

**SH-SM SERIES OWNERS MANUAL**

# DANLEY OWNER'S MANUAL

The instructions on this page apply to Danley powered units.

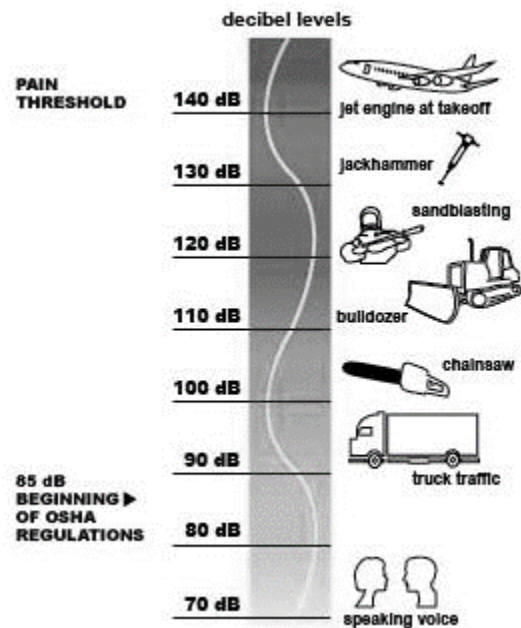
1. Read these instructions.
2. Keep these instructions.
3. Heed all warnings.
4. Follow all instructions.
5. Clean only with dry cloth.
6. Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.
7. Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
8. Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wide blade or the third prong is provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
9. The power plug at the wall must remain accessible to be able to disconnect power from the apparatus.
10. Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.
11. Only use attachments/accessories specified by the manufacturer.
12. Unplug this apparatus during lightning storms or when unused for long periods of time.
13. Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.
14. This apparatus shall not be exposed to dripping or splashing, and no object filled with liquid, such as vases, shall be placed on the apparatus.
15. This apparatus has been designed with Class-I construction and must be connected to a mains socket outlet with a protective grounding connection (the third grounding prong).
19. If the loudspeaker is exposed to changes in temperature and humidity, internal condensation may develop. If powered up with such condensation, electronic failure could result. When exposed to environmental changes, allow the loudspeaker at least 30 minutes to acclimate to a new temperature before connecting to the ac mains and operating.

20. Danley Sound Labs loudspeakers can produce sound levels capable of causing permanent hearing damage from prolonged exposure. The higher the sound level, the less exposure needed to cause such damage. Avoid prolonged exposure to the high sound levels from the loudspeaker.

**WARNING: TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS PRODUCT TO RAIN OR MOISTURE. DO NOT EXPOSE THE APPARATUS TO DRIPPING OR SPLASHING AND DO NOT PLACE OBJECTS FILLED WITH LIQUIDS, SUCH AS DRINKS, ON THE APPARATUS.**

**CAUTION:** This product is energized as long as it is connected to the AC mains supply.

**CAUTION:** Allow at least six inches of free space all around the amplifier heat sink for sufficient ventilation.



## **Section 1:** Your New Loudspeaker

- 1.1 Unpacking .....
- 1.2 Inspection .....
- 1.3 Shipping Damage .....

## **Section 2:** Understanding the Difference

- 2.1 Synergy™ Technology.....

## **Section 3:** Initial Set Up

- 3.1 What Size Amplifier to Use .....
- 3.2 Connecting to the Synergy Horn .....
- 3.3 Switch Modes for SH96HO, SH46 and SM80M.....
- 3.4 Rigging .....

## **Section 4:** Operation

- 4.1 Acoustic Level Warning.....
- 4.2 Operator Responsibility.....
- 4.3 Ambient Temperatures .....
- 4.4 Aqua Tight Coating.....

## **Section 5:** Warrantee

## **Section 6:** Contact Information

## Section 1

### *Your New Loudspeaker*

#### 1.1 Unpacking

For most of the Danley Sound Labs products we recommend that it be unpacked by two or more people. Refer to the spec sheet for product weight. Remove tape and open top flaps. Lay the box on its side and slide the loudspeaker out. Remove the packaging wrap.

#### 1.2 Inspection

Check to make sure the product is not missing hardware of any kind. If any brackets or additional accessory hardware is missing, please don't hesitate to contact Danley Sound Labs.

#### 1.3 Shipping Damage

If your Loudspeaker appears to have been damaged in shipping, please take clear photographs and contact the carrier immediately.

## Section 2

### *Understanding the Difference*

#### 2.1 THE SYNERGY HORN

The Synergy Horn successfully couples the radiation from multiple drivers into a single horn to yield the effective performance of a single horn/driver system with high sensitivity excellent directivity control and a wide frequency response.

## Section 3

### *Initial Set Up*

#### 3.1 What Size Amplifier to Use

Selecting the right amplifier for your loudspeaker depends on a variety of factors and uses. The owner is ultimately responsible for choosing the best amplifier or amplifiers for the application. We recommend choosing an amp that is rated between the continuous and program ratings. Please note "Continuous" does not mean "forever"! Most loudspeaker manufactures, including Danley Sound Labs, subscribe to the AES standards for loudspeaker power ratings.

#### 3.2 Connecting to the Synergy Horn

Your Danley loudspeaker has two NL4 ("speak-on") connectors located on a panel on the rear of the box. With the exception of the **SH96HO, SH46 and SM80M**, all SM and SH series loudspeakers are wired as passive. The NL4 connectors are wired parallel.

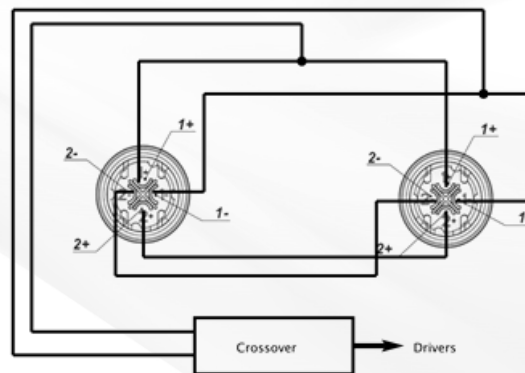
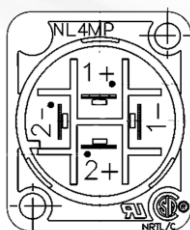
Pinout: Passive

- 1+ Positive Full Range
- 1- Negative Full Range
- 2+ Pass Through
- 2- Pass Through

Pinout: Bi-amp

- 1+ Positive LF
- 1- Negative LF
- 2+ Positive Mid/High
- 2- Negative Mid/High

Wiring View of an NL4 Connector

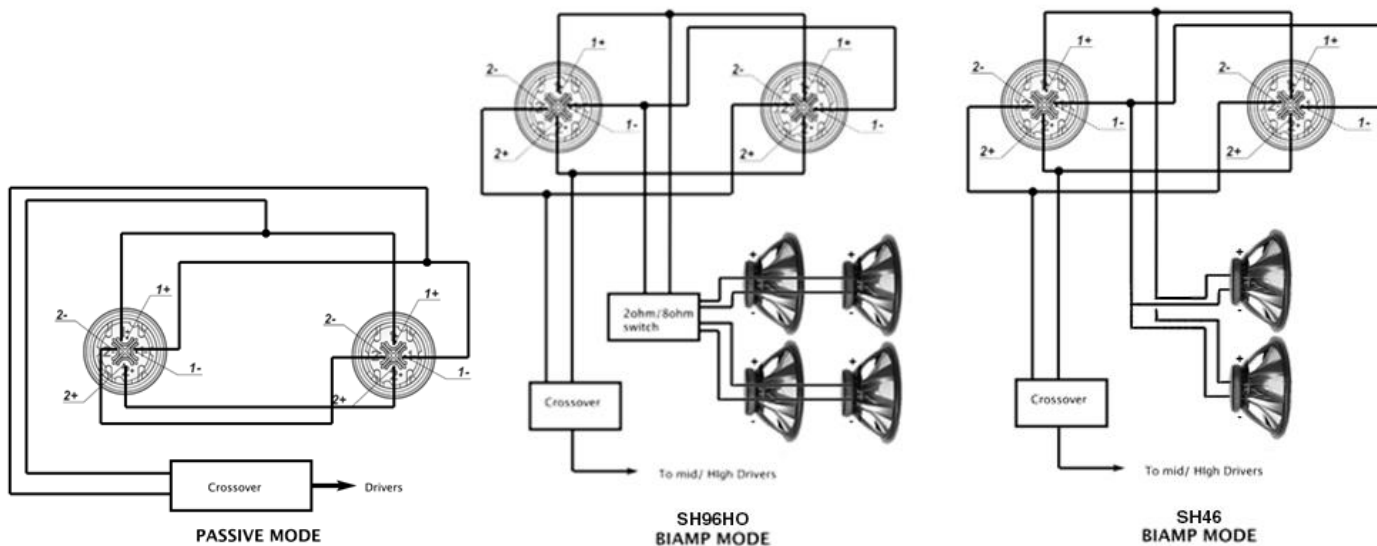


### 3.3 Switch Modes for SH96HO, SH46 and SM80M

The **SH96HO, SH46 and SM80M** can be run two ways; Bi-amp or passive. In the passive mode, the connection is to pins +1 and -1. In Bi-amp mode connect the low frequency amp channel to pins 1+ and 1- of the NL4, and the high/mid channel to pins 2+ and 2-. In addition, the four 15 inch woofers on the SH96HO can be switched to present a 2 or 8 ohm load.

**3.3.1** On the "Passive" setting there is an internal passive crossover. Using a **SH96HO** in passive mode should be viewed as a compromise. It is sort of like paying extra for the high horsepower engine and setting a 55 MPH governor on it! In the passive / 8 ohm mode the low end will be a significantly lower level. This may be acceptable if the **SH96HO** is part of a larger cluster where there are a number of woofers coupling together. It is also useful if there are unavoidable very long speaker runs and/or the amplifier is not capable of delivering the desired power into 2 ohms. For more low end in the passive mode, use the 2 ohm setting.

**3.3.2** You can also select the BIAMP setting. The BIAMP setting will allow the SH96HO to realize its full potential as a true high output device! **In the BIAMP setting, there is no crossover applied to the four 15 inch drivers! You are strongly advised to use a crossover set to high pass of 40 Hz at 24 dB Butterworth and 600 Hz at 12 dB Butterworth. The high/mid section is high passed at 400 Hz at 24 dB Butterworth.** In the BIAMP setting you can also select between a two ohm load and an eight ohm load for the woofers. **CAUTION! If you select the 2 ohm setting, make sure that the amplifier you have chosen can accommodate 2 ohm loads!** Remember that when running a 2 ohm load the resistance of the speaker cable becomes significant. Use the largest gauge and shortest run possible.



### 3.4 Impedance

On the **SH96HO**, in the active mode, the impedance of the low frequency section will be selected by the toggle switch, either 2 ohms or 8 ohms. The mid / high section will be 4 ohms. Since by convention the impedance of a loudspeaker is taken from the lowest point, in the passive setting with the woofers switched to 8 ohms, the SH96HO presents a nominal 4 Ohm load. With the woofers switched to 2 Ohms, in the passive mode the SH96HO presents a nominal 2 Ohm load.

### 3.5 Rigging

If you have to ask how, you probably shouldn't be doing it!

#### Safety Precautions

*Before attempting to rig or suspend your Danley speakers, read and understand the following safety information.*

#### IMPORTANT RIGGING SAFETY WARNING!

The information in this section has been assembled from recognized engineering data and is intended for informational purposes only. None of the information in this section should be used without first obtaining competent advice with respect to applicability

to a given circumstance. None of the information presented herein is intended as a representation or warranty on the part of Danley Sound Labs. Anyone making use of this information assumes all liability arising from such use.

All information presented herein is based upon materials and practices common to North America and may not directly apply to other countries because of differing material dimensions, specifications, and/or local regulations. Users in other countries should consult with appropriate engineering and regulatory authorities for specific guidelines.

Correct use of all hardware is required for secure system suspension. Careful calculations should always be performed to ensure that all components are used within their rated workload before the array is suspended. Never exceed maximum recommended load ratings.

Before suspending any speaker system always inspect all components (enclosure, rigging frames, pins, etc.) for cracks, deformations, corrosion, missing, loose or damaged parts that could reduce strength and safety of the array. Do not suspend the speaker until the proper corrective action has been taken. Use only load-rated hardware when suspending Danley loudspeakers.

### ***Are You New to Rigging?***

If you are new to rigging, you should do the following:

#### **Know the Rules for Safe Rigging.**

Attend a safe rigging seminar, such as that presented by professionals like Rigging Seminars or by Chain Motor Hoist manufacturers like Columbus McKinnon Corp. (manufacturers of the C/M Lodestar).

Meet and establish a relationship with a licensed mechanical or structural engineer. Get in the habit of asking them questions instead of guessing about their answers. Learn from what they tell you.

Meet and discuss this aspect of your business with your Insurance Agent.

- Research and understand the codes, practices, and requirements in the venues where you intend to operate your sound system.

### ***General Hardware Information***

All Danley loudspeakers which are intended to be flown are provided with  $\frac{3}{8}$  inch - 16 hardware. Any hardware used in an overhead suspension application must be load rated for the intended use. Generally, this type of hardware is available only from rigging supply houses; industrial supply catalogs and specialized rigging distributors. Local hardware stores do not usually stock these products.

### ***Attachment to Structures***

A licensed Professional Engineer must approve placement and method of attachment to structures prior to installation of any overhead object. The following performance standards should be provided to the Professional Engineer for design purposes: Uniform Building Code as applicable, Municipal Building Code as applicable, Seismic Code as applicable. Installation of hardware and method of attachment must be carried out in the manner specified by the Professional Engineer. Improper installation may result in damage, injury or death.

### ***Rigging Hardware Inspection & Maintenance***

Suspension systems are comprised of mechanical devices and, as such, they require regular inspection and routine maintenance to insure proper function ability. Danley loudspeakers must be inspected for fatigue at least annually. The inspection shall include a visual survey of all corners and load bearing surfaces for signs of cracking, water damage, de-lamination, or any other condition that may decrease the strength of the loudspeaker enclosure. Accessory rigging hardware provided with or for Danley loudspeakers must be inspected for fatigue at least annually. The inspection shall include a visual material survey for signs of corrosion, bending or any other condition that may decrease strength of the fastener. For other fittings used, refer to the manufacturer's inspection and maintenance guidelines for process.

*Danley Sound Labs is not responsible for the application of its products for any purpose or the misuse of this information for any purpose. Furthermore, Danley Sound Labs is not responsible for the abuse of its products caused by avoiding compliance with inspection and maintenance procedures or any other abuse. Prior to suspending the system, an expert, trained and experienced in flying loudspeaker systems should inspect all rigging parts and components.*

**SECTION 4**

*Operation*

**4.1 Acoustic Level Warning**

Danley Sound Labs loudspeakers can produce sound levels capable of causing permanent hearing damage from prolonged exposure. The higher the sound level, the less exposure needed to cause such damage. Avoid prolonged exposure to the high sound levels from the loudspeaker. Some Synergy Horns are capable of levels in excess of 140 dBSPL! Levels this high can cause permanent hearing loss! When operating at these high sound pressure levels the user is strongly encouraged to use hearing protection. Danley Sound Labs accepts no liability for hearing damage from using our loudspeakers!

**4.2 Operator Responsibility**

It is the responsibility of the operator to maintain safe operating levels and to insure that the audience is not harmed by excessive levels. This is a chart of the recommended exposure limits set by OSHA.

Noise Level	Exposure Limit
90 dBA	8.0 hours
92 dBA	6.0 hours
95 dBA	4.0 hours
97 dBA	3.0 hours
100 dbA	2.0 hours
102 dBA	1.5 hours
105 dBA	1.0 hours
110 dBA	30 minutes
115 dBA	15 minutes

*Table 1. OSHA's Permissible Noise Exposure Limits.*

**4.3 Aqua Tight Coating**

Aqua Tight Coating includes full two layer fiberglass finish for maximum moisture resistance as well as a special polyurea coat bonded to the fiberglass exterior & two topcoat layers of UV resistant color stabilizer. It also includes all stainless steel exterior fasteners, an acoustically transparent moisture barrier to the grille, waterproofing the driver cones and sealant for the input plate, handles or cabinet fixtures. The finish also includes a powder coated stainless steel grille, sealed, waterproof cable leads (12' length standard), and fully caulked all external joints (except for the "weep" opening at the bottom of the grille).

If a repair is to be made on a loudspeaker with "AT" finish, a few steps must be taken to insure the speaker remains water resistant in future usage. The caulking must be removed to free the grill and driver access panels. Once the repair is finalized, the bolts must be coated with silicon and the caulk must be replaced on all panels that have been removed.



## Section 5:

---

### *Warranty on Danley Commercial Audio Products*

Danley offers the following Warranty which covers product directly purchased from dealers in the 50 US States and Canada and only applies when product has been installed and operated under normally accepted standards. Warranty Covers Product Against Defects in Material or Workmanship for 5 Years. The warranty period starts on the date of purchase from an authorized Danley dealer.

Coverage: Danley will repair or replace the product and or defective portion of said product by this warranty if it becomes defective, malfunctions or otherwise fails to perform under normal use and service during the term of this warranty without charge for labor or materials. Repairs may be performed using new or refurbished parts that meet or exceed Danley specifications for new parts. If Danley elects to replace the product, the replacement may be a reconditioned unit. Buyer will be responsible for any removal or reinstallation charges and for any shipping charges if the product must be shipped for warranty service. However, Danley will pay the return shipping charges provided the destination is within the warranted area. This warranty does not cover damage, deterioration (due to corrosive environment) or malfunction resulting from accident, negligence, misuse, abuse, improper installation or operation, repair or attempted repair by someone other than an authorized Danley service tech, any product with altered serial number, damage due to power line surge or related electrical abnormalities, improper grounding, lightning damage or acts of God, damage during shipment (claims must be presented to the carrier). This warranty only covers original end-user purchaser.

To Obtain Warranty Service: please contact your authorized dealer or sound contractor for instructions for warranty claims or contact Danley directly at [info@danleysoundlabs.com](mailto:info@danleysoundlabs.com). Product requiring shipping should be packed securely and include explanation of problem along with a copy of original bill of sale. No products shipped will be accepted unless prepaid or prior agreement with Danley has been arranged. All returns must be accompanied by a Return Authorization Number. If any returned product is found ineligible, the cost of repairs will be forwarded to owner and product repaired and returned to buyer upon payment received by Danley.

## Section 6:

---

### *Contact Information*

Danley products are represented & sold through a network of key representatives & approved dealers in the US/Canada/ & Mexico. International sales and service are handled through our corporate office.

**Danley Sound Labs – Corporate Office**  
2196 Hilton Drive, Suite G,  
Gainesville, GA. 30501  
Phone (770)535-0204 or (877)419-5805  
Fax (678)928-4010  
Email: [info@danleysoundlabs.com](mailto:info@danleysoundlabs.com)