



MTD 108 OWNER MANUAL

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1.2 MISCELLANEOUS INFORMATIONS

You are the owner of at least one MTD 108 sound reinforcement/monitor loudspeaker system. The present manual has been written to provide you with the information you may require to operate the MTD 108 system, as a professional user.

Furthermore, we also have enclosed specific information relevant on how to configure the system, how to include it as a part of a global sound system design, and how to install it.

Finally, we have enclosed the measured data according to the E.A.S.E. software process , in order to allow accurate prediction of the system performance in installations.

We are confident that the information provided in this manual will be sufficient in most cases of operation. Nevertheless, your regional distributor, or ourselves as a manufacturer, do remain available to provide you some advises, help, or consultancy services whenever you may need it.

In this respect, we are also willing to cooperate with designers, consultants and architects, who are not directly using the system, but who do need a thorough knowledge of its behaviour in order to achieve an optimum prescriptive design.

2.1 THE PROXIMITY CONCEPT

Proximity loudspeakers are commonly referred to as "near field", although this designation is improper: because of their small size, the acoustical near field of such loudspeakers is usually limited to only a few centimeters.

However, they are operating closely enough to the listener to make the reverberant field of little influence, and it would be correct to say they are working mostly in the direct field.

In most situations, proximity loudspeakers are intended to complement an existing sound system by providing an improvement in intelligibility in a few "shadow" zones which are not totally covered by the main system.

In some other applications, they can be used for voice-only sound reinforcement, when a speaker is willing to address a small to medium size audience. When musical programs are played, the complement of a specific bass enclosure is useful for a full bandwidth response.

Finally, such enclosures can be used for the playback of the surround channel in movie theater applications.

The constraints in this type of applications are not as complicated as for large power sound systems, in terms of geometrical coverage, sound pressure level, and bandwidth. This may have led some manufacturers to overlook the quality, and focus on costs, when designing such enclosures.

The fact that the soundfield generated by such loudspeakers is most often not so altered by the reverberation makes it clear that the perceived sound is totally depending on the loudspeaker itself. This means that such loudspeakers, in our opinion, must provide the ultimate neutrality, intelligibility, and transparency in the direct field.

If this has always been clear for proximity monitors in studio applications, it is not so acknowledged in the sound reinforcement world.

We see the diminution of other constraints as an opportunity to focus on the two remaining ones: the sound quality and the size.

The result of this development is the MTD 108.

2.2 ELEMENTS OF THE SYSTEM

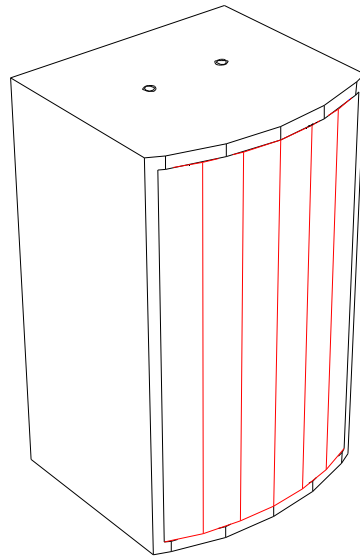
a) MTD108; R.C.4.6; SB 115

The MTD 108 system comprises a main element, i.e. the MTD 108 enclosure (obviously) but also the R.C.4.6 routing controller which is particularly convenient in some applications. Further, it can be complemented by the SB 115 bass extension enclosure for musical sound reinforcement or playback.

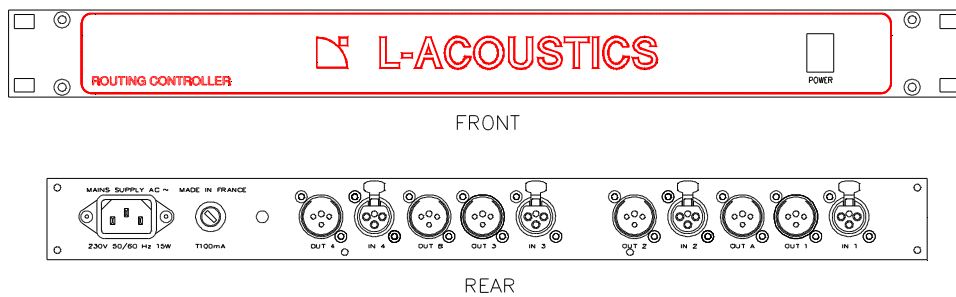
For operation, the MTD 108 system must also include at least a power amplifier, cables and connectors. Although these are not necessarily supplied together with the system itself, and not necessarily from the same supplier, they must be regarded as parts of the system.

In this respect, the selection of these components is of utmost importance for obtaining the best performances of your MTD 108 system. Your national distributor, or ourselves as a manufacturer, are the most qualified to specify these components.

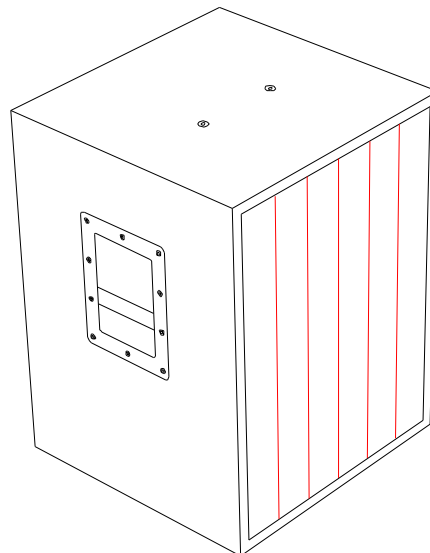
THE MTD 108 ENCLOSURE is a parallelepipedic-shaped wide-band enclosure equipped with a 8" direct radiating bass & midrange driver and a 1" HF compression driver loaded by a constant coverage type horn. It is to be operated in mono-amplification, as a passive crossover is provided.



The R.C.4.6 routing controller is an electronic routing device providing summation, filtering functions, and balancing of unbalanced sources. It is fully modular, and is provided with either 2 inputs and 3 outputs, or 4 inputs and 6 outputs.

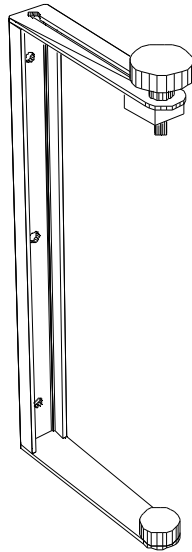


THE SB 115 ENCLOSURE is a single reflex-loaded enclosure equipped with a 15" driver. It is a bass-extension enclosure



b) HARDWARE & ACCESSORIES

CA ETR 4 Adjustable yoke for wall or scaffold mounting



3. APPLICATIONS, CONFIGURATIONS & DIAGRAMS

STAND MOUNT RECESSED POST: Built-in

3.1 APPLICATIONS

a) SOUND REINFORCEMENT

For sound reinforcement applications, the MTD 108 can be used with or without a subwoofer of the L-ACOUSTICS range, preferably the SB 115.

It is to be used in sound reinforcement applications as an individual sound source.

The ideal setup is when multiple sound sources are used with a time correction provided by delay lines for compensating the time shifts due to their respective positions.

Both available SPL figures and low frequency extension can be enhanced with the use of a subwoofer, which can be physically separated from the MTD 108 enclosure because of a low crossover cutoff frequency, i.e. 100 Hz to 150 Hz. Nevertheless, care should be taken during the subwoofer installation to avoid phase cancellations.

In the case when more than one subwoofer is used, ideally, the subwoofers should be grouped together in a central stack or array, and fed with a summed mono signal. Provision for mono summing of the subwoofers signals is provided by the R.C.4.6 routing controller.

b) DELAY LINE SOUND REINFORCEMENT

It often occurs that a complete coverage of an audience requires the location of loudspeakers near some areas of the audience, rather than near the stage. A proper sound localisation can be achieved in this case by delaying the signal feeding the loudspeakers which are the closest to the audience. The rule is that the first sound wave reaching any listener must be coming from the stage.

Delaying an MTD 108 system can be achieved with accuracy. Some delay lines are provided with direct distance displays, easing the adjustment of the delay. In this situation, you should verify the temperature, such metric displays being valid normally for 20°C.

Provision exists on some units for actual temperature data input. You should check this during the setup.

NOTE: Speed of sound in air

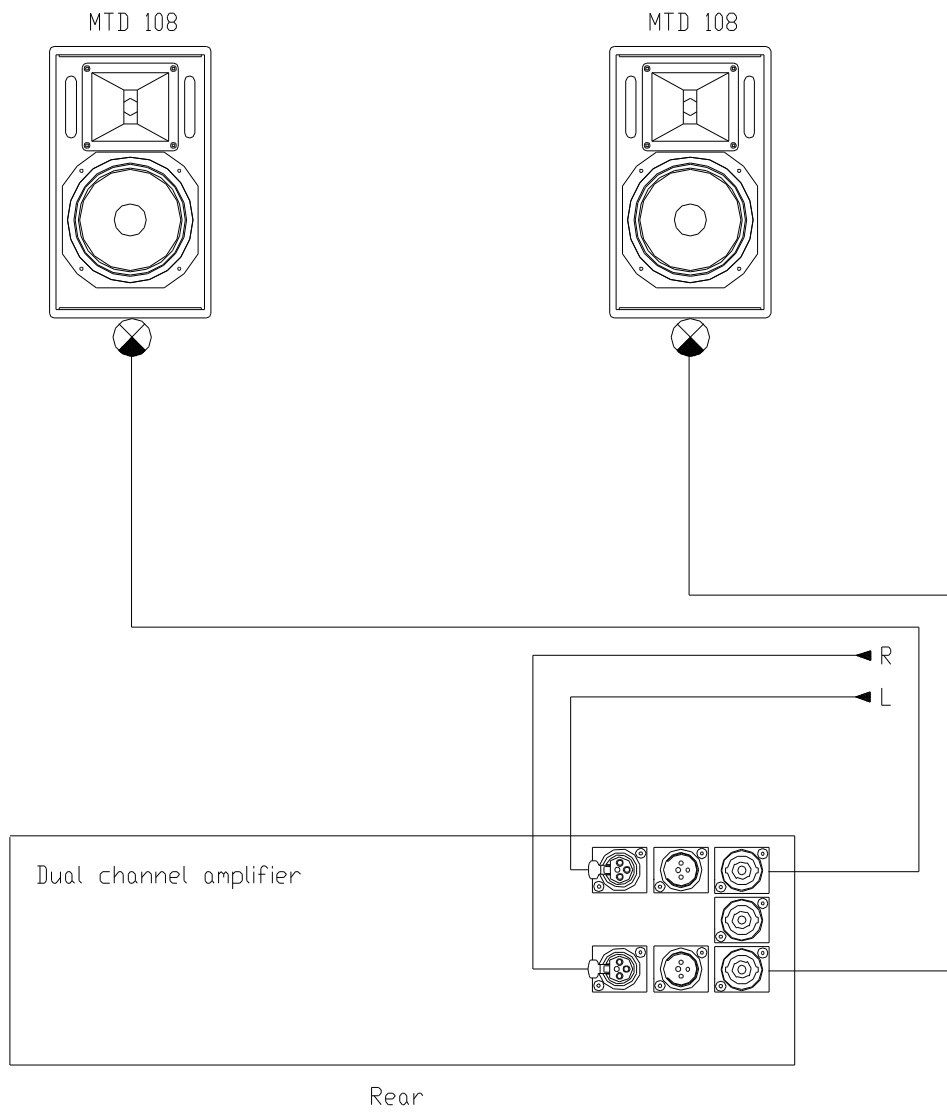
$c = 331.6 + (0.6 t) \text{ in m/s. with } t = \text{temperature of air in } ^\circ\text{C}$
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For its compact size, the MTD 108 enclosure allows unobtrusive sightlines when installed in the concert hall, particularly when underbalcony location is required.

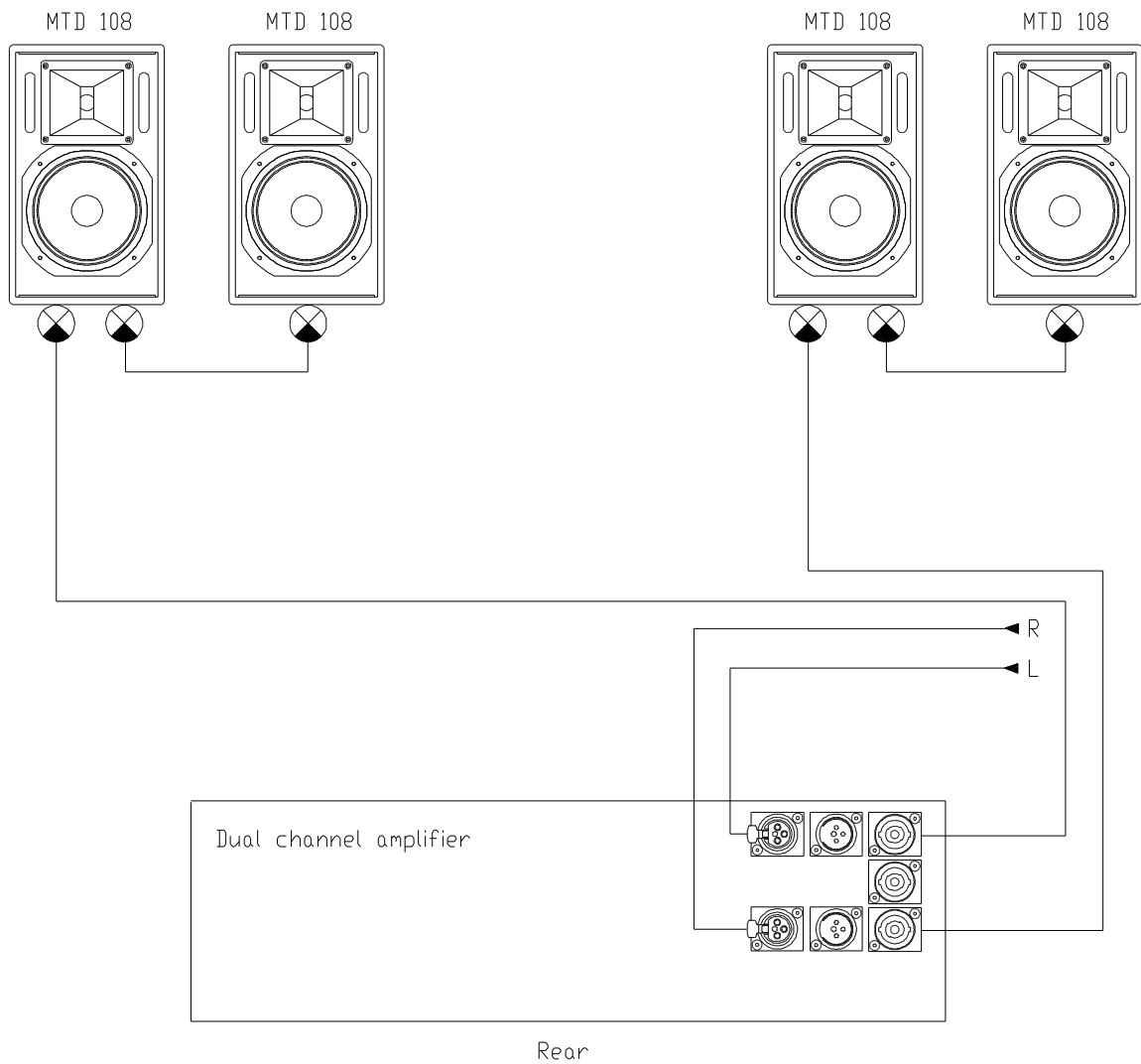
No subwoofer should be used for delay line sound reinforcement.

3.2 TRADITIONAL STEREO S.R. WITHOUT SUB (diagrams)

a) 2 MTD 108

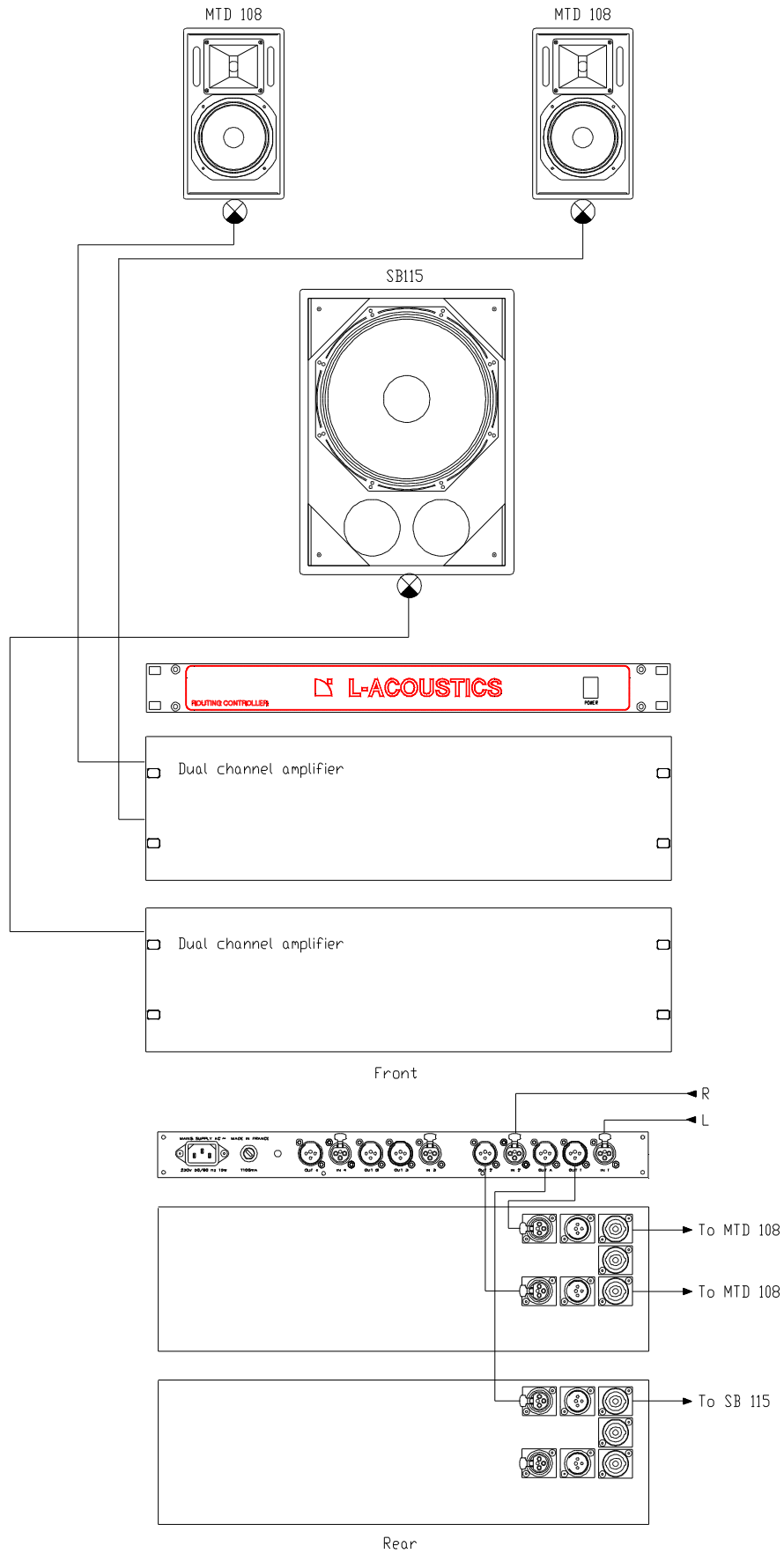


b) 4 MTD 108

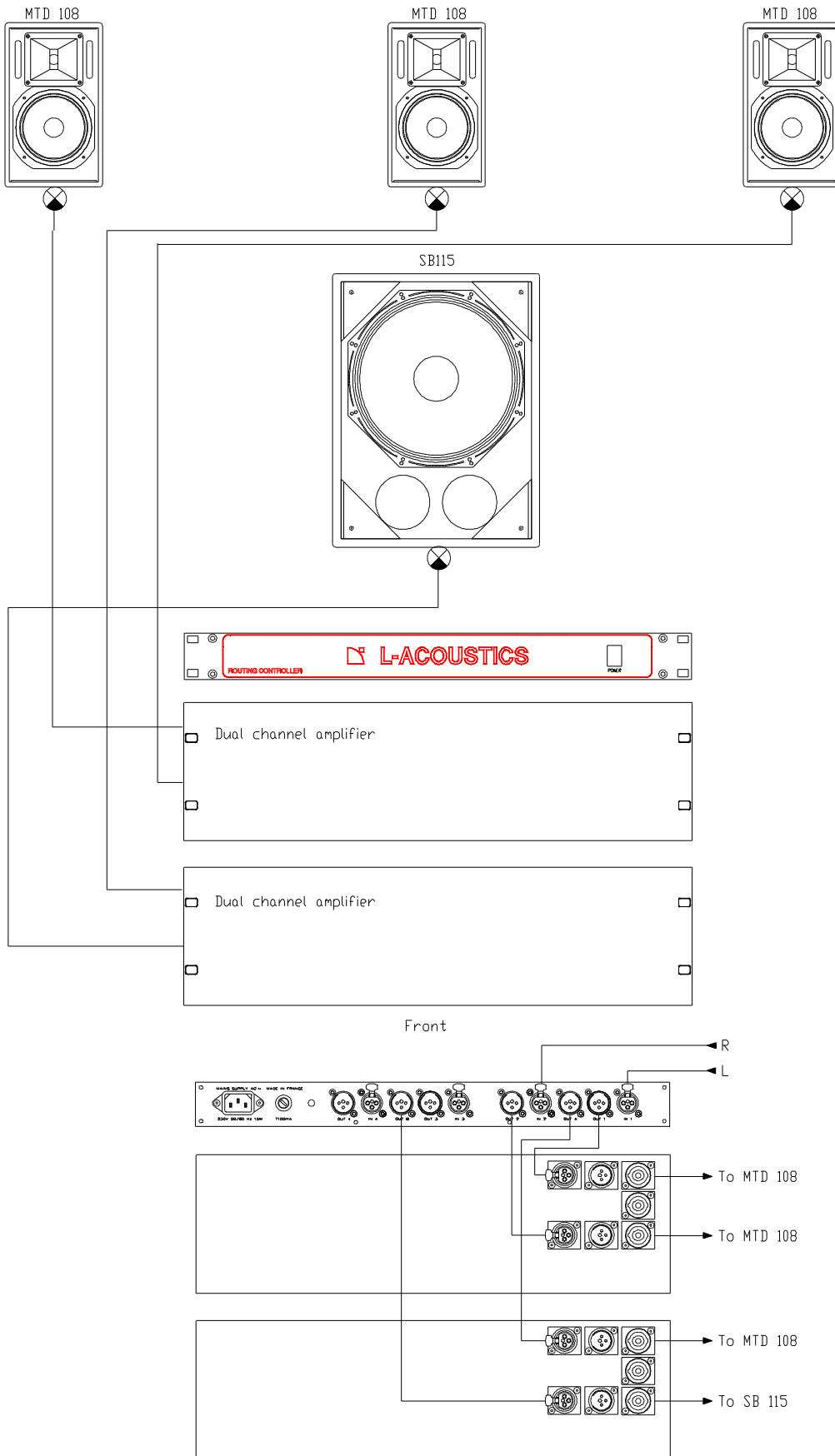


3.3 TRADITIONAL STEREO S.R. WITH SUB (diagrams)

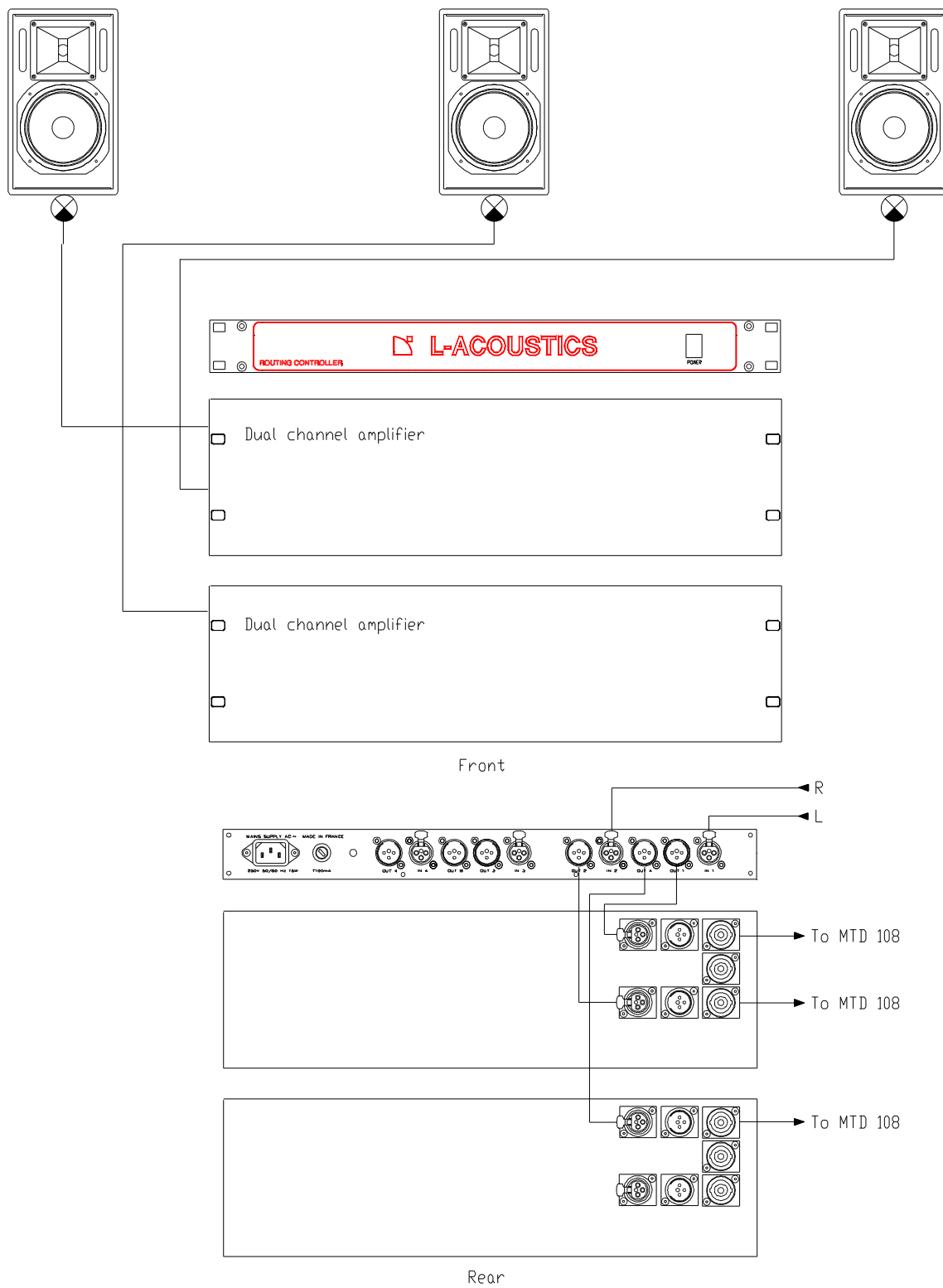
a) 2 MTD 108 + 1SB 115



3.4 3 SOURCES S.R. WITH SUB



3.5 3 SOURCES S.R. WITHOUT SUB (diagram)



3.6 MULTIPLE SOURCES FRONT-FILL

The number of enclosures is determined by the required coverage. The signal feeding each of these loudspeakers should be the same, i.e. a mono (central) signal, and if proper speaker location is achieved, no delay adjustment is necessary. Further, the front-fill loudspeakers can be used for providing the time-reference of the whole sound system, other main F.O.H. speakers being time-aligned on it.

4. TECHNOLOGY & SPECIFICATIONS

4.1 THE MTD 108 ENCLOSURE

a) Technology

The technology of the MTD 108 is based on the two-way, with direct-radiating LF and compression/horn assembly HF. The crossover is passive. The enclosure is ported.

The L.F. driver is of the 8" standard with a 1.57" flat wire copper voice coil.

The H.F. driver is of the 1" exit standard.

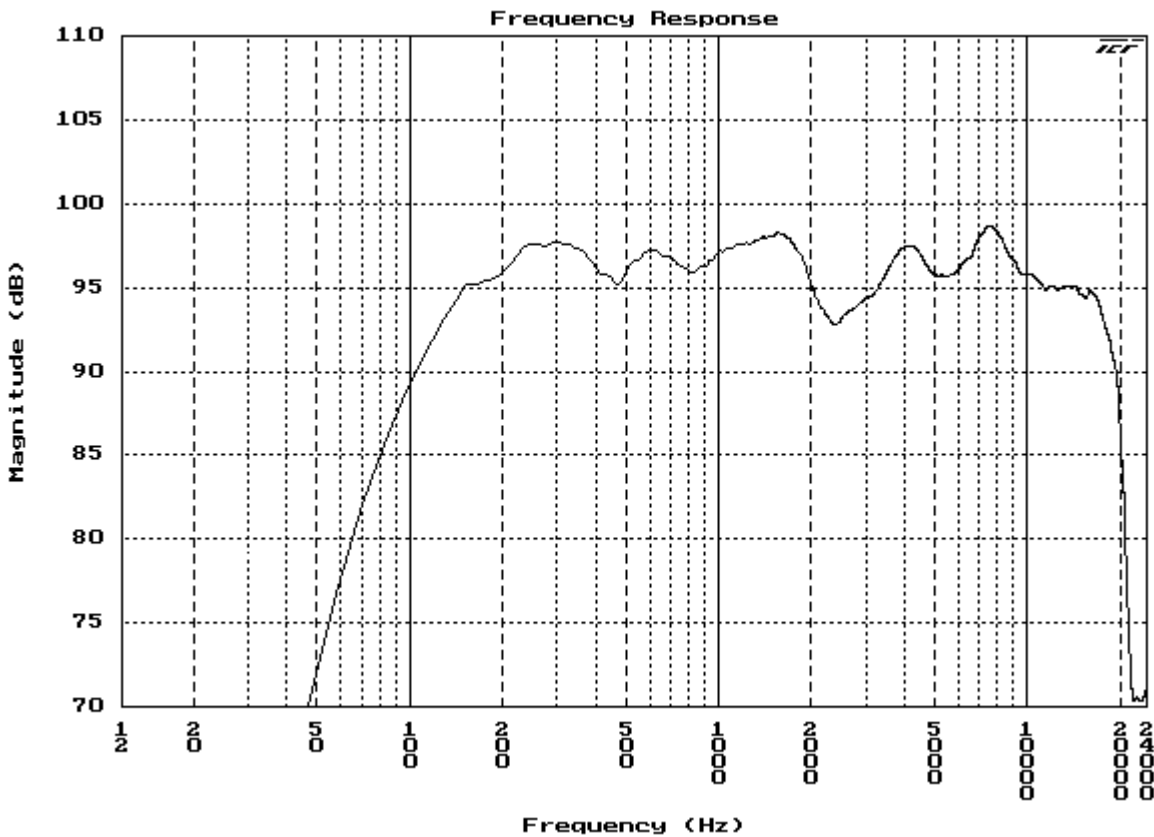
The voice coil is of the 2" standard, and the diaphragm is made of titanium alloy. The HF driver is loaded with a proprietary 90°X60° horn.

b) Specifications

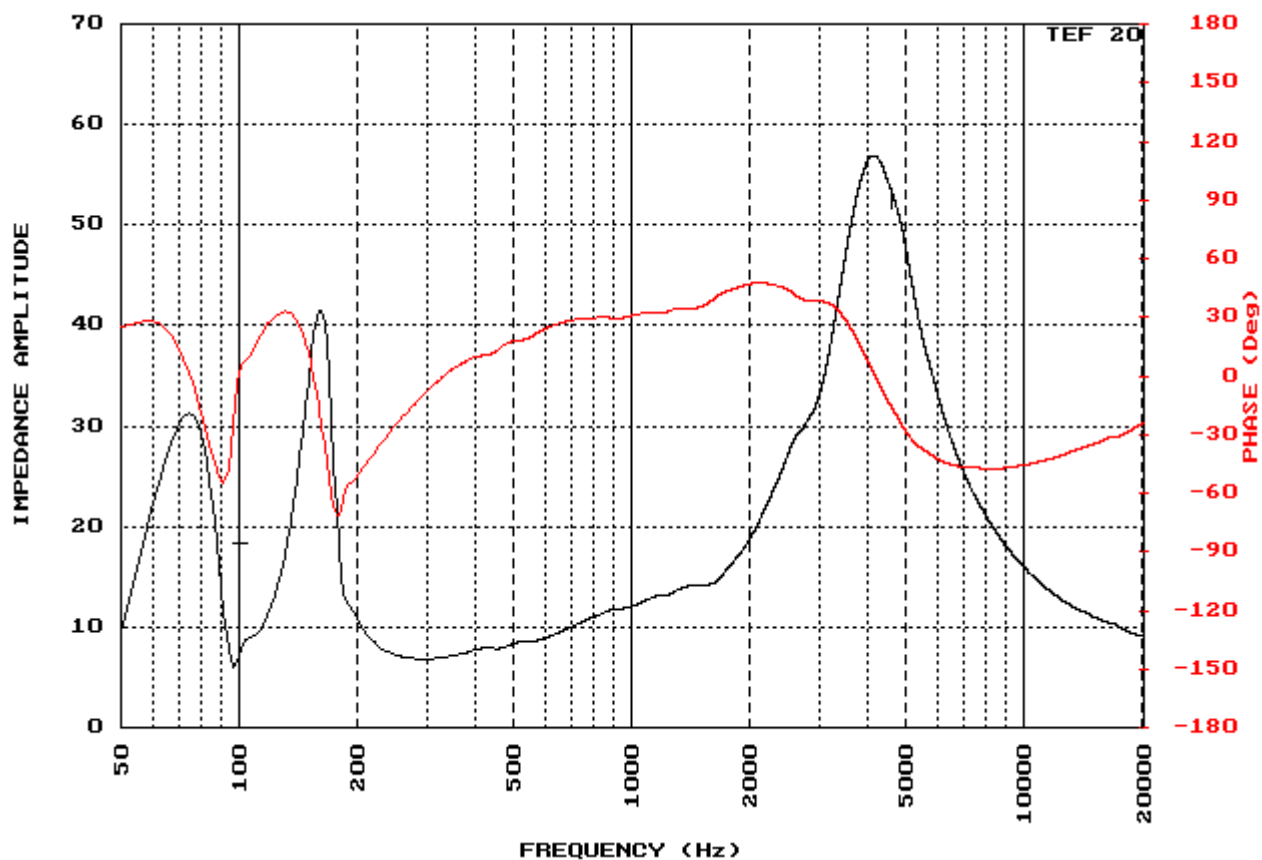
Frequency response:	125 Hz - 19 kHz +/- 3 dB.
Nominal impedance:	8 Ohms
Minimum recommended amplification	150 Watts
Continuous maximum S.P.L. @ 1 m. (measured in half-space, pink noise)	118 dB.
Nominal directivity	90°X60°, rectangular

c) Measured frequency responses

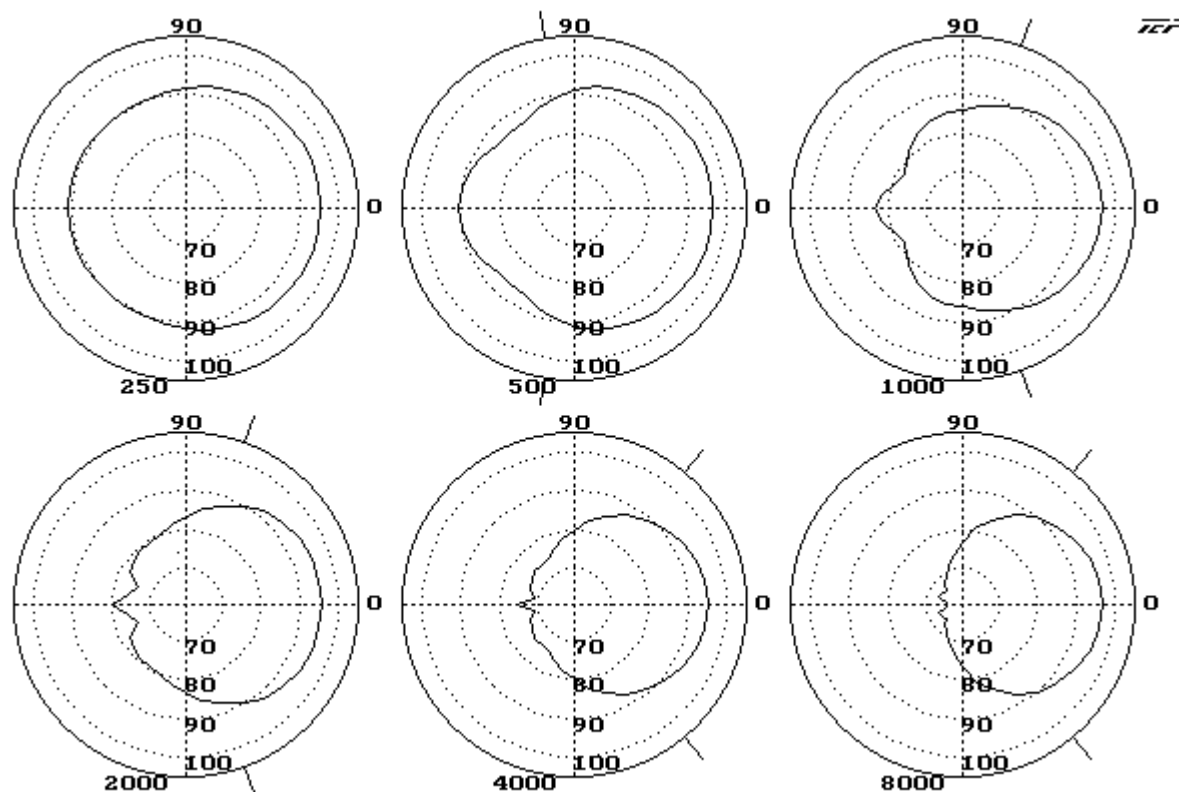
c-1 : Amplitude/Frequency response (1m, input=2.83V)



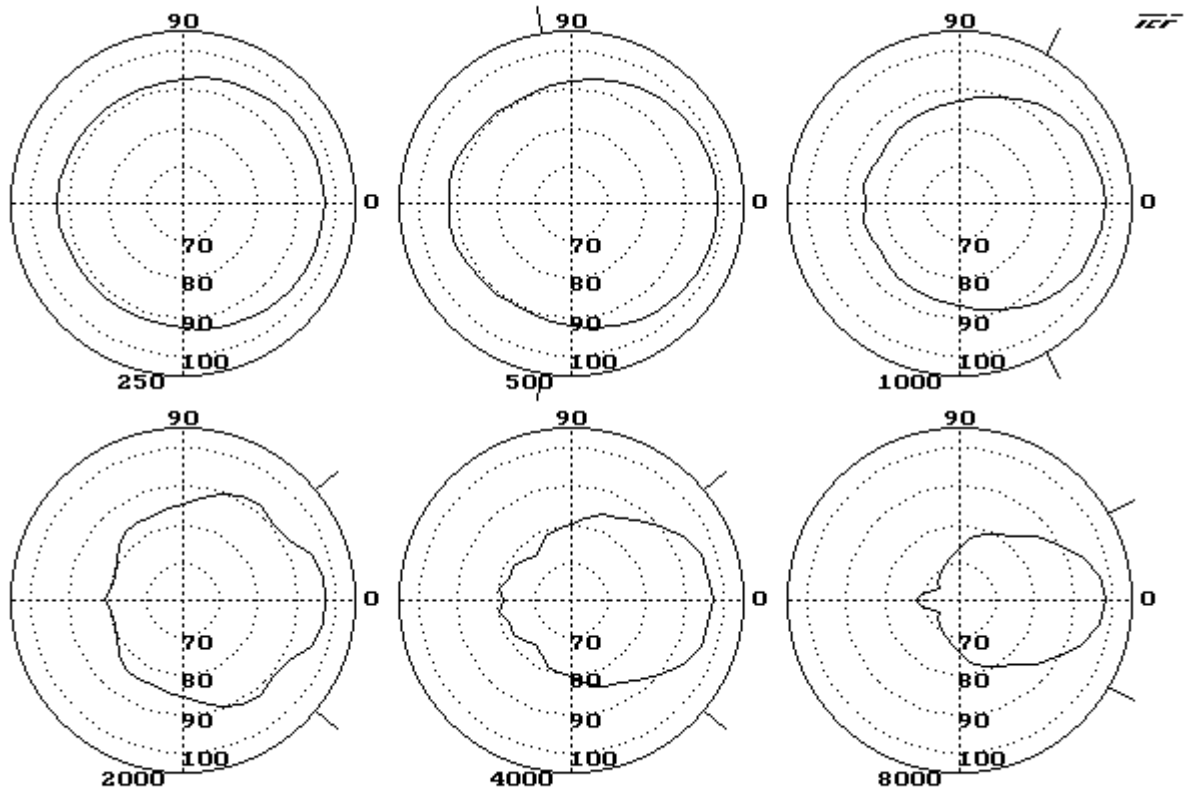
c-2 : Impedance amplitude & phase response



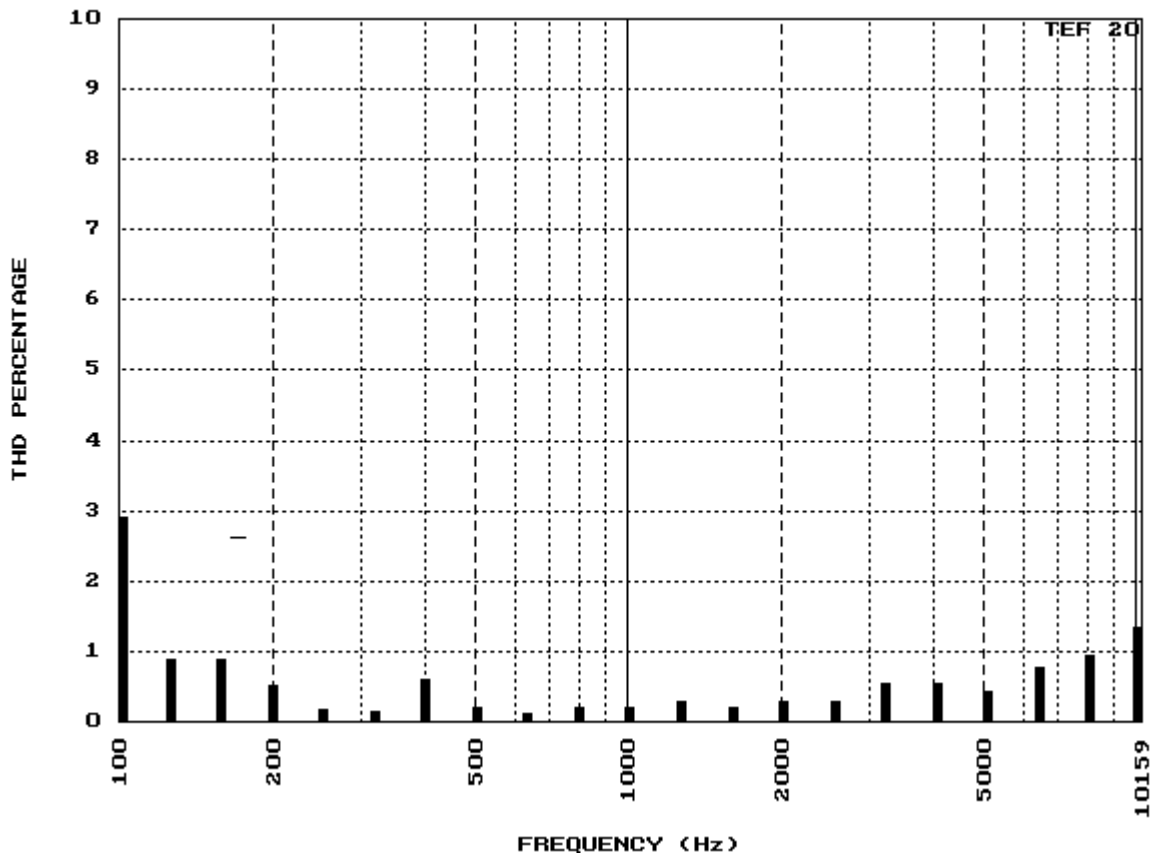
c-3 : Polar response
- For 0° horizontal



- For 0° vertical



c-4 : Total harmonic distortion (V = 2.83V)



d) EASE measurements chart, in accordance with the EASE specifications.

F = 250 Hz

φ θ	0°	10°	20°	30°	40°	50°	60°	70°	80°	90°
0°	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
10°	0,0	0,1	0,0	0,1	0,0	0,0	0,0	0,0	0,0	0,0
20°	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2	0,2
30°	0,4	0,5	0,5	0,5	0,4	0,5	0,5	0,5	0,5	0,6
40°	0,8	0,9	0,9	0,9	0,9	1,0	0,9	1,0	1,0	1,0
50°	1,2	1,4	1,3	1,4	1,4	1,6	1,5	1,5	1,5	1,6
60°	1,7	1,9	1,9	1,9	2,0	2,2	2,1	2,2	2,1	2,2
70°	2,4	2,6	2,6	2,5	2,5	2,8	2,8	2,9	2,9	2,9
80°	3,0	3,3	3,3	3,2	3,2	3,4	3,4	3,4	3,4	3,6
90°	3,9	4,0	4,1	4,2	4,1	4,2	4,3	4,3	4,3	4,3
100°	4,5	4,6	4,7	4,7	4,7	4,7	4,8	4,7	4,7	4,7
110°	4,9	5,0	5,0	5,0	5,1	5,1	5,1	5,0	5,0	5,0
120°	5,1	5,2	5,2	5,2	5,2	5,2	5,2	5,1	5,1	5,1
130°	5,1	5,1	5,2	5,1	5,1	5,1	5,1	5,0	5,0	5,0
140°	4,9	5,0	4,9	4,9	4,9	4,9	4,9	4,8	4,8	4,8
150°	4,6	4,7	4,7	4,7	4,6	4,6	4,6	4,6	4,6	4,6
160°	4,4	4,5	4,4	4,4	4,4	4,4	4,3	4,3	4,3	4,3
170°	4,2	4,3	4,2	4,2	4,2	4,1	4,1	4,2	4,1	4,1
180°	4,2	4,2	4,1	4,1	4,1	4,1	4,1	4,1	4,0	4,0

F = 500 Hz

φ θ	0°	10°	20°	30°	40°	50°	60°	70°	80°	90°
0°	0,0	0,0	0,0	0,0	0,1	0,1	0,0	0,0	0,0	0,0
10°	0,2	0,1	0,1	0,0	0,1	0,1	0,1	0,1	0,1	0,1
20°	0,4	0,3	0,2	0,2	1,2	1,2	0,0	0,0	0,0	0,0
30°	0,7	0,7	0,5	0,4	1,4	1,5	0,3	0,3	0,3	0,4
40°	1,2	1,2	1,0	0,9	1,9	2,0	0,9	0,9	1,0	1,0
50°	1,7	1,7	1,5	1,5	2,4	2,6	1,6	1,7	1,8	1,9
60°	2,4	2,4	2,2	2,2	3,0	3,2	2,4	2,6	2,6	2,7
70°	3,3	3,3	3,1	3,0	3,5	3,8	3,4	3,6	3,7	3,7
80°	4,1	4,2	4,1	3,9	4,2	4,4	4,3	4,4	4,5	4,7
90°	5,5	5,5	5,5	5,6	5,1	5,2	5,8	5,7	5,8	5,7
100°	6,7	6,8	6,9	6,8	5,7	5,7	6,8	6,5	6,4	6,4
110°	8,4	8,4	8,3	8,2	6,1	6,1	7,7	7,3	7,1	7,0
120°	9,8	9,8	9,8	9,5	6,2	6,2	8,3	7,8	7,5	7,3
130°	10,4	10,4	10,2	9,8	6,1	6,1	8,1	7,7	7,4	7,2
140°	9,9	9,9	9,2	8,9	5,9	5,9	7,4	7,0	6,8	6,8
150°	8,5	8,6	8,0	7,7	5,6	5,6	6,5	6,3	6,2	6,1
160°	7,3	7,3	6,9	6,6	5,4	5,4	5,9	5,8	5,6	5,6
170°	6,4	6,4	6,2	6,0	5,2	5,1	5,6	5,5	5,4	5,4
180°	6,0	6,0	6,0	6,0	5,1	5,1	5,9	5,8	5,7	5,7

F = 1000 Hz

φ θ	0°	10°	20°	30°	40°	50°	60°	70°	80°	90°
0°	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
10°	0,3	0,4	0,3	0,6	0,4	0,4	0,4	0,4	0,4	0,5
20°	0,8	1,1	1,0	1,1	1,0	1,0	0,9	0,8	0,9	1,0
30°	1,7	2,1	2,0	1,9	1,7	1,9	1,6	1,7	1,7	1,9
40°	3,1	3,5	3,3	3,2	3,1	3,3	3,0	3,0	3,1	3,1
50°	4,3	5,0	4,6	4,6	4,4	4,9	4,5	4,6	4,6	4,8
60°	5,9	6,6	6,3	6,2	6,0	6,5	6,2	6,4	6,3	6,5
70°	7,8	8,2	7,9	7,7	7,4	8,0	8,0	8,2	8,3	8,4
80°	8,9	9,4	9,3	9,0	8,9	9,2	9,3	9,4	9,5	9,9
90°	10,4	10,4	10,4	10,5	10,4	10,6	11,0	11,0	11,0	11,0
100°	10,9	11,1	11,2	11,4	11,7	11,8	12,0	11,7	11,6	11,6
110°	11,7	11,9	12,1	12,5	13,1	13,1	13,2	12,8	12,4	12,4
120°	13,1	13,2	13,9	14,3	15,0	14,6	14,3	13,4	12,9	12,7
130°	15,0	14,9	15,8	17,2	17,9	16,7	15,6	14,0	13,0	12,7
140°	16,8	16,7	17,9	19,1	20,2	19,1	17,0	15,1	13,8	13,2
150°	18,7	18,0	17,6	17,5	16,9	16,4	15,4	14,5	14,0	13,7
160°	17,4	17,0	15,8	14,9	14,5	13,7	13,2	12,9	12,7	12,6
170°	14,7	14,7	14,2	13,6	13,2	12,9	12,5	12,3	12,2	12,1
180°	13,3	13,3	13,3	13,2	13,2	13,3	13,2	13,2	13,1	13,2

F = 2000 Hz

φ θ	0°	10°	20°	30°	40°	50°	60°	70°	80°	90°
0°	0,0	0,0	0,0	0,0	0,0	0,1	0,0	0,1	0,0	0,1
10°	0,1	0,1	0,1	0,1	0,1	0,2	0,2	0,2	0,2	0,1
20°	0,4	0,4	0,2	0,2	0,1	0,3	0,2	0,2	0,7	1,2
30°	1,1	1,1	0,8	0,9	1,1	2,1	2,0	3,3	4,0	5,0
40°	2,2	2,2	2,2	2,7	3,7	5,8	6,4	7,0	6,7	6,3
50°	3,4	4,0	4,0	5,2	6,5	8,6	7,8	6,4	5,4	4,8
60°	5,3	6,2	6,8	8,3	9,6	10,1	8,3	6,7	5,8	5,4
70°	7,9	8,8	9,6	10,9	11,8	11,3	9,4	8,3	7,7	7,6
80°	9,5	10,7	12,1	13,2	14,0	12,9	11,0	9,9	9,5	9,7
90°	12,1	12,9	14,4	16,0	17,2	15,8	14,1	12,9	12,2	11,7
100°	14,0	14,5	15,6	16,8	18,6	17,7	15,8	14,1	13,1	12,5
110°	15,6	15,9	16,8	18,1	19,3	19,6	18,0	15,7	14,0	13,2
120°	16,0	16,2	17,1	18,1	18,9	20,3	21,0	17,6	14,5	13,1
130°	16,3	16,2	16,9	17,6	18,6	19,8	19,9	17,5	14,7	13,4
140°	17,0	16,5	16,7	17,4	18,2	18,8	18,8	17,4	15,9	14,8
150°	18,2	16,8	16,3	16,4	17,2	18,1	18,8	18,8	17,5	16,9
160°	21,7	19,4	19,1	18,7	17,9	18,2	18,0	18,1	17,9	17,8
170°	19,7	20,9	20,1	18,9	19,1	17,2	17,9	17,7	17,3	17,2
180°	15,5	15,6	15,5	15,5	15,6	15,6	15,8	16,0	16,1	16,0

F = 4000 Hz

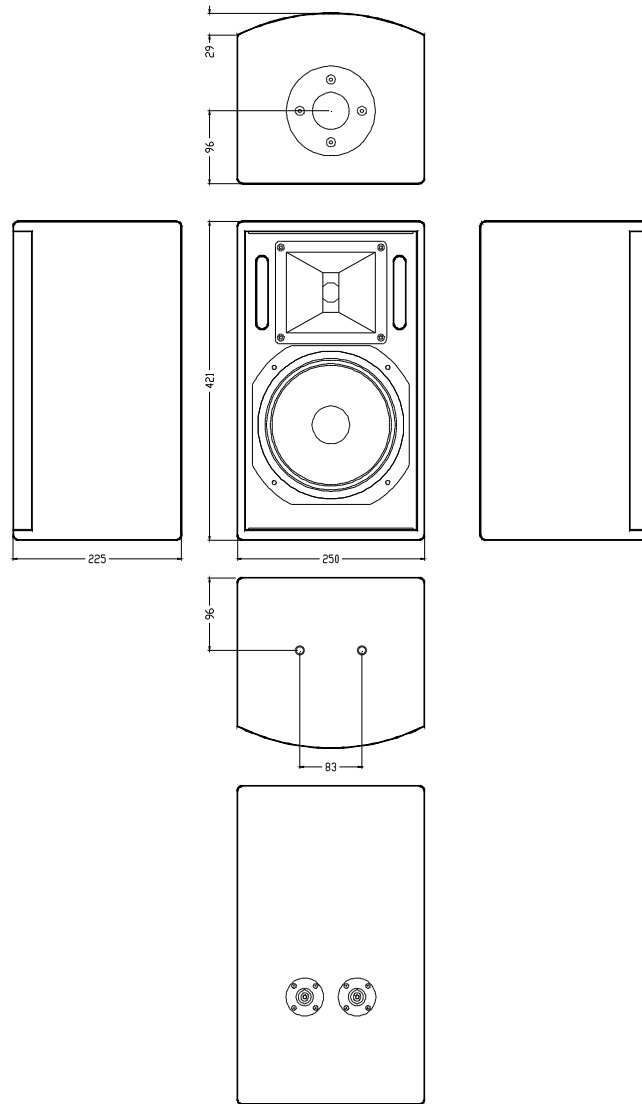
φ θ	0°	10°	20°	30°	40°	50°	60°	70°	80°	90°
0°	0,0	0,0	0,0	0,0	0,0	0,1	0,1	0,1	0,0	0,1
10°	0,6	0,7	0,6	1,1	0,7	0,8	0,6	0,5	0,5	0,6
20°	1,3	1,8	1,8	2,0	1,7	1,7	1,3	1,0	0,9	1,0
30°	2,7	3,2	3,0	2,7	2,3	2,4	2,1	2,4	2,7	3,2
40°	4,6	4,8	4,2	3,9	3,9	5,0	5,0	5,6	6,2	6,5
50°	6,2	6,4	5,6	5,9	6,4	7,8	7,8	8,6	9,3	9,7
60°	8,1	8,0	7,6	8,4	9,1	10,2	10,3	11,1	11,3	11,7
70°	10,5	10,4	10,3	11,2	11,6	13,1	13,0	13,9	13,2	12,8
80°	12,5	12,8	13,4	14,3	14,7	15,6	15,9	15,5	15,0	14,6
90°	15,6	15,3	16,2	17,8	18,1	18,5	18,9	18,0	17,5	16,6
100°	17,3	17,2	18,2	19,6	20,4	20,1	20,5	19,6	18,4	17,5
110°	19,3	18,8	19,6	21,1	21,9	21,3	21,1	20,4	19,1	18,2
120°	20,8	20,4	21,1	22,0	22,2	21,9	21,1	20,7	20,3	20,3
130°	21,4	21,4	21,5	22,1	22,0	21,6	21,2	21,1	21,5	21,4
140°	20,9	21,1	21,3	21,5	21,4	21,3	20,9	20,3	20,3	20,2
150°	22,0	21,6	21,9	21,6	21,3	20,8	20,3	19,8	19,3	19,1
160°	22,3	22,1	21,8	21,4	21,1	20,7	20,4	20,0	19,4	19,0
170°	24,4	24,0	24,2	23,8	23,2	20,2	20,3	19,1	18,0	17,5
180°	19,7	19,7	19,6	19,4	19,2	19,5	19,2	19,0	18,7	18,6

F = 8000 Hz

φ θ	0°	10°	20°	30°	40°	50°	60°	70°	80°	90°
0°	0,0	0,0	0,2	0,1	0,2	0,1	0,1	0,1	0,2	0,1
10°	0,4	0,2	0,0	0,5	0,3	0,6	0,4	0,3	0,7	1,0
20°	0,8	1,2	1,1	1,5	1,8	2,7	2,4	2,6	3,6	4,5
30°	2,6	3,0	3,2	3,9	4,5	6,1	6,0	7,1	7,7	8,5
40°	4,7	5,1	6,1	7,8	9,3	11,4	11,1	11,6	12,0	12,0
50°	6,6	7,9	9,0	11,4	13,6	16,2	15,5	15,7	15,8	15,9
60°	9,4	10,8	12,6	15,3	17,4	19,6	19,4	18,9	18,4	17,9
70°	12,9	14,3	16,3	19,0	20,7	23,3	22,5	22,1	21,3	19,5
80°	15,6	17,7	20,1	22,6	24,4	25,9	25,0	24,4	23,4	21,6
90°	20,1	21,3	24,0	27,0	28,9	29,8	29,3	27,9	26,6	24,2
100°	22,8	24,1	26,8	29,7	31,5	32,4	31,4	29,7	28,0	26,0
110°	25,5	26,6	28,6	31,1	33,3	33,8	33,1	31,4	29,6	27,6
120°	27,6	28,2	30,2	32,5	34,1	34,7	34,1	32,4	30,5	28,4
130°	28,8	29,4	31,1	32,6	34,2	34,7	33,3	32,5	31,2	29,5
140°	30,4	30,5	32,2	33,7	33,8	32,9	32,3	32,3	32,0	30,1
150°	29,8	30,7	31,9	32,7	31,2	30,7	31,1	31,1	31,8	31,7
160°	29,5	30,0	31,7	32,5	30,9	30,3	29,8	29,6	30,4	30,4
170°	31,8	32,4	32,9	32,2	30,9	31,6	29,9	29,4	28,7	27,6
180°	31,3	31,7	30,9	30,5	29,6	28,9	28,1	27,2	26,6	26,1

5.1 THE MTD 108 ENCLOSURE

a) External description



Scale:1/10

b) Shipping

The size of the package of an MTD 108 enclosure is:

H = 46 cm. (18")

W = 27 cm. (10.5")

D = 27 cm. (10.5")

The total shipping weight is: 8.5kg(18.5lb)

Warning: The package should not be exposed to water or moisture

c) Hardware

Grille: the front grille is made of honeycomb perforated 1.5 mm. thick steel with epoxy catalytic black finish. The drivers are further protected by a reticulated polyurethane foam 10 mm. thick glued in front of the grille.

The grille is fixed to the enclosure by 4 screws located just beneath the foam.

4 Fixing nuts are provided, 2 on each top/bottom side. They can be used either for accessories fitting or for yoke bracket mounting.

d) Construction

The MTD 108 cabinets are constructed of 15 mm. (0.6") Baltic Birch plywood, rabbeted, screwed and glued.

The structured heavy duty paint provides excellent scratch resistance for a long-lasting smooth appearance. The paint is also made available separately for maintenance.

The colour is RAL 8019 maroon-grey.

The screws are treated against corrosion.

6. INSTALLATION AND WIRING

6.1 HARDWARE AND ACCESSORIES

Once the optimum location has been determined for speakers installation (from the acoustic environment and the characteristics of the systems), hardware accessories are provided to ease their installation.

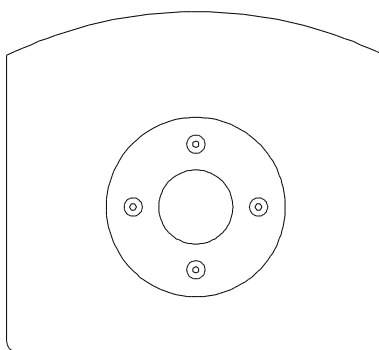
a) MTD 108 accessories

a.a) Yoke bracket CA ETR 4



Scale : 1/5

a.b) Stand mounting bracket



Scale : 1/5

6.2 CONNECTORS & CABLES

a) MTD 108 :The connectors of the MTD 108 are of the 4 pins Speakon type. Two are provided, located on the rear side of the enclosure.

The wiring is as follows:

1+ = +

1 - = -

2+ = NO CONNECTION

2 - = NO CONNECTION

b) In order to preserve a correct damping factor, which is essential both for the sonic qualities of the system and to prevent overshoot of the cone displacement function (which can eventually result into mechanical damage), it is desirable to keep the loudspeaker wires as short as possible, and of a gauge offering a low resistance per unit length.

The following chart provides the information on the minimum wire section vs. length.

Section area / Gauge		Max.recommended length			
		8Ω		4Ω	
Metric(mm2)	Imperial	Metric	Imperial	Metric	Imperial
2.5	12	10 m.	30 ft.	5 m.	15 ft.
4	10	18 m.	60 ft.	9 m.	30 ft.
6	8	30 m.	100 ft.	15 m.	50 ft.
10	6	45 m.	150 ft.	23 m.	75 ft.

6.3 SOUND SYSTEM DESIGN

The art of designing a sound system is a profession in itself, and the relevant skills and knowledge are supported by a few pertinent books. It is therefore neither to be described extensively, nor even summarised in a product user manual.

Further, we would like to underline how useful it is to involve a specialised engineer in any sound system design, whether he is an independent consultant or a house engineer, as *the best products can produce the worst results if improperly set-up.*

The object of this paragraph is to help the sound system designer in his task when MTD 108 systems are to be installed, simply by reminding a few features which are specific to this type of design.

a) Passive .

For its ease of installation and budget efficiency, the MTD 108 enclosure is passive.

The MTD 108 enclosure is capable of providing a very loud sound with respect to its size, a good coverage and a high sonic quality.

There is no "magic" behind this: Designed for maximum intelligibility, the transducer used for low and mid frequency reproduction has a light cone and a strong motor, allowing a fast and accurate response. This, typically, provides high efficiency with the tradeoff in low-frequency extension.

As the low end has been deliberately truncated, the result is a high available SPL figure for the size, as in this case the thermal power handling is not inversely depending on the efficiency.

Beware, however, of a risky situation occurring when the amplifiers are clipping, providing very high frequency components at full level. This is likely to occur when the amplifiers driving the loudspeaker are underrated, that is, not powerful enough.

TYPICAL AVAILABLE VOLTAGE OUTPUT OF THE AMPLIFIERS FOR DRIVING THE MTD 108:

35 volts permanently, continuously for more than 10 seconds (150 W / 8Ω; 300 W / 4Ω)

45 volts for a few milliseconds (250 W / 8Ω; 500 W / 4Ω)

b) Single source

Due to the small size of the drivers (the distance between the acoustics centres in the enclosure is not larger than the wavelength at the cutoff frequency), the MTD 108 can provide a true acoustic point-source. This is a great advantage which is lost when coupling enclosures together. Although it is sometimes attempted to couple two enclosures to achieve some power or SPL requirements from one source, the sound system designer should bear in mind that he will find more easily a high-quality result by dissociating the enclosures.

High quality results can only be achieved this way, as coupling two or more enclosures induces mid- and high-frequency band destructive interferences, producing a chaotic soundfield commonly known as "comb-filtering".

c) Speaker aiming.

Unlike other single source designs of the L-ACOUSTICS range, the MTD 108 is of the constant-coverage type. As a proximity loudspeaker, it is not meant to generate a sound field combining the room response. For this type of application, the constant coverage behaviour presents the advantage of providing an energy which is evenly distributed over the covered area, and which is consistent with the on-axis pressure.

It is therefore straightforward to install, the coverage being known. Ideally , the loudspeaker should be aimed at the center of the area to be covered. Practical considerations may lead to other aimings; it should be arranged, however, that the edges of the 90° (horizontal plane) coverage covers the allotted audience plane without overlapping with areas having open microphones. In the 60° (vertical plane), the axis should remain as much as possible directed towards the centre of the allotted part of the audience, as the coverage consistency is not as good in the vertical plane as in the horizontal one.

d) Subwoofer location

- Main Sound Reinforcement applications

For small S.R. applications, the subwoofers will be operated preferably in mono, fed with a signal from the "sub" output of a R.C.4.6 routing controller. In this case, the subwoofer(s) shall preferably be located in a central position, approximately at a distance which is equivalent from the left and right speakers.

Preferably, the subwoofers will be located on the floor, or against a hard wall. If this can be achieved, one SB 115 subwoofer per pair of MTD 108 will provide sufficient output.

If the difference of distance between the subwoofers and the MTD 108 at a point which is roughly in the middle of the direct field area reaches 1.4m, acoustic cancellation will occur around this point at the crossover frequency. This should be compensated by correct repositioning of the subwoofers. If, for practical reasons, this cannot be achieved it is to be done virtually with the help of a delay unit for a proper time alignment (4 milliseconds for 1.4m).

6.4 PHASE CHECK

A phase check of every installation must be performed. This shall be done with a polarity checking system, like, for instance, the SCV PC 80 MKII, or equivalent.

This system comprises two devices, a generator and a receiver. The checking procedure is as follows:

1 Generator

- a) disconnect one output of the mixing desk, and replace it by the output of the PC 80 generator.
- b) the PC 80 generator should be switched on "HOT PIN 3"
- c) turn the whole system ON
- d) switch the generator ON, with level at minimum.
- e) crank up the level until you obtain a reasonably measurable sound ("Plop,Plop")

2 Receiver

- a) connect a microphone to the input of the generator
- b) switch the "HOT PIN" to 2 or 3 according to the wiring of the microphone
- c) switch to EXT.MIC
- d) switch the PC 80 receiver ON
- e) Place the microphone near each loudspeaker fed with the signal of this output of the mixing desk, and observe if the lightened LED is the red one (negative polarity) or the green one (positive polarity)

3 Loudspeakers

a) MTD 108 enclosure:

The bass must show a positive polarity, with the green LED on

The compression driver must show a negative polarity, with the red LED on

b) SUBS: the subs must show a positive polarity, with the green LED on.

4 Do it again, for each output of the mixing desk.

7. MAINTAINANCE & MISCELLANEOUS

7.1 MTD 108 ENCLOSURE

a) Periodic check.

The response of the enclosure should be checked periodically, to prevent deviations due to wear, shocks or any event. This should be done at least every two years for systems not being submitted to heavy-duty use. For systems being used nearly everyday, or systems touring, this period should be reduced to six months.

This check can be performed with a well displayed 1/3 octave analyser, or even preferably a TEF or a MLSSA analyser. It should refer to the on axis amplitude/frequency response presented in page 14 of the present document.

The fixing of the chassis driver assembly should also be checked, as the metal screws could become loose after being submitted to intense, long duration mechanical vibrations.

The quality of the contacts and the locking of the SPEAKON connector should also be checked.

b) Phase check.

Whenever a diaphragm is replaced, the wiring polarity should be checked with a phase check device as mentioned in 6.4.

