
Electro-Voice
Cinema
Systems

REFERENCES

CENTURY STADIUM PROMENADE, USA

EVERGREEN PARKWAY, USA

VILNIUS, Lithuania

GAUMONT, France

UFA PALAST, Germany

GENERAL CINEMA, USA

The Benchmark for Cinema Sound Reinforcement

CINEMA. For a medium generally thought of as being visual, the quality of a theater's sound system often determines the "cinema experience" for the paying customer. For years Electro-Voice® has supplied loudspeaker systems, amplifiers and controllers to the cinema industry which have met or exceeded the standards set by THX or Dolby Laboratories. Every summer, with release of the latest blockbuster action film, new benchmarks for acoustic performance are set — and Electro-Voice continues to meet these demands with the most innovative products in the industry. Products that meet the demands of digital sound.

At Electro-Voice we offer the engineering knowledge and expertise to design and manufacture products "from the ground up". Electro-Voice loudspeakers, amplifiers and controllers are conceived from the component level and integrated into high-performance audio systems, consisting of screen channels, surround and subwoofer systems. We are committed to developing new technologies and achieving new levels of performance for complete cinema speaker systems.

ARCADIA CINEMA, Italy

THESSALONIKI, Greece

Contents:

RMD®
Ring-Mode Decoupling

Electro-Voice pioneered Ring Mode Decoupling® (RMD®) as a result of experience gained through years of high-level system design. The goal of that basic research is to bring those new technologies into all aspects of the sound reinforcement industry, including EV's commitment to Cinema.

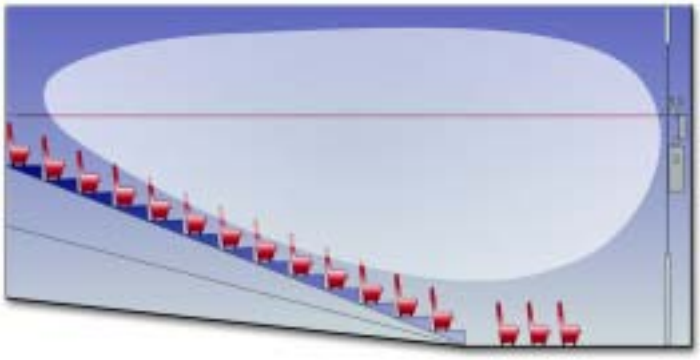
All loudspeaker components display unwanted vibrational modes — or resonances — that produce both frequency and time-domain distortions. A time-domain distortion is most often described by loudspeaker users as a "ringing" in the system. This ringing is usually most audible through the vocal fundamental range, and users commonly attempt to "cure" the ringing mode through equalization. Unfortunately such attempts remove not only the time-domain distortion, or ringing, but also parts of the musical signal as well. The net result is that musical information and intelligibility is lost. RMD® is a series of techniques developed by Electro-Voice engineers to deal with the time-domain distortion at its source. The basic problem is mechanical in nature. As a result, the only really effective solution is also mechanical. When acoustic resonances are encountered, the only effective solution is an acoustic remedy. The same applies to electrical resonances: The solution must be electrical.

RMD® treatment produces an acoustic signal that is less affected by mechanical and acoustical ringing modes. The result is a level of fidelity — particularly through the critical vocal range — that is more coherent. Another benefit of RMD® technology is a much higher degree of level independence. RMD® greatly minimizes the changes in system voicing that occur with level changes. Systems with RMD®, therefore, display a high degree of level-independent fidelity and a very audible improvement in vocal clarity as well.

EV Asymmetric Directed Coverage Technology in VARIPLEX™ II

Electro-Voice´s unique Asymmetric Directed Coverage technology provides an effectively rectangular coverage pattern. It provides advantages for most applications in traditional and stadium seating rooms. The unique throat and flare structure of the Waveguide delivers a 6-10 dB signal increase to the rear of the room. The resulting even front-to-back SPL eliminates ear-strain at the back of the sitting area and painful levels at the front. Aimed horizontally, the ADC Waveguide delivers sound only to the audience area, providing uniform direct-field SPL and significantly reducing the amount of sound reflections off the ceiling. This provides an increase in mid- to high-frequency intelligibility of 6 dB in most applications. The ADC Waveguide also provides lower distortion and very smooth uniform frequency response.

Rectangular horizontal coverage, with even front-to-back SPL distribution



Vertical Dispersion - projection straight to the audience

EV Theater Guide

EV developed an intuitive software tool to assist designing the best system for a theater. It guides the selection of the correct screen channel speaker, subwoofer, surround speaker, and power amplifier. Simply enter the dimensions of the room and screen, and the program will suggest the model, location, and aiming information of the screen channel speakers, surround speakers, and subwoofers. It also provides amplifier information. EV's Theater Speaker Guide (TSG) is available at no cost on **www.electrovoice.com**.

VARIPLEX™ Three-Way Systems for Highest Clarity and Intelligibility

- All VARIPLEX™ systems feature a 3-way design for absolute clarity and intelligibility throughout the theater.
- Asymmetric Directed Coverage Technology for even coverage of the room
- Very uniform frequency response
- Ring Mode Decoupling (RMD®) improves vocal clarity
- Low profile - only 18.5 in. (47 cm) depth

Variplex II XL

3-way very high output system for large rooms

Variplex II

3-way system for medium to large rooms, triamp operation or with internal MF/HF crossover for biamp operation.

Variplex M-Matinee

A 3-way system designed for mid-sized rooms providing all benefits of a three-way design, including the unique asymmetric directed coverage of all Variplex systems.
Can be operated passive 3-way, biamp or triamp.

RMD™ THX CINEMA

RMD™ THX CINEMA

RMD™

Specifications	Variplex II XL	Variplex II	Variplex M
Frequency Range	34 Hz - 16 kHz	34 Hz - 16 kHz	45 Hz - 18 kHz
Sensitivity, 1 W/1 m (LF/MF/HF)	104/109/112 dB	101/109/112 dB	104 dB
Max. SPL/1 m (calc.) (ave./peak)	136 / 136 dB	130 / 136 dB	127 / 133 dB
Crossover Frequency	500 Hz / 1300 Hz	500 Hz / 1300 Hz	500 Hz
Long-term Power Handling (LF/MF/HF)	1600/400/75 W	800/400/60 W	500 / 300 W
Short-term Power Handling (LF/MF/HF)	6400/1600/300 W	3200/1600/240 W	2000 / 1200 W
Coverage Horizontal (long axis/short axis)	90°	90°	90°
Coverage Vertical (up/down)	20°/30°	20°/30°	20°/30°
HF driver	ND6-8	ND6-8	DH2T
MF driver	2 x EV8DH	2 x EV8DH	2 x EV8D
LF driver	4 x DL15ST	2 x DL15ST	2 x EV15G
Nominal Impedance	2 x 4 / 4 / 16 Ω	4 / 4 / 8 Ω	4 / 4 Ω
Dimensions (Height/Width/Depth) in mm	1765 / 648 / 396	2090 / 597 / 467	1765 / 648 / 396
Dimensions (Height/Width/Depth) in inches	69.5” x 25.5” x 15.6”	82.3” x 23.5” x 18.4”	69.5” x 25.5” x 15.6”
Weight (net)	139 kg (306 lbs.)	74 kg (163 lbs.)	72.6 kg (160 lbs.)

Two-Way Systems for Large Rooms

TS550D-LX

Large format two-way system with very high power handling capability for large rooms.
Biamped operation only.

TS9040D-LX

Large format two-way system with high power handling capability for large rooms.
Biamped operation only.

Specifications	TS550D-LX	TS9040D-LX
Frequency Range	30 Hz - 20 kHz	32 Hz - 20 kHz
Sensitivity, 1 W/1 m (LF/HF)	100 / 111 dB	100 / 111 dB
Max. SPL/1 m (calc.) (ave./peak)	131 / 137 dB	129 / 135 dB
Crossover Frequency	500 Hz	500 Hz
Long-term Power Handling (LF/HF)	1,200 / 75 W	800 / 75 W
Short-term Power Handling (LF/HF)	4,800 / 300 W	3,200 / 300 W
Coverage (H x V)	90° x 40°	90° x 40°
HF driver	ND6X-8	ND6X-8
LF driver	2 x EVX155	2 x DL15ST
Nominal Impedance	4 / 8 Ω	4 / 8 Ω
Dimensions (Height/Width/Depth) in mm	1816 / 681 / 947	1816 / 681 / 947
Dimensions (Height/Width/Depth) in inches	71.5” x 26.8” x 37.3”	71.5” x 26.8” x 37.3”
Weight (net)	74.8 kg (165 lbs.)	74.8 kg (165 lbs.)

Two-Way Systems for Smaller and Medium Venues

TS 940D

Mid-size system for medium rooms with internal crossover for single channel drive.

RMD™

TS992E

Very compact and ultra-low profile system for smaller rooms with limited space — only 10 in. (25.4 cm) depth.

RMD™

Specifications	TS940D	TS992E
Frequency Range	32 Hz - 20 kHz	30 Hz - 20 kHz
Sensitivity, 1W/1m (LF/HF)	100 dB	96 dB
Max.SPL/1m (calc.) (ave./peak)	129 / 135 dB	122 / 128 dB
Crossover Frequency	500 Hz, internal	1200 Hz, internal
Long-term Power Handling (LF/HF)	800 W	400 W
Short-term Power Handling (LF/HF)	3,200 W	1,600 W
Coverage (H x V)	90° x 40°	90° x 90°
HF driver	ND6- X	DH2T
LF driver	2 x DL15ST	DL155T
Nominal Impedance	4 Ω	8 Ω
Dimensions (H/W/D) in mm	1354 / 572 / 447	1289 / 681 / 254
Dimensions (H/W/D) in inches	53.3” x 22.5” x 17.6”	50.8” x 26.8” x 10”
Weight (net)	60.4 kg (133 lbs.)	43.9 kg (97 lbs.)

Subwoofers

TL880D

Dual 18 inch very low frequency subwoofer, EVX180B equipped, with high power handling capacity down to 23 Hz (-10 dB)

TL880DM

Dual 18 inch very low frequency sub, EV18-S long excursion 300 W woofer with solid output to 27 Hz.

TL440

Single 18 inch version of TL880D. High acoustic output to 33 Hz.

TL440M

Single 18 inch very low frequency sub, essentially half of the TL880DM, solid output to 27 Hz.

TL18-1

Ultra-low profile subwoofer to go with TS992 series.
An ideal solution when space is limited but high performance required.

Specifications	TL880D	TL880DM	TL440	TL440M	TL18-1
Frequency Range	23 Hz - 80 Hz	27 Hz - 80 Hz	33 Hz* - 80 Hz	27 Hz - 80 Hz	38 Hz - 80 Hz
Sensitivity, 1 W/1 m (full/half-space)	99 / 105 dB	99 / 105 dB	96 / 102 dB	96 / 102 dB	96 / 102 dB
Max. SPL/1 m (calc.) (ave./peak)	136 / 142 dB	133 / 139 dB	124 / 130 dB	121 / 127	122 / 128 dB
Long-term Power Handling	1,200 W	700 W	600 W	350 W	400 W
Short-term Power Handling	4,800 W	2,800 W	2,400 W	1,400 W	1,600 W
Coverage (<125 Hz)	omnidirectional	omnidirectional	omnidirectional	omnidirectional	omnidirectional
LF driver	2 x EVX180B	2 x EVX18-S	1 x EVX 180B	1 x EV18-S	1 x DL18-MT
Nominal Impedance	4 Ω	4 Ω	8 Ω	8 Ω	8 Ω
Dimensions (Height/Width/Depth) in mm	1210 / 762 / 605	1207 / 762 / 605	1003 / 572 / 559	1003 / 572 / 559	1193 / 680 / 254
Dimensions (H/W/D) in inches	47.6” x 30” x 23.8”	47.5” x 30” x 23.8”	39.5” x 22.5” x 22”	39.5” x 22.5” x 22”	47” x 26.7” x 10”
Weight (net)	72.6 kg (160 lbs.)	70.8 kg (156 lbs.)	49 kg (108 lbs.)	44.5 kg (98 lbs.)	43 kg (95 lbs.)

* 24 Hz in step-down mode

Surround Speaker Systems

SL12-2V / SL10-2V (not shown)

High-Output 2-Way

THX approved

Digital Dynamics Capable

SL10-2 very compact with 10" woofer

SL6.2M

Full-Bandwidth overload protection

Strong-Arm-Mount™ for easy, flexible aiming

Lightweight, unobtrusive plastic enclosure

Easy access input terminals

Specifications	SL10-2V	SL12-2V	SL 6.2
Frequency Range	60 Hz - 20 kHz	70 Hz - 20 kHz	48 Hz - 20 kHz
Sensitivity, 1 W/1 m	93 dB	93 dB	90 dB, 1 W/1 m
Max. SPL/1 m (calc.) (ave./peak)	113 / 119 dB	116 / 121 dB	116 dB
Long-term Power Handling	100 W	200 W	125 W
Short-term Power Handling	400 W	800 W	500 W
Coverage (H x V)	100° x 100°	100° x 90°	100° x 100°
LF driver	10" woofer	12" woofer	6" woofer
HF driver	1" driver on Waveguide	DH2010A	1" driver on Waveguide
Nominal Impedance	8 Ω	8 Ω	8 Ω
Dimensions (Height/Width/Depth) in mm	476 / 318 / 275	535 / 476 / 335	419 / 228 / 298
Dimensions (Height/Width/Depth) in inches	18.7" x 12.5" x 10.8"	21" x 18.7" x 13"	16.5" x 9" x 11.7"
Weight (net)	10.5 kg (23 lbs.)	21.4 kg (47 lbs.)	4.5 kg (10 lbs.)

CPS Contractor Precision Series Amplifiers

The CPS Series of high-performance amplifiers offers unmatched dynamic range capability that meets and exceeds the demands of cinema applications.

- All CPS amplifiers are THX approved.
- All CPS amplifiers provide a headroom of 30% over the continuous power rating.
- The on-board dynamic limiter circuit ensures that the THD is limited to 1% maximum.
- Outstanding sonic quality.
- Very extensive common safety package includes: peak-current limiter, inrush-current limiter, thermal protection (heat sinks and transformers), DC-, HF-, Back-EMF protection, short-circuit and no-load protection.
- CPS1 and CPS2 have rear-mounted dB-scaled level controls and XLR/Phoenix type inputs and Phoenix type outputs.
- CPS3 and CPS4 have covered, detented front-mounted level controls and XLR input, Speakon® outputs.

Crossover retrofit cards for biamped EV cinema systems are available for the CPS 1 and CPS 2. These 24 dB Linkwitz-Riley filters are available at common crossover frequencies. In a two channel operation (channel A for LF, channel B for HF) the CPS amplifiers provide more output for the LF channel than rated for both channels driven, as the other channel is not driven to its maximum. The table below shows power ratings for the CPS 2 with both channels driven into 4 ohms, channel A 100 Hz burst (20 ms on, 480 ms off), channel B continuous signal 1 kHz:

	Channel B	Channel A
(similar for CPS1)	50 watt	800 watt
	100 watt	760 watt
Three crossover retrofit cards are available:	500 Hz	for TS9040D-LX, Variplex Biamp (LF/MH) TS550D-LX, TS940D-LX
	800 Hz	for TS940D-LX
	1200 Hz	for TS992-LX

Specifications*	**CPS1**	**CPS2**	**CPS3**	**CPS4**
Maximum power (1 kHz; THD <1%)				
2 Ω	650 W	850 W	1,200 W	1,800 W
4 Ω	450 W	600 W	900 W	1,300 W
8 Ω	280 W	350 W	560 W	850 W
Rated power (20 Hz–20 kHz; THD <0.2%)				
2 Ω	450 W	650 W	1,000 W	1,500 W
4 Ω	350 W	500 W	800 W	1,200 W
8 Ω	230 W	300 W	500 W	750 W
Maximum bridged output (1,000 Hz; <1% THD)				
4 Ω	1,300 W	1,700 W	2,400 W	3,600 W
8 Ω	900 W	1,200 W	1,800 W	2,600 W
Slew rate	25 V/µs	30 V/µs	35 V/µs	40 V/µs
Total harmonic distortion	<0.05%	<0.05%	<0.05%	<0.05%
Inter-modulation distortion (SMPTE)	<0.08%	<0.08%	<0.01%	<0.01%
Crosstalk (at 1,000 Hz)	<-80 dB	<-80 dB	<-80 dB	<-80 dB
Input impedance (balanced)	20 kΩ	20 kΩ	20 kΩ	20 kΩ
Signal-to-noise ratio (dB A-weighted)	>105 dB	>105 dB	>105 dB	>105 dB
Dimensions (H x W x D) in mm	133 x 483 x 386 mm	133 x 483 x 386 mm	133 x 483 x 390 mm	133 x 483 x 390 mm
Dimensions (H x W x D) in inches	5.2” x 19” x 15.2”	5.2” x 19” x 15.2”	5.2” x 19” x 15.2”	5.2” x 19” x 15.2”
Net weight	15 kg (33 lbs.)	16 kg (35 lbs.)	27 kg (59 lbs.)	29 kg (63 lbs.)

* Both channels driven into 8 Ω unless other specified

Dx38 Digital Sound System Processor

The Dx38 sets new standards for digital loudspeaker controllers and processors, providing 48-bit filter algorithms, 24-bit AD/DA conversion and a dynamic range of more than 115 dB. The Dx38 can be used in networks of up to 31 controllers with a maximum networking distance of 1,200 meters. Real-time controlling and configuration is either through the front panel or through a PC with an RS-232, MIDI, or RS-485 bus for networking. EV´s unique RACE 2.0 software (see next page) allows for complete control with a PC compatible with Windows 95/98/NT/ME/2000).

The Dx38 is a 2 input/4 output controller with a virtual third input source. Its mono summation of both input channels maximizes flexibility.

Two configuration modes allow an added degree of flexibility for experienced users. Additionally, the Dx38 can handle up to 30 user memories and 50 factory presets for EV speaker systems.

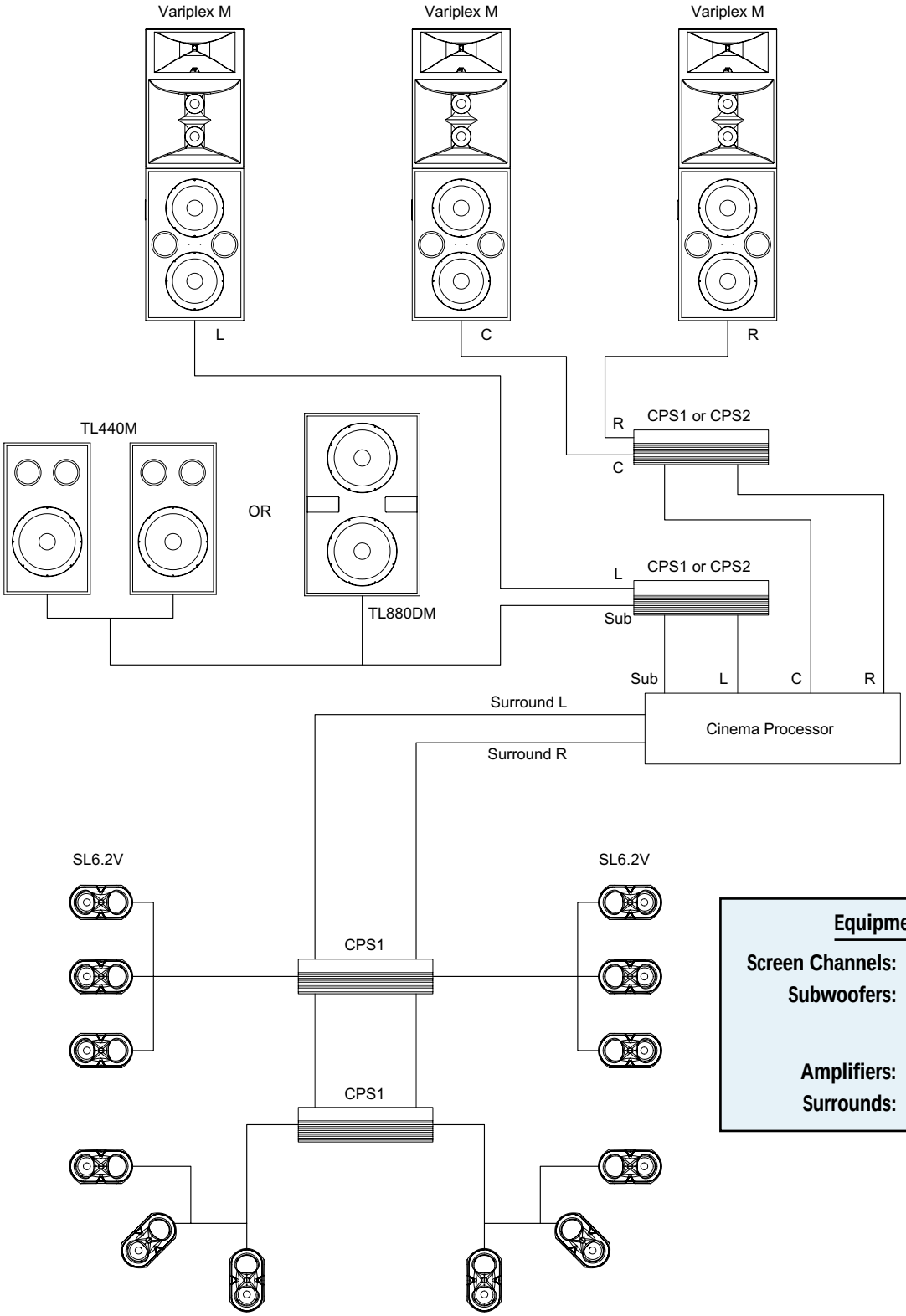
Dx38 options and accessories

- RS-232 interface is factory installed
- RS-485 network interface (requires one DLN 485 converter)
- Input transformer (NRS 90244)
- Contact closure interface (NRS 90246) for external user preset selection (8 contacts) (pin 1-8: activation; pin 9: common)
- PA 1 (clear acrylic cover)

Specifications	Dx38
Controller type	2 (+1) in / 4 out
Data format	24-bit linear AD/DA conversion 48-bit processing
A/D conversion	24-bit / sigma-delta (linear phase) 128 times oversampling
D/A conversion	24-bit / sigma-delta 128 times oversampling
Sampling rate	48 kHz
DSP type	2 x 24-bit Motorola®
Frequency response	20 Hz–20 kHz (-0.5 dB)
Dynamic range (typical)	>115 dB
THD (without input transformer)	<0.01%
THD (with input transformer)	<0.05%
Input connectors	2 XLR (balanced)/parallel out
Input voltage (nominal)	1.55V/+6 dBu
Maximum input voltage	24.5V/+30 dBu
Input impedance	20 kΩ
Common mode rejection	>40 dB
Output connectors	4 XLR (balanced)
Output voltage (nominal)	1.55V/+6 dBu
Maximum output voltage	8.7V/+21 dBu
Output impedance	<100 Ω
Minimum load impedance	600 Ω

Specifications (continued)	Dx38
Frequency crossovers (slopes)	6, 12, 18, 24 dB/oct.
Frequency crossovers (designs)	Butterworth/Bessel/Linkwitz-Riley
Filters (inputs and outputs)	26 (full) parametric equalizers low-shelving EQ (6/12 dB slope) LPN (low-pass notch) switchable hi-shelving EQ (6/12 dB slope) lo-cut filter (6 or 12 dB slope) B6 alignment hi-cut filter (6 or 12 dB slope) all-pass filter (1st or 2nd order) phase invert (180°)
Digital compressor	4 (1 per output) with graph
Digital limiter	4 (1 per output) with graph
Delay	3 master delays (2–900 ms)
	4 channel delays (0–900 ms)
Delay increment	21 µsec.
MIDI in/out/thru	Data dump; master/slave operation; remote control
LCD readout (with light)	122 x 32 px
Locking function	key lock
Dimensions (H x W x D)	1.72" x 19" x 14.75" 43.6 x 483 x 374 mm (1 RU)
Net weight	11.03 lbs (5.0 kg)

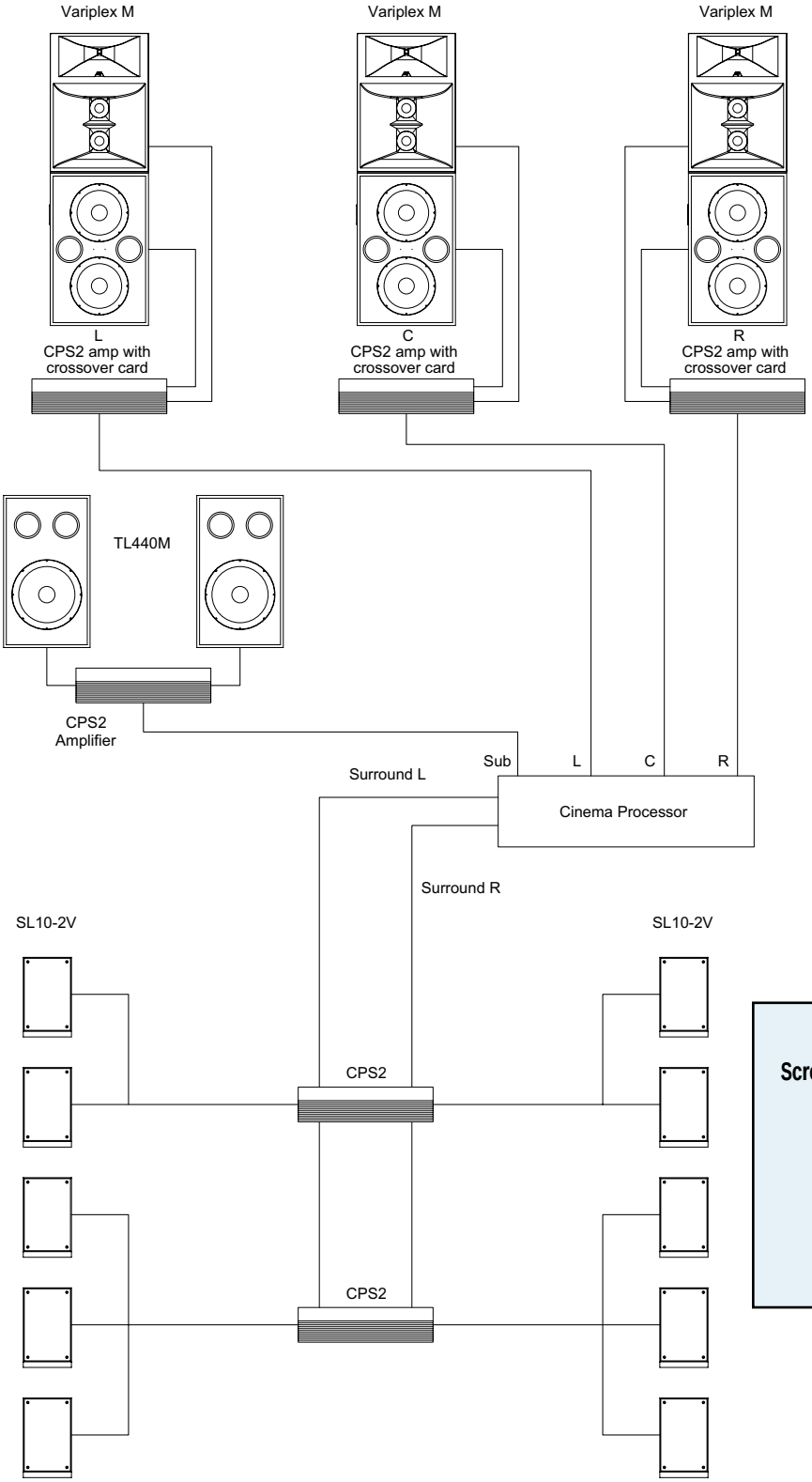
Variplex M, Passive Three-Way, Small-to-Medium Rooms



Equipment List

Screen Channels:	**3 x Variplex M**
Subwoofers:	**2 x TL440M or 1 x TL880DM**
Amplifiers:	**4 x CPS1**
Surrounds:	**12 x SL6.2M**

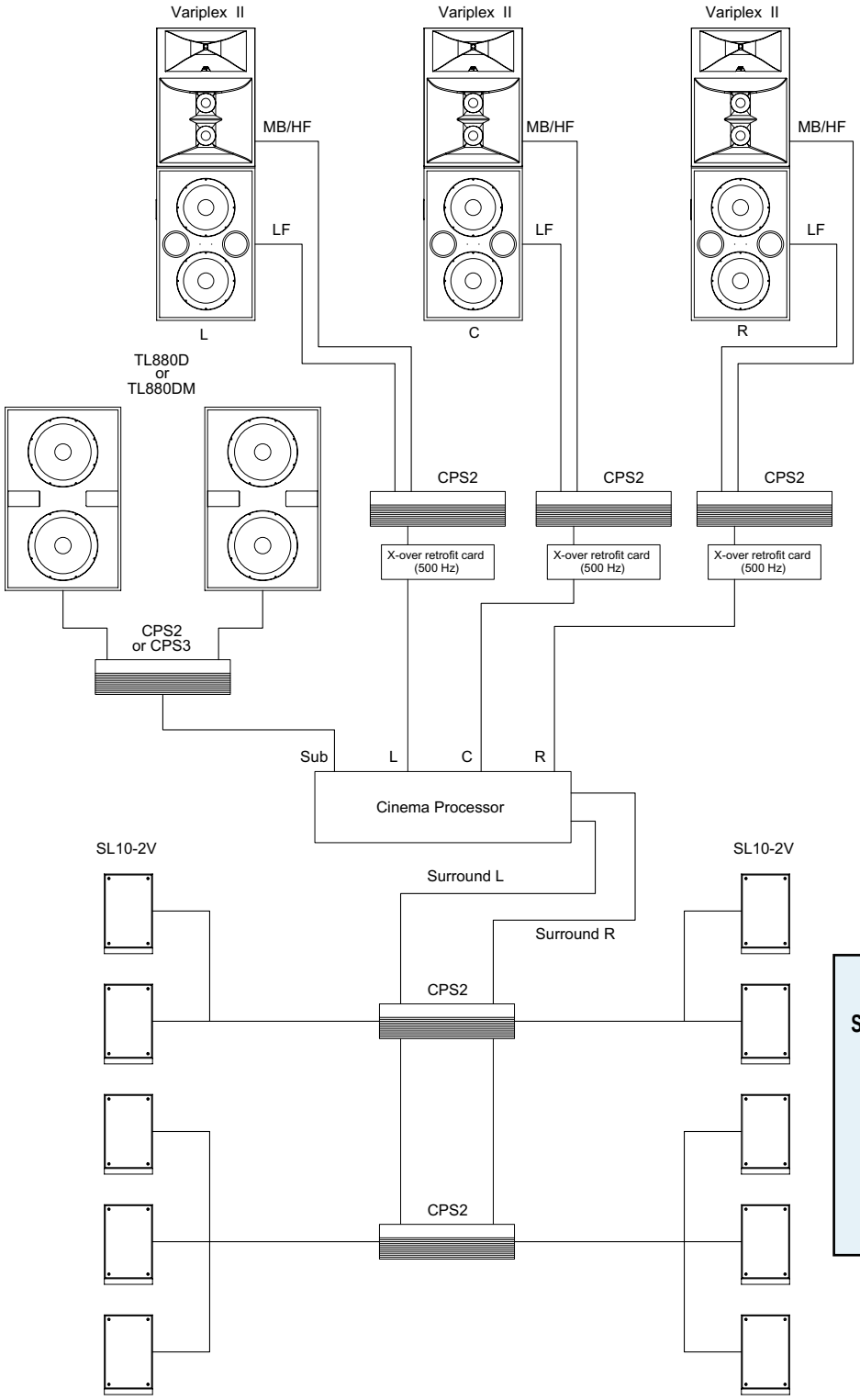
Variplex M, Bi-Amp, Small-to-Medium Rooms



Equipment List

Screen Channels:	**3 x Variplex M**
Subwoofers:	**2 or 4 x TL440M or 2 x TL880DM**
Amplifiers:	**3 x CPS2 and 3 x CPS2 w/ crossover card**
Surrounds:	**10 x SL10-2V**

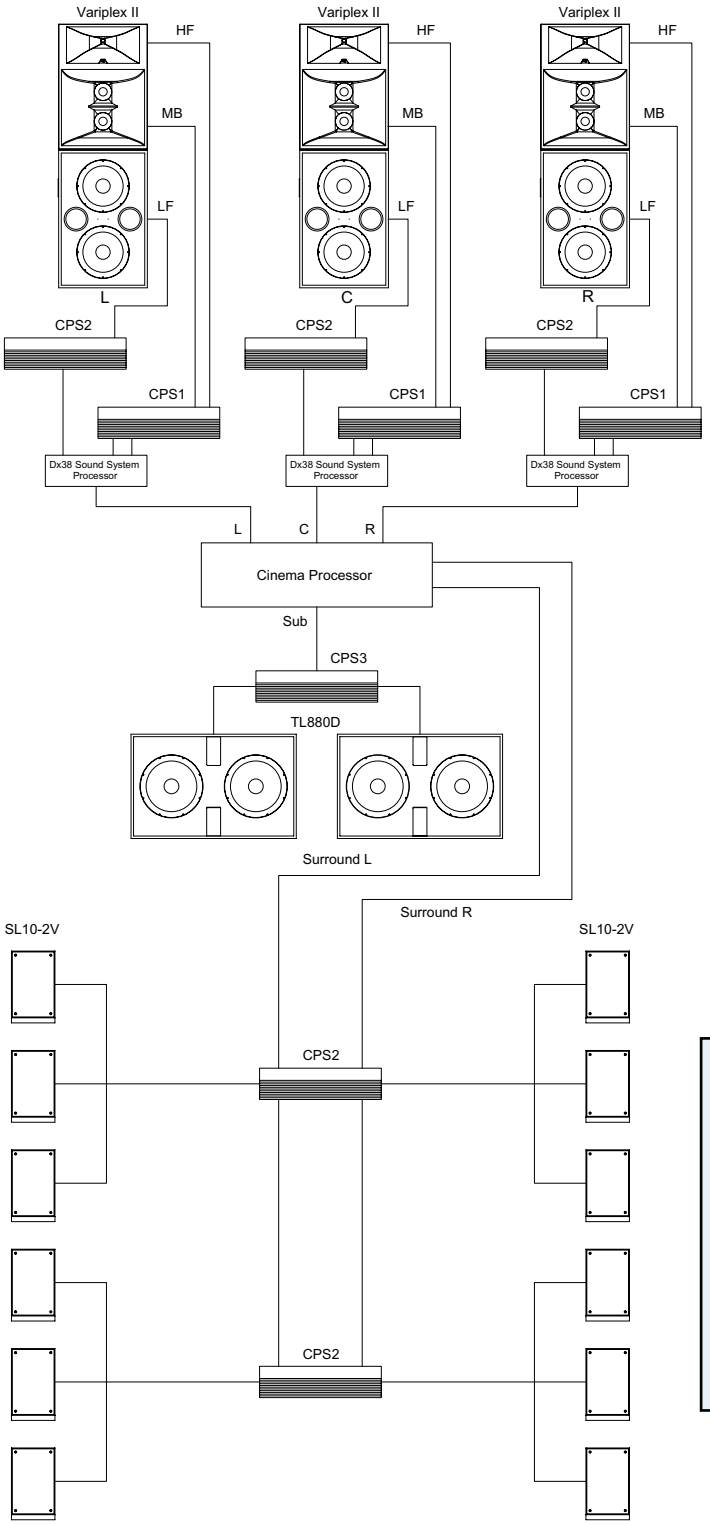
Two-Way Biamped System for Medium Rooms (THX)



Equipment List

Screen Channels:	**3 x Variplex II**
Subwoofers:	**2 x TL880D or 1 x TL880DM**
Amplifiers:	**3 x CPS2 w/ Card and 3 x CPS2**
Surrounds:	**10 x SL10-2V**

Three-Way Triamped VARIPLEX™ II (THX) for Larger Rooms



Equipment List

Screen Channels:	**3 x Variplex II**
Subwoofers:	**2 x TL880D**
Processors:	**3 x Dx38**
Amplifiers:	**3 x CPS1 and 5 x CPS2 and 1 x CPS3**
Surrounds:	**12 x SL10-2V**

ElectroVoice
EV Cinema Systems

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