

# DS-4P *Self-Powered Loudspeaker*

## OPERATING INSTRUCTIONS



*Superior  
engineering  
for the art  
and science  
of sound.*



**Meyer  
Sound**

*Keep these important operating instructions.*

OPERATING INSTRUCTIONS

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## SYMBOLS USED

THESE SYMBOLS INDICATE IMPORTANT SAFETY OR OPERATING FEATURES IN THIS BOOKLET AND ON THE CHASSIS.



Dangerous voltages: risk of electric shock	Important operating instructions	Frame or chassis	Protective earth ground
Pour indiquer les risques résultant de tensions dangereuses	Pour indiquer important instructions	Masse, châssis	Terre de protection
Zu die gefahren von gefährliche spannung zeigen	Zu wichtige betriebs- anweisung und unter- haltsanweisung zeigen	Rahmen oder chassis	Die schutzerde
Para indicar azares provengo de peligroso voltajes	Para indicar importante funcionar y mantenimiento instrucciones	Armadura o chassis	Tierra proteccionista

## DECLARATION OF CONFORMITY ACCORDING TO ISO/IEC GUIDE AND EN 45014

The Manufacturer:  
**MEYER SOUND LABORATORIES, INC.**  
2832 San Pablo Avenue  
Berkeley, California 94702-2204, USA

Declares that the product:  
**DS-4P**

Conforms to the following Product Specifications

Safety: EN60065: 1994  
EMC: EN55103-1 emission<sup>1</sup>  
EN55103-2 immunity<sup>2</sup>

This device complies with the requirements of the Low Voltage Directive 73 / 23 / EEC and the EMC Directive 89 / 336 / EEC.

This device also complies with EN 55103-1 & -2. Operation is subject to the following two conditions:

- (1) this device may not cause harmful interference, and
- (2) this device must accept any interference received, including interference that may cause undesired operation.

### ENVIRONMENTAL SPECIFICATIONS FOR MEYER SOUND ELECTRONICS PRODUCTS:

**Operating Temperature** 0° to + 45°  
**Nonoperating Temperature** <-40°C or > +75°C  
**Humidity** to 95% at 35°C  
**Operating Altitude** to 4600 m (15,000 ft)  
**Nonoperating Altitude** to 6300 m (25,000 ft)  
**Shock** 30g 11 msec half-sine on each  
of 6 sides  
**Vibration** 10Hz to 55Hz (0.010m  
peak-to-peak excursion)

UL and CSA compliance is pending.  
Call Meyer Sound for current status.



Made by Meyer Sound Laboratories  
Berkeley, California USA  
European Offices:  
Meyer Sound Lab. GmbH  
Carl Zeiss Strasse 13  
56751 Polch, Germany



Office of Quality Manager  
Berkeley, California USA April 21, 1999



## SAFETY SUMMARY



### ENGLISH

- To reduce the risk of electric shock, disconnect the loudspeaker from the AC mains before installing audio cable. Reconnect the power cord only after making all signal connections.
- Connect the loudspeaker to a two-pole, three wire grounding mains receptacle. The receptacle must be connected to a fuse or circuit breaker. Connection to any other type of receptacle poses a shock hazard and may violate local electrical codes.
- Do not install the loudspeaker in wet or humid locations without using weather protection equipment from Meyer Sound.
- Do not allow water or any foreign object to get inside the loudspeaker. Do not put objects containing liquid on, or near, the unit.
- To reduce the risk of overheating the loudspeaker, avoid exposing it to direct sunlight. Do not install the unit near heat-emitting appliances, such as a room heater or stove.
- This loudspeaker contains potentially hazardous voltages. Do not attempt to disassemble the unit. The unit contains no user-serviceable parts. Repairs should be performed only by factory-trained service personnel.

### FRANÇAIS

- Pour réduire le risque d'électrocution, débrancher la prise principale de l'haut-parleur, avant d'installer le câble d'interface allant à l'audio. Ne rebrancher le bloc d'alimentation qu'après avoir effectué toutes les connections.
- Branchez l'haut-parleur dans une prise de courant à 3 dérivations (deux pôles et la terre). Cette prise doit être munie d'une protection adéquate (fusible ou coupe-circuit). Le branchement dans tout autre genre de prise pourrait entraîner un risque d'électrocution et peut constituer une infraction à la réglementation locale concernant les installations électriques.
- Ne pas installer l'haut-parleur dans un

endroit où il y a de l'eau ou une humidité excessive.

- Ne pas laisser de l'eau ou tout objet pénétrer dans l'haut-parleur. Ne pas placer de récipients contenant un liquide sur cet appareil, ni à proximité de celui-ci.
- Pour éviter une surchauffe de l'haut-parleur, conserver-la à l'abri du soleil. Ne pas installer à proximité d'appareils dégagant de la chaleur tels que radiateurs ou appareils de chauffage.
- Ce haut-parleur contient des circuits haute tension présentant un danger. Ne jamais essayer de le démonter. Il n'y a aucun composant qui puisse être réparé par l'utilisateur. Toutes les réparations doivent être effectuées par du personnel qualifié et agréé par le constructeur.

### DEUTSCH

- Um die Gefahr eines elektrischen Schlages auf ein Minimum zu reduzieren, den Lautsprecher vom Stromnetz trennen, bevor ggf. ein Audio-Schnittstellensignalkabel angeschlossen wird. Das Netzkabel erst nach Herstellung aller Signalverbindungen wieder einstecken.
- Der Lautsprecher an eine geerdete zweipolige Dreiphasen-Netzsteckdose anschließen. Die Steckdose muß mit einem geeigneten Abzweigschutz (Sicherung oder Leistungsschalter) verbunden sein. Der Anschluß der unterbrechungsfreien Stromversorgung an einen anderen Steckdosentyp kann zu Stromschlägen führen und gegen die örtlichen Vorschriften verstoßen.
- Der Lautsprecher nicht an einem Ort aufstellen, an dem sie mit Wasser oder übermäßig hoher Luftfeuchtigkeit in Berührung kommen könnte.
- Darauf achten, daß weder Wasser noch Fremdkörper in das Innere den Lautsprecher eindringen. Keine Objekte, die Flüssigkeit enthalten, auf oder neben die unterbrechungsfreie Stromversorgung stellen.

- Um ein Überhitzen dem Lautsprecher zu verhindern, das Gerät vor direkter Sonneneinstrahlung fernhalten und nicht in der Nähe von wärmeabstrahlenden Haushaltsgeräten (z.B. Heizgerät oder Herd) aufstellen.
- Im Inneren diesem Lautsprecher herrschen potentiell gefährliche Spannungen. Nicht versuchen, das Gerät zu öffnen. Es enthält keine vom Benutzer reparierbaren Teile. Reparaturen dürfen nur von ausgebildetem Kundendienstpersonal durchgeführt werden.

### ESPAÑOL

- Para reducir el riesgo de descarga eléctrica, desconecte de la red el altoparlante antes de instalar el cable de señalización de interfaz de la segnale. Vuelva a conectar el conductor flexible de alimentación solamente una vez efectuadas todas las interconexiones de señalización.
- Conecte el altoparlante a un tomacorriente bipolar y trifilar con neutro de puesta a tierra. El tomacorriente debe estar conectado a la protección de derivación apropiada (ya sea un fusible o un disyuntor). La conexión a cualquier otro tipo de tomacorriente puede constituir peligro de descarga eléctrica y violar los códigos eléctricos locales.
- No instale el altoparlante en lugares donde haya agua o humedad excesiva.
- No deje que en el altoparlante entre agua ni ningún objeto extraño. No ponga objetos con líquidos encima de la unidad ni cerca de ella.
- Para reducir el riesgo de sobrecalentamiento, no exponga la unidad a los rayos directos del sol ni la instale cerca de artefactos que emiten calor, como estufas o cocinas.
- Este altoparlante contiene niveles de voltaje peligrosos en potencia. No intente desarmar la unidad, pues no contiene piezas que puedan ser reparadas por el usuario. Las reparaciones deben efectuarse únicamente por parte del personal de mantenimiento capacitado en la fábrica.

## DS-4P: INTRODUCTION

The self-powered DS-4P is an arrayable mid-bass loudspeaker system which provides high power and extremely low distortion. It was developed to supplement the 70-200Hz band in full-range systems, affording additional mid-bass headroom. The DS-4P is most effective when used in multiples within an array, and it can easily be incorporated into conventionally powered or self-powered systems. The DS-4P uses two 12-inch cone drivers in a true horn enclosure. The horn's flare provides maximum energy transfer in the mid-bands with minimum frequency response ripple.

The DS-4P's trapezoidal shape facilitates the creation of loudspeaker arrays that maximize the coverage area and SPL for the size of the array. Two types of rigging hardware (aircraft pan fittings and L-Track fittings) are available to safely suspend the DS-4P.

The DS-4P can be equipped to operate with the **Remote Monitoring System (RMS)** interface network and software application. RMS displays signal and power levels, driver and cooling fan status, limiter activity, and amplifier temperature for all loudspeakers in the network on a Windows-based PC.

The minimum configuration of two DS-4Ps have the following acoustical specifications:

<b>Operating Range</b>	60 – 250Hz
<b>Frequency Response*</b>	70 – 200Hz (±4dB)
<b>Phase Response*</b>	±70° 70-200Hz
<b>Dynamic Range</b>	>120dB
<b>Coverage</b>	120°H 120°V

\*Measured with one-third octave frequency resolution in fixed ISO bands.

## AC POWER

When AC power is applied to the DS-4P, the **Intelligent AC™** supply automatically selects the correct operating voltage, allowing the DS-4P to be used worldwide without manually setting a voltage switch. The Intelligent AC power supply also performs surge suppression for high voltage transients (up to 275V), minimizes inrush current, and filters EMI. *Continuous voltages above 275VAC may damage the unit!* The DS-4P uses a NEMA L6-20P or IEC 309 male power inlet and satisfies UL, CSA, and CE safety standards.

### VOLTAGE REQUIREMENTS

The DS-4P operates safely and without audio discontinuity if the AC voltage stays within the ranges 85–134V or 165–264V, at 50 or 60Hz. Immediately after applying AC power, the green **Active** LED on the user panel illuminates and the proper operating voltage is automatically selected, but the system is muted. During the next three seconds, the primary fan turns on, the main power supply slowly ramps on, and the system is enabled to pass audio signals.

**TROUBLESHOOTING NOTE:** If the Active LED does not illuminate or the system does not respond to audio input after ten seconds, remove AC power to avoid possible damage to the unit. Experienced electronics technicians with access to a test bench can verify

proper operation for the power supply and amplifier system with The Meyer Sound Self-Powered Series MP-2 and MP-4 Field Verification Procedure (part #17.033.066.01); contact Meyer Sound to receive this document). All other users should contact Meyer Sound or an authorized Meyer Sound service center.

If the voltage decreases below the lower bounds of either operating range (known as a *brownout* period), the supply uses current from its storage circuits and continues to function briefly. The unit turns off if the voltage does not increase above the threshold before the storage circuits are depleted. The length of time that the DS-4P continues to operate during brownout depends on how low the voltage drops and the audio source level during this period.

If the voltage fluctuates within either operating range, automatic tap selection stabilizes the internal operating voltage. This tap selection is instantaneous and there are no audible artifacts. If the voltage increases above the upper bound of either range, the power supply turns off rapidly, preventing damage to the unit.

If the DS-4P shuts down due to either low or high voltage, the power supply

automatically turns on after three seconds if the voltage has returned to normal operating range. If the DS-4P does not turn back on after ten seconds, remove AC power and refer to the **TROUBLESHOOTING NOTE** previously in this section.

### CURRENT REQUIREMENTS

The DS-4P presents a dynamic load to the AC mains which causes the amount of current to fluctuate between quiet and loud operating levels. Since different types of cables and circuit breakers heat up (and trip) at varying rates, it is essential to understand the types of current ratings and how they correspond to circuit breaker and cable specifications.

The **maximum continuous RMS** current is the maximum RMS current over a duration of at least 10 seconds. It is used to calculate the temperature increase in cables, which is used to select cables that conform to electrical code standards. It is also used to select the rating for slow-reacting thermal breakers.

The **maximum burst RMS** current is the maximum RMS current over a one second duration. It is used to select the rating for most magnetic breakers.

The **maximum instantaneous peak**

**current during burst** is used to select the rating for fast-reacting magnetic breakers and to calculate the peak voltage drop in long AC cables according to the formula

$$V_{pk\,drop} = I_{pk} \times R_{total\,cable}$$

Use the table below as a guide to select cables and circuit breakers with appropriate ratings for your operating voltage.

### DS-4P Current Ratings

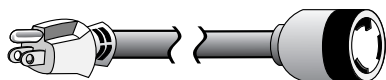
	115V	230V	100V
Max. Continuous RMS	8 A	4 A	10 A
Max. Burst RMS	15 A	8 A	18 A
Max Peak During Burst	22 A	11 A	25 A

The minimum electrical service amperage required by Meyer Sound loudspeaker systems is the sum of their **maximum continuous RMS** currents. We recommend allowing an additional 30% above the minimum amperage to prevent peak voltage drops at the service entry.

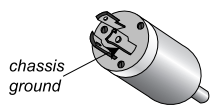
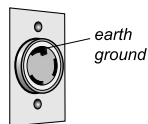
**TROUBLESHOOTING NOTE:** In the unlikely case that the circuit breaker trips (the white center buttons pop out), do not reset the breaker! Contact Meyer Sound for repair information.

### SAFETY ISSUES

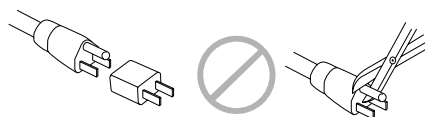
Pay close attention to these important electrical and safety issues.



Use a power cord adapter to drive the DS-4P from a standard 3-prong outlet (NEMA 5-15R; 125V max).



The DS-4P requires a grounded outlet. Always use a grounding adapter when connecting to ungrounded outlets.



Do not use a ground-lifting adapter or cut the AC cable ground pin.



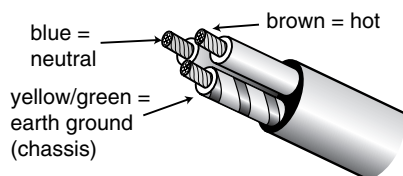
Keep all liquids away from the DS-4P to avoid hazards from electrical shock.

Do not operate the unit if the power cables are frayed or broken.

Tie-wrap anchors on the amplifier chassis provide strain relief for the power and signal cables. Insert the plastic tie-wraps through the anchors and wrap them around the cables.

### POWER CONNECTOR WIRING CONVENTIONS

Use the following AC cable wiring diagram to create international or special-purpose power connectors:



**AC cable color code**

If the colors referred to in the diagram don't correspond to the terminals in your plug, use the following guidelines:

- Connect the blue wire to the terminal marked with an N or colored black.
- Connect the brown wire to the terminal marked with an L or colored red.
- connect the green and yellow wire to the terminal marked with an E or  $\oplus$  or colored green or green and yellow.

### AUDIO INPUT

The DS-4P presents a 10 kOhm balanced input impedance to a three-pin XLR connector wired with the following convention:

- Pin 1** 220 k $\Omega$  to chassis and earth ground (ESD clamped)

- Pin 2** Signal
  - Pin 3** Signal
  - Case** Earth (AC) ground and chassis
- } Differential Outputs



Shorting an input connector pin to the case can form a ground loop and cause hum.

Pins 2 and 3 carry the input as a differential signal; their polarity can be reversed with the **input polarity** switch on the user panel. If the switch is in the up position, pin 2 is hot relative to pin 3, resulting in a positive pressure wave when a positive signal is applied to pin 2. Use standard audio cables with XLR connectors for balanced signal sources.

### TROUBLESHOOTING NOTE:

If abnormal noise (hum, hiss, popping) is produced from the loudspeaker, disconnect the audio source from the loudspeaker. If the noise stops, then the problem is not within the loudspeaker; check the audio input and AC power.

A single source can drive multiple DS-4Ps with a paralleled input loop, creating an unbuffered hardwired loop connection. The input impedance for a single DS-4P is 10k $\Omega$ ; if  $n$  represents the number of DS-4Ps in use, cascading  $n$  DS-4Ps will produce a balanced input impedance of 10k $\Omega$  divided by  $n$ . To avoid distortion from the source, make sure that the source equipment can drive the total load impedance presented by the paralleled input circuit. For most source equipment it is safe to drive circuits whose input impedance is no smaller than 10 times its output impedance. For example, cascading 10 DS-4Ps produces an input impedance of 1000 Ohms (10k $\Omega$  divided by 10). The source equipment should have an output impedance of 100 ohms or less. This is also true when connecting in parallel (loop out) DS-4Ps to 650-Ps, MSL-4s, or any other Meyer Sound self-powered loudspeaker system.

The LD-1A is highly recommended when driving systems using multiple loudspeakers. (See Complete Systems, page 8.)



## AMPLIFICATION AND PROTECTION CIRCUITRY

Each driver in the DS-4P is powered by one channel of the Meyer Sound MP-2/DS-4P, a 1240W RMS amplifier (620W RMS/ch) utilizing complementary power MOSFET output stages (class AB/H). The following sections discuss the MP-2's limiting circuitry and the two-fan cooling system.

### TRUPOWER™ LIMITING SYSTEM

Conventional limiters assume that the resistance of a loudspeaker remains constant and set the limiting threshold by measuring voltage only. This method is inaccurate because the loudspeaker's resistance changes in response to the frequency content of the source material and thermal variations in the loudspeaker's voice coil and magnet. Conventional limiters begin limiting prematurely, which under-utilizes system headroom and deprives the loudspeaker of its full dynamic range.

The TruPower limiting (TPL) system accounts for varying loudspeaker impedance by measuring current, in addition to voltage, to compute the power dissipation and voice coil temperature. TPL improves performance before and during limiting by allowing the loudspeaker to produce its maximum SPL across its entire frequency range. TPL also extends the lifetime of the drivers by controlling the temperature of the voice coil.

When the safe continuous power level is exceeded, a single limiter engages, affecting both amplifier channels equally. TPL activity is indicated by the **Low Limit** LED on the user panel. The limiter ceases operation when the power level returns to normal and does not affect the signal when the LED is inactive.

The DS-4P performs within its acoustical specifications and operates at a normal temperature if the TPL LED is on for no longer than two seconds, and off for at

least one second. If the LED remains on for longer than three seconds, the DS-4P is **hard limiting** with these negative consequences:

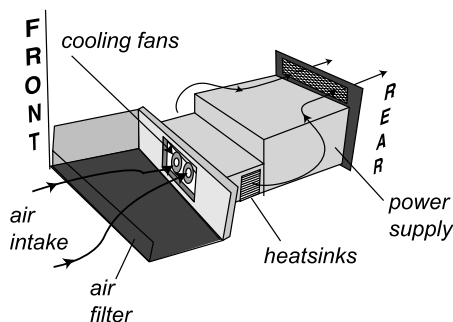
- Increasing the input level will not increase the volume.
- The system distorts due to clipping and nonlinear driver operation.
- The life-span of driver and amplifier components is reduced because they are subjected to excessive heat.

The TPL LED can indicate an imbalance in a system of loudspeakers by functioning like a spectrum analyzer. If drivers in a subwoofer, mid-bass, or mid-hi subsystem begin to limit before reaching the required operating level for the entire system, then that subsystem needs to be supplemented with additional loudspeakers.

**NOTE:** Although the TPL limiters exhibit smooth sonic characteristics, we do not recommend using them for intentional compression effects. Use an outboard compressor/limiter to compress a mixed signal.

### FANS AND COOLING SYSTEM

The DS-4P uses a forced-air cooling system with two fans to prevent the amplifiers from overheating. The fans draw air in through ducts on the front of the cabinet, over the heatsinks, and out the rear of the cabinet. Since dust does not accumulate in the amplifier circuitry, its life-span is increased significantly.



A foam insert filter, in combination with the entire front grill surface, acts as an air filter for the cooling system. Despite the filtering, extensive use or a dusty operating environment can allow dust to accumulate along the path of the airflow, preventing normal cooling. We recommend periodically removing the grill, filter, and amplifier module and using compressed air to clear dust from the grill, filter, fans, and heatsinks. Make sure that the air ducts are clear and that there is at least six inches clearance for exhaust behind the cabinet.

A variable-speed primary fan runs continuously with an inaudible operating noise of 22 dBA at 1 m at its slowest speed. The speed of the primary fan begins increasing when the temperature of the heatsinks reaches 42°C. The fan reaches full speed at 62°C and is barely audible near the cabinet, even without an audio signal.

In the unusual event that the heatsink temperature reaches 74°C, the secondary fan turns on; it turns off when the temperature decreases to 68°C. The secondary fan is audible at close proximity without an audio signal and turns on in response to

- primary fan failure (check its status immediately);
- accumulation of dust in the cooling system path;
- a prolonged period of high source levels in hot temperatures or direct sunlight;
- driver failure.

**TROUBLESHOOTING NOTE:** In the highly unlikely event that the secondary fan does not keep the temperature below 85°C, the DS-4P automatically shuts down until AC power is removed and reapplied. If the DS-4P shuts down again after cooling and reapplying AC power, contact Meyer Sound for repair information.

# RIGGING

Two types of rigging hardware are available to fly the DS-4P loudspeaker system: Aircraft pan fittings and the optional L-Track system. Additionally, weather protective treatment is available for the DS-4P. With the exception of the optional rain hood, all rigging hardware is installed and tested exclusively at Meyer Sound Laboratories. The DS-4P is available with aircraft pan fittings only, L-Track only, or with both aircraft pan fittings and L-Track rigging hardware.

## AIRCRAFT PAN FITTINGS

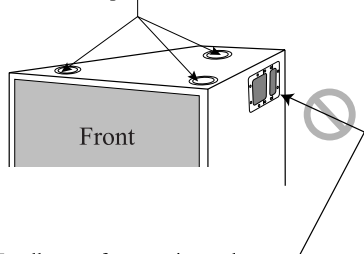
The DS-4P with only aircraft pan fittings weighs 163 lbs (74 kg), or 169 lbs (77 kg) when carpeted. The maximum recommended load for a single cabinet with these fittings is 600 lbs (273 kg). This *working load* is based on a 5:1 safety factor. The DS-4P has six rigging fittings (three on top and bottom). Each fitting is capable of supporting the full working load of the cabinet.

There are four types of interchangeable rigging fittings, each fastened by six Phillips screws:

- aircraft pan fittings (ring and stud)
- 3/8"-16 nut plates
- M-10 x 1.5 metric nut plates
- blank plates (if no rigging fittings are requested)

**NOTE:** Units with nut plates are rated for the weight of one cabinet only.

rigging brackets  
three on top, three on bottom



! Handles are for carrying only. Do not use them for rigging!

Rigging load ratings assume a straight tensile pull and that the cabinet is in new condition with aircraft pan fittings. If these conditions are not met, the load ratings can be reduced significantly.

Load ratings can also be reduced by age, wear, and damage. It is important to inspect the rigging hardware regularly and replace worn or damaged components immediately.

## THE DS-4P WITH OPTIONAL L-TRACK RIGGING SYSTEM

The DS-4P equipped with the L-Track rigging system weighs 182 lbs (83 kg). The carpeted version of a DS-4P with L-Track weighs 188 lbs (86 kg). The **maximum recommended load for an L-Track-equipped DS-4P at vertical pull using any 2 points is 1500 lbs (682 kg)**. We strongly recommend using all four rigging points per end. This *working load* is based on a 5:1 safety factor<sup>1</sup>.

L-Track provides eight rigging points (four on the top and bottom end of each cabinet); the maximum working load of each individual point is

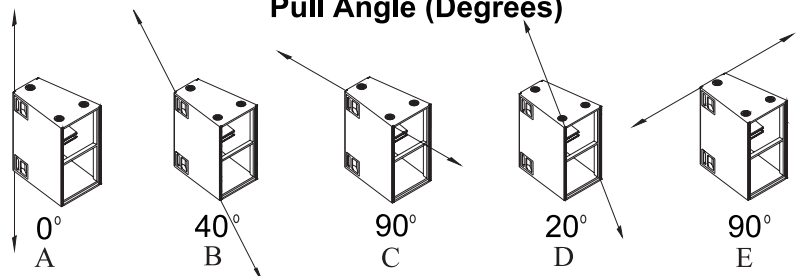
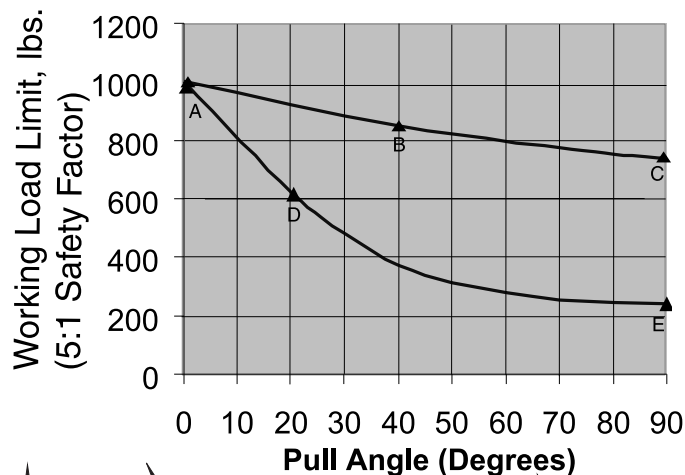
dependent on the direction in which the cabinet is being pulled at each particular point. Figure 1 on the following page shows the working loads for each point as they vary depending on cabinet pull angle.



When flying the DS-4P using the L-Track system, it is absolutely imperative that you do not exceed either the maximum recommended working load for an entire cabinet **or** the working load of any individual rigging point.

All working load limit ratings assume the cabinet, fittings, and L-Track are in new condition. If not, the load ratings can be reduced significantly. It is important to inspect the rigging hardware regularly and replace worn or damaged components immediately.

## Single Point Working Loads<sup>2</sup> (L-Track Rigging Hardware)



1. Depending upon your geographic location a different safety factor may be required. All Meyer Sound products must be used in accordance with local, state, federal, and industry regulations. It is the owner's and/or user's responsibility to adhere to local regulations and evaluate the reliability of any rigging method for their application. Rigging should be done only by experienced professionals.
2. Results from tests of the L-Track rigging system using the New Haven Part #NH47556-12.

## ALL-WEATHER RIGGING EQUIPMENT

The cabinet, exposed electronic circuitry, and its accompanying drivers can receive protective treatment while still in the factory that permits safe use in wet conditions. Additionally, a rain hood can be fitted to shield cables and

## COMPLETE SYSTEMS

Meyer Sound self-powered loudspeaker systems are designed complementarily in frequency and phase to maximize power through each crossover point in a complete system.

### DS4-P / MSL-4 / 650-P RECOMMENDED SETUP

We strongly recommend using a minimum of two DS-4Ps in the same array. A complimentary ratio of one Meyer Sound MSL-4 to one DS-4P will give users extra power headroom in the 70Hz to 200Hz band pass.

To integrate different types of Meyer Sound self-powered loudspeakers into a complete system, we recommend using the Meyer Sound **LD-1A Line Driver**. The LD-1A has two channels equipped to control a full-range main system, and six auxiliary channels for down-fill, front-fill, and delay systems. The LD-1A maintains signal integrity for long cable paths.

The LD-1A's filters have been designed to compliment and work with the internal filters in Meyer Sound's self-powered products in order to minimize time offset while maximizing power addition when these products are added together. The LD-1A further gives users the ability to balance level between the products within a system.

Figure 1 illustrates the recommended settings for the DS-4P's use with MSL-4s and 650-P Subwoofers. The DS-4P has been engineered in both frequency and phase response to work with the LD-1A's filters when used in a co-planar configuration. All of the products contain their own active bandlimiting networks, however these additional filters are required when the three products are added together.

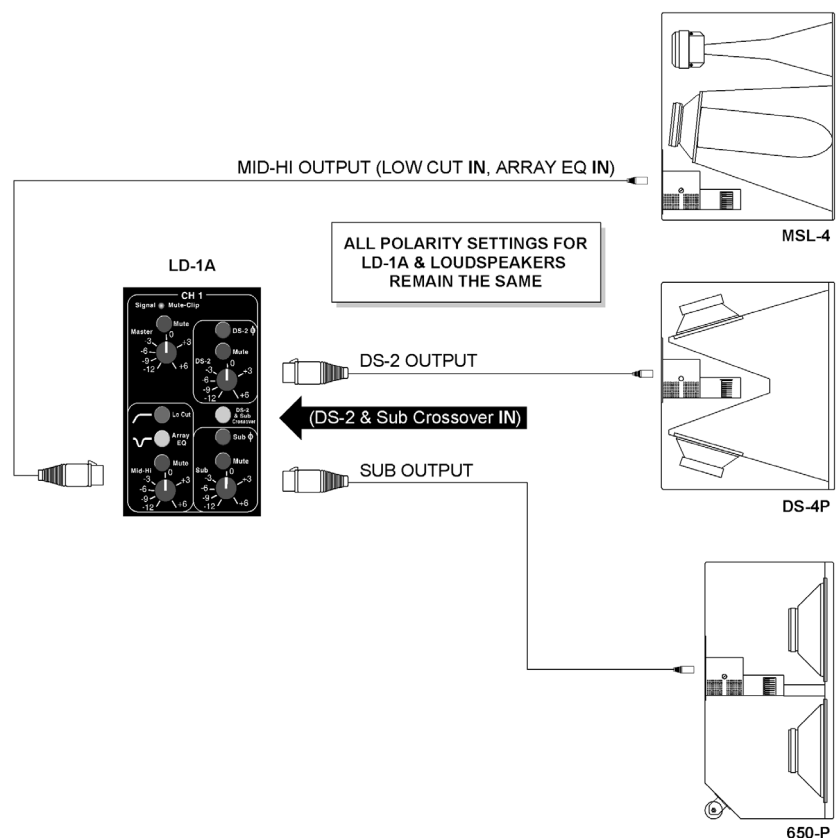
electronics. *Do not install a unit outdoors without weather protection!* Contact Meyer Sound for more information.

**NOTE:** All Meyer Sound products must be used in accordance with local, state,

federal, and industry regulations. It is the owner's and/or user's responsibility to evaluate the reliability of any rigging method for their application. Rigging should be done only by experienced professionals.

The DS-4P has been optimized for the LD-1A's *Array EQ* in combination with the *Low Cut* filter IN on the Mid-High output. These two filters allow the MSL-4/DS-4P to add together in phase response through their crossover range to give you optimal power addition.

A typical system configuration will be MSL-4s flown in the same array with DS-4Ps and subwoofers on the ground in half space. If the subwoofer arrays are offset vertically to the MSL-4/DS-4Ps, then some minor delay compensation may be required to optimize the system's crossover range between the DS-4Ps and the subwoofers.



**Figure 1**

**NOTE:** In a typical flown array with a one-to-one ratio of MSL-4s to DS-4Ps, a gain adjustment of +/- 2dB should be expected depending on the array's

splay angles. If the DS-4Ps are put on the ground (in half space), the relative levels will change to approximately 6dB less gain to the DS-4Ps.



Figure 2 is the electrical response of the LD-1A with all three filters engaged, and polarity options equal (non-inverted) as recommended in the previous (Figure 1) diagram.

**NOTE:** The LD-1A's DS-2P output provides a special

eq filter to minimize time offset in the VLF range. The Sub Output as well as the Hi-Pass filter are gentle slopes (about 12 dB per octave) in order to minimize time offset of all three products working together through the 30 to 200 Hz passband.

## MEASUREMENT AND SYSTEMS INTEGRATION TOOLS

It is essential that even the most carefully assembled sound systems be analyzed with precise measurement tools. We recommend using the Meyer Sound **SIM® System II Sound Analyzer and CP-10 Parametric Equalizer** to

- assist the process of choosing and configuring loudspeaker systems;
- measure propagation delays between subsystems to set

the correct polarity and delay times;

- measure and equalize variations in frequency response caused by the acoustical environment and the placement and interaction of loudspeaker systems.

Contact Meyer Sound for assistance with your application.

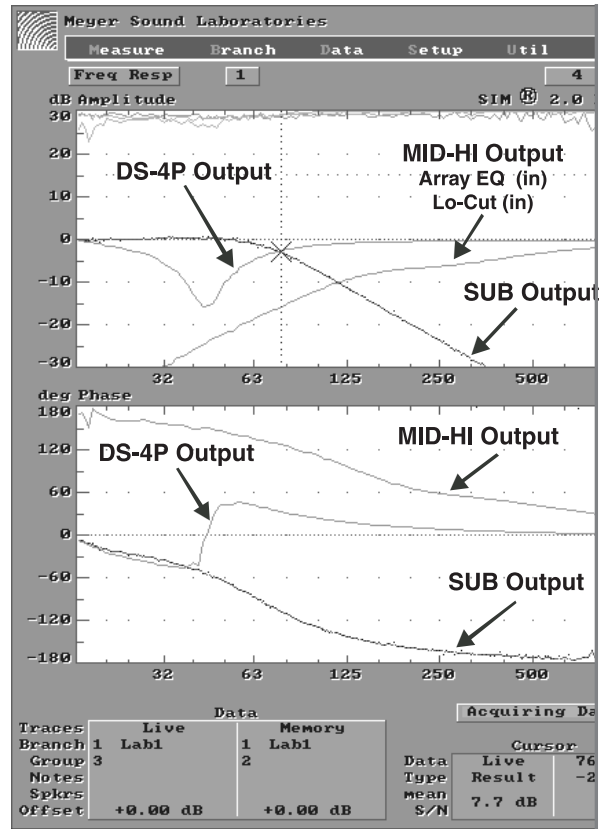


Figure 2

## DRIVER TROUBLESHOOTING

### TROUBLESHOOTING WITH TPL

The TPL LED can indicate potential driver problems, if interpreted correctly. If one DS-4P in a system exhibits substantially more TPL activity than others receiving the same audio signal, then one or both drivers in that unit may have a short circuit. This is a potentially dangerous condition for the electronics; shut the DS-4P down immediately.

The TPL circuit does not activate if there is no power dissipation in the driver, regardless of the input signal level. Therefore, if all DS-4Ps in a system receiving the same audio signal exhibit TPL activity except one, then that unit may have an open voice coil; disconnect it and contact Meyer Sound for replacement information.

**NOTE:** The Remote Monitoring System (RMS) provides precise information about peak power, peak voltage, and average voltage (VU) for each amplifier channel, enabling a more

complete driver diagnostic than the TPL LEDs. Contact Meyer Sound for more information about RMS.

### DRIVER REPLACEMENT

To determine whether a driver is functioning properly, or replace a damaged driver, contact Meyer Sound to obtain the Low Driver Inspection and Evaluation Procedure for Self-Powered Series Products (part # 17.033.120.01).

### VERIFYING DRIVER POLARITY

Incorrect driver polarity impairs system performance and may damage the drivers. All Meyer Sound loudspeakers are shipped with the drivers in correct alignment. However, if the driver or circuit wiring has been removed or disassembled in any loudspeaker in a system for any reason, it is essential to check the polarity between drivers in the same cabinet and between adjacent loudspeakers.

We do not recommend using phase poppers to analyze driver polarity. The

phase response for all drivers varies, to some degree, over the frequency range in which it operates. Since the phase popper, a popular but inaccurate tool, does not discern variations in phase response with respect to frequency, it provides no useful information about the phase response through the crossover, the most important consideration for determining correct driver polarity.

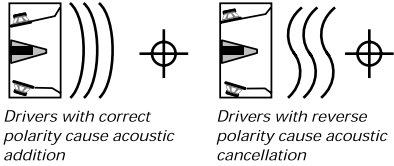
Phase poppers are, therefore, not useful for performing phase measurements on an individual loudspeaker or a full-range sound system containing one or more crossovers. If necessary, apply a phase popper only to loudspeakers with identical drivers without a crossover, and check the system's overall phase response with a frequency analyzer and/or listening test.

**NOTE:** Since polarity reversal causes excessive driver excursion at high source levels, use moderate levels for these tests.

## DRIVER POLARITY IN THE SAME LOUDSPEAKER

Use the following test procedure to verify polarity between drivers in the same loudspeaker:

1. Place a measurement microphone 3 ft from the front of the loudspeaker at the midway point between the two drivers.
2. Connect a signal source to the loudspeaker and note the frequency response.



Drivers with correct polarity cause acoustic addition

Top driver is 180° out of phase

Drivers with reverse polarity cause acoustic cancellation

The polarity is correct if the frequency response is  $\pm 4$  dB 50–160 Hz. Cancellation greater than 6 dB in the same range indicates polarity reversal.

## POLARITY BETWEEN ADJACENT LOUDSPEAKERS

Use the following test procedure to verify the polarity between adjacent loudspeakers of the same type:

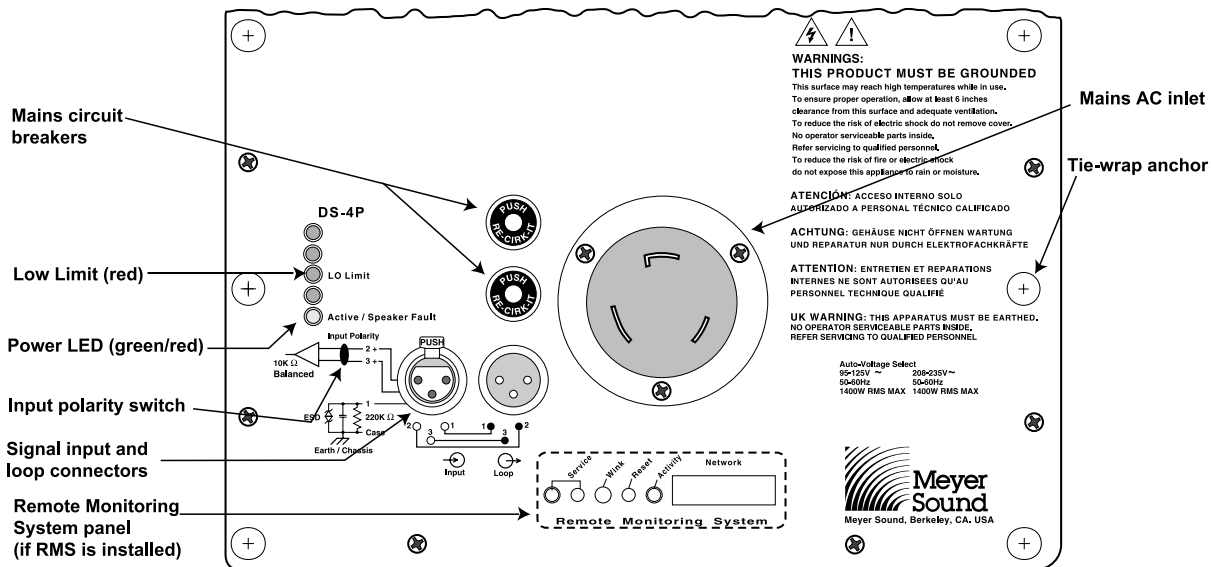
1. Position two loudspeakers adjacent to each other.
2. Place a measurement microphone 3 ft from the speakers on the axis between them.
3. Connect a signal source to one loudspeaker and note the frequency response and overall level.

4. Apply the same signal to the second loudspeaker with the first loudspeaker still connected.

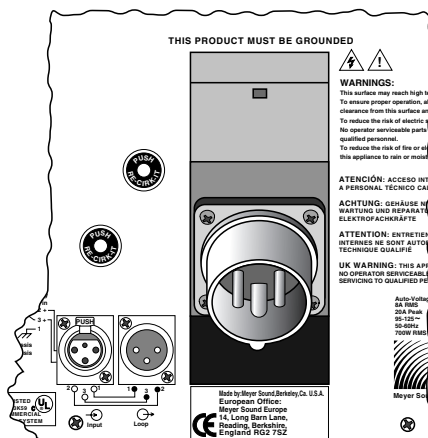
The polarity is correct if the frequency response remains constant with a significant increase in amplitude. Broadband cancellation (decreased overall level) indicates polarity reversal.

**NOTE:** Do not attempt to check more than two adjacent loudspeakers in one test. Detecting polarity reversal among more than two loudspeakers is difficult and may damage the drivers in the cabinet with reversed polarity.

## CONTROLS AND CONNECTORS



Rear User Panel shown with the optional Remote Monitoring System (RMS) panel



European User Panel with IEC 309 connector

# DS-4P SPECIFICATIONS

## ACOUSTICAL<sup>1</sup>

**Frequency Response**<sup>2</sup> 70 - 200Hz ( $\pm 4$  dB)  
**Phase Response**<sup>2</sup>  $\pm 70^\circ$  from 70 - 200Hz  
**Maximum SPL**<sup>2</sup> >142 dB SPL peak @1 meter  
**Dynamic Range** >120 dB

## COVERAGE

120° H; 120° V

## TRANSDUCERS

(2) MS-12 12-inch cone drivers

## AUDIO INPUT

**Type** 10k $\Omega$  impedance, electronically balanced  
**Connector** XLR (A-3) male and female  
**Nominal Input level** +4 dBu (1.23 Vrms)

## AMPLIFIERS

**Type** Complementary power MOSFET output stages (class AB/H)  
**Burst Capability**<sup>3</sup> 1240 Watts (620W per channel)  
**THD, IM, TIM** < .02%

## AC POWER

**Connectors** 250V NEMA L6-20P / IEC 309 male inlet  
**Automatic Voltage Selection**<sup>4</sup> 95-125V / 208-235V; 50-60Hz  
**Operational Voltage Range** Turn on: 85VAC; Turn off: 134VAC; 50-60Hz  
 Turn on: 165VAC; Turn off: 264VAC; 50-60Hz  
**Max. Continuous RMS Current (>10s)** @115V: 8A @230V: 4A @100V: 10A  
**Max Burst RMS Current (<1s)** @115V: 15A @230V: 8A @100V: 18A  
**Max Peak Current During Burst** @115V: 22Apk @230V: 11Apk @100V: 25Apk  
**Soft Current Turn-on** Inrush current <12A @115V

## PHYSICAL

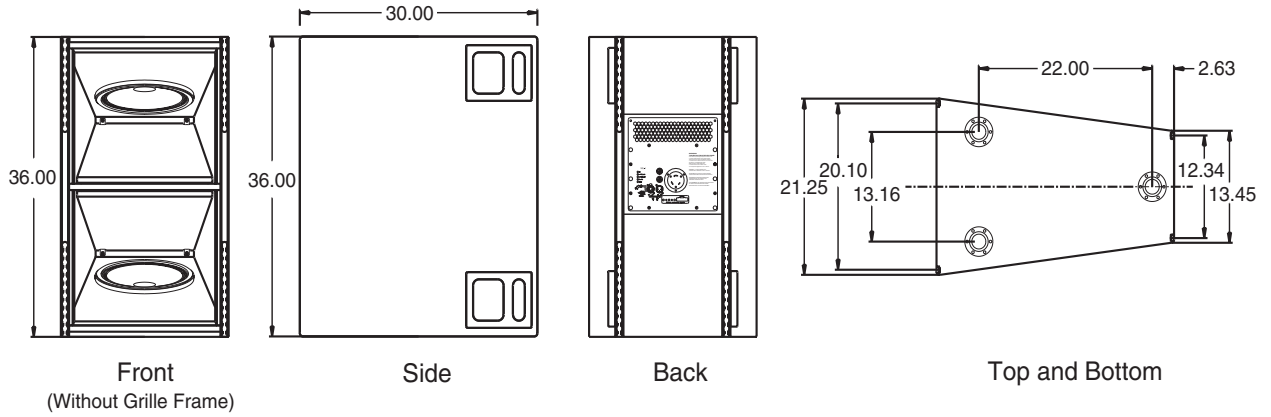
**Dimensions** Height: 36"; Width: 21.25"; Depth: 30"  
 (914mm H x 540mm W x 762mm D)  
**Weight** 163 lbs (74 kg); shipping: 187 lbs (85 kg)  
 with carpet: 169 lbs (77 kg); shipping: 192 lbs (87 kg)  
 with L-Track: 182 lbs (83 kg); shipping: 206 lbs (94 kg)  
 with carpet and L-Track: 188 lbs (86 kg); shipping: 211 lbs (96 kg)  
**Finish/Enclosure** Black textured, multi-ply hardwood  
**Protective Grill** Perforated steel grill, charcoal-grey foam  
**Rigging** 6 aircraft pan fittings (3 on top and bottom). Working load for each fitting is 600 lbs (273 kg) based on a 5:1 safety factor with a straight tensile pull.  
 Optional L-Track system: Working load at vertical pull using any two points is 1500 lbs (682 kg) based on a 5:1 safety factor<sup>5</sup>. Working load for individual points varies; please see the chart on page 7.

## NOTES

1. Acoustical specifications are for the minimum configuration of two DS-4P cabinets and are measured on-axis at 2 meters. One meter figure is derived from this data.
2. Subject to half-space loading, measured with one-third octave frequency resolution in fixed ISO bands.
3. Nominal 8 $\Omega$  resistive load, pink noise, 100V peak.
4. The unit is rated at 95-125V and 208-235V, 50-60Hz, to satisfy EC standards for -10% to 6% AC line voltage.
5. Based on New Haven Part Number NH47556-1 fitting.

## PHYSICAL DIMENSIONS

All units in inches.



## CONTACT INFORMATION

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