

Model 1



# *Sonorous*<sup>TM</sup>

by Nel-Tech Labs

INSTALLATION AND OPERATION MANUAL



**Quick install  
instructions  
on back cover**

**Please leave this manual with the unit at all times**  
Important warranty information enclosed

**This page intentionally left blank.**

# **TABLE OF CONTENTS**

<b>What is the Sonorous model 1?</b>	<b>4</b>
Sonorous and Messaging Provider Contact Information	<b>5</b>
<b>System Overview</b>	<b>6</b>
<i>Front Panel</i>	<b>6</b>
Figure 1 - Front Panel Diagram	<b>6</b>
<i>Connections Panel</i>	<b>7</b>
Figure 2 - Side Panel Diagram	<b>7</b>
<b>CD Preparation Instructions</b>	<b>8</b>
<b>Message Length Tables</b>	<b>9</b>
<b>Installation</b>	<b>10</b>
<i>Step 1 – Connections</i>	<b>10</b>
Figure 3 - Installation Diagram	<b>10</b>
Connection Instructions	<b>11</b>
<i>Step 2 – Load Messages</i>	<b>12</b>
CD Load	<b>12</b>
Table 1 - Status Light Indications	<b>12</b>
Message Review	<b>13</b>
<i>Step 3 – Adjust Volume</i>	<b>13</b>
<b>Playback Operation</b>	<b>14</b>
<i>Continuous Play</i>	<b>14</b>
<i>Power On Self-Test (POST)</i>	<b>14</b>
<b>Wall Mounting Instructions</b>	<b>15</b>
<b>FLAT SURFACE Mounting Instructions</b>	<b>15</b>
<b>Technical Specifications</b>	<b>16</b>
<b>Troubleshooting</b>	<b>17</b>
Table 2 - Troubleshooting	<b>17</b>
<b>FCC Notice</b>	<b>18</b>
<b>Copyright Notice</b>	<b>18</b>
<b>Limited Warranty</b>	<b>19</b>
<b>Quick Install instructions</b>	<b>20</b>
Connection Instructions	<b>20</b>

# WHAT IS THE SONOROUS MODEL 1?

The *Sonorous™ Model 1* is a state-of-the-art digital audio recording and playback device designed to provide a continuous-play audio source for message-on-hold, background music, or any other audio application where high-quality audio playback is required. The audio program is loaded from a standard MP3 burned CD using a pure digital-to-digital transfer into a high-density flash memory file system. After audio is loaded, the CD can be removed and the audio is played from its 8Ω or 1KΩ output jacks on the rear of the unit.

The Sonorous is also available with the optional Sonocrypt™ encryption key technology. This technology enables you to protect your units from being loaded with any unauthorized .mp3 file. When a CD is burned, an additional key file must be placed on the CD to make it work. These key files are only supplied to dealers using this feature.

The Sonorous Model 1 is the most versatile digital player of its kind with a list of features that includes:

- ✓ CD-ROM Loadable – using standard MP3's burned onto a CD
- ✓ Base memory of 64 minutes @ 32Kbps
- ✓ Bit rates up to 128K bits-per-second
- ✓ Sample rates up to 48KHz
- ✓ Industry standard time-proven CD-ROM drive
- ✓ Sonocrypt™ encryption key technology
- ✓ Built-in monitor speaker
- ✓ Extruded aluminum & steel construction
- ✓ 5-year parts and labor warranty
- ✓ Manufactured in the USA

Each Sonorous is built to exacting quality standards using state-of-the-art SMT (surface mount) assembly for outstanding reliability and years of dependable service.

To get the best possible performance from your Sonorous, **please take the time to read this manual** and fully familiarize yourself with how the Sonorous works before you begin installation.

**IMPORTANT NOTE**

The following must be supplied by your messaging provider, which is not included with the Sonorous:

1. A pre-recorded .mp3 file or CD containing the messages. (The Key file is also needed if you are using Sonocrypt.)

*Use the space below to record information about the Sonorous and about your messaging provider. You must have this information should you require assistance installing or configuring the unit, and when you need new voice messages or background music.*

***Sonorous and Messaging Provider Contact Information***

<b>Dealer name:</b>	
<b>Contact person:</b>	
<b>Phone:</b>	
<b>Address:</b>	
<b>Serial number: (11 digits)</b>	

# SYSTEM OVERVIEW

## Front Panel

The Monitor Switch, Monitor Speaker, Open/Close Button and Status LED are located on the front panel.



**Figure 1 - Front Panel Diagram**

**Monitor Switch** – Turns the Monitor Speaker Off/On.

**Monitor Speaker** – A built-in speaker, useful for previewing the CD, or listening to the audio output during operation. Note that the speaker's volume is not adjustable.

**Open/Close Button** – Opens and closes the motorized CD drawer for CD loading and removal.

**Status LED** – Lights to indicate the current operation status of the unit.

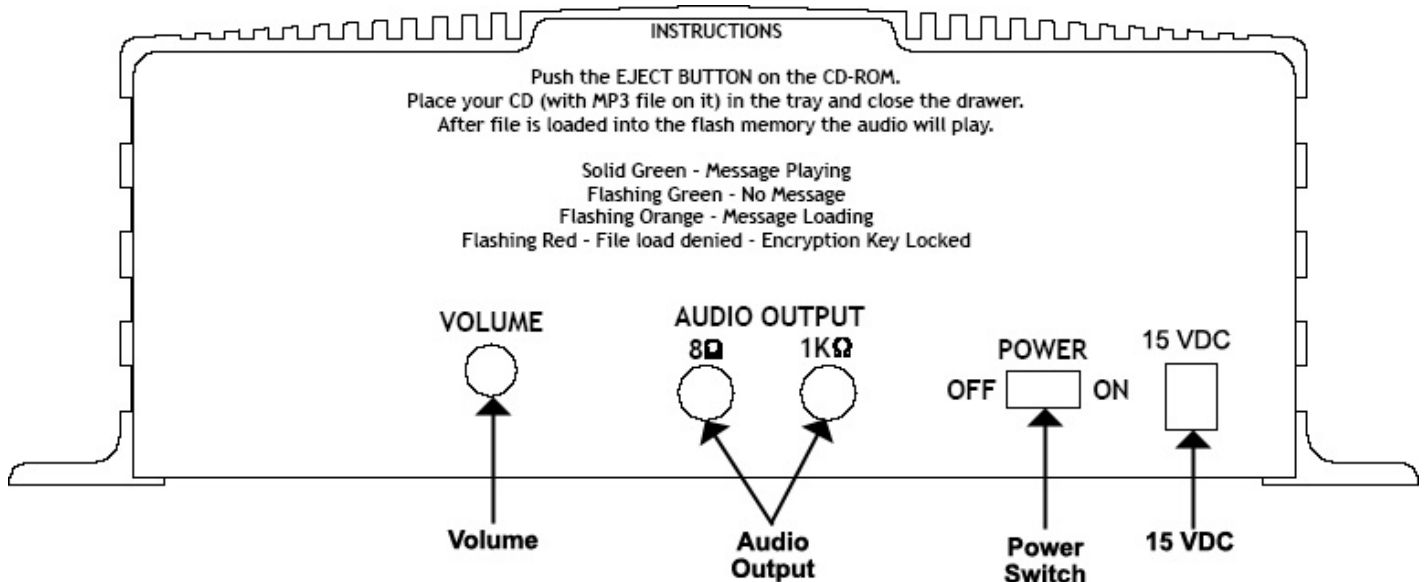
### **Symbols**

Key - Indicates the Sonorous is equipped with Sonocrypt.

Key<sup>2</sup> - Indicates the Sonorous is equipped with Sonocrypt<sup>2</sup>.

## Connections Panel

The back side panel is where the connectors are for external equipment including the Power Supply, and the system that receives the Sonorous's output. Also located here are the Volume Control and the Power Switch.



**Figure 2 - Side Panel Diagram**

**Volume** – Used to adjust the volume of the audio output.

**8Ω Audio Output** – Used to connect to an external 8OHM speaker or headphones.

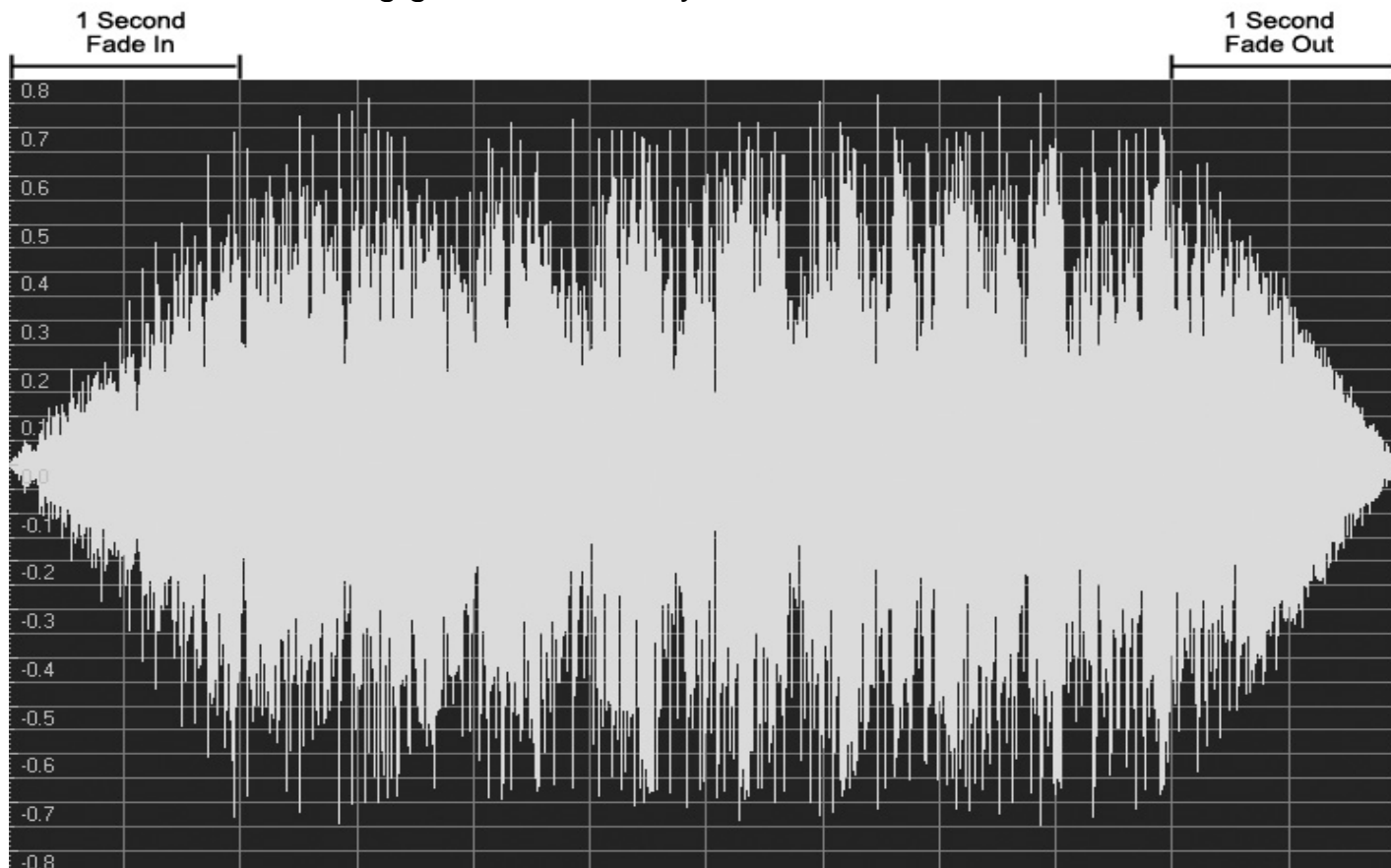
**1KΩ Audio Output** – Used to connect to an external audio system such as a KSU/PBX Phone System or an amplifier.

**Power Switch** – Used to turn the unit Off/On.

**Power Supply** – Used to supply power to the unit.

# CD PREPARATION INSTRUCTIONS

To get the best audio reproduction, it is essential to start with a high-quality recording. In order to load into memory properly, your audio CD program must conform to the following guidelines exactly.



1. Be sure to include a 1 second music Fade In and 1 second music Fade Out at the beginning and end of each message, similar to the audio file above. This will give you better continuity between messages.
2. Use only **MPEG-2** or **MPEG-3** (also known as .mp3 files) on **CD-R**, or **CD-RW** CD's.
3. The Sonorous loads your .mp3 files into memory alphabetically. If your messages must play in a specific order, we suggest adding a 3-digit number in the prefix. For example... 100Promo1.mp3, 101Message1.mp3, 102Promo2, 103Message3.mp3, etc. The Sonorous will load these messages according to the 3-digit number before them. Any alphabetical naming convention will work, however, do not use fewer than 3-digits as the Sonorous will load a file named 20Promo1.mp3 before a file named 3Promo2.mp3 etc.
4. **Record your .mp3 productions as a Data CD** using your existing CD Burner Software. If you are using *Sonocrypt™* or *Sonocrypt<sup>2</sup>™*, you must burn the key file along with your .mp3 production(s).

NOTE: Some audio editors embed album art or cover art into the .mp3 files. Some of these files may not be compatible with the Sonorous.

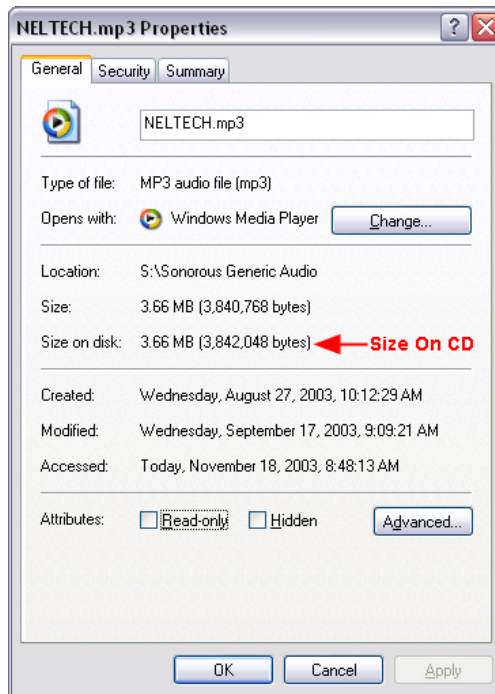


# MESSAGE LENGTH TABLES

Message length is determined by the bit-rate of the audio file. Refer to the table below to determine the maximum memory of each unit.

Model Number	Maximum Memory
S1XX64NSTD	16MB (16,777,216 bytes)
S1X128NSTD	32MB (33,554,432 bytes)
S1X256NSTD	64MB (67,108,864 bytes)
S1X512NSTD	128MB (134,217,728 bytes)
S11024NSTD	256MB (268,435,476 bytes)
S12040NSTD	512MB (536,870,912 bytes)
S13064NSTD	768MB (805,306,368 bytes)

The Sonorous may store up to 500 messages, assuming the total size of all messages does not exceed the maximum memory of the unit stated above. As a general rule of thumb, allow extra memory to be used by the unit's file system. Any messages that exceed the estimated memory (Base 16MB x 1,000,000 = 16,000,000 bytes) might not be downloaded into the unit.



The actual size of the message(s) can be found by viewing the Properties information of the selected file(s). View the Size on disk label. (The larger of the two)

In the example above, the size of the file is 3,842,048 bytes. If you divide that by 1,048,576, the result, 3.66MB, will be the size of the file in MB. On a base 16MB Sonorous, you still have 12.34MB of available memory.

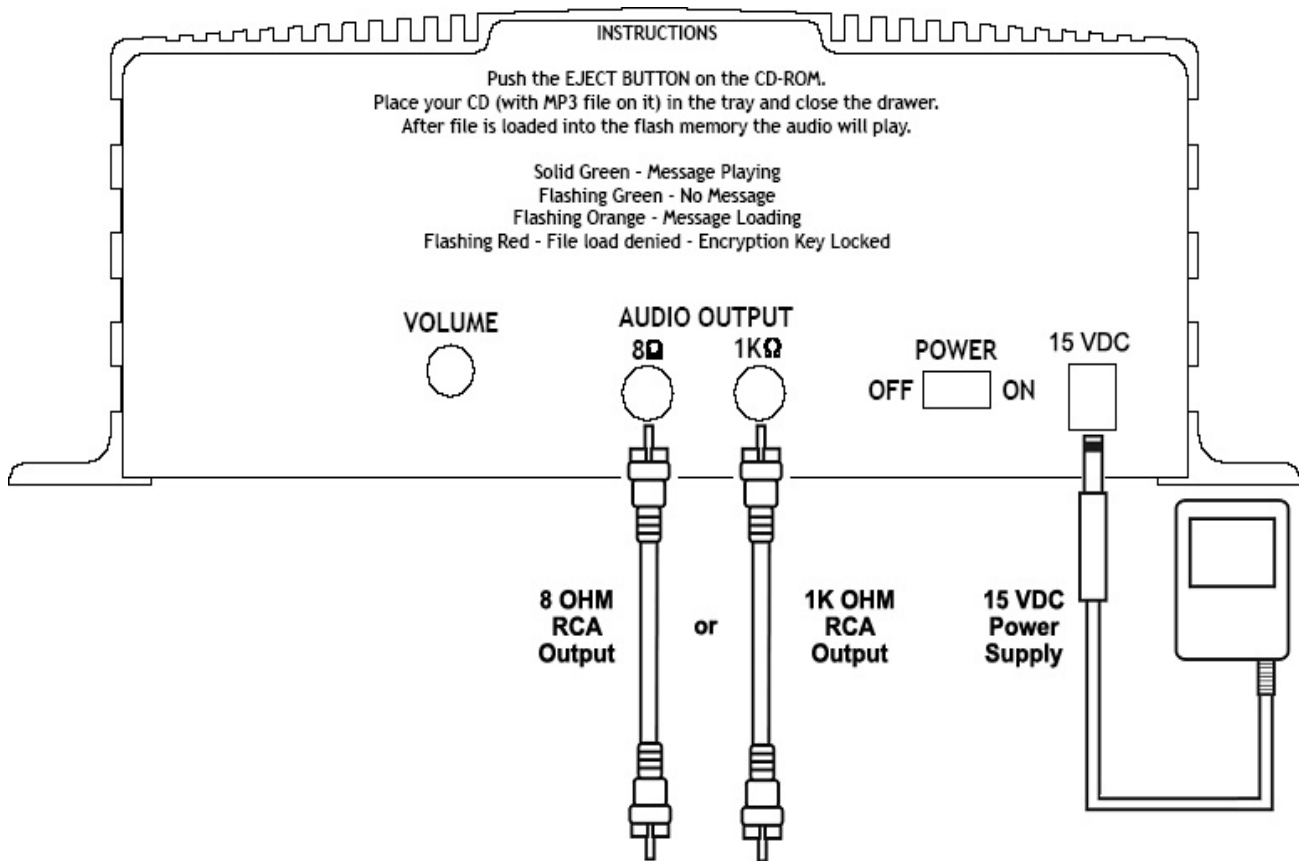
# INSTALLATION

## Step 1 – Connections

Locate the Sonorous within 6 feet of an 110VAC outlet. The unit is designed to be placed on a flat, level surface or securely mounted on a wall. Be sure to leave clearance for connections and adjustments.

**Important:** Devices that emit strong electromagnetic fields such as computer monitors and fluorescent lights may interfere with message loading, so locate the unit at least a few feet away from such devices.

To help protect against power surges and other electrical problems, the use of a quality surge suppressor strip (which is different from a standard multi-outlet power strip) is strongly recommended. **Damage caused by power surges, lightning, or other electrical problems are not covered under warranty.**



**Figure 3 - Installation Diagram**

## Connection Instructions

1. Turn the power switch OFF. Plug the included power supply into a normal 110VAC wall outlet and the 15VDC jack on the Sonorous. Only use the power pack provided with the unit (15VDC, center pin positive). Many power supplies look alike, but provide different output. Using the wrong one voids your warranty and may damage the unit.
2. Connect either the  $8\Omega$  or  $1K\Omega$  audio output jack to the PA sound system input using a mono RCA-to-RCA cable (included). If the sound system does not have an RCA-style input, use the included RCA to 1/8 inch adapter.

## **Step 2 – Load Messages**

Messages must be loaded into the Sonorous from a CD.

NOTE: Memory is automatically erased whenever a CD load begins.

### **CD Load**

Turn the power switch on. The Sonorous begins a 30 second self-test and the Status LED cycles from Green to Orange. After the short self-test is completed, the Status LED turns to a blinking Green. Press the CD open/close button. The motorized CD-ROM drawer opens just like a CD-ROM drive on a computer. Place the CD into the drawer, then press the open/close button. The Sonorous detects the presence of the CD, switches itself to setup mode, the Status LED turns to a blinking Orange, then begins the load process automatically. The Status LED turns solid Green when the Sonorous is finished loading.

**NOTE: Never eject the CD while it is loading.**

During CD load, the status light displays the load progress:

<b>Activity</b>	<b>Status</b>
Slow Green blink	No messages loaded
Slow Orange blink	Message(s) loading
Solid Green	Message is playing
Slow Red blink	Sonocrypt protected (Need Key) or Incompatible Audio CD
Fast Green Flash	Memory Over-Run Warning or bad .mp3 files on CD

***Table 1 - Status Light Indications***

Once the unit detects the CD, it begins loading message #1, and then starts loading message #2, and so on until all messages on the CD are loaded. After all messages are successfully loaded, the Status LED turns to a solid Green. If your Status LED is blinking Red, your Sonorous is protected by Sonocrypt and the Key is needed, or you have a bad CD. The CD automatically ejects in the event that this occurs.

Important: It is not necessary to leave the CD in the unit after loading. Since the Sonorous uses non-volatile Flash memory, messages are not erased during power outages or when the unit is unplugged or turned off. If you do decide to remove the CD, LEAVE IT OUT. Every time you insert a CD with the power switch on, all messages are erased and the CD load process begins.

A fast green flash after a load indicates that the audio is playing, but the entire CD has not been loaded because it exceeds the available memory of the Sonorous. NOTE: All complete files load until you are out of available memory. At that point, the Sonorous begins its normal playback operation. If the Sonorous loses power, the LED will turn to a solid green upon power up. This over-run warning is for the initial load only.

## **Message Review**

You can listen to the messages via the internal monitor speaker by pressing the monitor switch. This is useful for listening to the messages privately before they play over the sound system. Messages only play after they are loaded into the Flash memory.

## **Step 3 – Adjust Volume**

The Volume Knob is used to adjust the volume to a comfortable level.

## **Continuous Play**

The Sonorous plays back all loaded music and messages over your sound system or MOH port continuously. There is no option to trigger the messages remotely or via a timer.

## **Power On Self-Test (POST)**

Each time the unit is turned on, an automatic self-test routine commences immediately, lasting about 30 seconds. The Status LED will cycle from Green to Orange during this process.

If a failure occurs in any one of the tests, the self-test halts, rendering the unit inoperable.

If you experience a POST failure, try turning the unit off, unplugging it and letting it sit for a few minutes. Then, plug it back in and turn it on to see if the failure occurs again. If it does, you should return the unit for service.

## WALL MOUNTING INSTRUCTIONS

Using the screw holes on the unit as a guide, secure four screws through the unit into the wall where you want to mount the unit.

Consider the weight of the Sonorous when choosing a mounting wall. Make sure the wall's construction is sufficiently strong to support the weight of the unit securely. Make sure all 4 screws are driven into studs or other sturdy supports, not just into plain drywall.

The unit may be installed in any direction; however, be sure that the area in front of the CD-ROM drawer is clear, allowing it to open completely.

## FLAT SURFACE MOUNTING INSTRUCTIONS

Secure the four included rubber feet to the bottom of the unit near the screw holes in each corner.

Place the unit on a sturdy table, away from any obstructions that may disrupt its mounting.

The unit may be installed in any direction; however, be sure that the area in front of the CD-ROM drawer is clear, allowing it to open completely.

# TECHNICAL SPECIFICATIONS

Frequency response.....	80Hz to 15 KHz (Depending on sample rate)
Bit Rates.....	8K to 128K bits per second
Sample Rates.....	16KHz to 48KHz
Encoding.....	MPEG-3 (.mp3)
Signal to noise.....	>90 dB
Memory type.....	High-density, Non-volatile FLASH
Memory capacity.....	64 minutes @ 32 Kbps (Expandable to 34 hours)
Message loading.....	CD using built-in CD ROM drive
Message playback.....	Continuous
Power supply.....	110VAC 60Hz to 15VDC 1.6A, center pin positive
Audio output.....	Mono RCA jack Adjustable volume control
Audio output impedance.....	8 $\Omega$ or 1K $\Omega$
Size.....	3.25" x 9.50" x 9.10" (H x W x D)
Color.....	Black
Weight.....	5 pounds (excluding power supply)



## TROUBLESHOOTING

If you have trouble installing or operating the Sonorous, refer to the table below to help find a solution. If you are unable to solve the problem yourself, contact your dealer for further assistance.

<b>Problem or Indication</b>	<b>Possible cause and solution</b>
CD load error (Status blinks RED)	Sonorous is Sonocrypt protected and the Sonocrypt Key is needed for operation. The CD is bad.
Slow or fast playing audio	File may have album art or cover art embedded. To fix, open file in standard audio editor such as GoldWave and resave the file.
No messages	Adjust output level knob.
	Check amplifier or speakers.
	Make sure status light is solid Green.
CD drawer won't open	If the drawer doesn't open when you press the open/close button, make sure the power is connected and the unit is turned on. Press the open/close button again.
No power-main power light is off	Check the power switch (should be on)
	Check power pack for correct DC output voltage & current.
	Check AC source to make sure it is not controlled by a switch.

***Table 2 – Troubleshooting***

## FCC Notice

**WARNING:** This equipment has been tested and found to comply with the limits for a Class A digital device pursuant to Part 15 of FCC Rules. These limits are designed to provide reasonable protection against harmful interference when this equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user is required to correct the interference at his/her own expense.

This digital apparatus does not exceed the Class A limits for radio noise emissions from digital apparatus set out in the Radio Interference Regulations of the Canadian Department of Communications.

Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de la Class A prescrites dans le Règlement sur le brouillage radioélectrique édicté par le ministère des Communications du Canada.

## Copyright Notice

The Nel-Tech Labs, Inc. Sonorous product line is strictly used for Licensed Music only. Use of copyrighted music is illegal and Nel-Tech Labs, Inc. takes no responsibility for that action. Sonorous users are fully responsible for any music, mechanical, and recording rights.

This manual is copyright ©2003-2004 Nel-Tech Labs, Inc. All rights reserved. No part of it may be copied, photocopied, reproduced, translated, or reduced to any electronic medium or machine-readable form without Nel-Tech's prior written consent.

Information contained herein is subject to change without prior notification. Nel-Tech Labs, Inc. provides this manual without warranty of any kind, express or implied. This user's manual may contain technical and/or typographical errors. **Sonorous** and **Sonocrypt** are trademarks of Nel-Tech Labs, Inc.

## Limited Warranty

### **TERMS:**

Nel-Tech warrants to the original purchaser ("Buyer") that the Product sold is free from defects in material and workmanship at the time of purchase. The warranty extends five (5) years from the date of original purchase and covers parts and labor. Buyer must provide written notice to Nel-Tech within the warranty period of any defective part or conditions. If the defect is not the result of improper use, service, maintenance or installation, and if the equipment has not been otherwise damaged or modified after shipment, Nel-Tech or its authorized representative shall either replace or repair the defective Product at Nel-Tech's option. No credit shall be allowed for work performed by Buyer or unauthorized parties. Out-of-warranty repairs are invoiced at the current Nel-Tech hourly rate plus the cost of parts, shipping and handling. In the event that the product serial number is missing or has been tampered with in any way, the foregoing warranty is void and without effect and Nel-Tech shall have no liability whatsoever on account defects to such product.

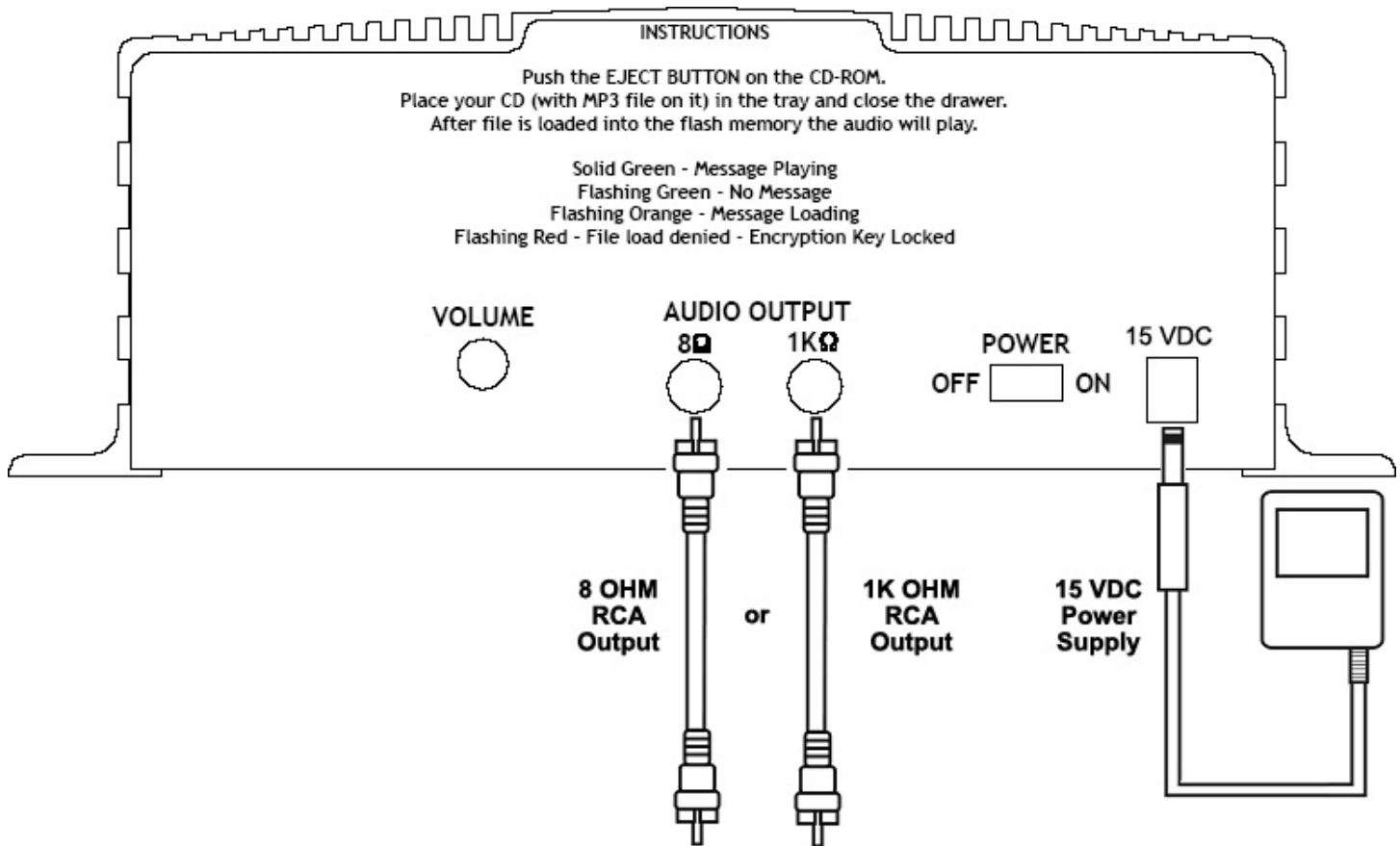
### **LIMITATIONS:**

Except as stated above, there are no warranties, express or implied, that extend beyond the specifications for the product. Nel-Tech expressly disclaims any warranty, express or implied, that equipment sold hereunder is of merchantable quality or that it can be used, or is fit for any particular purpose. Buyer purchases and accepts equipment solely on the basis of the warranty here in above expresses. Under no circumstances shall Nel-Tech be liable by virtue of this warranty or otherwise for any special indirect, secondary or consequential damages to any person or property arising out of the use or inability to use the product. Please be aware that cracked, deeply scratched or other poor quality discs used in this product may cause damage to the drive and data in the disc. Such discs may break at high speed rotation. If full care is not exercised in relation to this matter, you may void the warranty to this product.

### **REPAIRING OR REPLACING PRODUCT:**

Buyer may obtain the repair or replacement of any eligible part or equipment covered under this warranty through Nel-Tech only. Buyer is responsible for all shipping and handling charges in connection with the performance of this warranty. Products returned to Nel-Tech must be securely packaged to prevent damage in transit, freight prepaid, and insured for replacement value. A return authorization number assigned by Nel-Tech must be clearly marked on the outside of the shipping container. Proof of purchase must accompany shipment. Items delivered to Nel-Tech without a return authorization clearly marked on the outside of the shipping container, and/or without proof of purchase is refused. Please contact Nel-Tech at the address and phone number below to receive a return authorization number and to arrange for the repair or replacement of a flawed part covered by this warranty. Please indicate the Product's serial number in all correspondence. An authorization number is not issued in the absence of a serial number. Nel-Tech Labs, Inc., 101 Zachary Rd., Manchester, NH 03109-5609, Phone: (603) 641-8844.

# QUICK INSTALL INSTRUCTIONS



## Connection Instructions

1. Turn the power switch OFF. Plug the included power supply into a normal 110VAC wall outlet and the 15VDC jack on the Sonorous. Only use the power pack provided with the unit (15VDC, center pin positive). Many power supplies look alike, but provide different output. Using the wrong one voids your warranty and may damage the unit.
2. Connect either the 8Ω or 1KΩ audio output jack to the PA sound system input using a mono RCA-to-RCA cable (included). If the sound system does not have an RCA-style input, use the included RCA to 1/8 inch adapter.

**For more detailed instructions, read the inside of the manual.**