>240 V, 230 V, 220 V, 120 V or 100 V ; 50 ... 60 Hz (factory configured)</td>
<td>240 V, 230 V, 220 V, 120 V or 100 V ; 50 ... 60 Hz (factory configured)</td>
<td>240 V, 230 V, 220 V, 120 V or 100 V ; 50 ... 60 Hz (factory configured)</td>
<td>240 V, 230 V, 220 V, 120 V or 100 V ; 50 ... 60 Hz (factory configured)</td>
<td>240 V, 230 V, 220 V, 120 V or 100 V ; 50 ... 60 Hz (factory configured)</td>
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<tr>
<td>Weight</td>
<td>35 lbs (16 kg)</td>
<td>37.5 lbs (17 kg)</td>
<td>66.2 lbs (30 kg)</td>
<td>53 lbs (24 kg)</td>
<td>55.1 lbs (25 kg)</td>
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**CPS Series Amplifier Specifications**

<table>
<thead>
<tr>
<th></th>
<th>CPS2.4</th>
<th>CPS2.6</th>
<th>CPS2.8</th>
<th>CPS2.11</th>
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<tbody>
<tr>
<td><strong>MAX. MIDBAND OUTPUT POWER</strong></td>
<td>800 W</td>
<td>800 W</td>
<td>800 W</td>
<td>800 W</td>
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<tr>
<td><strong>MAX. LOWBAND OUTPUT POWER</strong></td>
<td></td>
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<td></td>
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<tr>
<td><strong>MAX. MIDBAND POWER @ 80 Hz</strong></td>
<td></td>
<td></td>
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<tr>
<td><strong>MAX. MIDBAND POWER @ 120 Hz</strong></td>
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<tr>
<td><strong>POWER INPUT POWER</strong></td>
<td>900 W</td>
<td>900 W</td>
<td>900 W</td>
<td>900 W</td>
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<tr>
<td><strong>POWER INPUT POWER</strong> @ 1 kHz, 1% Distortion</td>
<td>1056 W</td>
<td>1080 W</td>
<td>1080 W</td>
<td>1080 W</td>
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<tr>
<td><strong>Slew Rate @ 1 kHz, 1% Distortion</strong></td>
<td>300 V/µs</td>
<td>350 V/µs</td>
<td>350 V/µs</td>
<td>350 V/µs</td>
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<tr>
<td><strong>Damping Factor @ 1 kHz</strong></td>
<td>450 W</td>
<td>450 W</td>
<td>450 W</td>
<td>450 W</td>
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<tr>
<td><strong>FREQUENCY RESPONSE</strong></td>
<td>+3 dBu (1.12 Vrms)</td>
<td>+4.7 dBu (1.33 Vrms)</td>
<td>+5.8 dBu (1.51 Vrms)</td>
<td>+5.8 dBu (1.51 Vrms)</td>
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<tr>
<td><strong>Gain</strong></td>
<td>105,5 dB</td>
<td>107 dB</td>
<td>107 dB</td>
<td>107 dB</td>
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<tr>
<td><strong>LINEAR FREQUENCY RESPONSE</strong></td>
<td>20 Hz - 20 kHz</td>
<td>20 Hz - 20 kHz</td>
<td>20 Hz - 20 kHz</td>
<td>20 Hz - 20 kHz</td>
</tr>
</tbody>
</table>

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**RL Series**

EV’s RL Series DSP-Controlled amplifiers are tightly integrated into the IRS-Net platform. They are the ideal companion to the NetMax N8000 system controller and combine legendary performance with uncompromised remote control and system supervision capability. When you need DSP power in multiple locations, the RL line is the state-of-the-art choice. They employ EV’s proven signal processor technologies, and they guarantee superior audio performance.

**P3000 RL**

The flagship of the RL Series, with 2 x 1300 watts into 4 ohms and 2 x 1800 watts into 2 ohms, is the the digital controlled version of the legacy P3000 amplifier. Loudspeaker outputs on Neutrik® Speakon® NL4 connectors.

**P1200 RL / RT**

The universally recognized P1200 features with 2 x 800 watts into 4 ohms and 2 x 850 watts into 2 Ohms. Loudspeaker outputs on barrier strip.

For the RT model, the unit features a high-impedance output for 100/70V-lines with 2 x 590 watts. The dynamic limiter circuit includes the output transformer and limits THD to 1% maximum. Loudspeaker outputs on barrier strip.

**P900 RL / RT**

Featuring 2 x 450 watts into 4 ohms and 2 x 650 watts into 2 ohms, the P900RL is ideal for HF drive in multi-way systems. Loudspeaker outputs on barrier strip.

For the RT model, the unit has a high-impedance output for 100/70V-lines with 2 x 410 watts. Loudspeaker outputs on barrier strip.
GENERAL DESCRIPTION AND FEATURES

N8000 System Controller

Modular NetMax system manager including signal processing, routing, system control and supervision

Audio

32 Audio Channels 4 Audio Slots, modular 8-Channel Input and Output cards, analog or digital

Networking

Modular Slots for optional CobraNet™ 10BaseT or 100BaseT

Safety/Reliability

Internal Supervision, System Monitoring, Watchdog, Fault Isolation, Redundant Audio Network possible

PC Configuration and Control Software

IRIS — Intelligent Remote & Integrated Supervision Integration of N8000, Remote Amplifiers, peripheral control, Configuration, Control and Supervision

for complete Audio System Ready programmable User Control Panels and Access Levels

AUDIO SPECIFICATIONS

N8000 General

32 audio inputs per module, line level, electronically symmetric

Input Connectors

2 x 3-pole Euro block connectors

Input Level (nominal)

+6 dBu / 1.55 V

Input Level (max. before clip)

+21 dBu / 8.7 V

Input Impedance

20 kΩ

Common Mode Rejection

> 70 dB

A/D Conversion

24 Bit, Sigma-Delta, 128 times oversampling

Audio Outputs

8 analog audio outputs per module, line level, electronically symmetric

Connectors

8 x 3-pole Euro block connectors

Output Level (nominal)

+6 dBu / 1.55 V

Output Level (max. before clip)

+21 dBu / 8.7 V

Output Impedance

100 Ω

Min. Load Impedance

600 Ω

D/A Conversion

24 Bit, Sigma-Delta, 128 times oversampling

Frequency Response

20 Hz...20 kHz (-0.5 dB)

Signal to Noise Ratio (A-weighted)

AI-1: 117 dB typical AO-1: 118 dB typical N8000 analog In to analog Out: 114 dB typical

THD+N

< 0.005 %

Intermodulation

< 0.003 %

SIGNAL PROCESSING

Ethernet

10 / 100 MBit/s, RJ-45 (PC Control)

CAN

20... 500 kbaud, r x RJ-45 (Remote Amp Control)

RS-232

2 Ports, 9pin D-sub male (Remote Control)

USB

USB Type B on Front Panel (PC Control)

GPIO Control Port

2 x 6-pole Euro block 4 Control Inputs (analog 0 - 10 V / logic control) 3 Control Outputs (Relay contact to ground) 1 Fault Output (NC Relay contact) 3 Reference Outputs (+5 V / +10 V / GND)

N8000 GENERAL 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)

Cooling

Left-to-right, 3-stage fan

Operating Temperature Range

32°F – 104°F (0 °C – 40 °C)

Dimensions (W x H x D)

19” x 3.5” x 15” (483 x 88.1 x 381 mm) 2 RU

MODULES / OPTIONS

AI-1 Analog Input Module

8 analog audio inputs, line level, electronically symmetric

AO-1 Analog Output Module

8 analog audio outputs, line level, electronically symmetric

CM-1 CobraNet™ Module

32 digital audio inputs and outputs, 2 CobraNet™ ports (Primary/Secondary) for network redundancy

DSP-1 DSP Extension Module

Internal DSP processing power and I/O buffer power: 256 MIPS, 512k x 24 SRAM

MI-1 Microphone Input Module

8 microphone inputs, programmable Gain and Phantom Power: 48V for line level switching

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