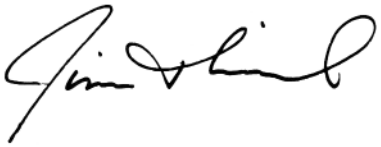
# THIEL

Model **CS1.6**
*Coherent Source*®
loudspeaker system

# OWNER INFORMATION

Congratulations on your purchase of the THIEL model CS1.6 loudspeaker system. This fine product is the result of a dedicated effort to provide very accurate music reproduction. We have used very high quality components and taken great care in the CS1.6's construction. Properly set up and used with good associated equipment, the CS1.6 will provide you with a great deal of musical enjoyment for many years.



**Jim Thiel, Product Design/CEO, THIEL Audio**

## SPEAKER PLACEMENT

The CS1.6s are relatively noncritical to room placement and will provide good results from almost anywhere. However, here are some guidelines to help you achieve the best sound from your speakers. Speaker placement will affect the accuracy of timbre, spatial performance, and bass performance.

**Distance from walls:** THIEL speakers, and most others, sound best if they are placed well away from all walls. Such placement optimizes imaging and depth, and musical timbres are reproduced with the least coloration because it allows the initial sound coming from the speaker to be distinctly separated in time from the secondary sound of wall reflections. If reflections are heard too quickly after the primary sound, your brain tends to interpret them as part of the initial sound, causing the perceived timbre to be altered and the spatial characteristics to be confused.

If you experiment, you will notice a major improvement in openness when the speakers are even two feet from the rear wall instead of one. Ideally, we like to see the speakers three feet from the rear wall and five feet from the side wall. Also, it is not desirable for large objects to be placed near the speakers since these will also be a source of unwanted early reflections that reduce imaging accuracy.

**Spacing:** Because of their very wide, even dispersion of energy, THIEL speakers should usually be placed farther apart than most. Optimum imaging is usually achieved when the speakers and the listener form an equilateral triangle, although this will depend on the width of the room—a narrow room will require closer placement. If the speakers are too far apart for a given environment, there will tend to be a "hole" in the middle of the sound stage; if they are too close together, the image will be compressed and will not achieve optimum width.

**Aiming:** We usually prefer the imaging obtained when the speakers are pointed straight ahead rather than pointing toward the listener. This placement produces the largest, most natural soundstage. However, toeing the speakers in somewhat may produce more specific placements of instruments. Also, if it is not possible to get the speakers far enough away from the side walls, a toed-in position can be helpful to reduce the strength of wall reflections.

**Bass:** Bass response is also affected by speaker placement. In general, when a speaker is close to a wall the bass response is stronger and placing a speaker in a corner will make it even more so. In order to achieve properly balanced bass, it is necessary for the speaker to be used in the environment for which it was designed. THIEL speakers are designed to provide accurate bass when positioned away from all walls—the same position that provides the best imaging.

**Listener position:** The CS1.6s provide broad dispersion of energy at all frequencies and therefore provide good results throughout a large listening area. Best imaging is provided for a listener centered in front of the speakers. Optimum phase and time alignment is provided only for a seated listener who is eight or more feet away from the speakers.

*All aspects of speaker placement are dependent on the particular room. Since every room is different, no hard rules can be given, and experimentation is necessary to achieve the best results.*

## CONNECTING THE SPEAKERS

The CS1.6's input terminals are located on the lower rear of the speaker cabinet. The CS1.6 uses 5-way binding posts that accept several types of wire connections. European CE regulations do not permit dual banana plug type loudspeaker connections, but single banana plugs can be used. Regardless of the type of wire termination, *make sure that all connections are tight.* The input terminals are designed to be easily tightened by hand or a ½ inch nut driver can be used.

It is essential for proper performance that both speakers in a stereo system be wired in the same polarity. The speaker's input terminals are color coded to facilitate this. The wire connected to the red ringed input terminal of each speaker should connect to the respective positive (+) output terminals of the amplifier; the wire connected to the black ringed input terminals should be connected to the respective negative (–) output terminals of the amplifier.

The speakers should be connected to the amplifier with high quality cable to ensure minimal loss of power and proper control by the amplifier. If the speakers are being connected to a vacuum tube amplifier with various impedance taps, the 4 ohm tap will usually give the best results.

## STABILIZER FEET

*The speakers should be positioned before the stabilizer feet are installed.*

Speakers positioned on a soft or uneven surface are able to rock slightly and will vibrate in reaction to forces the speaker generates to move the driver diaphragms. (Every action has an equal and opposite reaction.) This motion slightly reduces the music's clarity.

To eliminate this effect, the CS1.6s can be used with four gold stabilizer feet on uneven surfaces or on carpeted floors to provide a more solid footing and allow the speaker to couple more firmly to the floor. To install the feet:

- Position the speaker in the desired location.
- Tilt the speaker forward slightly so that the back of the speaker is a few inches off the floor.
- Remove the plastic caps in each of the four holes in the corners of the speaker's bottom.
- Screw one foot into each of the two holes at the back corners of the base. The pins should be screwed into the speaker until there is about ¼" of thread remaining visible.
- Let the back of the speaker down and then tilt the speaker backward slightly so that the front is a few inches off the floor and install the two front feet.
- With all four feet installed, the height of each foot should be adjusted so that the speaker stands firmly on the floor without wobbling. Then tighten the lock nuts to secure the feet to the cabinet

*Please be cautioned that the stabilizer feet can dent hardwood floors and it is possible to mar the floor's surface if the speakers are moved with the feet in place.*

## OPTIONAL OUTRIGGER BASE

The CS1.6s can be used with an optional THIEL-made Outrigger base. The Outrigger attaches to the bottom of the speaker cabinet with four mounting bolts screwed into the four threaded openings normally used for the stabilizer feet. The CS1.6 stabilizer feet, without the lock nuts, are then screwed into the bottom of the four Outrigger legs. After adjusting the height of the feet, screw the threaded gold caps (provided with the Outrigger) onto the stabilizer feet threads from above to lock the feet.

***CS1.6 shown with optional Outrigger***

## BREAK-IN

The CS1.6's, like most speakers, require a period of playing before they perform optimally. The amount of time depends on how loudly the speakers are played; more time is required if played softly, less if played loudly. At least 50 hours at moderately loud levels are required before the speaker is performing near optimum. You should notice even more improvement after 100 hours of playing.

## ASSOCIATED EQUIPMENT

The CS1.6 is a very high quality sound reproducer and will benefit from use with the best associated equipment. Since it is extremely accurate, it will reveal sources of distortion generated elsewhere in the system. For example, distortion resulting from poor recordings or inferior electronics will be reproduced accurately. Also, the quality of the interconnect cables and speaker cables will significantly effect the performance of the system.

## POWER REQUIREMENTS

It is important to have enough power to play at the level you desire without distortion. If high sound levels are desired, the CS1.6's are designed to be used with amplifiers rated up to 300 watts per channel (into 4 ohms). If you play the speakers more loudly than the volume the amplifier can cleanly produce, the amplifier will produce overload (clipping) distortion. The sound will become compressed, strained, and in extreme cases, obviously distorted. This distortion is actually non-musical *additional energy* and since it is concentrated in the high frequency region where the speaker is least able to handle it, tweeters can be damaged in extreme cases.

Keep in mind that sound *quality* is usually much more important than sound *quantity*. There can be large differences in the sonic performance of two amplifiers of equal power, and this is more important than large differences in power. Most everyone will be happier with a 100 watt amplifier of high sonic quality than a 200 watt amplifier of mediocre sonic quality. For this reason, we feel there is no substitute for listening in making your amplifier decision.

The question "how much power do I need?" does not have the simple answer most people expect because it is not determined only by the loudspeaker's efficiency, but also by the volume desired and the size of the room. If all three factors are average, about 100 watts per channel is required. Each factor can raise or lower this amount by about three times.

1) Usually, people who "don't like music loud" can decrease their power to about one-half. Also, people who like music loud should increase their power by 2 times or more. Most people fall within a normal range.

2) A speaker with a low efficiency of 84dB/W-m will require twice the power of an average 87dB/W-m speaker and one with a high rating of 90dB/W-m will require only half the power of an average speaker. The CS1.6 is of high efficiency (90dB) and therefore can work well with smaller amounts of power from a quality amplifier.

3) A small room will need less power for a given loudness level than a large room. A very small room of 1000 cu ft (11' x 11' with an 8' ceiling) will require about half the power of an average size room. A large room of 6000 cu ft (20' x 30' with a 10' ceiling) will require twice the average power. If the listening room is connected to another room by a large open area, the required power will increase, but not by the amount of the combined room volume. If the room has a "dropped" ceiling with light panels, the ceiling will be almost transparent acoustically and the space above the ceiling should be added. If the panels are heavy they will act as a more normal ceiling.

With all this in mind, a person who doesn't like to play music very loudly and has a small room can get quality sound with as little as 50 watts whereas a person who sometimes likes to play loudly and has a large room may need 300 watts or more.

## CABINET FINISH CARE

THIEL CS1.6 cabinets possess a high quality lacquer finish that is both beautiful and very durable. Any furniture care product such as Pledge, Johnson's, or Endust can be used to keep the cabinets clean.

## GRILLE

The CS1.6 grille is is attached magnetically to the front of the speaker. The grille is designed to not produce diffraction so there is no sonic reason to remove it. If you do need to remove the grille, carefully pull the the grille frame away from the front of the speaker. When replacing the grille, line up the grille with the baffle's inlay edges.

The grilles can be cleaned of dust by using an upholstery attachment of a vacuum cleaner. To prevent damage to the tweeter, take care not to push the cloth in toward the top of the grille.

## SERVICE

If your speaker system requires service, contact your authorized THIEL dealer. If you need to contact THIEL directly, service information and technical support is available at (859) 254-9427, Monday-Friday, 8:30 a.m. - 5:00 p.m. Eastern Time, or via e-mail at service@thielaudio.com. THIEL dealer information and a “Frequently Asked Questions” section can be found at our web site, www.thielaudio.com.

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## CS1.6 SPECIFICATIONS

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|---|---|
| **Bandwidth (–3dB)** | 48 Hz-20 kHz |
| **Amplitude Response** | 50Hz-20 kHz ±2 dB |
| **Phase Response** | Minimum ±10° |
| **Sensitivity** | 90 dB@2.8 V-1m |
| **Impedance** | 4 ohms (3.0 ohms minimum) |
| **Recommended Power** | 50-300 watts |
| **Size** | 9" W x 11.5" D x 35.5" H |
| **Weight** | 38 pounds |

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## WE WANT YOU LISTENING FOR A LIFETIME

Used wisely, your new sound equipment will provide a lifetime of enjoyment. Since hearing damage from loud noise is often undetectable until it is too late, THIEL and the Electronics Industries Association’s Consumer Electronics Group recommend you avoid prolonged exposure to excessive noise. Depending on room size and amplifier power, some home audio systems can reach sound pressure levels in excess of 95 decibels with peaks of over a 105 decibels. For your protection, the list below identifies sound levels for various noises.

**Decibel**

| Level | Example |
|---|---|
| 30 | Quiet library, soft whispers |
| 40 | Living room, refrigerator, bedroom away from traffic |
| 50 | Light traffic, normal conversation, quiet office |
| 60 | Air conditioner at 20 feet, sewing machine |
| 70 | Vacuum cleaner, hair dryer, noisy restaurant |
| 80 | Average city traffic, garbage disposals, alarm clock at two feet |

**The Following Noises Can Be Dangerous Under Constant Exposure**

| | |
|---|---|
| 90 | Subway, motorcycle, truck traffic, lawn mower |
| 100 | Garbage truck, chain saw, pneumatic drill |
| 120 | Rock concert in front of speakers, thunderclap |
| 140 | Gunshot blast, jet plane |
| 150 | Rocket launching pad |

Information courtesy of the Deafness Research Foundation and the EIA.

We Want You LISTENING For A Lifetime

## LIMITED WARRANTY

THIEL warrants every THIEL model CS1.6 system against defects in materials and workmanship to the original owner for a period of ten years from the date of purchase. THIEL will, at no charge, replace any defective part and make any repairs necessary to ensure its proper performance when the defective unit is returned to us postpaid.

This warranty does not cover damage due to accident or abuse and is void if the unit has been tampered with.

This warranty is automatic and no registration is required. This warranty gives you specific legal rights. You may also have other rights which are particular to your state.

The following information is for your records.

Serial Numbers_____

Purchase Date_____

Purchased From_____

## REGISTER YOUR WARRANTY ONLINE AT www.thielaudio.com


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