



Jessica Marla Díaz C <jessica.diaz@plazamayor.com.co>

PROPUESTA TÉCNICA PAPA

1 mensaje

Conrado Santamaría <gerencia@lineaestrategica.com>

14 de julio de 2017, 16:10

Para: jessica.diaz@plazamayor.com.co, Deicy Galvis <administracion@lineaestrategica.com>

Cordial saludo, adjunto propuesta para producción de la visita papal.

**Conrado Santamaría Polo**
Gerente

- Línea Estratégica
- Móvil: 3167419882
- Tel oficina: (+57) 034 4183930
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- Medellín - Colombia

 **PROPUESTA final VISITA PAPA LINEA ESTRATEGICA.pdf**
68K

Medellín, 14 de julio de 2017

Señores
PLAZA MAYOR
Medellín

Cordial saludo,

Respondiendo a su solicitud nos permitimos cotizar los siguientes servicios:

ESCENARIO			
DESCRIPCIÓN EQUIPO	CANTIDAD	UNITARIO	TOTAL
Techo Estructural de 80 x 55 x 55 pies con capacidad de carga de 60.000 libras	1	\$170.000.000	\$170.000.000
Techo Estructural de 60 x 45 x 45 pies con capacidad de carga de 30.000 libras	2	\$108.000.000	\$216.000.000
Tarima de 24,4 x 16 x 2 metros	1	\$22.000.000	\$22.000.000
Tarima de 18,30 x 13,20 x 2 metros	2	\$10.000.000	\$20.000.000
Areas de trabajo de 12 x 6 x 2 metros	4	\$4.900.000	\$19.600.000
Provocado de tarima de 2,44 x 38 x 1,80 metros	1	\$2.400.000	\$2.400.000
Sobretarima de 6 x 2,40 a 0,60 metros (house mix)	1	\$1.200.000	\$1.200.000
Sobretarima de 4,8 x 2,40 a 1,20 metros (house mix)	1	\$1.200.000	\$1.200.000
Sobretarimas de 4,8 x 2,44 x 1,80 metros	8	\$600.000	\$4.800.000
Escaleras de 1,80 metros	4	\$200.000	\$800.000
Valor			\$458.000.000

SONIDO FOH			
DESCRIPCIÓN EQUIPO	CANTIDAD	UNITARIO	TOTAL
Arreglos de medios altos L'ACUSTIC, D&B o MEYER SOUND.	82	\$21.600.000	\$1.771.200.000
Medios altos L'ACUSTIC, D&B o MEYER SOUND (front fill)	164	\$500.000	\$82.000.000
Bajos L'ACUSTIC, D&B o MEYER SOUND	48	\$450.000	\$21.600.000
Procesadores L'ACUSTIC, D&B o MEYER SOUND	54	\$3.200.000	\$172.800.000
Snake WHIRLWIND SUPER TOUR	6	\$5.800.000	\$34.800.000
Tapa cables YELLOW JACKED	320	\$80.000	\$25.600.000
Consola VENUE S6L	1	\$6.000.000	\$6.000.000
Consola DIGICO SD5	1	\$10.000.000	\$10.000.000
Consola DIGICO SD10	1	\$9.000.000	\$9.000.000

MONITORES			
DESCRIPCIÓN EQUIPO	CANTIDAD	UNITARIO	TOTAL
Monitores de piso L'ACUSTIC, D&B o MEYER SOUND	36	\$400.000	\$14.400.000
Medios altos L'ACUSTIC, D&B o MEYER SOUND (side fill)	24	\$500.000	\$12.000.000
Bajos L'ACUSTIC, D&B o MEYER SOUND (side fill)	12	\$500.000	\$6.000.000
Procesadores L'ACUSTIC, D&B o MEYER SOUND	3	\$3.200.000	\$9.600.000
Consola VENUE S6L	1	\$7.000.000	\$7.000.000
Consola DIGICO SD10	1	\$9.000.000	\$9.000.000
Consola de YAMAHA CL5	1	\$5.000.000	\$5.000.000
Consola de sala VENUE PROFILE 48 canales, 5 DSP	1	\$4.000.000	\$4.000.000
Valor			\$2.200.000.000

TRUSSING & RIGGING			
DESCRIPCIÓN EQUIPO	CANTIDAD	UNITARIO	TOTAL
Torres de scaffold Layher de 14 x 2,57 x 2,57 metros para colgar sonido	96	\$4.000.000	\$384.000.000
Torres de scaffold 14 x 2,57 x 2,57 metros para colgar video	56	\$4.000.000	\$224.000.000
Viga celocía Layher de 6,14 metros	56	\$800.000	\$44.800.000
Viga Súpet Slim Layher de 3,07 metros	96	\$350.000	\$33.600.000
Motores CM Lodestar de 1 tonelada	136	\$500.000	\$68.000.000
Motores CM Lodestar de 0,5 tonelada	88	\$300.000	\$26.400.000
Motores CM Lodestar de 2 tonelada	36	\$535.000	\$19.260.000
Valor			\$800.060.000

VIDEO			
DESCRIPCIÓN EQUIPO	CANTIDAD	UNITARIO	TOTAL
Pantalla led pitch 6mm, 10mm y 12mm	720	\$1.250.000	\$900.000.000
Procesador LVP-605S	32	\$3.300.000	\$105.600.000
Switcher de video Panasonic AWHS50	3	\$9.000.000	\$27.000.000
Control Panasonic AWRP50	3	\$6.000.000	\$18.000.000
Cámara Panasonic AWHE 40SWE	8	\$2.400.000	\$19.200.000
Cámara Panasonic HPX 370/371, lente Fujinon 17X DH, lente Fujinon 22X HD, con duplicador	3	\$2.600.000	\$7.800.000
Trípode LIBEC LX7	6	\$400.000	\$2.400.000
Valor			\$1.080.000.000
Valor Total Alquiler de Equipos			\$4.538.060.000
			MÁS IVA

Nota: Este valor no incluye el recurso humano para preproducción, montaje, operación, desmonte y postproducción.

Atentamente,

A handwritten signature in black ink, appearing to read 'Conrado', with a stylized flourish extending to the right.

CONRADO ARAU SANTAMARÍA POLO
Línea Estratégica



Jessica Maria Diaz C <jessica.diaz@plazamayor.com.co>

PROPUESTA NÚMERO 2

1 mensaje

Conrado Santamaría <gerencia@lineaestrategica.com>

14 de julio de 2017, 16:49

Para: jessica.diaz@plazamayor.com.co, Deicy Galvis <administracion@lineaestrategica.com>

Cordial saludo Jessica, aquí adjunto mi segunda propuesta y que se fundamenta en el uso de nuestros equipos solamente, toda vez que en la propuesta anterior debo subcontratar marcas y equipos de otras compañías por lo que se hace mayor el valor de la propuesta. Con esto para decir que esta difiere de la anterior en cantidades con respecto de la primer solicitud hecha por ustedes, sin embargo con estos equipos cumplimos tal como lo hicimos en la ciudad de Quito, Ecuador, donde fuimos la empresa a cargo de la producción.

**Conrado Santamaría Polo**
Gerente

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2 archivos adjuntos

 **PROPUESTA PAPAL EXCEL.pdf**
104K **PROPUESTA VISITA PAPAL CARTA.pdf**
58K

Medellín, 14 de Julio de 2017.

Señores
PLAZA MAYOR
Ciudad

Cordial saludo.

Línea Estratégica SAS, presenta segunda propuesta económica de acuerdo a estudio propio y que garantiza el cumplimiento de las necesidades y requerimientos para atender la VISITA PAPAL en el mes de Septiembre del presente año en la ciudad de Medellín Colombia.

Dicho estudio se fundamenta solo en los equipos técnicos de nuestra compañía, ésta es la razón por la cual los costos se minimizan con respecto a la primera propuesta presentada, donde se proponía una mayor cantidad de equipos técnicos de marcas y cantidades no disponibles en la compañía y por lo tanto era necesario subcontratar.

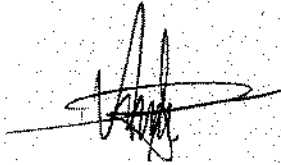
A continuación se referencia parte de nuestra experiencia en lo referente a grandes producciones:

- Visita PAPAL, Quito Ecuador, 2015.
- Inauguración esclusas del Panamá, 2016.
- Firma de los acuerdos de Paz, Cartagena 2016.
- Conciertos de agrupaciones Anglo como: Metállica, Kiss, Cold Play, Guns N' Roses, Foo Fighter, Ringo Star, Calvin Harris, Armin Van Buren y otros artistas.

- Conciertos de agrupaciones latinas: Marc Anthony, Juan Luis Guerra, Vicente Fernández, Ana Gabriel, Calle 13, Andrea Boccelli, Daddy Yankee, Carlos Vives, Fonseca, entre otros.
- Eventos y festivales: Carnaval de Barranquilla, Feria de Flores, Estéreo Picnic, Carulla Picnic, entre otros.

Agradezco la atención.

Cordialmente,

A handwritten signature in black ink, appearing to read 'Conrado', with a long horizontal stroke extending to the right.

CONRADO SANTAMARIA POLO
Gerente

LINEA ESTRATEGICA S.A.S.

**PROPUESTA VISITA DEL PAPA FRANCISCO
SEPTIEMBRE DE 2017**

ESCENARIO PRINCIPAL	MARCA	CANTIDAD	UNIDADES	# DE DIAS
Sonido amplificado con LA8 para arreglos de medios altos	L-Acoustics serie K2	2	28	8
Bajos	L-Acoustics serie SB28	12	24	8
Estructura para cuelgue de sonido	Layher o Gleason	2	6	8
Trusses	Eurotruss	2	4	8
Spancet, Schakles, bandas de acero, Steel flex y accesorios	Varias	2	48	8
Motores	Chain Master o CM Lodestar	4	4	8
Monitores	L-Acoustics - D&B - Meyer	24	24	4
Procesadores	L-Acoustics LARACK con LA8	2	6	4
Consolas	Avid - Yamaha - Digico	6	3	4
Pantalla Led Pitch 6 mm	Ciberlight	2	192	8
Procesador LVP 605s	Ciberlight	2	6	8
Switcher de video, control, cámaras, lentes, trípodes y accesorios.	Panasonic - Sony - JVC - Black Magic	6	22	4

TORRE 1	MARCA	CANTIDAD	UNIDADES	# DE DIAS
Sonido amplificado con LA8 para arreglos de medios altos	L-Acoustics serie K2	1	10	8
Estructura para cuelgue de sonido	Layher o Gleason	1	2	8
Trusses	Eurotruss	2	2	8
Spancet, Schakles, bandas de acero, Steel flex y accesorios	Varias	1	24	8
Motores	Chain Master o CM Lodestar	1	1	8
Procesadores audio	L-Acoustics LARACK con LA8	1	3	4
Pantalla Led Pitch 6 mm	Ciberlight	1	96	8
Procesador video LVP 605s	Ciberlight	1	2	8
Estructura para cuelgue de pantalla	Layher o Gleason	1	2	8

TORRE 2	MARCA	CANTIDAD	UNIDADES	# DE DIAS
Sonido amplificado con LA8 para arreglos de medios altos	L-Acoustics serie K2	1	10	8
Estructura para cuelgue de sonido	Layher o Gleason	1	2	8
Trusses	Eurotruss	2	2	8
Spancet, Schakles, bandas de acero,	Varias	1	24	8
Motores	Chain Master o CM Lodestar	1	1	8
Procesadores audio	L-Acoustics LARACK con LA8	1	3	4
Pantalla Led Pitch 6 mm	Ciberlight	1	96	8
Procesador video LVP 605s	Ciberlight	1	2	8
Estructura para cuelgue de pantalla	Layher o Gleason	1	2	8

TORRE 3	MARCA	CANTIDAD	UNIDADES	# DE DIAS
Sonido amplificado con LA8 para arreglos de medios altos	L-Acoustics serie K2	1	8	8
Estructura para cuelgue de sonido	Layher o Gleason	1	2	8
Trusses	Eurotruss	2	2	8
Spancet, Schakles, bandas de acero,	Varias	1	24	8
Motores	Chain Master o CM Lodestar	1	1	8
Procesadores audio	L-Acoustics LARACK con LA8	1	3	4

TORRE 4	MARCA	CANTIDAD	UNIDADES	# DE DIAS
Sonido amplificado con LA8 para arreglos de medios altos	L-Acoustics serie K2	1	8	8
Estructura para cuelgue de sonido	Layher o Gleason	1	2	8
Trusses	Eurotruss	2	2	8
Spancet, Schakles, bandas de acero,	Varias	1	24	8
Motores	Chain Master o CM Lodestar	1	1	8
Procesadores audio	L-Acoustics LARACK con LA8	1	3	4

TORRE 12	MARCA	CANTIDAD	UNIDADES	# DE DIAS
Sonido amplificado con LA8 para arreglos de medios altos	L-Acoustics serie K2	1	6	8
Estructura para cuelgue de sonido	Layher o Gleason	1	2	8
Trusses	Eurotruss	2	2	8
Spancet, Schakles, bandas de acero, Steel flex y accesorios	Varias	1	24	8
Motores	Chain Master o CM Lodestar	1	1	8
Procesadores audio	L-Acoustics LARACK con LA8	1	3	4
Pantalla Led Pitch 6 mm	Ciberlight	1	96	8
Procesador video LVP 605s	Ciberlight	1	2	8
Estructura para cuelgue de pantalla	Layher o Gleason	1	2	8

TORRE 13	MARCA	CANTIDAD	UNIDADES	# DE DIAS
Sonido amplificado con LA8 para arreglos de medios altos	L-Acoustics serie K2	1	6	8
Estructura para cuelgue de sonido	Layher o Gleason	1	2	8
Trusses	Eurotruss	2	2	8
Spancet, Schakles, bandas de acero, Steel flex y accesorios	Varias	1	24	8
Motores	Chain Master o CM Lodestar	1	1	8
Procesadores audio	L-Acoustics LARACK con LA8	1	3	4

TORRE 14	MARCA	CANTIDAD	UNIDADES	# DE DIAS
Sonido amplificado con LA8 para arreglos de medios altos	L-Acoustics serie K2	1	6	8
Estructura para cuelgue de sonido	Layher o Gleason	1	2	8
Trusses	Eurotruss	2	2	8
Spancet, Schakles, bandas de acero, Steel flex y accesorios	Varias	1	24	8
Motores	Chain Master o CM Lodestar	1	1	8
Procesadores audio	L-Acoustics LARACK con LA8	1	3	4

TORRE 15	MARCA	CANTIDAD	UNIDADES	# DE DIAS
Sonido amplificado con LA8 para arreglos de medios altos	L-Acoustics serie KARA	1	8	8
Estructura para cuelgue de sonido	Layher o Gleason	1	2	8
Trusses	Eurotruss	2	2	8
Spancet, Schakles, bandas de acero, Steel flex y accesorios	Varias	1	24	8
Motores	Chain Master o CM Lodestar	1	1	8
Procesadores audio	L-Acoustics LARACK con LA8	1	3	4

TORRE 16	MARCA	CANTIDAD	UNIDADES	# DE DIAS
Sonido amplificado con LA8 para arreglos de medios altos	L-Acoustics serie KARA	1	8	8
Estructura para cuelgue de sonido	Layher o Gleason	1	2	8
Trusses	Eurotruss	2	2	8
Spancet, Schakles, bandas de acero, Steel flex y accesorios	Varias	1	24	8
Motores	Chain Master o CM Lodestar	1	1	8
Procesadores audio	L-Acoustics LARACK con LA8	1	3	4

TORRE 17	MARCA	CANTIDAD	UNIDADES	# DE DIAS
Sonido amplificado con LA8 para arreglos de medios altos	L-Acoustics serie KARA	1	8	8
Estructura para cuelgue de sonido	Layher o Gleason	1	2	8
Trusses	Eurotruss	2	2	8
Spancet, Schakles, bandas de acero, Steel flex y accesorios	Varias	1	24	8
Motores	Chain Master o CM Lodestar	1	1	8
Procesadores audio	L-Acoustics LARACK con LA8	1	3	4

TORRE 5	MARCA	CANTIDAD	UNIDADES	# DE DIAS
Sonido amplificado con LA8 para arreglos de medios altos	L-Acoustics serie K2	1	6	8
Estructura para cuelgue de sonido	Layher o Gleason	1	2	8
Trusses	Eurotruss	2	2	8
Spancet, Schakles, bandas de acero,	Varias	1	24	8
Motores	Chain Master o CM Lodestar	1	1	8
Procesadores audio	L-Acoustics LARACK con LA8	1	3	4

TORRE 6	MARCA	CANTIDAD	UNIDADES	# DE DIAS
Sonido amplificado con LA8 para arreglos de medios altos	L-Acoustics serie K2	1	6	8
Estructura para cuelgue de sonido	Layher o Gleason	1	2	8
Trusses	Eurotruss	2	2	8
Spancet, Schakles, bandas de acero,	Varias	1	24	8
Motores	Chain Master o CM Lodestar	1	1	8
Procesadores audio	L-Acoustics LARACK con LA8	1	3	4

TORRE 7	MARCA	CANTIDAD	UNIDADES	# DE DIAS
Sonido amplificado con LA8 para arreglos de medios altos	L-Acoustics serie K2	1	6	8
Estructura para cuelgue de sonido	Layher o Gleason	1	2	8
Trusses	Eurotruss	2	2	8
Spancet, Schakles, bandas de acero,	Varias	1	24	8
Motores	Chain Master o CM Lodestar	1	1	8
Procesadores audio	L-Acoustics LARACK con LA8	1	3	4

TORRE 8	MARCA	CANTIDAD	UNIDADES	# DE DIAS
Sonido amplificado con LA8 para arreglos de medios altos	L-Acoustics serie K2	1	6	8
Estructura para cuelgue de sonido	Layher o Gleason	1	2	8
Trusses	Eurotruss	2	2	8
Spancet, Schakles, bandas de acero, Steel flex y accesorios	Varias	1	24	8
Motores	Chain Master o CM Lodestar	1	1	8
Procesadores audio	L-Acoustics LARACK con LA8	1	3	4

TORRE 9	MARCA	CANTIDAD	UNIDADES	# DE DIAS
Sonido amplificado con LA8 para arreglos de medios altos	L-Acoustics serie K2	1	6	8
Estructura para cuelgue de sonido	Layher o Gleason	1	2	8
Trusses	Eurotruss	2	2	8
Spancet, Schakles, bandas de acero, Steel flex y accesorios	Varias	1	24	8
Motores	Chain Master o CM Lodestar	1	1	8
Procesadores audio	L-Acoustics LARACK con LA8	1	3	4

TORRE 10	MARCA	CANTIDAD	UNIDADES	# DE DIAS
Sonido amplificado con LA8 para arreglos de medios altos	L-Acoustics serie K2	1	6	8
Estructura para cuelgue de sonido	Layher o Gleason	1	2	8
Trusses	Eurotruss	2	2	8
Spancet, Schakles, bandas de acero, Steel flex y accesorios	Varias	1	24	8
Motores	Chain Master o CM Lodestar	1	1	8
Procesadores audio	L-Acoustics LARACK con LA8	1	3	4

TORRE 11	MARCA	CANTIDAD	UNIDADES	# DE DIAS
Sonido amplificado con LA8 para arreglos de medios altos	L-Acoustics serie K2	1	6	8
Estructura para cuelgue de sonido	Layher o Gleason	1	2	8
Trusses	Eurotruss	2	2	8
Spancet, Schakles, bandas de acero, Steel flex y accesorios	Varias	1	24	8
Motores	Chain Master o CM Lodestar	1	1	8
Procesadores audio	L-Acoustics LARACK con LA8	1	3	4
Pantalla Led Pitch 6 mm	Ciberlight	1	96	8
Procesador video LVP 605s	Ciberlight	1	2	8
Estructura para cuelgue de pantalla	Layher o Gleason	1	2	8

TORRE 18	MARCA	CANTIDAD	UNIDADES	# DE DÍAS
Sonido amplificado con LA8 para arreglos de medios altos	L-Acoustics serie KARA	1	8	8
Estructura para cuelgue de sonido	Layher o Gleason	1	2	8
Trusses	Eurotruss	2	2	8
Spancet, Schakles, bandas de acero, Steel flex y accesorios	Varias	1	24	8
Motores	Chain Master o CM Lodestar	1	1	8
Procesadores audio	L-Acoustics LARACK con LA8	1	3	4

TORRE 19	MARCA	CANTIDAD	UNIDADES	# DE DÍAS
Sonido amplificado con LA8 para arreglos de medios altos	L-Acoustics serie KARA	1	8	8
Estructura para cuelgue de sonido	Layher o Gleason	1	2	8
Trusses	Eurotruss	2	2	8
Spancet, Schakles, bandas de acero, Steel flex y accesorios	Varias	1	24	8
Motores	Chain Master o CM Lodestar	1	1	8
Procesadores audio	L-Acoustics LARACK con LA8	1	3	4

TORRE 20	MARCA	CANTIDAD	UNIDADES	# DE DÍAS
Sonido amplificado con LA8 para arreglos de medios altos	L-Acoustics serie KARA	1	8	8
Estructura para cuelgue de sonido	Layher o Gleason	1	2	8
Trusses	Eurotruss	2	2	8
Spancet, Schakles, bandas de acero, Steel flex y accesorios	Varias	1	24	8
Motores	Chain Master o CM Lodestar	1	1	8
Procesadores audio	L-Acoustics LARACK con LA8	1	3	4

TORRE 21	MARCA	CANTIDAD	UNIDADES	# DE DIAS
Sonido amplificado con LA48 para arreglos de medios altos	L-Acoustics serie V-DOSC	1	6	8
Estructura para cuelgue de sonido	Layher o Gleason	1	2	8
Trusses	Eurotruss	2	2	8
Spancet, Schakles, bandas de acero, Steel flex y accesorios	Varias	1	24	8
Motores	Chain Master o CM Lodestar	1	1	8
Procesadores audio	L-Acoustics LARACK con LA48	1	3	4
Pantalla Led Pitch 6 mm	Ciberlight	1	96	8
Procesador video LVP 605s	Ciberlight	1	2	8
Estructura para cuelgue de pantalla	Layher o Gleason	1	2	8

TORRE 22	MARCA	CANTIDAD	UNIDADES	# DE DIAS
Sonido amplificado con LA48 para arreglos de medios altos	L-Acoustics serie V-DOSC	1	6	8
Estructura para cuelgue de sonido	Layher o Gleason	1	2	8
Trusses	Eurotruss	2	2	8
Spancet, Schakles, bandas de acero,	Varias	1	24	8
Motores	Chain Master o CM Lodestar	1	1	8
Procesadores audio	L-Acoustics LARACK con LA48	1	3	4
Pantalla Led Pitch 6 mm	Ciberlight	1	96	8
Procesador video LVP 605s	Ciberlight	1	2	8
Estructura para cuelgue de pantalla	Layher o Gleason	1	2	8

TORRE 23	MARCA	CANTIDAD	UNIDADES	# DE DIAS
Sonido amplificado con LA48 para arreglos de medios altos	L-Acoustics serie V-DOSC	1	6	8
Estructura para cuelgue de sonido	Layher o Gleason	1	2	8
Trusses	Eurotruss	2	2	8
Spancet, Schakles, bandas de acero,	Varias	1	24	8
Motores	Chain Master o CM Lodestar	1	1	8
Procesadores audio	L-Acoustics LARACK con LA48	1	3	4

TORRE 24	MARCA	CANTIDAD	UNIDADES	# DE DÍAS
Sonido amplificado con LA48 para arreglos de medios altos	L-Acoustics serie V-DOSC	1	6	8
Estructura para cuelgue de sonido	Layher o Gleason	1	2	8
Trussés	Eurotruss	2	2	8
Spancet, Schakles, bandas de acero,	Varias	1	24	8
Motores	Chain Master o CM Lodestar	1	1	8
Procesadores audio	L-Acoustics LARACK con LA48	1	3	4

TORRE 25	MARCA	CANTIDAD	UNIDADES	# DE DÍAS
Sonido amplificado con LA48 para arreglos de medios altos	L-Acoustics serie V-DOSC	1	6	8
Estructura para cuelgue de sonido	Layher o Gleason	1	2	8
Trusses	Eurotruss	2	2	8
Spancet, Schakles, bandas de acero, Steel flex y accesorios	Varias	1	24	8
Motores	Chain Master o CM Lodestar	1	1	8
Procesadores audio	L-Acoustics LARACK con LA48	1	3	4

TORRE 26	MARCA	CANTIDAD	UNIDADES	# DE DÍAS
Sonido amplificado con LA48 para arreglos de medios altos	L-Acoustics serie V-DOSC	1	6	8
Estructura para cuelgue de sonido	Layher o Gleason	1	2	8
Trusses	Eurotruss	2	2	8
Spancet, Schakles, bandas de acero, Steel flex y accesorios	Varias	1	24	8
Motores	Chain Master o CM Lodestar	1	1	8
Procesadores audio	L-Acoustics LARACK con LA48	1	3	4

TORRE 27	MARCA	CANTIDAD	UNIDADES	# DE DIAS
Sonido amplificado con LA48 para arreglos de medios altos	L-Acoustics serie V-DOSC	1	6	8
Estructura para cuelgue de sonido	Layher o Gleason	1	2	8
Trusses	Eurotruss	2	2	8
Spancet, Schakles, bandas de acero, Steel flex y accesorios	Varias	1	24	8
Motores	Chain Master o CM Lodestar	1	1	8
Procesadores audio	L-Acoustics LARACK con LA48	1	3	4

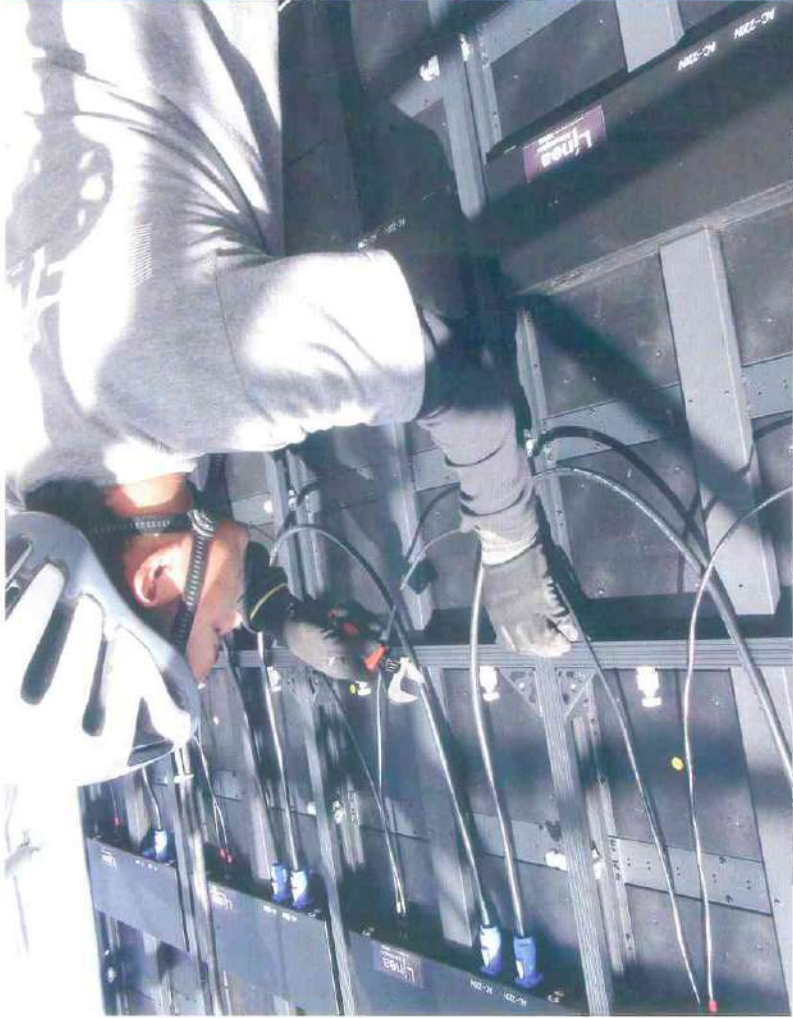
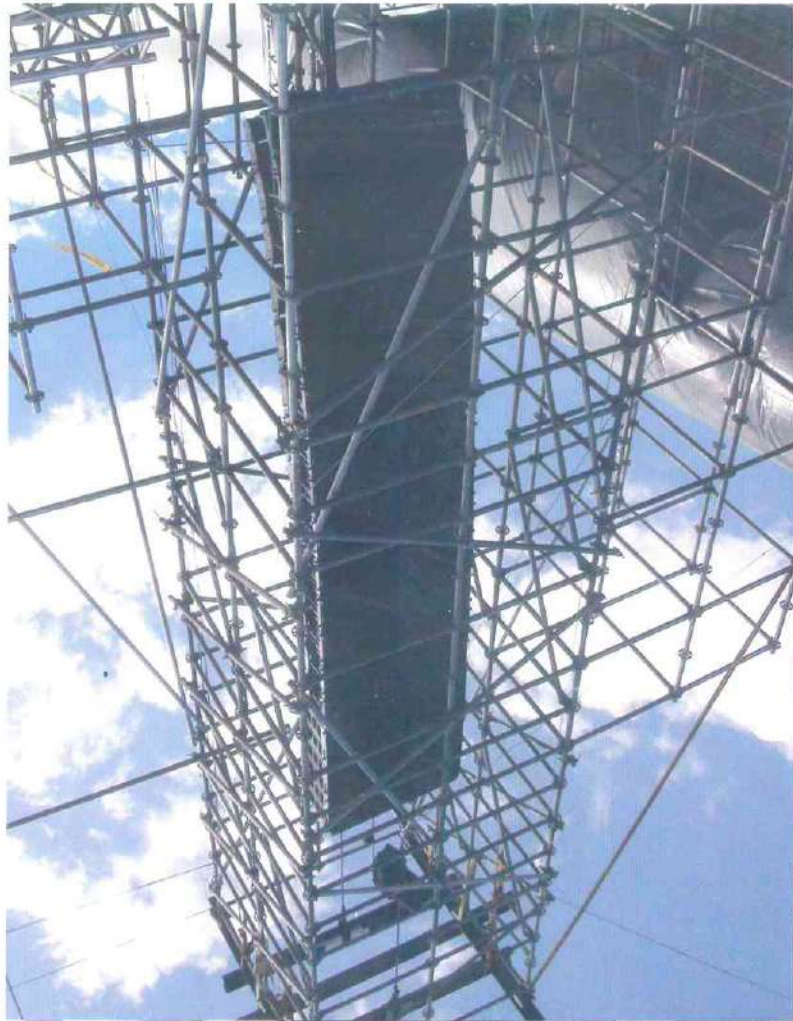
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Estructura para cuelgue de sonido	Layher o Gleason	1	2	8
Trusses	Eurotruss	2	2	8
Spancet, Schakles, bandas de acero,	Varias	1	24	8
Motores	Chain Master o CM Lodestar	1	1	8
Procesadores audio	L-Acoustics LARACK con LA48	1	3	4

VALOR TOTAL

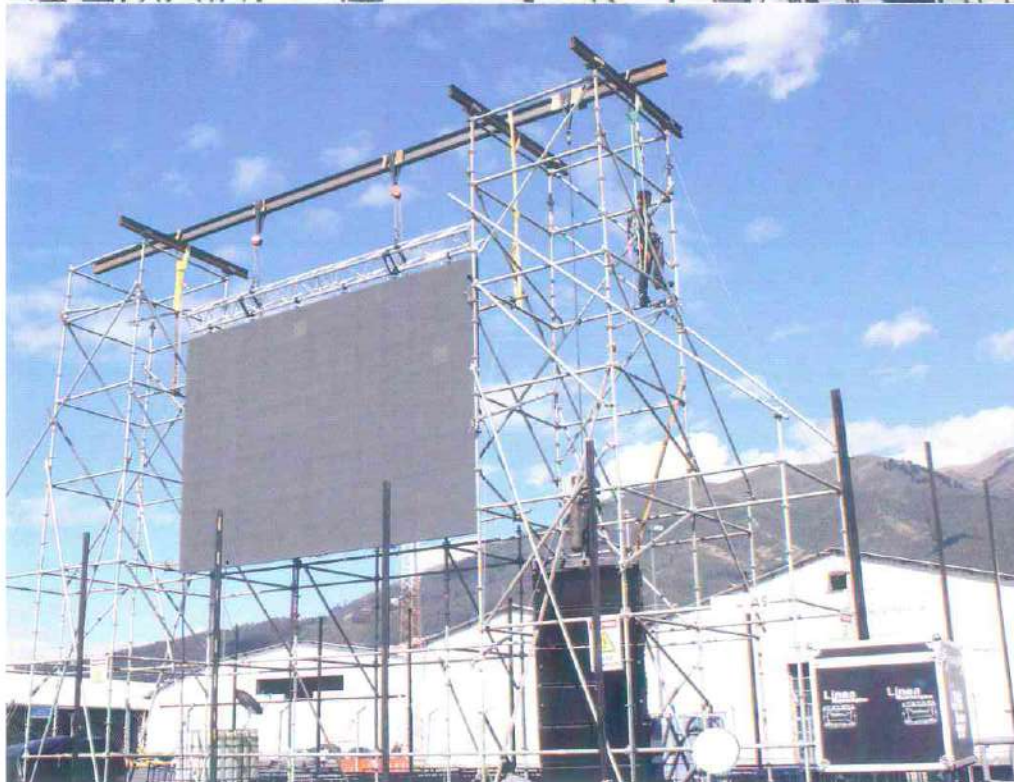
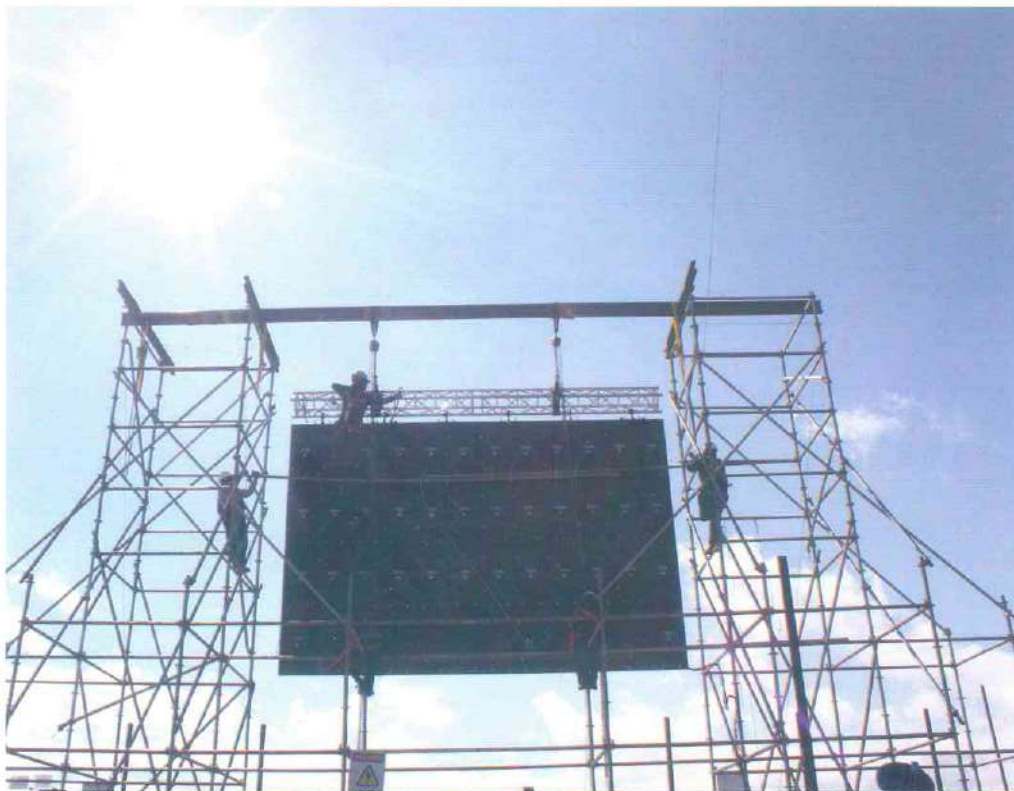
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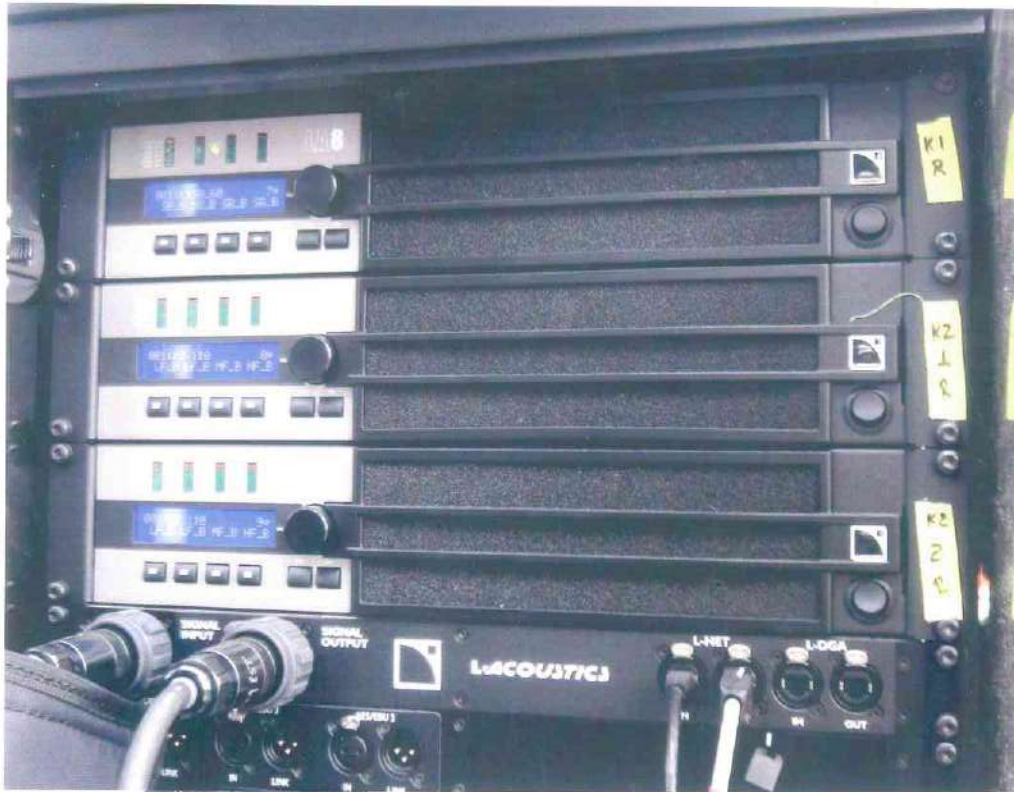
REGISTRO FOTOGRAFICO MONTAJE VISITA PAPAL, REPÚBLICA DEL ECUADOR 2015







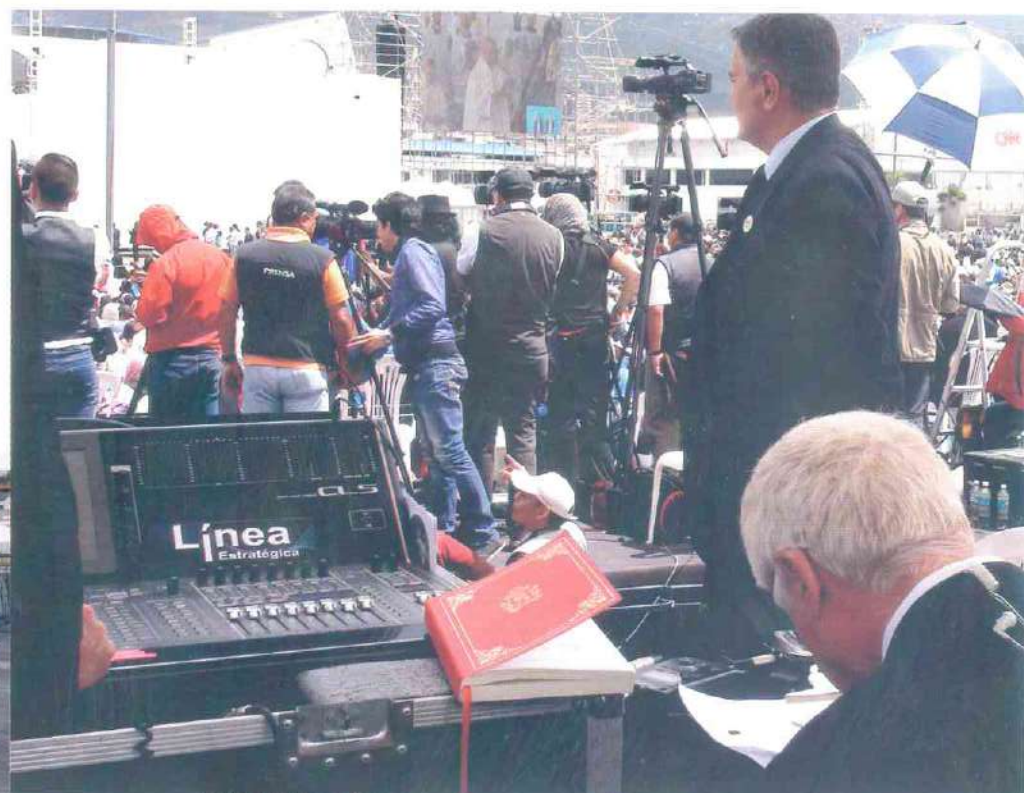


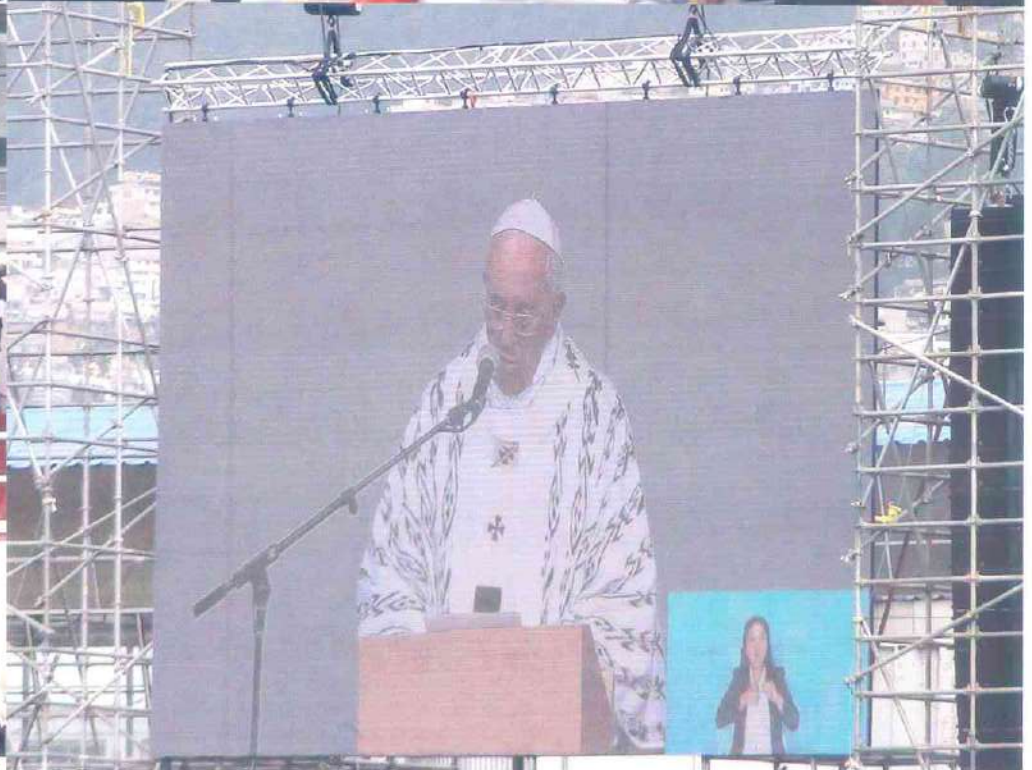


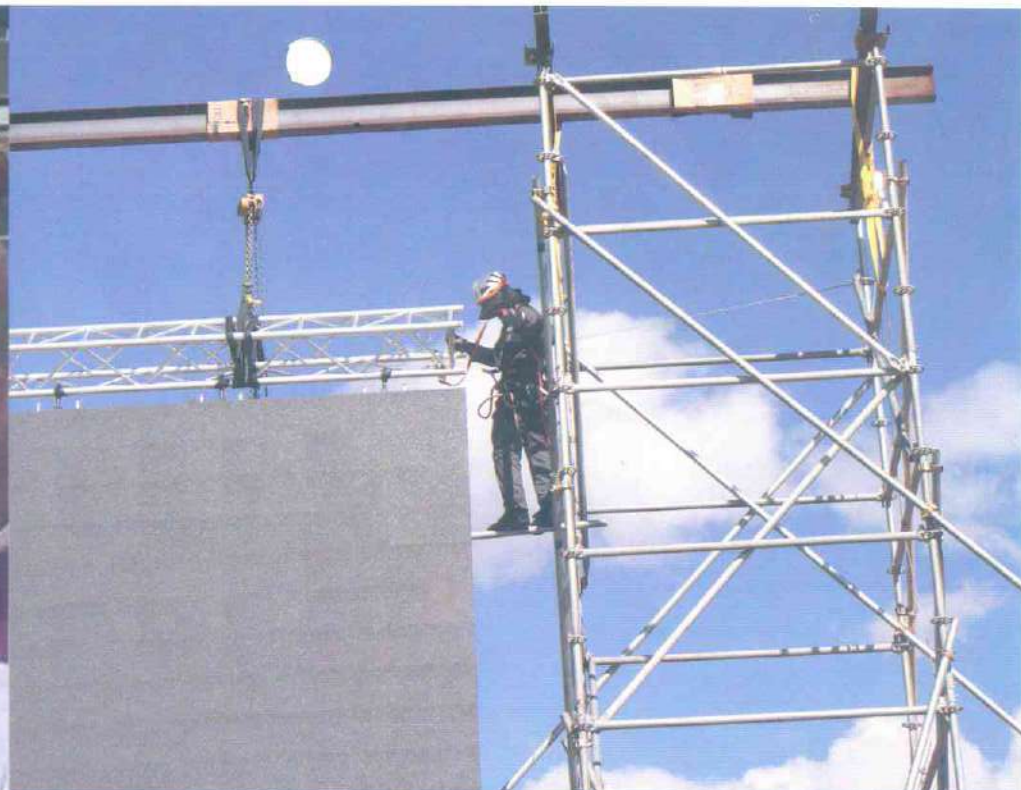










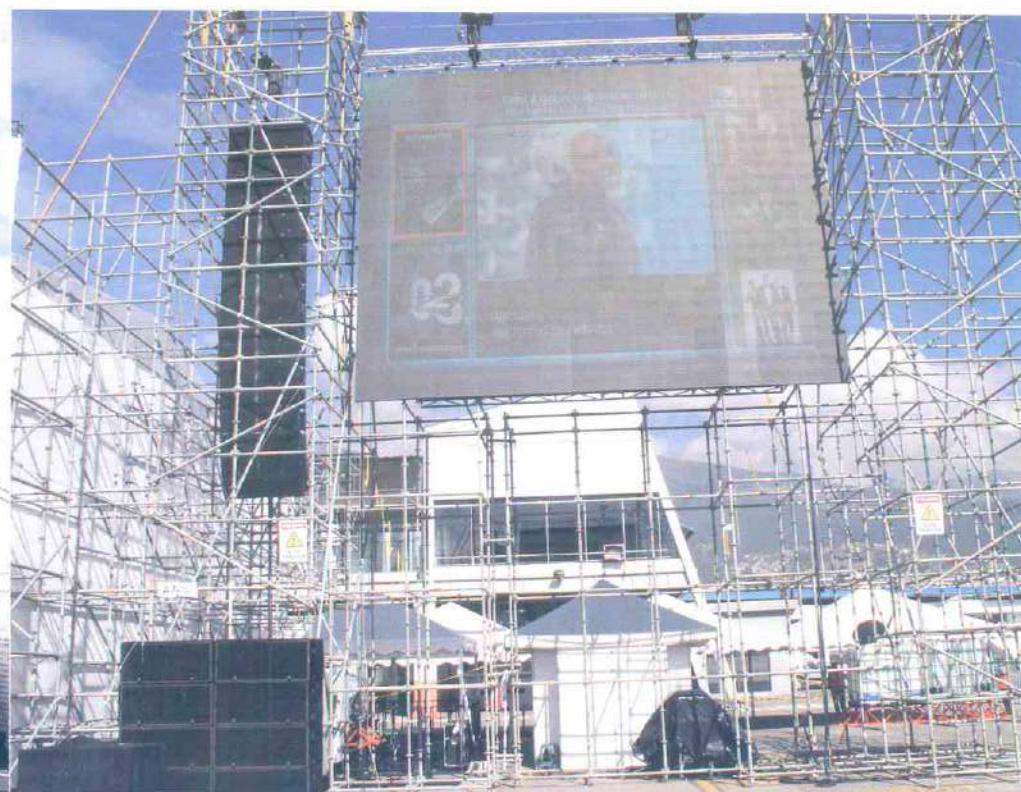


Linea

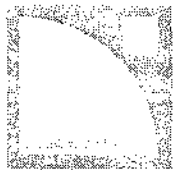


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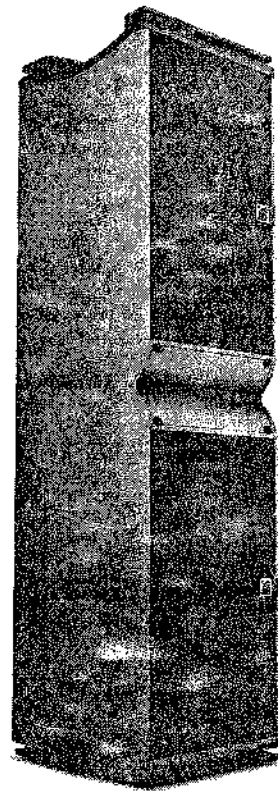


FICHA TÉCNICA DE EQUIPOS DE AUDIO



CONFIGURATION AND KIT LIST

K2-KS28



K2-KS28
(LA12X)

Date : 04/2018

www.farnell.com

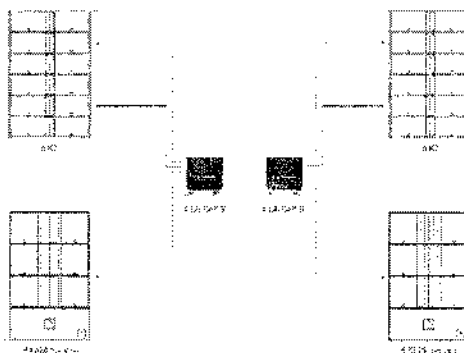
13, rue de la Courbe d'Orléans • 91402 Marcoussis Cedex • France • Ph : +33 (0)1 69 63 60 60 • Fax : +33(0)1 69 63 60 61 • Email : info@farnell.com 1/4



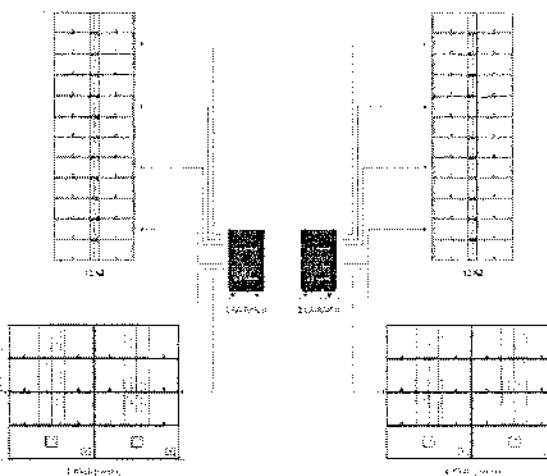
CONFIGURATION AND KIT LIST

K2-KS28

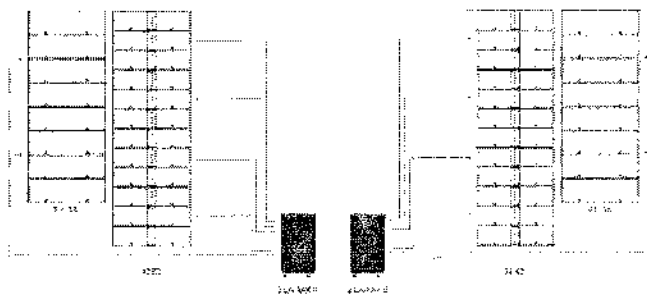
12 K2 & KS28

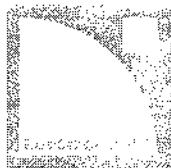


24 K2 & KS28



24 K2 & K1-SB

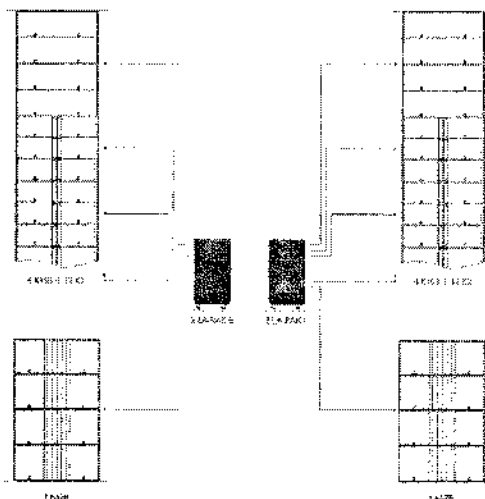




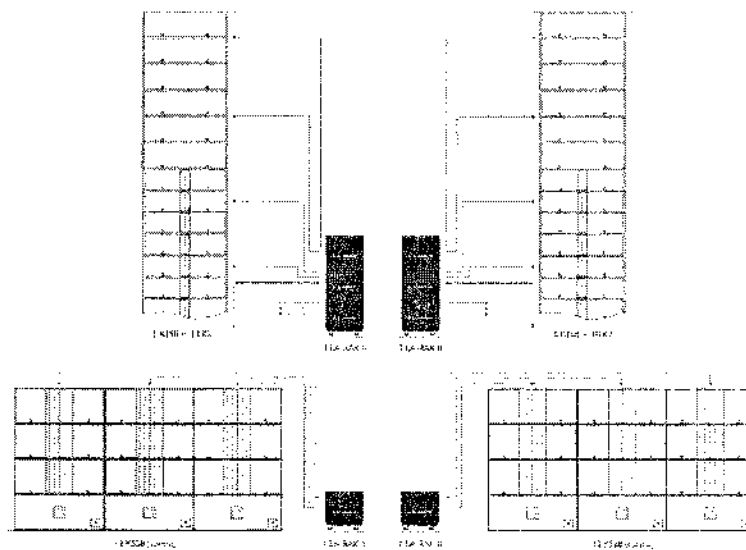
CONFIGURATION AND KIT LIST

K2-KS28

24 K2 & HYBRID K1-SB/KS28



36 K2 & HYBRID K1-SB/KS28 THROW



K2-KS28-EN-2016

K2 Architect and Engineer Specifications

K2

The system shall consist of a 3-way active enclosure quad-amplified design using the Wavefront Sculpture Technology (WST) and driven and protected by a dedicated amplified controller.

The enclosure shall feature two direct radiating 12" neodymium LF transducers, each mounted in a bass-reflex enclosure, four direct radiating 6.5" MF neodymium transducers, and three 3" neodymium diaphragm compression HF drivers coupled to individual DOSC waveguides.

The usable system bandwidth shall be 35 Hz to 20 kHz (-10 dB).

The horizontal directivity pattern generated by the K-shape coplanar loudspeaker configuration shall be adjustable through the combination of presets and a mechanical system. The available settings shall be symmetrical (90° or 70°) or asymmetrical (90° as 35°/55° or 55°/35°). In line source mode, the system shall be curved up to a maximum of 10° for each element without breaking the wavefront.

Maximum SPL shall be 147 dB (peak level measured at 1 m under free field conditions using pink noise with crest factor 4). The long term RMS handling capacity shall be 2 x 450 W for both LF sections, 320 W for the MF section, and 160 W for the HF section. The impedance of the LF and MF sections shall be 8 Ω. The impedance of the HF section shall be 16 Ω.

The enclosure cabinet construction shall consist of first grade Baltic birch plywood. The front of the enclosure shall be protected by a steel grill with anti-corrosion coating covered with an acoustically neutral 3D fabric. The dimensions shall be 1338 mm (52.7 in) wide, 354 mm (14 in) high at the front, 286 mm (11.3 in) high at the back, 400 mm (15.8 in) deep and the enclosure weight shall be 56 kg (123.2 lb). The enclosure shall be rigged using internal hardware and connected using two parallel 8-point PA-COM sockets.

K1-SB

The system shall consist of a subwoofer enclosure driven and protected by a dedicated amplified controller.

The enclosure shall feature two 15" weather-resistant low-frequency transducers, in a bass-reflex tuned enclosure.

Dedicated presets shall allow two distinct applications of the enclosure with the main line source. The enclosure shall be used as an LF line source extension to enhance the LF throw. The enclosure shall be used as a subwoofer to reinforce the LF contour and extend the system bandwidth down to 30 Hz (-10 dB). Both applications of the enclosure can be combined in the same configuration.

Maximum SPL shall be 145 dB (peak level at 1 m under half space conditions using pink noise with crest factor 4). The long term RMS handling capacity shall be 1200 W at the nominal impedance of 4 Ω.

The enclosure cabinet construction shall consist of first grade Baltic birch plywood. The dimensions shall be 438 mm (17.1 in) height, 1342 mm (52.8 in)

width, and 520 mm (20.5 in) depth. The enclosure weight shall be 83 kg (183 lb). The front of the enclosure shall be protected by a steel grill with anti-corrosion coating covered with acoustically neutral 3D fabric.

The enclosure shall include internal hardware for rigging and shall be used in conjunction with dedicated rigging accessories. It shall be arrayable with a full-range line source without breaking the wavefront. The enclosure shall be connected via one 4-point speakON connector.

KS28

The system shall consist of a subwoofer driven and protected by a dedicated amplified controller.

The subwoofer shall feature two 18" weather-resistant low frequency transducers including cone drivers and vented neodymium magnets, mounted in a bass-reflex tuned enclosure.

The LF limit shall be 25 Hz (-10 dB).

The subwoofer shall be usable in standard or cardioid configuration.

The maximum SPL shall be 143 dB (peak level at 1 m under half space conditions using pink noise with crest factor 4). The long term RMS handling capacity shall be 1000 W at the nominal 4 Ω impedance.

The subwoofer cabinet construction shall consist of first grade Baltic beech and birch plywood. The dimensions shall be 565 mm (22.2 in) height, 1351 mm (53.2 in) width, and 719 mm (28.3 in) depth. The subwoofer weight shall be 79 kg (174 lb). The front of the subwoofer shall be protected by a steel grill with anti-corrosion coating covered with acoustically neutral fabric.

The subwoofer shall include a flush-fitting 2-point rigging system. The dedicated lifting beam shall allow flying up to 16 subwoofers. Two ground runners and eight corner stops shall allow stacking the subwoofer in horizontal and vertical position. The subwoofer shall be connected via one 4-point speakON connector.

SB28

The system shall consist of a subwoofer enclosure driven and protected by a dedicated amplified controller.

The subwoofer shall feature two 18" weather-resistant low-frequency cone drivers with a massive vented structure, mounted in a bass-reflex tuned enclosure. .

The LF limit shall be 25 Hz (-10 dB).

The subwoofer shall be used in standard or cardioid configuration.

The maximum SPL shall be 142 dB (peak level at 1 m under half space conditions using pink noise with crest factor 4). The long term RMS handling capacity shall be 1225 W at the nominal impedance of 4 Ω .

The subwoofer cabinet construction shall consist of first grade Baltic birch plywood. The dimensions shall be 550 mm (21.7 in) height, 1300 mm (51.2 in) width, and 700 mm (27.6 in) depth. The subwoofer weight shall be 93 kg (205 lb). The front of the subwoofer shall be protected by a steel grill with anti-corrosion coating covered with acoustically neutral 3D fabric.

The subwoofer shall feature integrated rigging rails and shall be flown with dedicated rigging accessories. The subwoofer shall be connected via one 4-point speakON connector.

LA4X

The amplified controller shall incorporate a 4-input x 4-output DSP architecture and deliver an output power of 4 x 1000 W RMS for 4 / 8 ohms (1% THD) in a compact rack-mountable 19" wide and 2U high chassis. The amplified controller shall provide class D amplification and shall operate from 20 Hz to 20 kHz. Heat dissipation shall be performed by means of two temperature controlled fans. The amplified controller weight shall be 11.3 kg / 24.9 lb.

An on-board factory library of loudspeaker presets and 10 user memory locations shall be available. The amplified controller shall incorporate two Ethernet connections for remote control and monitoring. Those connections shall be ready for future support of AVB audio networks, with both listener and bridge functionalities. The amplified controller shall feature a local user interface and a built-in connection panel for input signals and speaker output. The amplified controller shall have four 4-point speakON for loudspeaker connections. The amplified controller shall include a card dedicated to digital AES/EBU signals.

The amplified controller shall incorporate a universal SMPS power supply with PFC and shall be able to operate automatically on either 100 V / 240 V ($\pm 10\%$) mains supply. The amplified controller mains input power shall not exceed 3 A / 750 W when all four channels are driven at 1/8 of the maximum output power.

The amplified controller shall feature four cascaded 24-bit A/D converters and one 32-bit floating point DSP operating at a sampling frequency of 96 kHz. DSP shall feature dual IIR/FIR filter topologies, an adjustable output delay from 0 ms to 1000 ms, a contour EQ filter, an air absorption compensation filter, and loudspeaker thermal and over-excursion protection. Total I/O system latency shall be set for both analog and digital input signals at 3.84 ms in standard operating mode and down to 0.76 ms in low latency operating mode. The amplified controller shall allow unitary tests of loudspeaker sections using an embedded impedance measurement tool.

A protocol operating at a minimum speed of 100 Mbps/s shall allow the set-up of a network composed by up to 253 amplified controllers in a star, daisy chain or hybrid topology. The physical connection between the units of the network (a master computer and the amplified controllers) shall be achieved via CAT5e U/FTP (or higher) cables connected to etherCON connectors.

A network manager software shall allow monitoring and control of the connected units and shall be able to run on Windows and Mac OS X operating systems. Monitoring shall include component load, signal level, limiter activity, clipping and network or amplified controller fault. Control shall cover preset management, gain, mute, delay and system contour EQ.

LA8

The amplified controller shall incorporate a 2-input x 4-output DSP architecture and deliver an output power of 4 x 1800 W RMS for 4 / 2.7 ohms (1% THD) in a compact rack-mountable 19" wide and 2U high chassis. The amplified controller shall provide class D amplification and shall operate from 20 Hz to 20 kHz. Heat dissipation shall be performed by means of two temperature controlled fans. The amplified controller weight shall be 12.2 kg / 26.9 lb.

The amplified controller shall incorporate a local user interface, an on-board factory loudspeaker preset library and 10 user memory locations, two Ethernet connections for remote control and monitoring and a built-in connection panel for input signals and speaker outputs. The amplified controller shall have two 4-point speakON and one 8-point CA-COM connector for loudspeaker connections. The amplified controller shall include a card dedicated to digital AES/EBU signals.

The amplified controller shall incorporate a SMPS power supply and shall be able to operate automatically on either 120 V / 230 V ($\pm 10\%$) mains supply or 100 V / 200 V ($\pm 10\%$) mains supply for the Japanese version.

The amplified controller shall feature two cascaded 24-bit A/D converters and one 32-bit floating point DSP operating at a sampling frequency of 96 kHz. DSP shall feature dual IIR/FIR filter topologies, an adjustable output delay from 0 ms to 680 ms, a contour EQ filter, an air absorption compensation filter, and loudspeaker thermal and over-excursion protection. Total I/O system latency shall be set for both analog and digital input signals at 3.84 ms in standard operating mode and down to 1.19 ms in low latency operating mode.

A protocol operating at a minimum speed of 100 Mbps/s shall allow the set-up of a network composed by up to 253 amplified controllers in a star, daisy chain or hybrid topology. The physical connection between the units of the network (a master computer and the amplified controllers) shall be achieved via CAT5e U/FTP (or higher) cables connected to RJ45 Ethernet connectors.

A network manager software shall allow monitoring and control of the connected units and shall be able to run on Windows and Mac OS X operating systems. Monitoring shall include component load, signal level, limiter activity, clipping and network or amplified controller fault. Control shall cover preset management, gain, mute, delay and system contour EQ.

LA12X

The amplified controller shall incorporate a 4-input x 4-output DSP architecture and deliver an output power of 4 x 2600 W RMS for 4 ohms (1% THD) in a compact rack-mountable 19" wide and 2U high chassis. The amplified controller shall provide class D amplification and shall operate from 20 Hz to 20 kHz. Heat dissipation shall be performed by means of three temperature controlled fans. The amplified controller weight shall be 14.5 kg (32 lb).

An on-board factory library of loudspeaker presets and 10 user memory locations shall be available. The amplified controller shall incorporate two Ethernet connections for remote control and monitoring. Those connections shall be ready for future support of AVB audio networks, with both listener and bridge functionalities. The amplified controller shall feature a local user interface and a built-in connection panel for input signals and speaker output. The amplified controller shall have two 4-point speakON and one 8-point CA-COM connector for loudspeaker connections. The amplified controller shall feature two AES/EBU inputs with active link ports and failsafe relays.

The amplified controller shall incorporate a universal SMPS power supply with PFC and shall be able to operate automatically from 100 V to 240 V ($\pm 10\%$) mains supply. The amplified controller mains input power shall not exceed 8.1 A / 1850 W when all four channels are driven at 1/8 of the maximum output power.

The amplified controller shall feature four cascaded 24-bit A/D converters and two 32-bit floating point DSP operating at a sampling frequency of 96 kHz. DSP shall feature dual IIR/FIR filter topologies, an adjustable output delay from 0 ms to 1000 ms, a contour EQ filter, an air absorption compensation filter, and loudspeaker thermal and over-excursion protection. Total I/O system latency shall be set for both analog and digital input signals at 3.84 ms in standard operating mode and down to 0.76 ms in low latency operating mode. The amplified controller shall allow unitary tests of loudspeaker sections using an embedded impedance measurement tool.

A protocol operating at a maximum speed of 1 Gb/s shall allow the set-up of a network composed by up to 253 amplified controllers in a star, daisy chain or hybrid topology. The physical connection between the units of the network (a

master computer and the amplified controllers) shall be achieved via CAT5e U/FTP (or higher) cables connected to etherCON connectors.

A network manager software shall allow monitoring and control of the connected units and shall be able to run on Windows and Mac OS X operating systems. Monitoring shall include component load, signal level, limiter activity, clipping and network or amplified controller fault. Control shall cover preset management, gain, mute, delay and system contour EQ.

References

loudspeaker system	K2
arrayable LF extension	K1-SB
subwoofer	K1-SB
	SB28
	KS28
rigging accessories	K2-BUMP
	K2-BAR
	K2-RIGBAR
amplified controllers	LA4X
	LA8
	LA12X
control software	LA Network Manager

The response curves of the systems are available upon request by applications@l-acoustics.com.

**Delay values**

Do not forget to add the pre-alignment and geometric delays depending on the configuration.



When using [K2] with [K1SB_X K2], do not add any delay value between the K2 and K1-SB elements of a same line source.

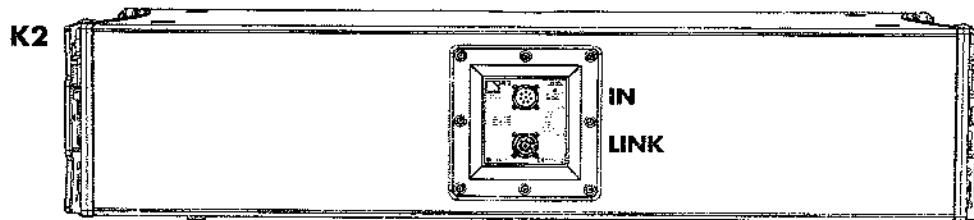
Pre-alignment delays

[K2] + [SB28_60]	K2 = 0 ms	SB28 = 6 ms	
[K2] + [SB28_60_C]	K2 = 0 ms	SB28 = 0.5 ms	
[K2] + [K1SB_60] + [SB28_60]	K2 = 8 ms	K1-SB = 2 ms	SB28 = 0 ms
[K2] + [K1SB_60] + [SB28_60_C]	K2 = 13.5 ms	K1-SB = 7.5 ms	SB28 = 0 ms

Loudspeaker connection

Connectors

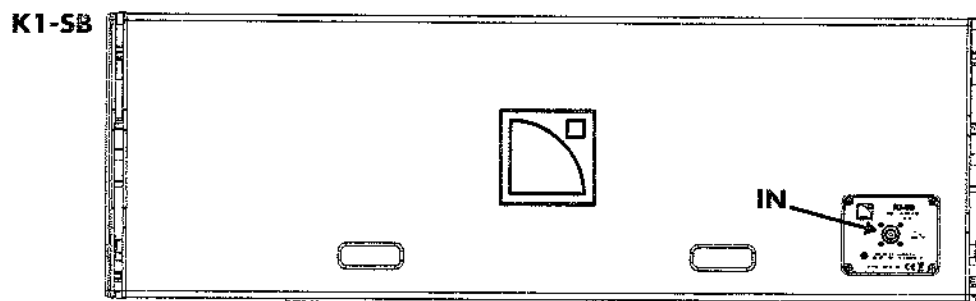
The K2 is equipped with two 8-point PA-COM connectors.



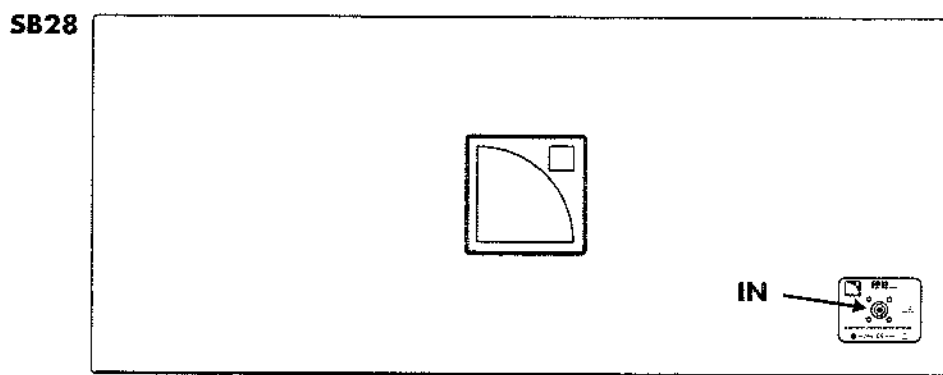
Internal pinout for L-Acoustics 3-way active enclosures

PA-COM points	A/B	C/D	E/F	G/H
Transducer connectors	left LF	right LF	MF	HF

The K1-SB is equipped with one 4-point speakON connector.



The SB28 is equipped with one 4-point speakON connector.



Internal pinout for L-Acoustics subwoofers

speakON points	1 +	1 -	2 +	2 -
Transducer connectors	LF +	LF -	Not linked	Not linked

Connection to LA4X

Maximum number of enclosures per LA4X

enclosure	max enclosures in parallel *	max enclosures per controller
K2	1	1

* For passive loudspeakers, the value corresponds to the number of enclosures in parallel on the output. For active loudspeakers, the value corresponds to the number of sections in parallel on the output.

Impedance load

K2

1 enclosure: LF 8 Ω / MF 8 Ω / HF 16 Ω

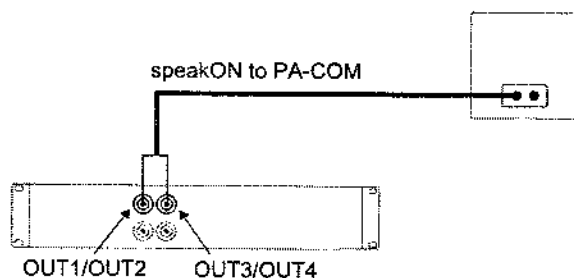
Connecting 3-way active enclosures

custom speakON-to-PA-COM on speakON output



L-Acoustics does not supply the speakON-to-PA-COM interface.

It must be built with two 4-point speakON connectors and a female 8-point PA-COM connector (no cable clamp).



Connection to LA8

Maximum number of enclosures per LA8

enclosure	max enclosures in parallel *	max enclosures per controller
K2	3	3
K1-SB	1	4
SB28	1	4

* For passive loudspeakers, the value corresponds to the number of enclosures in parallel on the output. For active loudspeakers, the value corresponds to the number of sections in parallel on the output.

Impedance load

K2

1 enclosure: LF 8 Ω / MF 8 Ω / HF 16 Ω

2 enclosures in parallel: LF 4 Ω / MF 4 Ω / HF 8 Ω

3 enclosures in parallel: LF 2.7 Ω / MF 2.7 Ω / HF 5.2 Ω

SB28 K1-SB

1 enclosure: 4 Ω

Preset description

[K2 70] [K2 90] [K2 110]

loudspeaker elements	outputs	channels	routing	gain	delay	polarity	mute
left LF	OUT 1	LF	IN A	0 dB	0 ms	+	ON
right LF	OUT 2	LF					ON
MF	OUT 3	MF					ON
HF	OUT 4	HF					ON

[K15B_60] [K15B_X K2] [SB28_60]

outputs	channels	routing	gain	delay	polarity	mute
OUT 1	SB	IN A	0 dB	0 ms	+	ON
OUT 2	SB	IN A	0 dB	0 ms	+	ON
OUT 3	SB	IN A	0 dB	0 ms	+	ON
OUT 4	SB	IN A	0 dB	0 ms	+	ON

[SB28_60_C]

loudspeaker elements	outputs	channels	routing	gain	delay	polarity	mute
SR	OUT 1	SR	IN A	0 dB	0 ms	+	ON
SB	OUT 2	SB					ON
SB	OUT 3	SB					ON
SB	OUT 4	SB					ON

Recommendation for speaker cables

Follow the recommended maximum length for loudspeaker cables to ensure minimal SPL attenuation.



Cable quality and resistance

Only use high-quality fully insulated speaker cables made of stranded copper wire.

Use cables with a gauge offering low resistance per unit length and keep the cables as short as possible.

The table below provides the recommended maximum length for loudspeaker cables depending on the cable gauge and on the impedance load connected to the amplifier.

cable gauge			recommended maximum length					
			8 Ω load		4 Ω load		2.7 Ω load	
mm ²	SWG	AWG	m	ft	m	ft	m	ft
2.5	15	13	30	100	15	50	10	33
4	13	11	50	160	25	80	17	53
6	11	9	74	240	37	120	25	80

For your installation projects, you can use the more detailed L-ACOUSTICS calculation tool to evaluate cable length and gauge based on the type and number of enclosures connected. The calculation tool is available on our website:

<http://www.l-acoustics.com/installation-outils-de-calcul-137.html>

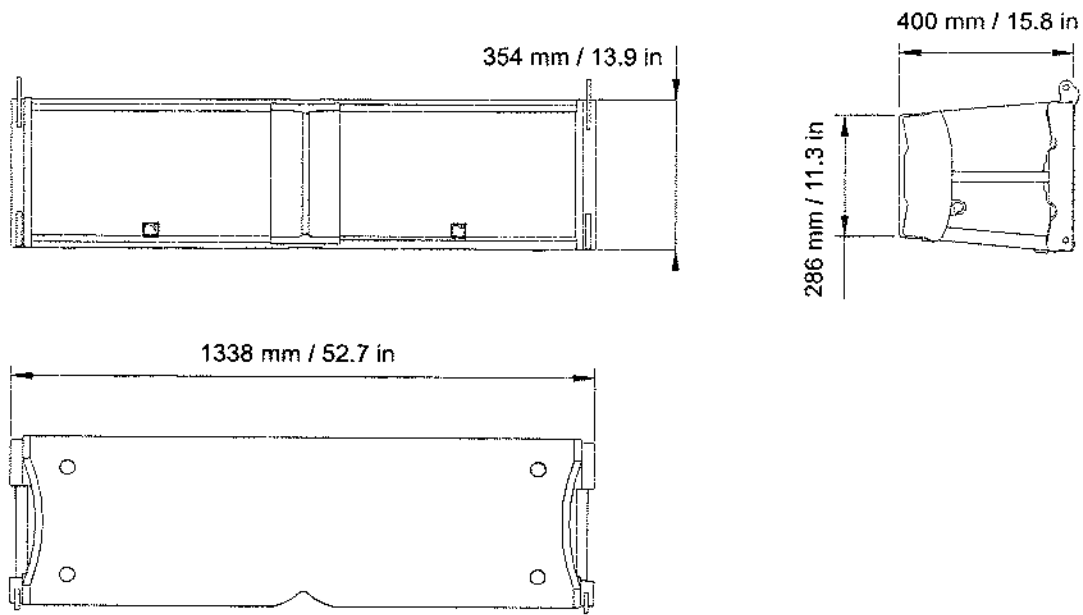
Specifications

K2 specifications

Description	3-way full-range active WST enclosure, quad-amplified by LA4X / LA8
Usable bandwidth (-10 dB)	35 Hz - 20 kHz ([K2 70])
Maximum SPL¹	147 dB ([K2 70])
Nominal directivity	horizontal: 110° / 70° symmetric or 90° asymmetric (35°/55° or 55°/35°) vertical: dependent upon the number of elements and the line source curvature
Transducers	LF: 2 x 12" MF: 4 x 6.5" HF: 2 x 3" diaphragm compression driver
Acoustical load	LF: bass-reflex, L-Vents MF: bass-reflex HF: DOSC waveguides
Nominal impedance	LF: 2 x 8 Ω MF: 8 Ω HF: 16 Ω
Connectors	IN: 1 x 8-point PA-COM LINK: 1 x 8-point PA-COM
Rigging and handling	captive 4-point rigging system inter-enclosure angles: 0.25°, 1°, 2°, 3°, 4°, 5°, 7.5° or 10°
Weight (net)	56 kg / 123.2 lb
Cabinet	first grade Baltic birch plywood
Front	steel grill with anti-corrosion coating acoustically neutral 3D fabric
Rigging components	high grade steel with anti-corrosion coating
Finish	dark grey brown Pantone 426C
IP	IP45

¹ Peak level measured at 1 m under free field conditions using pink noise with crest factor 4 (preset specified in brackets).

K2 dimensions

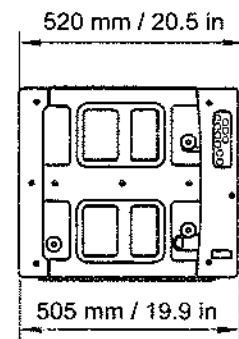
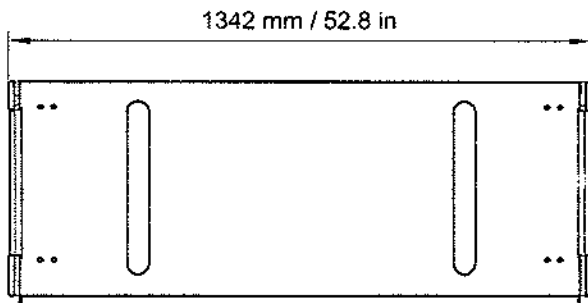
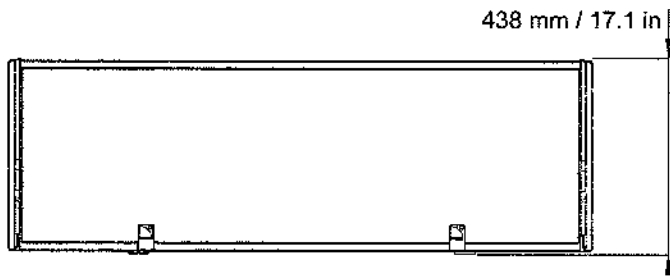
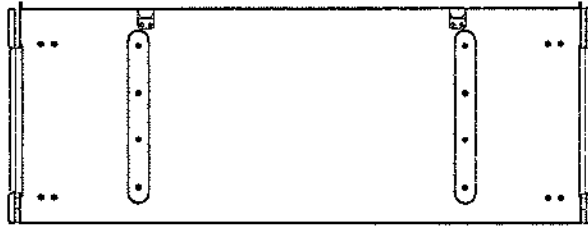


K1-SB specifications

Description	K1-SB system subwoofer 2 x 15", amplified by LA8
Low frequency limit (-10 dB)	30 Hz ([K1SB_60])
Maximum SPL[†]	145 dB ([K1SB_X])
Transducers	2 x 15", 4" coil, magnesium die-cast basket, vented magnet design
Acoustical load	bass-reflex, L-Vents
Nominal impedance	4 Ω
Connectors	IN: 1 x 4-point speakON
Rigging and handling	captive 4-point rigging system inter-enclosure angles: 0°, 0.5°, 1°, 1.5°, 2°, 2.5°, 3°, 4° or 5° handles integrated into the cabinet
Weight (net)	83 kg / 183 lb
Cabinet	first grade Baltic birch plywood
Front	steel grill with anti-corrosion coating acoustically neutral 3D fabric
Rigging components	high grade steel with anti-corrosion coating
Finish	dark grey brown Pantone 426C
IP	IP55

[†] Peak level at 1 m under half space conditions using pink noise with crest factor 4 (preset specified in brackets).

K1-SB dimensions

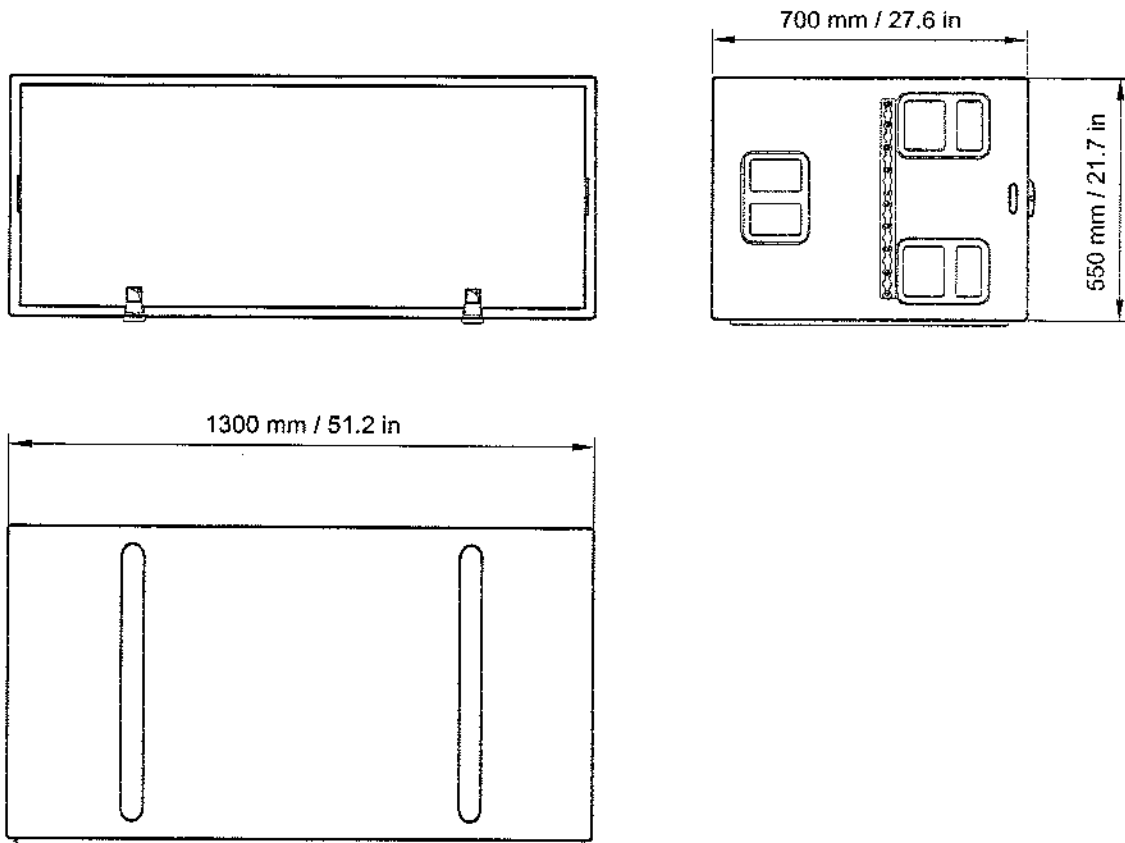


SB28 specifications

Description	high power subwoofer 2x18", amplified by LA8
Low frequency limit (-10 dB)	25 Hz ([SB28_100])
Maximum SPL¹	142 dB ([SB28_100])
Directivity	standard or cardioid
Transducers	2 x 18" neodymium, direct radiation
Acoustical load	bass-reflex, L-Vents
Nominal impedance	4 Ω
Connectors	IN: 1 x 4-point speakON
Rigging and handling	integrated rigging system handles integrated in the cabinet
Weight (net)	93 kg / 205 lb
Cabinet	first grade Baltic birch plywood
Front	steel grill with anti-corrosion coating acoustically neutral 3D fabric
Rigging components	high grade steel with anti-corrosion coating
Finish	dark grey brown Pantone 426C

¹ Peak level at 1 m under half space conditions using pink noise with crest factor 4 (preset specified in brackets).

SB28 dimensions





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SYSTEM COMPONENTS

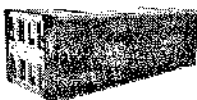
K2^{1,2}

Quad-amplified, full range, 3 way active WST enclosure 2 x 12" + 4 x 6.5" + 2 x 3" DOSC HF. Bandwidth = 35 Hz - 20 kHz.



K1-SB^{1,2}

Low frequency extension cabinet 2 x 15". Used as LF line source element (throw) with LF limit = 35 Hz or subwoofer element (contour) with LF limit = 30 Hz.



SB28^{1,2}

High power subwoofer 2 x 18". LF limit = 25 Hz.



LA8/LA4X/LA-NETWORK MANAGER¹

Amplified controller with DSP library and networking capabilities. Remote control software.



LA-RAK¹

Touring rack for mains, audio and network distribution fitted with 3 LA8 amplified controllers.



SOUNDVISION¹

3D acoustic and mechanical simulation software dedicated to L-ACOUSTICS® products.



K2-BUMP

Rigging frame for flying K2 and LA-RAK. Certified up to 24 x K2 or 16 x K1-SB and 2 x LA-RAK, including adjustable motor chain (1 m) and laser adapter plate.



K2-BAR

Extension bar for K2-BUMP.



K1-DELTA

Rigging accessory for azimuth adjustment with K1-BUMP or K2-BUMP.



K2-RAKMOUNT

4 x Mounting cradle for LA-RAK (including rack stabilizer).



K2-BUMPFLEIGHT

Modular flight case for 2 x K1-BUMP or K2-BUMP (including K2 adapter kit).



K2-CHARIOT - K2-CHARIOTCOV

Chariot for 4 x K2.
Protective cover for 4 x K2 on CHARIOT.



K2-JACK

Pair of stabilizers with adjustable feet to use K2-CHARIOT as a stacking platform.



K2-LINK

Rigging accessory for rear attachment of K2 below K1 or K1-SB or K1-BUMP.



LA-SLING2T

Chain sling with two-leg bridles.
Mandatory element when flying 1 LA-RAK only on top of K2-BUMP.



¹ See product spec sheet for more details. ² Available in white color. ³ Verify the mechanical conformity of any installation using SOUNDVISION.



K2

VARIABLE DIRECTIVITY WAVEFRONT SYSTEM

The L-ACOUSTICS® K1 system has achieved international recognition and is today the prime choice of engineers for the largest stadium tours and outdoor festivals. Its sonic performance, its fully integrated system package and its rider friendliness are considered as the industry benchmarks. With K2, L-ACOUSTICS® offers K1 performance in a rescaled package. The K2 system flexibility makes it suited to both permanent installation and touring applications, from theatre to stadium productions. The main system components are as follows:

- K2, full-range element, with adjustable horizontal directivity, operating from 35 Hz to 20 kHz
- K1-SB, low-frequency element, reinforcing LF contour down to 30 Hz or LF throw down to 35 Hz
- SB28, low-frequency element, extending the operating bandwidth down to 25 Hz
- LA4X/LA8 amplified controllers or LA-RAK, touring rack fitted with three LA8

The 3-way quad amplified design, the transducers resources are among the characteristics giving K2 an exceptional ability to perform in many applications and with a record-breaking performance/weight ratio. Any on-site deployment can be easily and quickly achieved thanks to an extremely ergonomic, fast and captive rigging system.

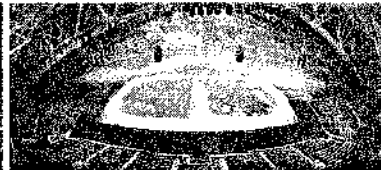
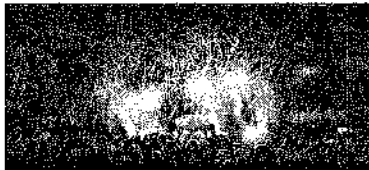
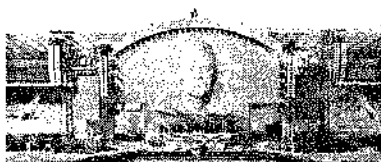
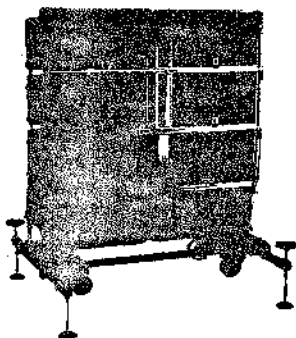
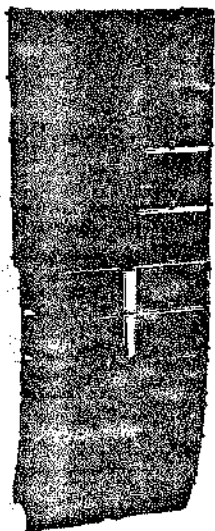
A K2 line source utilizes the unrivalled characteristics of Wavefront Sculpture Technology®. Inter-element angles can be set with laser like accuracy up to a generous 10°, allowing the optimization of the vertical coverage with SPL smoothly spread across the audience. The K2 also features the PANFLEX™ technology, a unique solution for adjusting the horizontal coverage pattern to any audience or room geometry. Four different settings are possible: two symmetric (70° or 110°) and two asymmetric (90° as 35°/55° or 55°/35°).

Thanks to its full range capability, the K2 enclosure can be deployed as a standalone line source. For applications demanding extreme LF impact (contour mode), or maximized LF projection (throw mode), K2 can be arrayed with its dedicated and flyable K1-SB LF extension. The K2 system can also address applications with demanding infrasonic reproduction when combined to the SB28 subwoofer. Before installation, any system configurations can be acoustically and mechanically modeled with SOUNDVISION 3D simulation software.

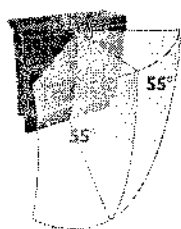
For touring applications, K2 can be associated to the LA-RAK, a universal distribution platform for power, audio signals and network which facilitates cross rental between rental companies. LA-RAK houses three LA8 amplified controllers and can be flown onto a K2 array. Other applications can feature LA8 amplified controllers. For high-end installation projects, K2 can also be driven by the LA4X amplified controller. The scheme authorizes fully discrete DSP treatment per section and maximum power headroom for the best possible sonic performance.

Thanks to dedicated factory presets, the LA8/LA4X amplified controller constitutes an extremely advanced and precise drive system for the enclosures. All L-ACOUSTICS® amplified controllers feature the L-DRIVE, a thermal and over-excursion protection circuit.

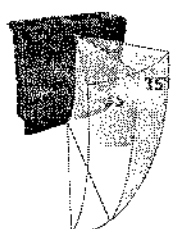
Up to 253 LA8/LA4X amplified controllers can be connected together via the Ethernet-based L-NET protocol. The LA NETWORK MANAGER software allows online remote control and monitoring of all the connected units, via a user-friendly and intuitive graphic interface, and features the Array Morphing EQ. This exclusive tool allows the engineer to quickly adjust the tonal balance of the system to reach a reference curve or to ensure consistency of the sonic signature.



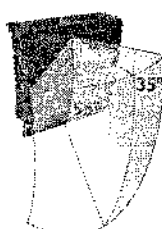
HORIZONTAL DIRECTIVITY



110° Symmetric
Preset [K2 110]



70° Symmetric
Preset [K2 70]



90° Asymmetric
Preset [K2 90]
(35°/55° or 55°/35°)

ABOUT L-ACOUSTICS PANFLEX™

K2 employs the L-ACOUSTICS PANFLEX™, a unique horizontal steering technology which combines mechanically adjustable fins with DSP algorithms effective from 300 Hz.

Narrowing or widening the horizontal directivity can serve many purposes: adapt to the width of the listening area, fit long and short distances coverage/ SPL requirements, reduce or extend overlapping areas, and avoid reflecting surfaces.

By combining WST® and PANFLEX™, L-ACOUSTICS exclusively addresses the control of directivity in both vertical and horizontal planes. As a result K2 can match the complex shape of any audience geometry with best sonic performance and minimum noise pollution.

LINE SOURCE CONFIGURATIONS

K2 LINE SOURCE

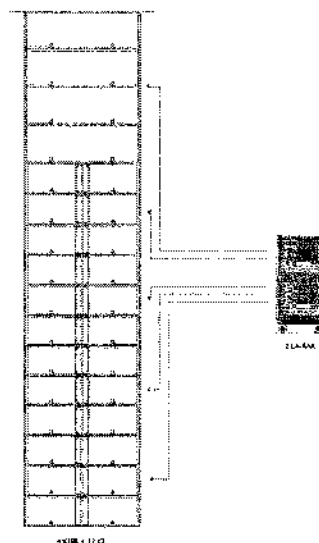
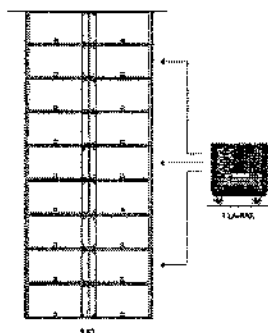
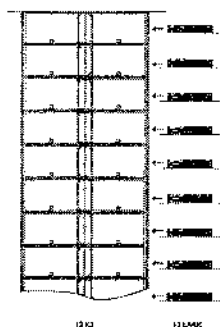
Deployed as a standalone line source, a K2 system operates over the nominal bandwidth of the K2 enclosure, with an adjustable horizontal directivity. An LA4X can drive 1 K2 enclosure. An LA8 can drive up to 3 K2 enclosures.

Presets: K2 line source: [K2 110] or [K2 70] or [K2 90]

K2/K1-SB LINE SOURCE

Deployed with K1-SB as additional LF line source elements, the K2 system provides an enhanced LF throw. An LA8 can drive up to 3 K2 enclosures or 4 K1-SB.

Presets: K2 line source: [K2 110] or [K2 70] or [K2 90]
K1-SB, as an LF line source element: [K1SB_X K2]

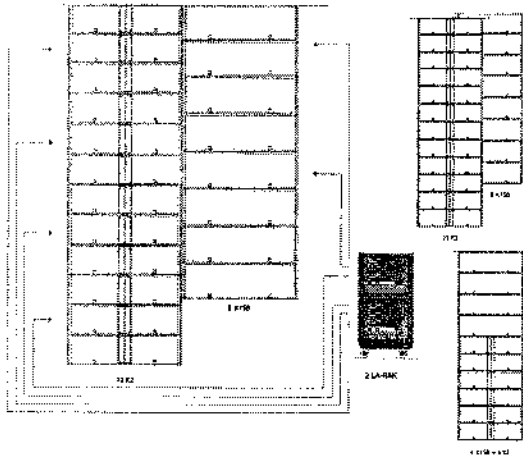


ADDITIONAL SUBWOOFER

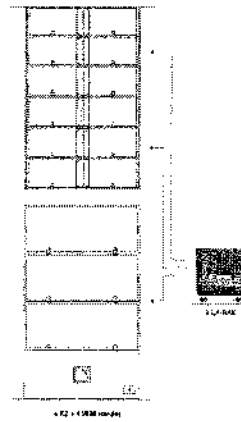
A K2 line source or a K1-SB/K2 line source can be deployed with additional K1-SB or SB28 subwoofers to provide increased sub-low resources to demanding applications (reinforced LF contour and extended bandwidth). Recommended ratio is 2 subwoofers for 3 K2. An LA8 can drive up to 3 K2 enclosures or 4 K1-SB or 4 SB28.

Preset: *K1-SB as a subwoofer: [K1SB_60]*
SB28: [SB28_60] or [SB28_60_C]

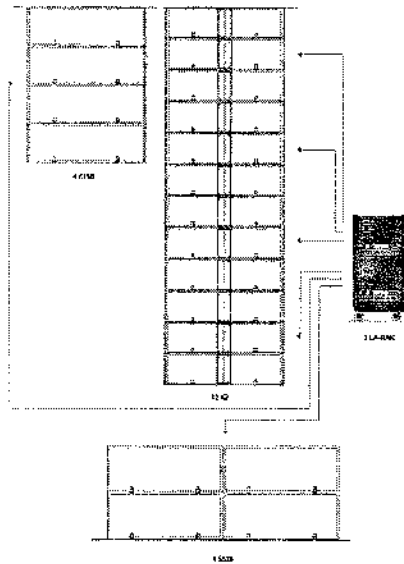
K2 LINE SOURCE + COUPLED K1-SB



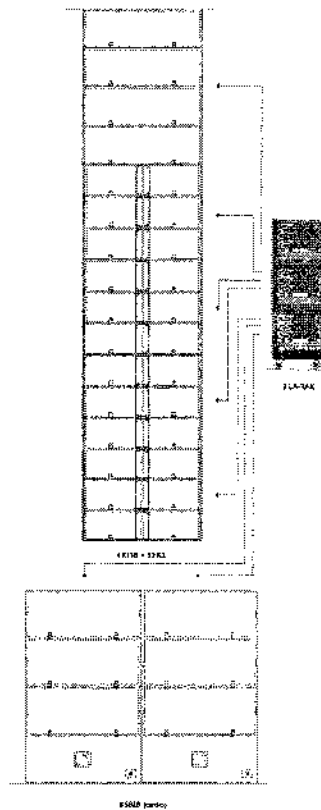
K2 LINE SOURCE + SB28



K2 LINE SOURCE + COUPLED K1-SB + SB28



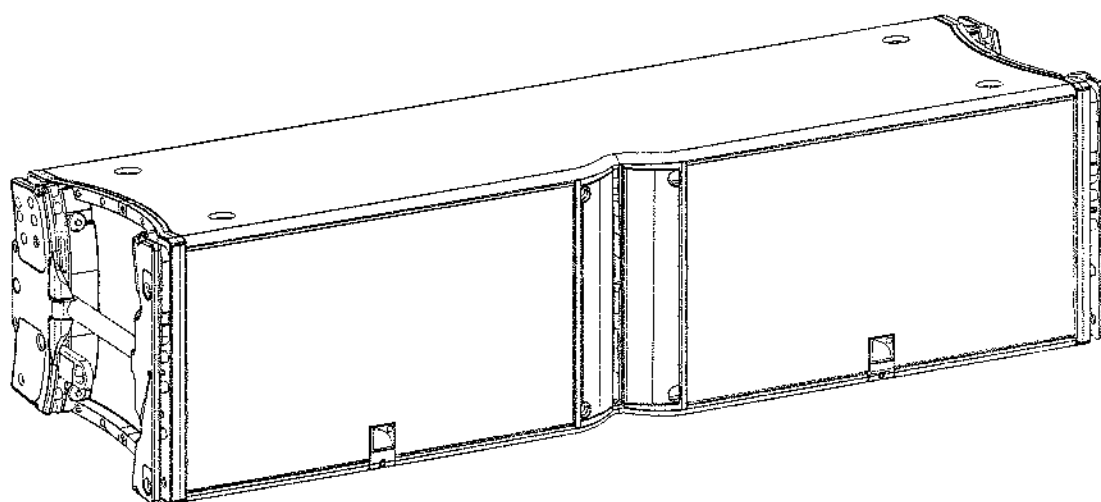
K2/K1-SB LINE SOURCE + SB28



K2/SB28



user manual (EN)



Document reference: K2/SB28 user manual (EN) version 6.0

Distribution date: March 7, 2017

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Safety

Instructions



Inspect the product before operation.

If any sign of defect or damage is detected, immediately withdraw the product from use for maintenance.



Never incorporate equipment or accessories not approved by L-Acoustics.

Read all the related PRODUCT INFORMATION documents shipped with the products before exploiting the system.



Do not store the product on an unstable cart, stand, tripod, bracket, or table.



Beware of sound levels.

Do not stay within close proximity of loudspeakers in operation.

Loudspeaker systems are capable of producing very high sound pressure levels (SPL) which can instantaneously lead to permanent hearing damage to performers, production crew and audience members. Hearing damage can also occur at moderate level with prolonged exposure to sound.

Check the applicable laws and regulations relating to maximum sound levels and exposure times.



This system is intended for professional use.



Read the RIGGING MANUAL before installing the system.

Use the rigging accessories described in the rigging manual and follow the associated procedures.

Read the maintenance section of this document before servicing the product.



Do not expose the product to extreme conditions.

Do not expose the product to rain or sea spray.

Do not expose the product to moisture (mist, steam, humidity, condensation...) or excessive heat (direct sun, radiator...) for a long period of time.



Contact L-Acoustics for advanced maintenance.

Any unauthorized maintenance operation will void the product warranty.

Symbols

The following symbols are used in this document:



This symbol indicates a potential risk of harm to an individual or damage to the product.

It can also notify the user about instructions that must be strictly followed to ensure safe installation or operation of the product.



This symbol notifies the user about instructions that must be strictly followed to ensure proper installation or operation of the product.



This symbol notifies the user about complementary information or optional instructions.

Welcome

Thank you for purchasing the L-Acoustics K2.

This document contains essential information on using the system properly.

As part of a continuous evolution of techniques and standards, L-Acoustics reserves the right to change the specifications of its products and the content of its document without prior notice. Please check www.l-acoustics.com on a regular basis to download the latest document and software updates.

K2 variable curvature WST line source

The K2 is the full range element of a WST® line source with variable curvature and adjustable horizontal directivity. The K2 loudspeaker enclosure is based on a 3-way active design. It comprises 4 input sections: 2 LF and 1 MF at a nominal impedance of 8 ohms, and 1 HF at a nominal impedance of 16 ohms. It features two 12" speakers and four 6.5", all direct-radiating neodymium speakers mounted in a bass-reflex enclosure, and two 3" neodymium diaphragm compression drivers coupled to individual DOSC® waveguides and adjustable directivity fins. The transducers are implemented in a K-shape configuration. The cabinet is made of machined first grade Baltic birch plywood (for top, bottom and back panels) combined to die cast aluminum side panels to ensure maximum acoustical and mechanical integrity while reducing weight to the minimum. A four-point rigging system is integrated into the cabinet.

The K2 enclosure operates over the nominal frequency range of 35 Hz to 20 kHz. Its LF contour can be reinforced with the dedicated K1-SB extension and its bandwidth can be extended down to 25 Hz with the SB28 subwoofer. In the horizontal plane, the directivity is adjustable down to 300 Hz, with two symmetric settings (70° or 110°) and two asymmetric settings (90° as 35°/55° or 55°/35°).

The K2 rigging system allows vertical assembly of enclosures with various inter-element angles (up to 10°), constituting a line array with variable curvature. The combination of the coplanar symmetry and the DOSC® waveguide in the HF region ensure a perfect acoustic coupling between the elements of an array. The WST® (Wavefront Sculpture Technology) criteria are fulfilled, so that such an array can be qualified as a true line source. Any WST® line source provides a smooth tonal response and a coverage that is free of secondary lobes over the entire frequency range.

The K2 is driven and quad-amplified by the LA8 or LA4X controller with factory presets which ensure linearization, protection, and optimization for the loudspeaker system.

System components

Loudspeaker enclosures

K2	3-way full-range active WST enclosure
K1-SB	K1 system subwoofer 2x15"
SB28	High power subwoofer: 2 x 18"

Powering and driving system

LA4X / LA8	Amplified controller with DSP, preset library and networking capabilities
LA-RAK	Touring Rack (RK9U/3xLA8/LA-POWER/ LA-PANEL/LA-PANELAES3/2U panels)



Refer to the LA4X / LA8 user manual for operating instructions.

Loudspeaker cables

SP cables	4-point speakON loudspeaker cables (4 mm ² gauge) SP cables come in four sizes: SP.7 (0.7 m/2.3 ft), SP5 (5 m/16.4 ft), SP10 (10 m/32.8 ft) and SP25 (25 m/82 ft)
SP-Y1	breakout cable for two passive enclosures (2.5 mm ² gauge) provided with a CC4FP adapter 4-point speakON to 2 x 2-point speakON
DO	8-point PA-COM loudspeaker cables (4 mm ² gauge) DO cables come in three sizes: DO.7 (0.7 m/2.3 ft), DO10 (10 m/32.8 ft) and DO25 (25 m/82 ft)
DOSUB-LA8	breakout cable for four passive enclosures (4 mm ² gauge) 8-point PA-COM to 4 x 2-point speakON



Information about the connection of the enclosures to the LA amplifiers is given in this document.

Refer to the LA4X / LA8 user manual for detailed instructions about the whole cabling scheme, including modulation cables and network.

Rigging elements



Rigging elements or procedures are not presented in this document.
Refer to the K2 rigging manual.

Software applications

Soundvision	3D acoustical and mechanical modeling software
LA Network Manager	Software for remote control and monitoring of amplified controllers

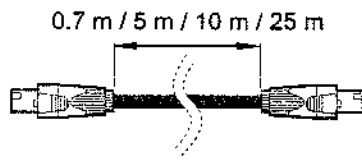


Refer to the **Soundvision** help.

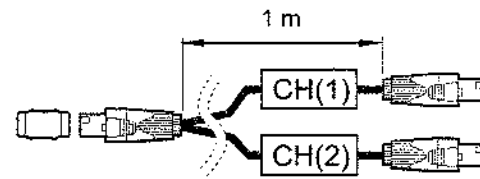


Refer to the **LA Network Manager video tutorial**.

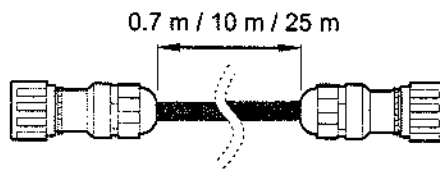
Loudspeaker cables



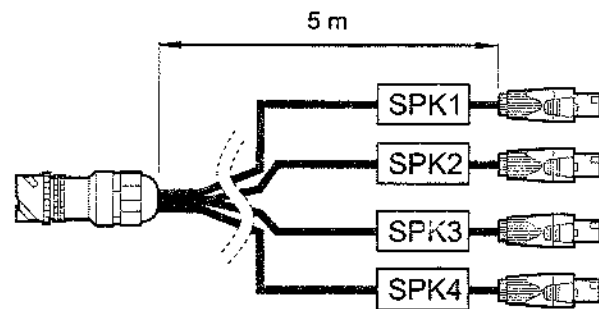
SP.7 / SP5 / SP10 / SP25



SP-Y1



DO.7 / DO10 / DO25



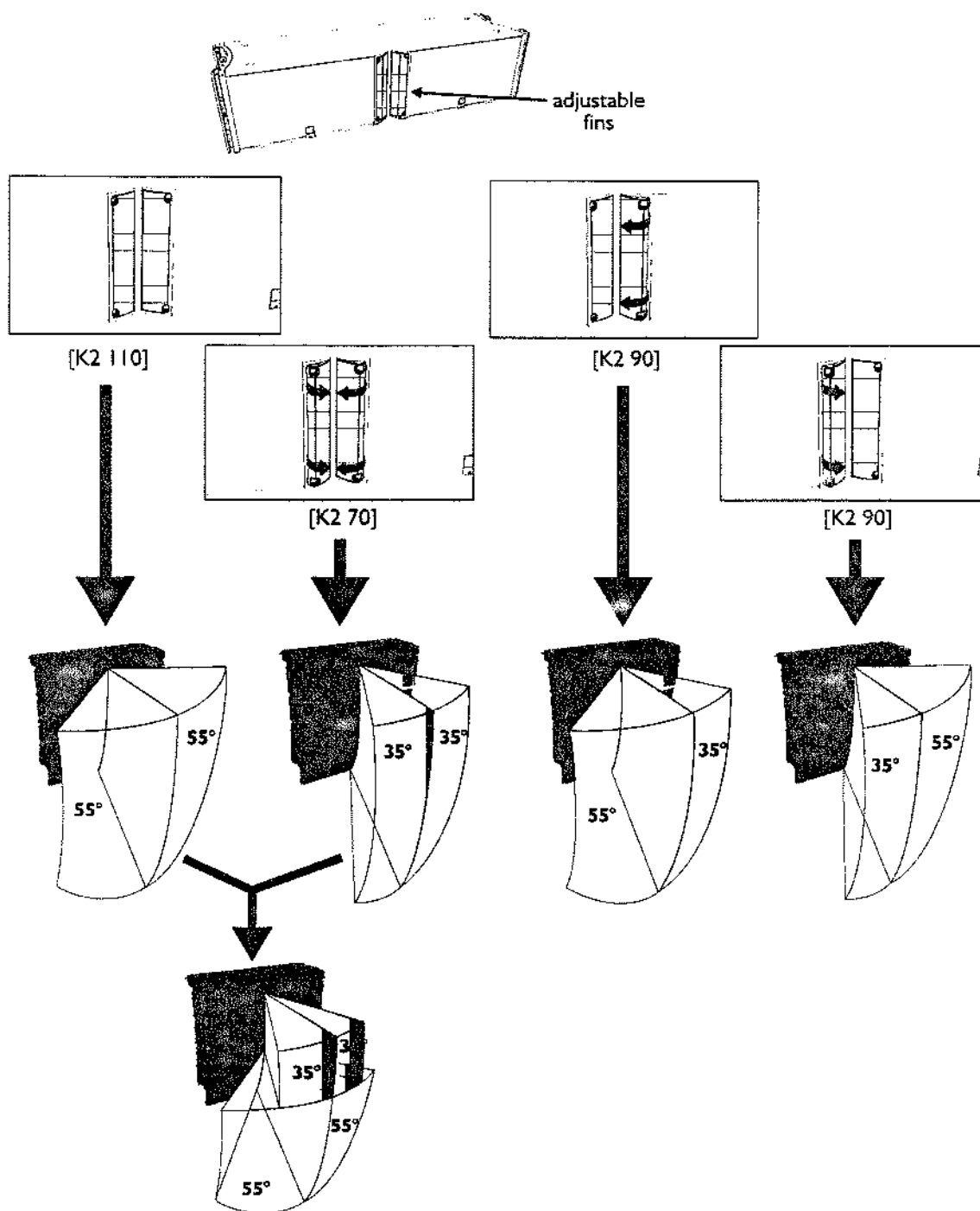
DOSUB-LA8

Technical description

K2 horizontal directivity settings

The K2 enclosure features an adjustable horizontal directivity system. Using the adjustable fins, horizontal directivity can be adjusted with four different settings: 110° / 70° symmetric or 90° asymmetric (35°/55° or 55°/35°). A specific K2 preset must be used for each directivity setting.

Within a line source, different directivity settings can be combined to improve the coverage of the audience geometry.

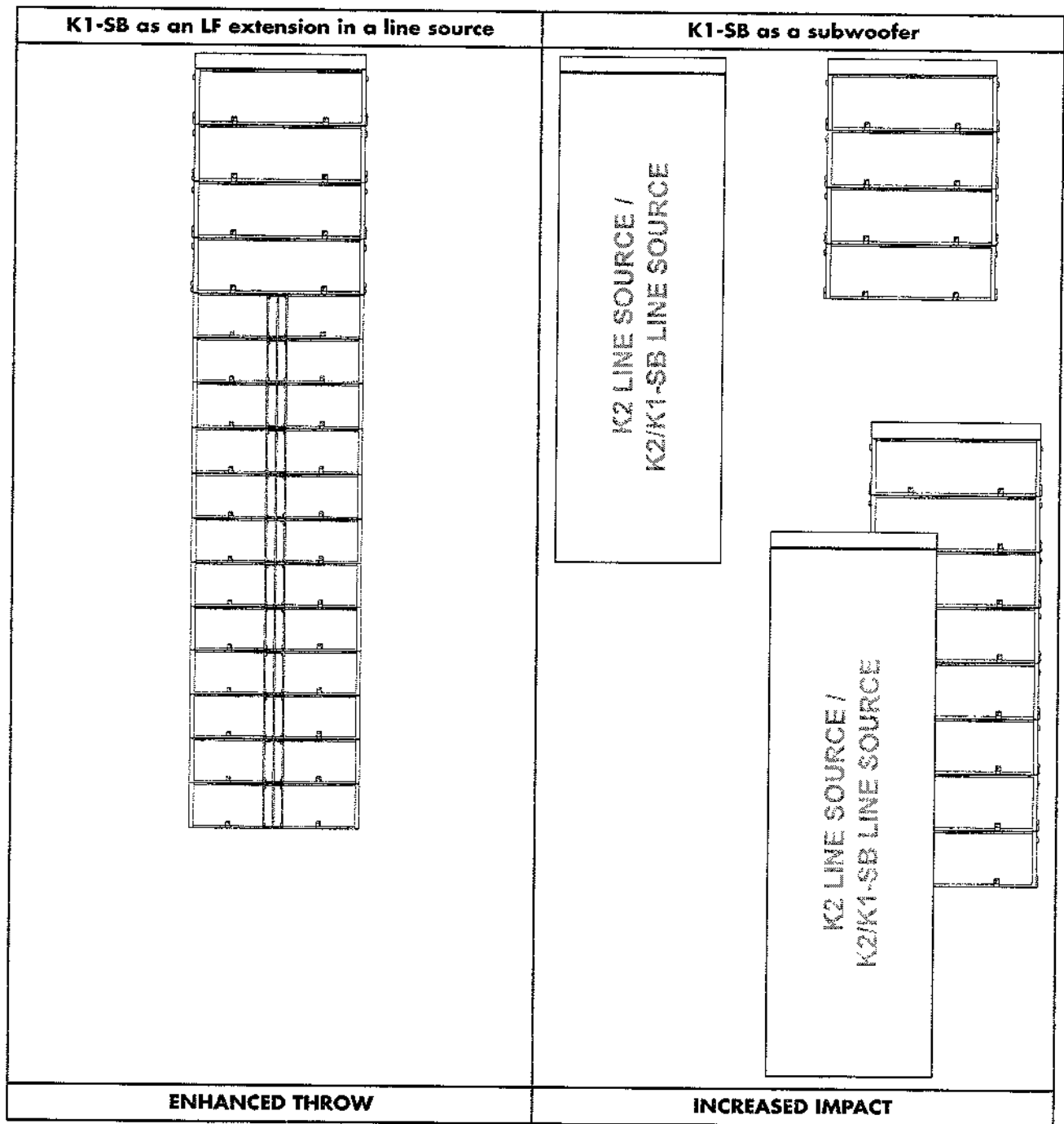


K1-SB applications

There are two distinct applications for K1-SB in a K2 system:

- As an LF extension in a line source for enhanced throw, using the [K1SB_X K2] preset with K2
- As a subwoofer for increased impact, using the [K1SB_60] preset

i Both applications of K1-SB can be combined in the same configuration.



Loudspeaker configurations

Line source

Deployed as a line source, the system operates over the nominal bandwidth of the K2 enclosure, with an adjustable horizontal directivity.

Two configurations are possible:

- K2 line source
- K2/K1-SB line source: enhanced LF throw

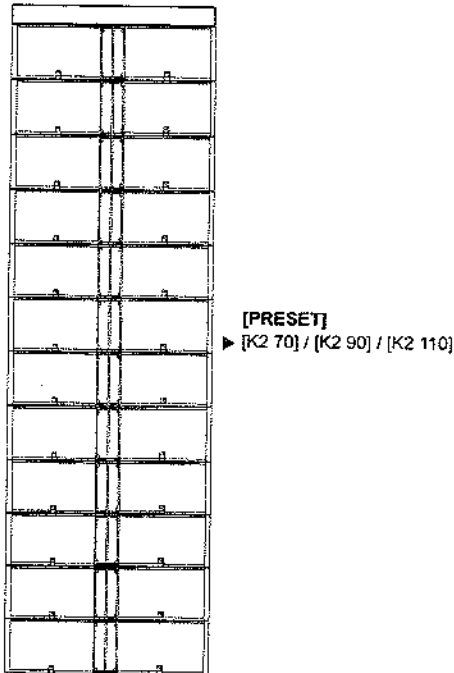
The [K2 70], [K2 90] and [K2 110] presets allow for a reference frequency response in long throw applications. Each preset is dedicated to a horizontal directivity setting.

By providing the K1-SB with the same frequency response as the K2 low section, the [K1SB_X K2] preset allows the K1-SB enclosure to be used as an LF line source element, increasing the length of the sub-low line source.

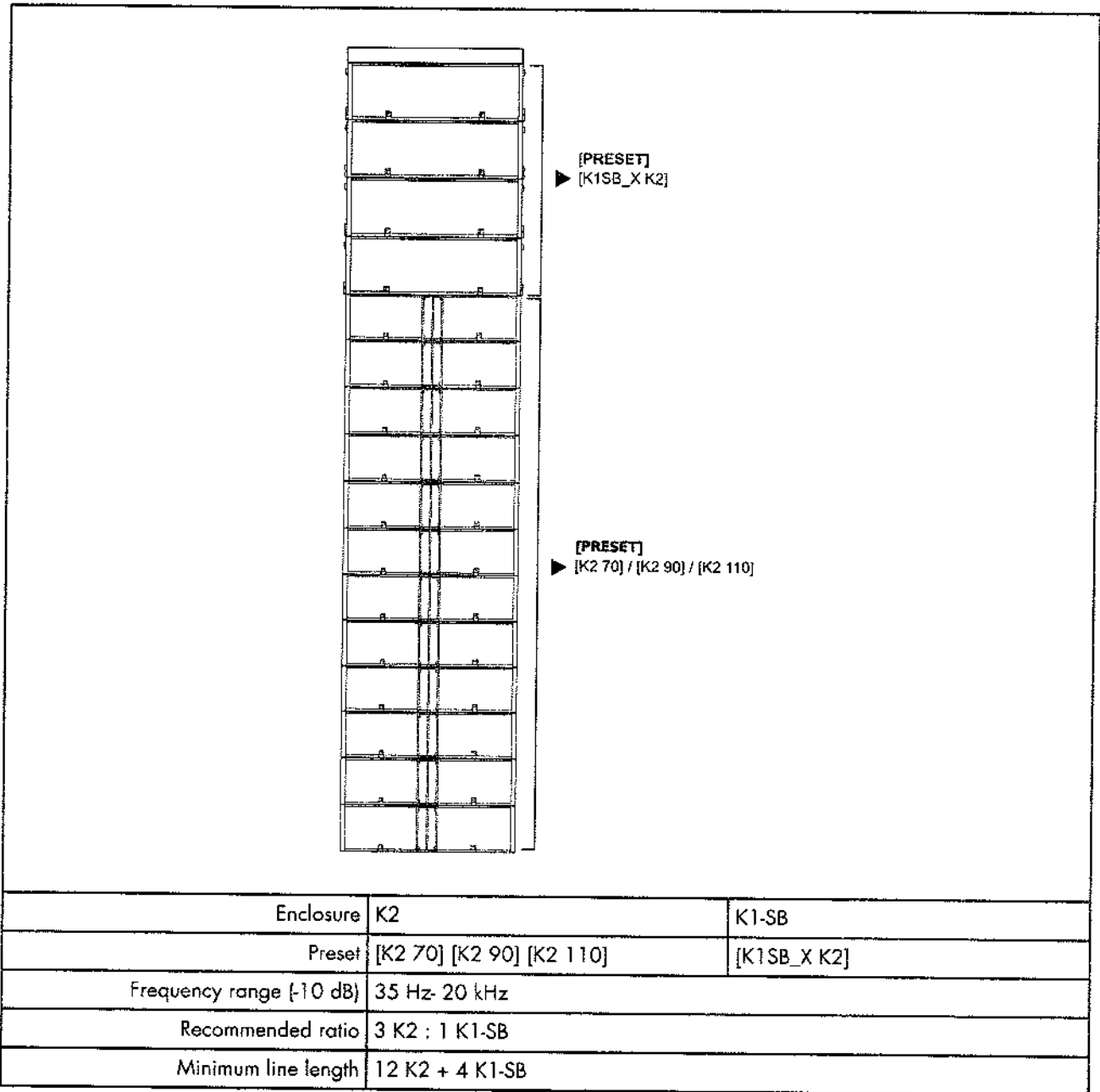
The K2 enclosures are driven by the LA4X / LA8 amplified controllers.

The K1-SB enclosures are driven by the LA8 amplified controller.

Standalone K2 line source

	
Enclosure	K2
Preset	[K2 70] [K2 90] [K2 110]
Frequency range (-10 dB)	35 Hz - 20 kHz

K2/K1-SB line source



When using [K2] with [K1SB_X K2], do not add any delay value between the K2 and K1-SB elements of a same line source.

Additional subwoofer system

A K2 line source or a K2/K1-SB line source can be deployed with additional subwoofer enclosures to provide increased sub-low resources to demanding applications.

Two subwoofer systems are available:

- K1-SB for increased LF contour
- SB28 for infra extension

The recommended ratio is 3 K2 for 2 subwoofers, whether using K1-SB subwoofers only, SB28 subwoofers only, or a combination of both.

The [K1SB_60] and [SB28_60] presets provide the subwoofers with an upper frequency limit at 60 Hz for an optimal frequency coupling with the line source.

The K1-SB and SB28 subwoofer enclosures are driven by the amplified controller.

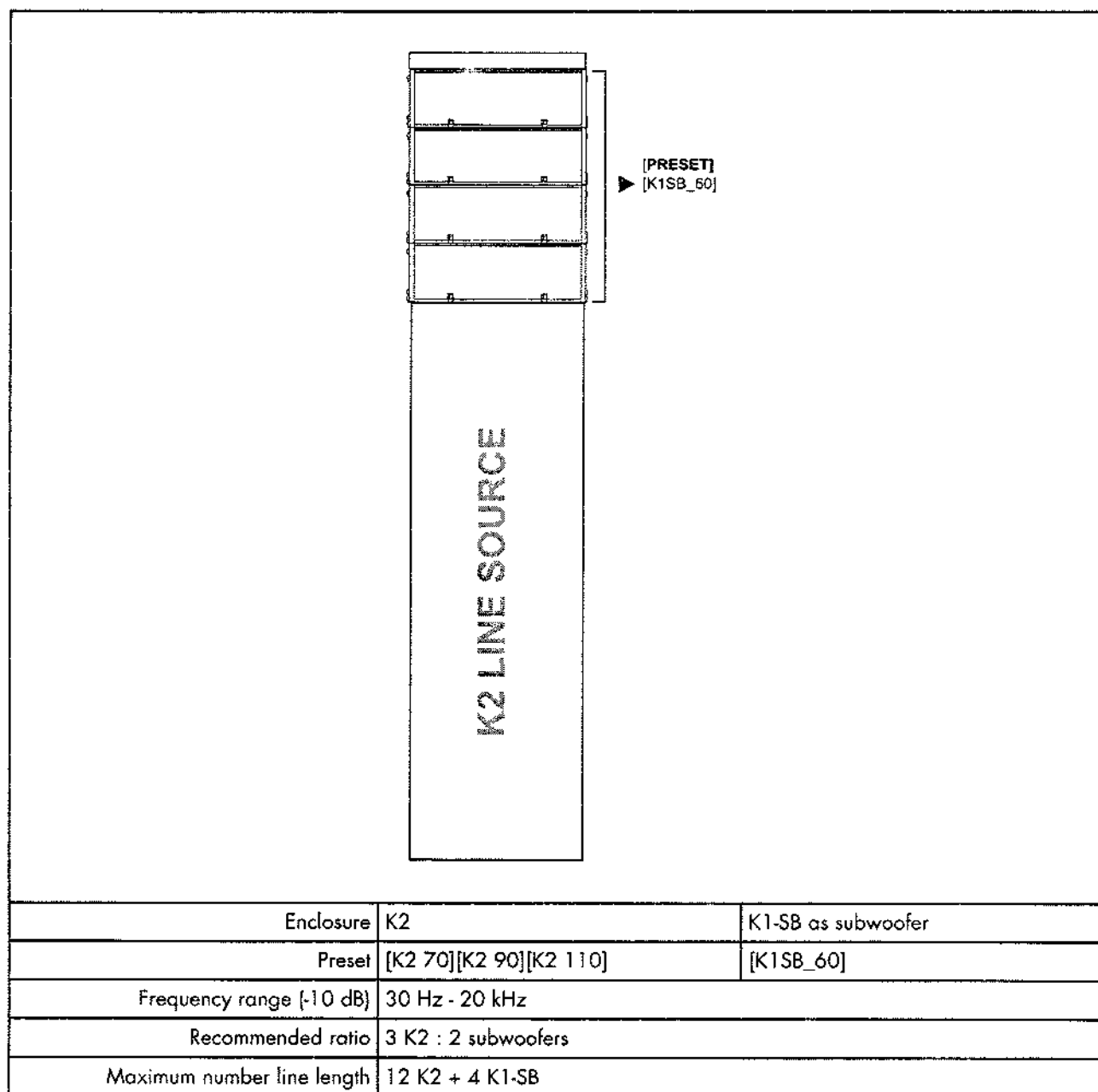
K1-SB

The K1-SB provides an extension of the bandwidth in the low end, down to 30 Hz. Depending on the deployment, LF rejection can be produced.

Three deployments are available in this configuration:

- K1-SB on top of the K2 line source
- K1-SB beside the K2 or K2/K1-SB line source : side LF rejection (polarized)
- K1-SB behind the K2 or K2/K1-SB line source : rear LF rejection (cardioid)

Line source with K1-SB on top



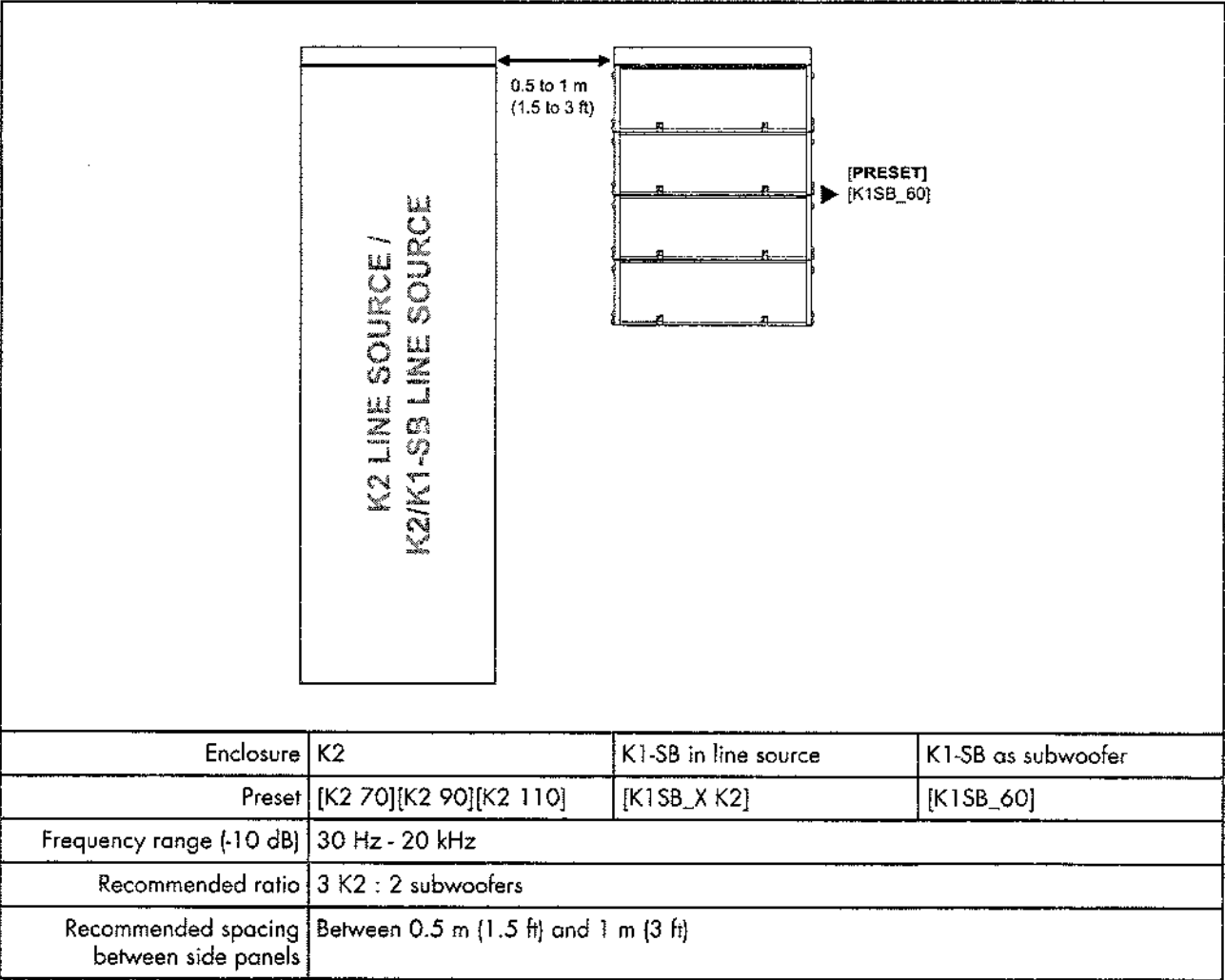
Delay values

Do not forget to add the pre-alignment and geometric delays depending on the configuration.

Pre-alignment delays

[K2] + [K1SB_60]	K2 = 6 ms	K1-SB = 0 ms
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Line source with K1-SB beside

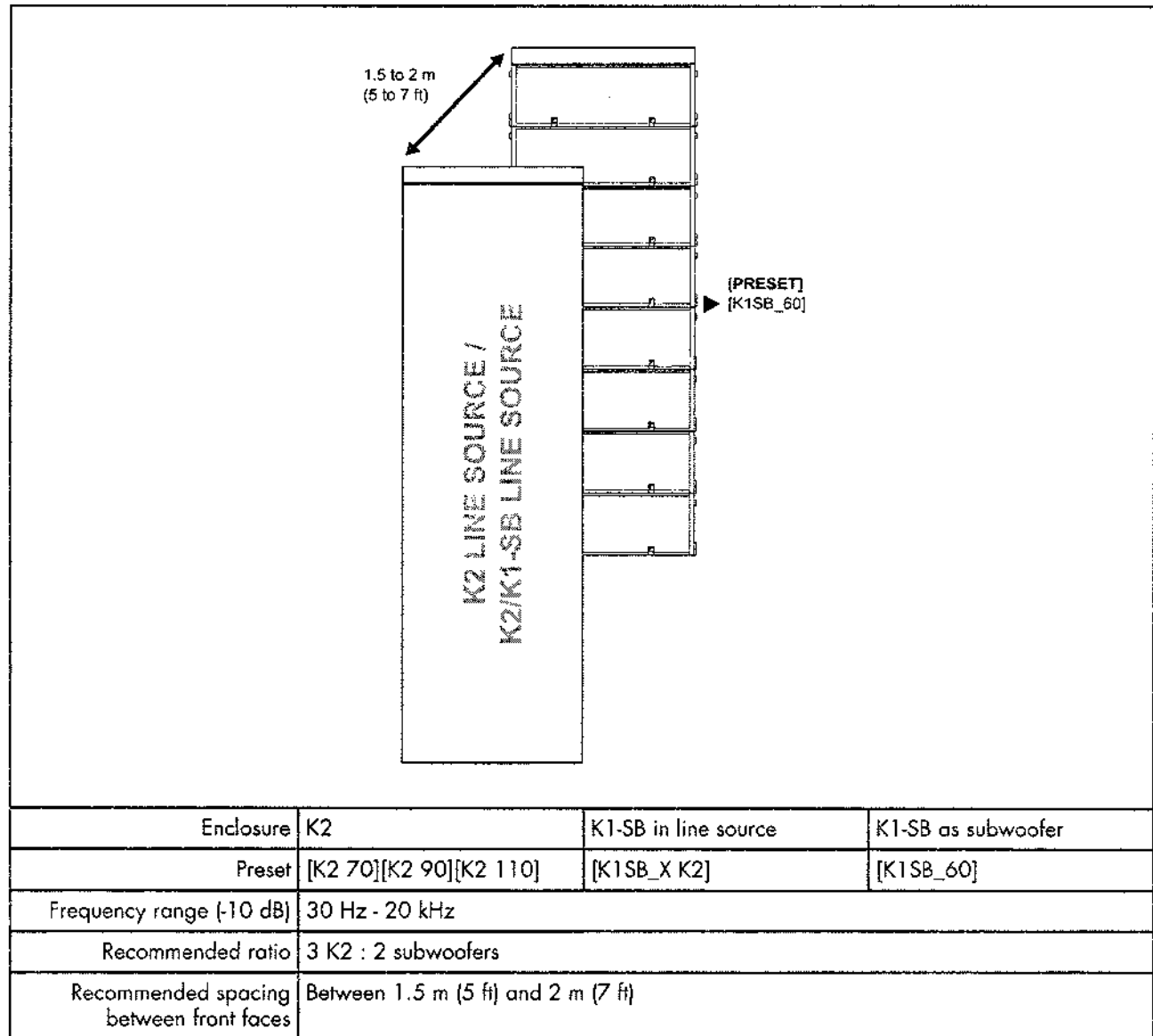


- **Delay values**
Do not forget to add the pre-alignment and geometric delays depending on the configuration.
- **When using [K2] with [K1SB_X K2], do not add any delay value between the K2 and K1-SB elements of a same line source.**

Pre-alignment delays

[K2] + [K1SB_60]	K2 = 6 ms	K1-SB = 0 ms
------------------	-----------	--------------

Line source with K1-SB behind

**Delay values**

Do not forget to add the pre-alignment and geometric delays depending on the configuration.



When using [K2] with [K1SB_X K2], do not add any delay value between the K2 and K1-SB elements of a same line source.

Pre-alignment delays

[K2] + [K1SB_60]	K2 = 6 ms	K1-SB = 0 ms
------------------	-----------	--------------

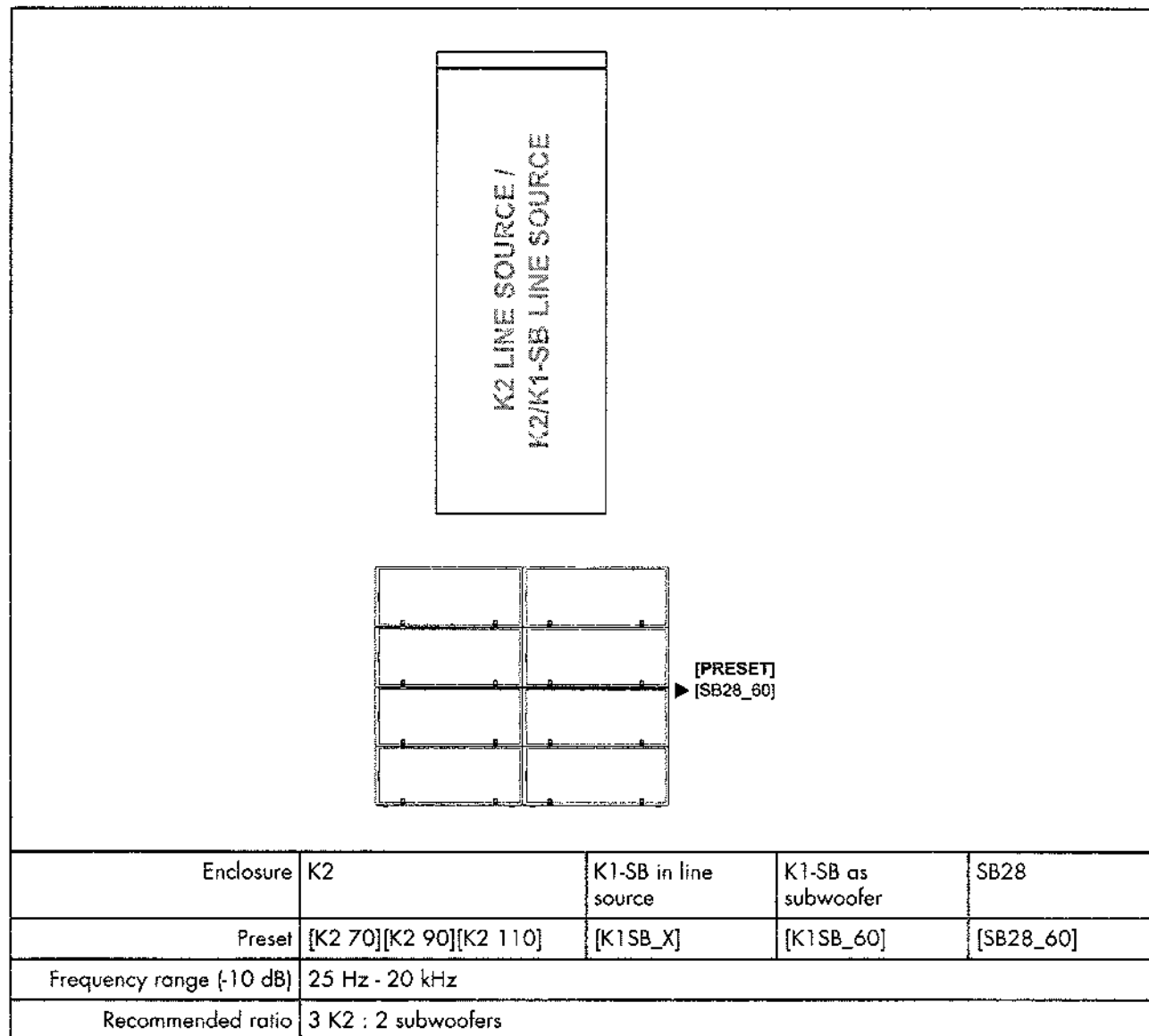
Geometric delays

1.5 m (5 ft)	Line source = 4.5 ms
2 m (7 ft)	Line source = 6 ms

SB28

The SB28 provides an extension of the bandwidth in the low end, down to 25 Hz.

Line source with SB28



Grouping subwoofers

Place the subwoofer enclosures side by side. If not possible, the maximum distance between two adjacent acoustic centers must be 2.8 m or 1.7 m if the upper frequency limit of the subwoofer system is at 60 Hz or 100 Hz, respectively.



Use [xxxx_xx_C] on a reversed subwoofer in a cardioid configuration

The cardioid configuration consists in reversing 1 element in an array of 4 subwoofers. Refer to the subwoofer user manual and to the **Cardioid configurations** technical bulletin.