

**NEW!**



**PRECISION SERIES  
DSP CONTROLLED  
AMPLIFIERS**



**PRELIMINARY**

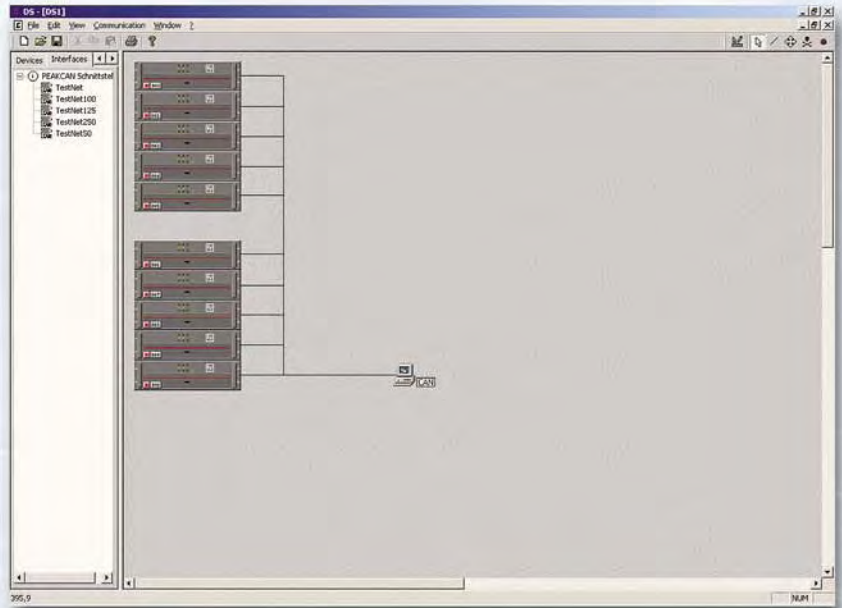


## CLEAR SET-UP AND CONFIGURATION

Select amplifier type and activate through "drag and drop."

Each amplifier is displayed showing address, operation mode, input level, and network mode (on-line/off-line). Double-click on one amplifier link to the individual control panel for more detail.

Amplifiers and channels may be assigned to control groups on customized group control panels with dedicated control parameters.



## ADVANCED REMOTE CONTROL AND SUPERVISION

Amplifier Type: P900RL, P1200RL, P3000RL, P900RT or P1200RT

Impedance Load Monitoring  
Green = O.K.  
Display red = Hi or Low

Threshold of DSP compressor (yellow) and limiter (blue).

Temperature control  
green = perfect, yellow = limit  
red = too warm

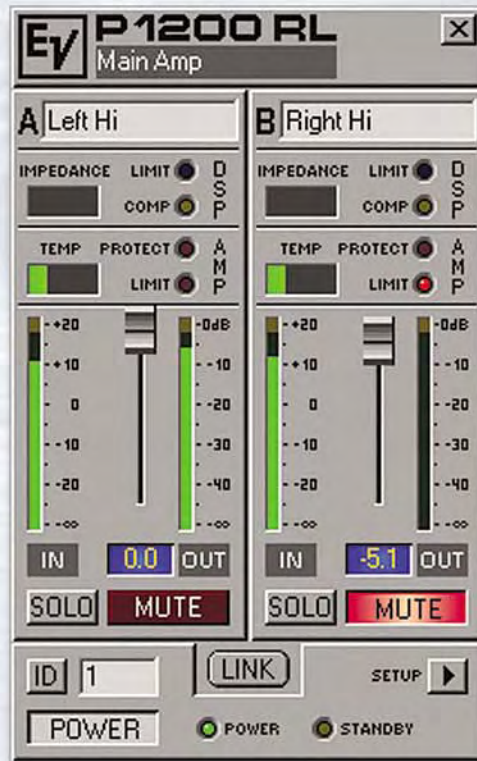
Hi resolution input metering

Solo button: mutes all other channels

MUTE button

Address number of amplifier

POWER On/Off and operation mode display



Name of amplifier (position, use, loudspeaker group...)

Channel name (loudspeaker, component, ...)

Display for protect mode

Display for dynamic limiter of amplifier

Hi resolution output metering in real-time. The yellow LED indicates 0dB for maximum output power.

Level (attenuation) control of the amplifier (infinity to 0dB).

Set-Up Button: accesses detailed control of amplifier, including all DSP functions (filter, delay, dynamics)

Monitor LED for stand-by mode

# EV PRECISION SERIES DSP CONTROLLED AMPLIFIERS

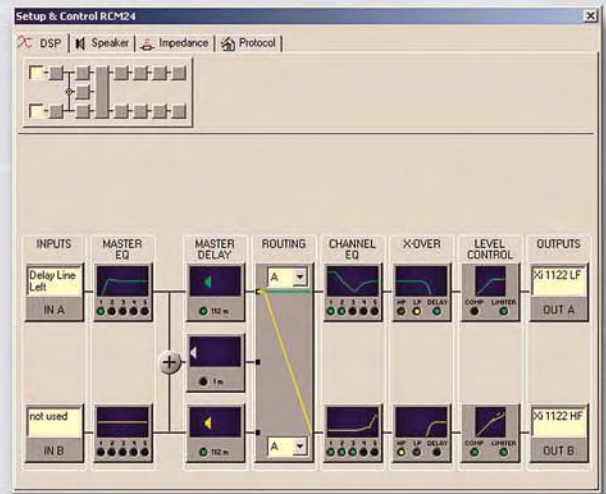


STATE-OF-THE-ART SIGNAL PROCESSING WITH 24 FILTERS, 5 DELAYS, 2 COMPRESSORS AND 2 LIMITERS

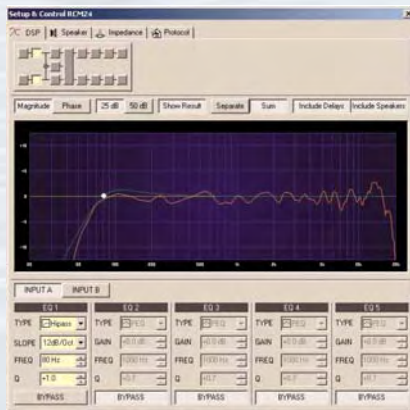
Menu control for selection of DSP parameters, speaker assign, impedance monitoring or protocol.

Each block of DSP functions shows the amount of active parameters. Filter response, delay times and dynamic settings are displayed as a thumbnail. The DSP functions are:

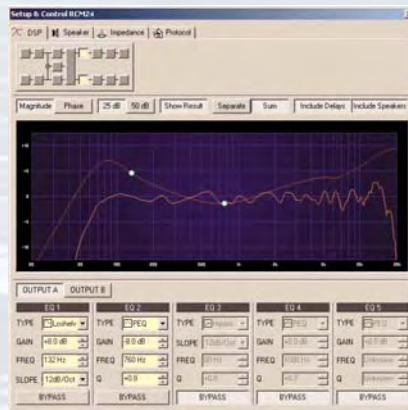
- Master-EQ with five filters, each selectable as Low or Hi-Shelf, Low or Hi-Pass, or PEQ.
- Input-Delay for channel A, B and A+B, up to 1,000 ms. Input-Routing (A, B, or A+B).
- Channel-EQ with five filters as master EQ and additional all-pass filter.
- Crossover with Hi and Lo-Pass Filter
- First to fourth order (Bessel, Butterworth, Linkwitz-Riley) compressor and limiter per channel.



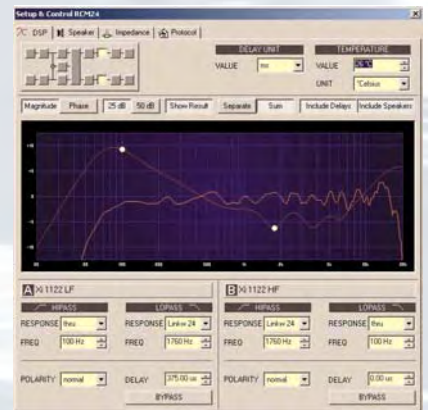
CLEAR OVERVIEW ON ALL DSP PARAMETERS AND FUNCTIONS



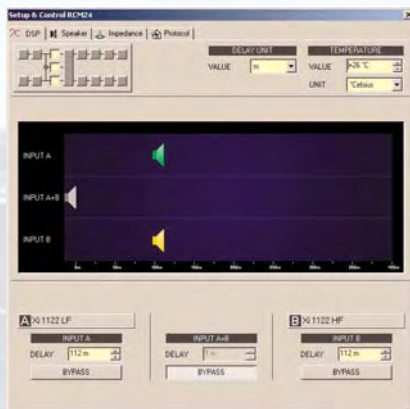
Channel-EQ with five filters. Display of the filters and their acoustical impact on the loudspeaker system.



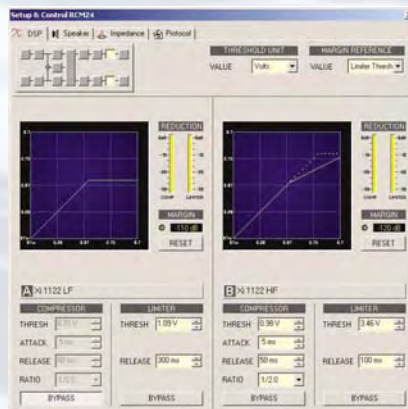
Master EQ with five filters. Display of the filter response and the acoustical impact of each filter on the loudspeaker system.



Crossover with each Hi and Lo-Pass per channel. Impact of all DSP parameters (filters, delay, level) to acoustical delivery of the system can be displayed.



Input-Delay for A, B, or sum A+B. Maximum delay time 1,000 ms. Units:  $\mu$ s, ms, s, cm, meters, inches, or feet.



Compressor and limiter per output. Threshold assignable in volts or dBu.



Supervision for each connected loudspeaker with individual upper and lower thresholds for impedance values. An out-of-limit device will show up immediately.



## RANGE OF AMPLIFIERS FOR HIGH AND LOW-IMPEDANCE APPLICATIONS

### P3000 RL

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

### P1200 RL

The universal with 2 x 600 watts into 4 ohms and 2 x 850 watts into 2 Ohms. Loudspeaker outputs on barrier strip.

### P900 RL

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.

### P1200 RT

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 RT

High-impedance output for 100/70V-lines with 2 x 410 watts. Loudspeaker outputs on barrier strip.



Rear panel view P1200 RL



Rear panel view P3000 RL



## RCM-24: THE DIGITAL ENGINE WITH MORE THAN 114 dB DYNAMICS FOR

### Remote Control

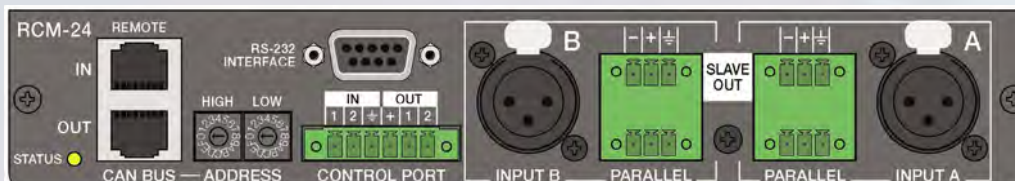
- Remote control of all amplifier parameters
- Centralized system configuration
- Preset and program change for different applications
- Control via one or multiple PCs with discretionary access control

### Signal Processing

- 12 filters, 2 delays, compressor and limiter per channel
- RACE Processed Presets for EV speakers available

### Total Supervision

- All amplifier operation modes are controlled and monitored
- Automated action procedures on critical operation modes are programmable
- Full time supervision of loudspeaker lines for short-circuit and interrupt
- Full frequency bandwidth measurement of speaker impedance and display of impedance curve showing tolerances



In and out jacks for CAN bus on RJ45 connectors—CAT-5 cabling (includes audio monitoring signal) RS-232 interface to connect to media control systems

Control port with GP in and out termination (0 to 5V) for external control, free programmable functionality (i.e. integration into safety and evacuation systems). Audio signal input on XLR

connector, parallel out and DSP out on Phoenix connector.

AD/DA-conversion in 24-bit resolution and 128-times oversampling (linear phase); internal word length: 48-bit. This allows the RCM-24 to offer a total dynamic in excess of 114 dB, an unequalled value for digital signal processing in power amplifiers.



## AUDIO PERFORMANCE, REMOTE CONTROL AND SUPERVISION AT THE HIGHEST LEVEL

Electro-Voice is famous for its 75 years of experience in designing and manufacturing loudspeakers and microphones. Many audio professionals, however, don't know that it also has 50 years of design experience in power amplifiers and more than 20 years in digital audio processing.

An unwavering commitment to satisfying customer needs made Electro-Voice a leading manufacturer of sound reinforcement systems for stadiums, arenas, multi-purpose venues, theatres and cinemas around the globe. Due to their sonic purity and extreme

reliability, EV's amplifiers became established with top concert-sound and professional installation projects worldwide. The Precision Series is the flagship of EV's amplifier line. They employ the highest levels of design to meet the highest levels of demand.

EV's new DSP-Controlled P-Series amplifiers combine legendary performance with uncompromised remote control and system supervision capability. They use EV's state-of-the-art signal processor technologies, and they guarantee superior audio performance.

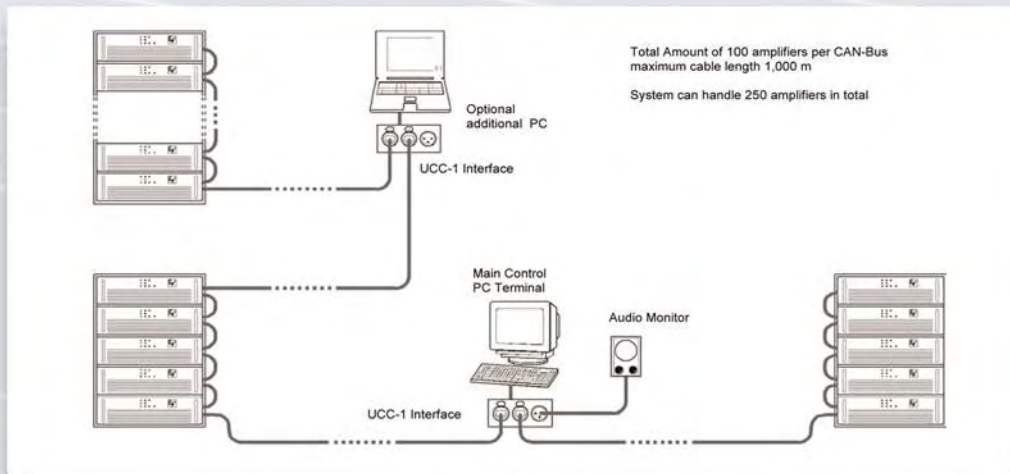


## DSP CONTROLLED PRECISION SERIES AMPLIFIERS:

- Remote control and supervision of up to 250 amplifiers via one or multiple PCs.
- Central supervision of all amplifiers and connected loudspeakers
- State-of-the-art signal processing (Filter, Delay, Level, Dynamics)
- Display of the acoustical response of EV speakers in real-time (RACE)
- Integration with life-safety systems and control of external equipment
- Exceptional audio performance and extreme reliability



## SYSTEM DESIGN AND CONFIGURATION



The network of the DSP Controlled Precision Series amplifiers is controlled via a serial CAN-Bus. Up to 100 amplifiers, over a 1,000 m cable length can be controlled per CAN bus. USB to CAN conversion is realized with the UCC-1 converter. Network cabling is based on CAT-5 with RJ-45 connectors; each amplifier features one input and one output. The audio monitor signal is available on the XLR connector of the UCC-1.

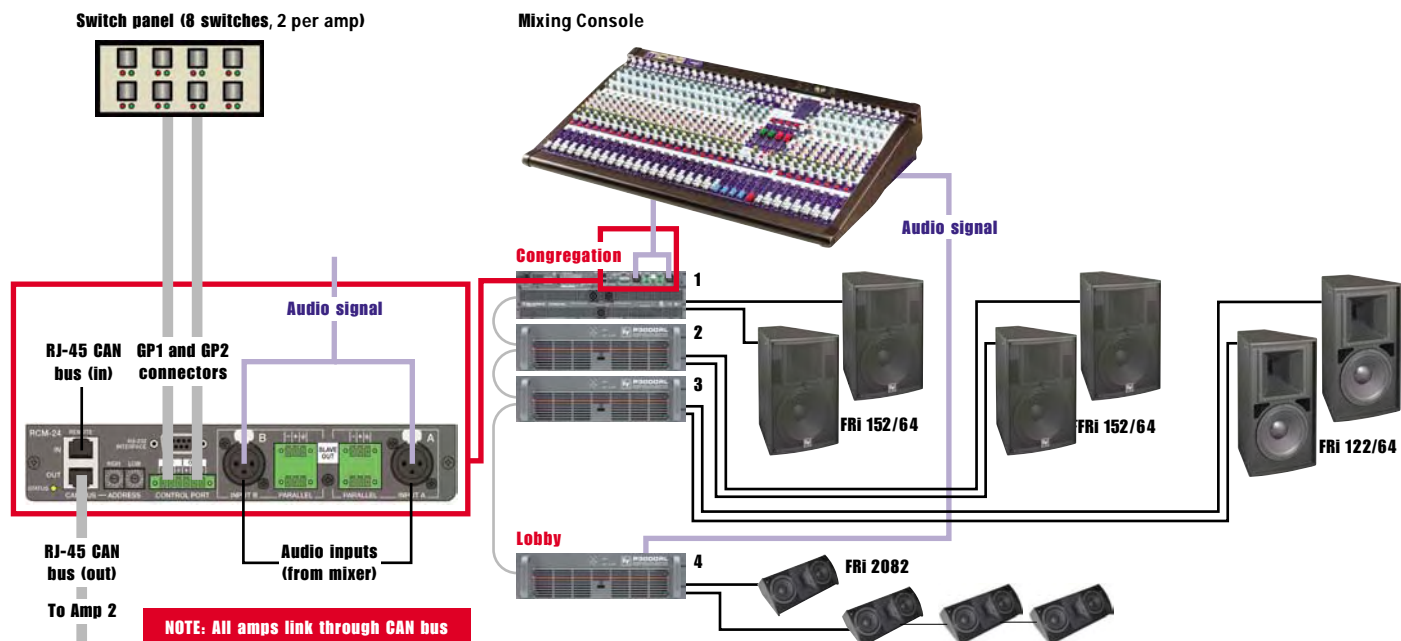
Controlling more than 100 amplifiers requires another CAN bus. At this time the control software is able to deal with a maximum of 250 amplifiers in total. A significant advance of this architecture is the ability to connect additional control PCs at any position in

the network. The software is able to handle several users, with discretionary access control.

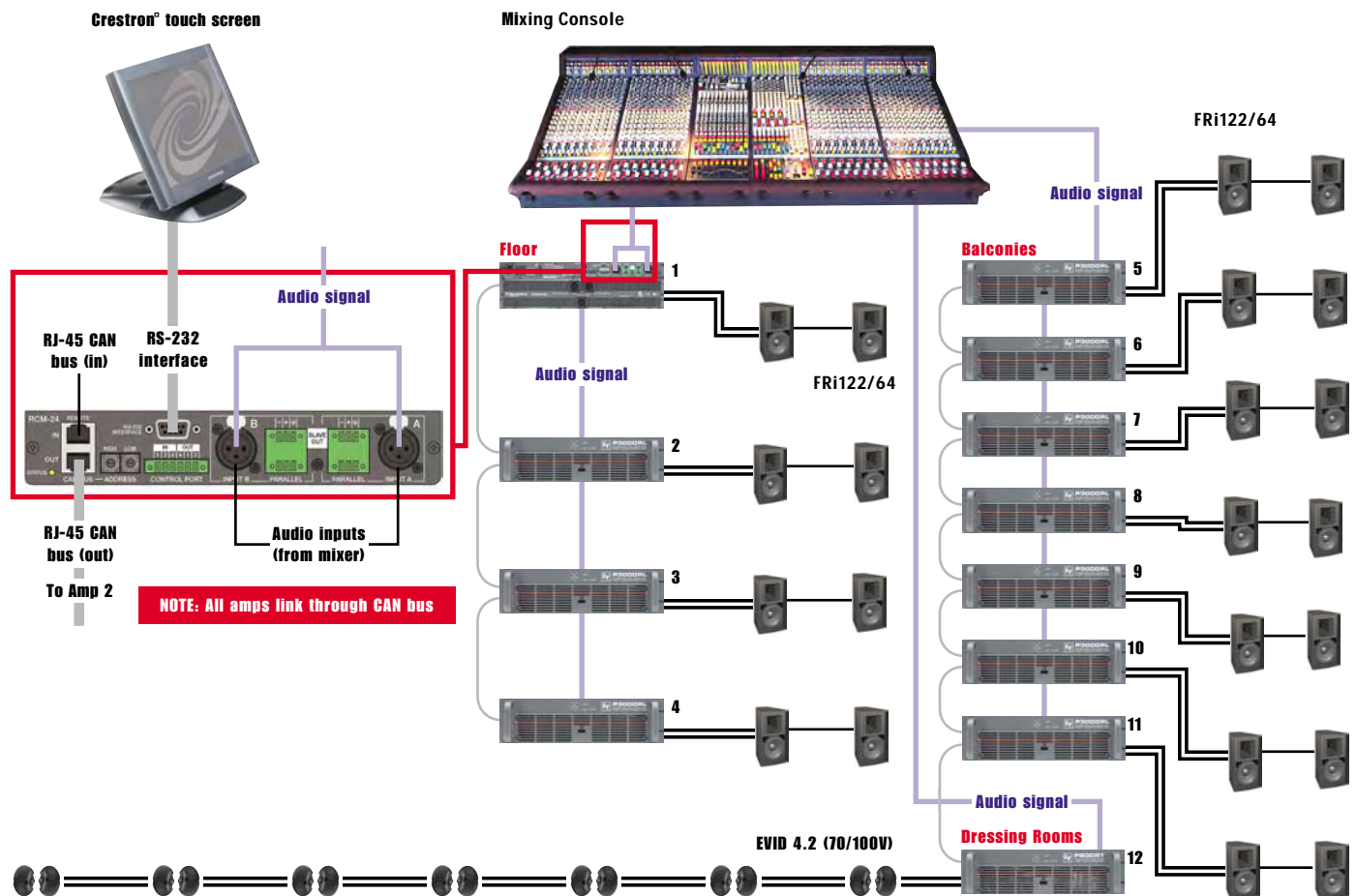
The DSP of each amplifier stores up to 8 user presets. This allows system operation, independent of the network control in the event of a network fault. All DSP settings (filter, eq, delay, level) will stay in place. The other general-purpose amplifier inputs and outputs may be used for network-independent preset switching. For example, a dedicated emergency setting with maximum power for the vocal band give a network of DSP-Controlled Precision Series amplifiers the ability to meet highest security and safety standards.



## SMALL SYSTEM CONFIGURATION — HOUSE OF WORSHIP

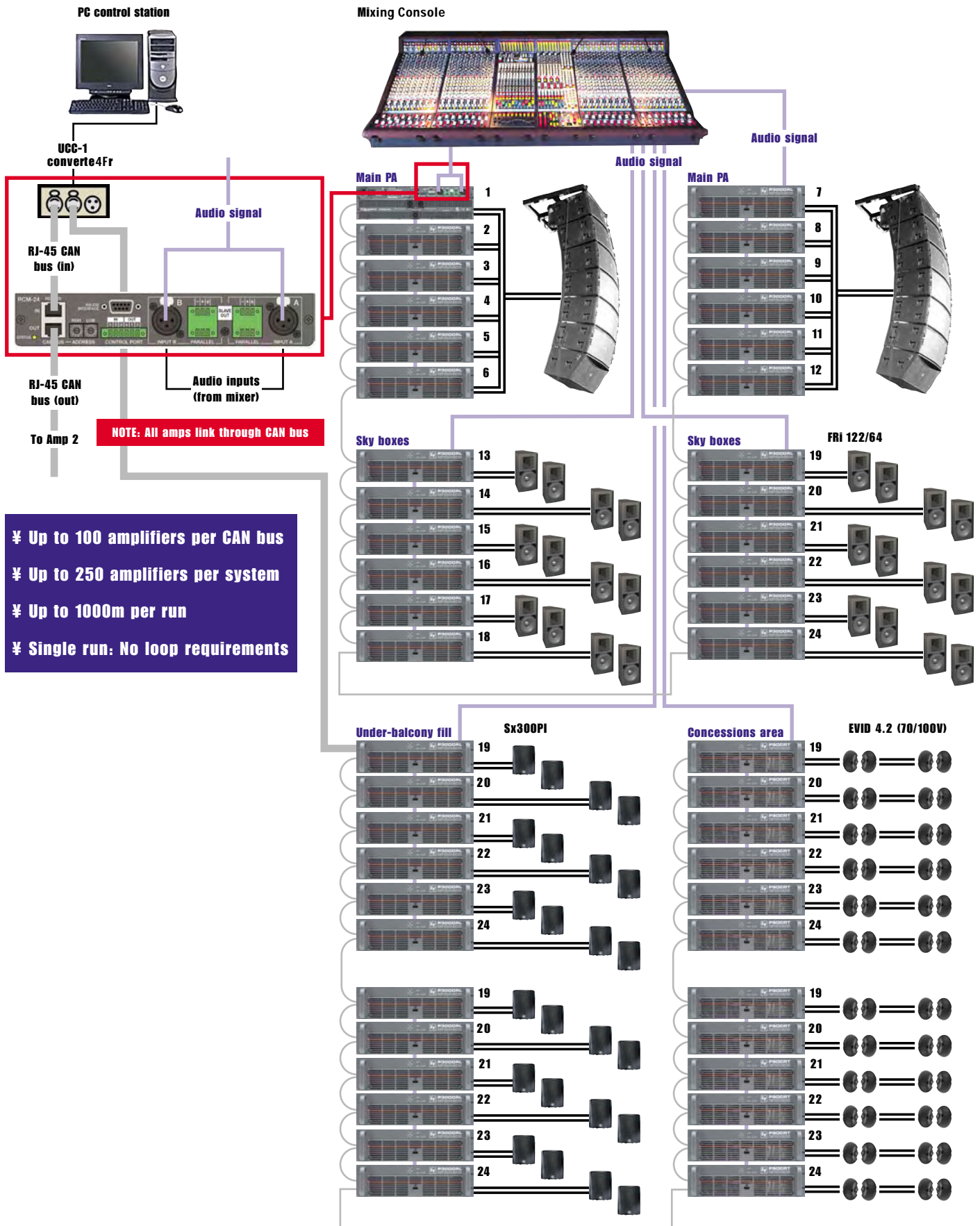


## MEDIUM SYSTEM CONFIGURATION — PERFORMING ARTS CENTER





## LARGE SYSTEM CONFIGURATION — ARENA



¥ Up to 100 amplifiers per CAN bus  
 ¥ Up to 250 amplifiers per system  
 ¥ Up to 1000m per run  
 ¥ Single run: No loop requirements



## TECHNICAL DATA AND SPECIFICATIONS

Network and General Features	
Maximum Configuration	100 amplifiers per CAN bus over a 1,000 meter cable run, 250 amplifiers in total
Supervised Amplifier Parameters	Operation mode, temperature, pilot tone, protection mode status, impedance of connected speaker system, output current and output voltage
Network Supervision	Defective or missing amplifiers, limits, failure protocol
Audio Monitoring	All input and output signals
System Back-Up	Last setting stored initiated upon system activation
PC Control and Software	Multiple PCs possible (discretionary access control), runs in MS Windows 95/98, 2000, NT, XP
Digital Signal Processing	
A/D & D/A-converters	24 Bit, Sigma-Delta, 128x Oversampling, linear phase
Sampling Rate	48 kHz
Dynamic Range	> 114 dB
I/O Structure	2 In - 2 Out, flexible routing (A, B, A+B)
Master (Input) EQ per Channel	5 filters selectable as PEQ (20 Hz - 20 kHz, Q: 0.4 - 20.0, +/-12 dB), Lo-Shelf (20 Hz - 20 kHz, 6/12 dB slope, +/- 12 dB), Hi-Shelf (20 Hz - 20 kHz, 6dB slope, +/-12 dB), Hi-Pass and Low-Pass (20 Hz - 20 kHz, 6 dB/12 dB, Q: 0.4 - 2.0)
Master (Input) Delay	For input A, B and A+B: 2 ms to 1,000 ms (unit:µs, ms, s, cm, m, inches, feet)
Channel (Output) EQ per Channel	5 filters selectable as PEQ (20 Hz - 20 kHz, Q: 0.4 - 20.0, +/-12 dB), Lo-Shelf (20 Hz - 20 kHz, 6/12 dB slope, +/- 12 dB), Hi-Shelf (20 Hz - 20 kHz, 6 dB slope, +/-12 dB), Hi-Pass and Low-Pass (20 Hz - 20 kHz, 6 dB/12 dB, Q: 0.4 - 2.0); All-Pass (20 Hz - 20 kHz, 1st/2nd Order,
Crossover per Channel	Hi-Pass and Low-Pass each 6/12/18/24 Bessel / Butterworth, or 12/24 dB Linkwitz-Riley
Dynamics per Channel	Compressor (Threshold, Attack, Release, Ratio) and Limiter (Threshold, Release)
Other Parameters	Polarity (inverted/non-inverted), Level, Mute (On/Off)

Amplifier	P900 RL			P1200 RL			P3000 RL			P900 RT		P1200 RT	
	8Ω	4Ω	2Ω	8Ω	4Ω	2Ω	8Ω	4Ω	2Ω	100V	70 V	100V	70 V
Continuous Output Power (1 kHz, THD 1%)	280 W	450 W	650 W	380 W	600 W	850 W	850 W	1300 W	1800 W	410 W	400 W	590 W	580 W
Rated Output Power (20 Hz-20 kHz, THD <0,2%)	230 W	350 W	450 W	300 W	500 W	650 W	750 W	1200 W	1500 W	350 W	350 W	500 W	500 W
Maximum Bridged Output (1 kHz, THD 1%)	900 W	1300 W	-	1200 W	1700 W	-	2600 W	3600 W	-	-	-	-	-
THD @ Rated Output Power	< 0,05%									<0,1%	<0,2%	<0,1%	<0,2%
DIM 30	<0,03%						<0,01%			<0,2%	<0,3%	<0,2%	<0,3%
Intermodulation (SMPTE)	<0,08%						<0,01%			<0,1%	<0,3%	<0,1%	<0,3%
Signal to Noise Ratio	> 105 dB									>100 dB			
Frequency Response (-1 dB)	20 Hz - 20 kHz									45 Hz - 20 kHz			
Dynamic Audio Limiter	THD </= 1% (Input signal </= + 20 dBu)												
Protections	Hi-Temperature, DC, HF, Back EMF, Peak Current Limiter, Inrush Current Limiter, Power On Delay												
Cooling	3(4)-stage fan, front-to-rear cooling												
Input Sensivity and Impedance	1,55 V (+6dBu), 20 kOhm, XLR Input												
Maximum Input Level	8,7 V (+21 dBu)												
Serial Interface	Network: CAN, 2 RJ45 (CAT-5 Cabling), RS-232 for media control systems												
Control Logic in and Outputs	2 x 0V 5V free configurable, Easy-Remote												
Loudspeaker Connectors	Barrier Strip						Neutrik Speakon NL4			Barrier Strip			
Dimensions (Width x Height x Depth)	483 mm x 132,5 mm x 390 mm (19", 3 U)												
Net Weight	16 kg			17 kg			30 kg			24 kg		25 kg	

All measurements both channels driven into 8 ohms unless other specified.

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