

3M

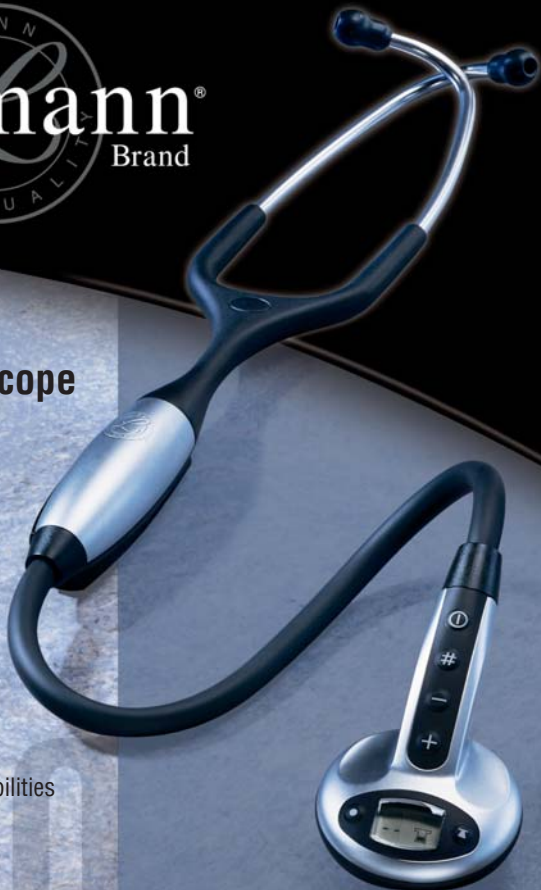
Littmann®  
Brand



## Littmann® Electronic Stethoscope

Model 4000

- Superior acoustics
- Amplification up to 18 times greater than best conventional Littmann stethoscopes
- Three frequency response modes: bell, diaphragm, and extended range
- Recording and playback capabilities
- Heart rate display
- Uses two AAA batteries



# 3M™ Littmann® Electronic Stethoscope Model 4000

Congratulations on the purchase of your new Littmann Electronic Stethoscope Model 4000, the next generation electronic stethoscope that offers the very latest in advanced auscultation technology.

This powerful, state-of-the-art electronic stethoscope provides superior acoustics. With amplification up to 18 times greater than the best conventional stethoscopes, the Model 4000 is specially designed to pick up difficult-to-hear heart and other body sounds. Three frequency modes are available for optimal heart and lung auscultation: Bell, Diaphragm and Extended Range.

The Littmann Electronic Stethoscope Model 4000 offers recording, storage and playback capabilities on six different soundtracks. Instant playback is available at normal and half speed.

Additionally, the Model 4000 provides infrared data transmission of recorded sounds to either another Model 4000 or an IBM-compatible PC, giving you the option of sharing or storing the sounds.

Other features include digital signal processing over the entire acoustic range, built-in display for easy viewing of the heart rate, patient-friendly nonchill rim, and patented 3M™ Littmann® Snap Tight Soft-Sealing Eartips for excellent acoustic seal and comfortable fit. Plus, the Model 4000 operates on just two AAA alkaline batteries.

Most of all, know that the Model 4000 carries the Littmann brand name, the name known worldwide for unsurpassed quality. As a trusted leader in auscultation technology, the Littmann brand of stethoscopes is your assurance of acoustic superiority, innovative design and exceptional performance.

The following symbols are applicable to this device:



• Attention, see instructions for use.



• Indicates Type B Equipment: The equipment provides protection against electrical shock and electrical current leakage.

IPX4

• Avoid penetration of fluids into the eartip openings. The remainder of stethoscope is protected against splashing liquid.



• This product and package do not contain natural rubber latex.

Each Littmann Electronic Stethoscope Model 4000 has a serial number beginning with "SN P".

## Indications

The Littmann Electronic Stethoscope Model 4000 is intended for medical diagnostic purposes only. It can be used for the amplification of heart, lung and other body sounds with selective frequency filtering. The Model 4000 can also be used for recording, playback and transmitting/receiving of heart, lung, and other body sounds. This product is not designed, sold, or intended for use except as indicated.



### Caution

- Failure to follow directions, general use, and maintenance recommendations could result in damage to the device or possible injury to the user. Damage could cause malfunction of the product, ranging from a slight decrease in auditory response to complete failure of the product.
- Half speed playback is for reference and should not be the only basis for diagnosis.
- It is the responsibility of the clinician to assure that all recordings and data transmissions correspond to the appropriate patient data.
- Transmissions of soundtracks to a computer are for storage purposes only. Soundtracks should not be listened to from a computer for diagnostic purposes.

- The Littmann Electronic Stethoscope Model 4000 has been tested to be resistant to both electromagnetic fields (EMI) and electrostatic discharge (ESD). However, it may be susceptible to very strong radio frequency signals. When using the stethoscope, if sudden or unexpected sounds are heard, the Model 4000 may be in close proximity to a strong radio transmitter. If this should occur, move away from the radio's transmitting antenna.
- Use only AAA alkaline batteries.
- The Model 4000 will not function if the batteries are depleted.
- Do not immerse the stethoscope in any liquid or subject it to any sterilization processes. The entire Model 4000 can be wiped clean with alcohol.
- At the end of this device's useful life, dispose or recycle in accordance with your local, state, and governmental regulations.
- If you have any problems with the Model 4000, do not attempt to repair it yourself. Refer to the Service and Warranty section of this manual.

## Instructions For Use

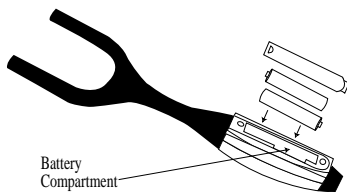
### Battery

When used in a typical setting, the Littmann Electronic Stethoscope Model 4000 will operate for about one month on two AAA alkaline batteries. Using the recording options or infrared data transfer will reduce the average battery life.

When the batteries are close to depletion, the LOW BATTERY indicator, located on the display, will blink. When this occurs, the batteries should be replaced within two hours of continuous use.

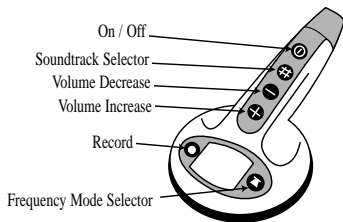
When the batteries are no longer able to power the Model 4000 stethoscope, the stethoscope will automatically turn off. All recorded sounds and settings are saved. The Model 4000 will not function if the batteries are depleted.

### Insert batteries as shown

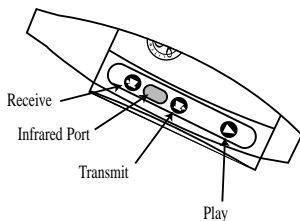


### Electronic Controls

The chestpiece of the Littmann Electronic Stethoscope Model 4000 contains six buttons:



The battery compartment of the Model 4000 contains three buttons and the infrared port:



## Electronic Control Quick Reference

(Refer to Operation section for complete instructions)

**On/Off** Press the ON/OFF button to turn the stethoscope on.  
Press the ON/OFF button for approximately two seconds to turn the stethoscope off.  
Pressing the ON/OFF button cancels the current action, for example, to stop a playback, transmission, or reception of a soundtrack.

**Soundtrack Selector** There are six soundtracks available on the Model 4000. Press the SOUNDTRACK SELECTOR button once to display soundtrack one, press again to advance to the next sound track.

**Volume Decrease** Press the VOLUME DECREASE button to decrease the sound level.

**Volume Increase** Press the VOLUME INCREASE button to increase the sound level.

**Record** Press the RECORD button for one second to record sound onto the selected soundtrack. Press again to stop recording.

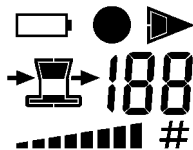
**Frequency Mode Selector** Press the FREQUENCY MODE SELECTOR button to select Bell, Diaphragm or Extended Range.

**Receive** Press the RECEIVE button to receive a soundtrack from another Model 4000 or computer.

**Transmit** Press the TRANSMIT button to transmit the displayed soundtrack to another Model 4000 or computer.

**Play** Press the PLAY button to hear the selected soundtrack. The display panel will indicate that the playback is at normal speed. Press and hold the PLAY button for two seconds to play back in half speed. The display panel will indicate that the playback is at half speed. To return to normal speed, press the PLAY button again. Stop playback by pressing the ON/OFF button.

## Display Panel



The above picture demonstrates the graphics that are used on the Model 4000 display panel. As a functional test, when the Model 4000 is turned on, all the graphic indicators as shown above will be briefly displayed. After this brief test, the display will then indicate the current listening mode and the volume setting. The factory setting for listening mode is Bell mode and a volume setting of level three.

If  $\text{Er}$  is shown on the display, refer to the Error Message section.

**When the display panel shows:**



**It means:**  
Blinking means the two batteries are almost depleted.



The sound volume has eight levels. The bar shows the current sound level, increasing from the left. The more bars visible, the higher the sound level. When one element is displayed, the sound level is similar to a typical acoustic stethoscope. This is also used to indicate soundtrack reception or transmission progress during data transmission.



Bell mode.



Diaphragm mode.



Extended range mode. The extended range amplifies sound from a broader range of frequencies than the bell or diaphragm mode.



Playing a recorded sound at normal speed.



Playing a recorded sound at half speed.



Recording a sound.



Transmitting a recording. The arrow will blink until the infrared connection is made. After connection is made, the arrow will no longer blink.






Receiving a recording. The arrow will blink until the infrared connection is made. After connection is made, the arrow will no longer blink.



The number displayed indicates the soundtrack currently selected.





The symbol  indicates that the soundtrack is occupied by a previous recording. If  is not displayed, the soundtrack is vacant. When the  is rotating, a sound transmission is in progress.

**#** is located below the number of the soundtrack you have selected.



A number displayed is the heart rate. If two dashed lines are displayed, refer to the heart rate section.



If the display is blinking , the heart rate is above  bpm and cannot be displayed.



*Error Message.* See Error Message section of this manual

## Operation Power On

Press the ON/OFF button on the Littmann Electronic Stethoscope Model 4000. The factory or personalized setting will be in operation.

**Automatic Power Off**

The Model 4000 automatically turns off three minutes after the last actuation of any button. Press the ON/OFF button within 10 seconds of automatic power off and the same settings will be restored. If longer than 10 seconds have transpired, the Model 4000 will power up at your personalized setting or factory setting.

Note, the stethoscope will not power off automatically during a data transmission.

**Change Sound Volume Level**

Press the VOLUME INCREASE or VOLUME DECREASE button. The sound volume bar displays the change.

**Change Frequency Mode**

Press the FREQUENCY MODE SELECTOR button to select one of the frequency ranges (Bell, Diaphragm or Extended). The selection is indicated on the display panel.

**Personalized Setup**

The Model 4000 is factory set in bell mode and sound level 3. To personalize setup, select the desired frequency mode and volume level, and then press and hold the FREQUENCY MODE SELECTOR button for two seconds. The Model 4000 will now function with these settings on startup.



**Heart Rate**

The Model 4000 detects and displays an acoustic-based heart rate. It takes five seconds to compute the initial heart rate and is updated every two seconds. For heart rates below 30 bpm or before the initial reading, the display shows two dashes (--). Heart rates above 199 bpm will flash the number 199. Heart

rate is not displayed during recording or playback.

The acoustic-based heart rate display functions best when the Model 4000 is placed near the apex of the patient's heart. If the heart rate changes from consistent to inconsistent or if there is excessive ambient noise, patient movement or lung sounds during auscultation, the heart rate display number will flash or display two dashes (--). The flashing heart rate will change to two dashes (--) after 10 seconds of inconsistent sounds or no heart rate detection.

**Select Soundtrack**

Select any one of the six soundtracks by pressing the SOUNDTRACK SELECTOR button one or more times. The selected soundtrack is displayed. A number shown by itself indicates an empty track. A number shown with the  indicates a recorded soundtrack. Recording on a soundtrack that displays the  will erase the currently stored sound.

Press the ON/OFF button to return to the heart rate display.

**Recording**

Press and hold the RECORD button for one second. The record symbol will flash in the display. Press the record button again to stop recording. Wait for approximately two - three seconds after an auscultation event before pressing the RECORD button to stop recording. Each soundtrack has a recording duration of eight seconds. Each recording must be at least two seconds in duration.

The recording process captures the full frequency range and stores it on the soundtrack. This allows the ability to change the frequency mode from bell, diaphragm or extended range during playback. To ensure that clear auscultation sounds are captured, do not adjust volume or frequency mode during recording.

### Playback

To play back a recording, select the desired soundtrack and press the PLAY button. When the entire soundtrack has been played, there is a one second delay before the soundtrack will play again. To end playback, press the ON/OFF button.

### Half Speed Playback

Press and hold the PLAY button for two seconds. To stop the continuous half speed and return to normal playback, press the PLAY button. To end playback, press the ON/OFF button.

### Erase Single Soundtracks



Erase soundtracks by recording new sounds onto them. Erased soundtracks cannot be recovered.

### Erase All Sound Tracks (use with caution)



Press and hold the SOUNDTRACK SELECTOR button for two seconds. This will erase all soundtracks. Erased soundtracks cannot be recovered.

### Data transmission to another Littmann Electronic Stethoscope Model 4000

1. Select the soundtrack to be transmitted and the soundtrack to receive the transmission.  
2. Position the two IR ports within two feet.

3. Press the RECEIVE button on the receiving Model 4000 then press the TRANSMIT button on the transmitting Model 4000. The arrow will blink until the infrared connection is made.  
4. Transmission is indicated on the Model 4000 display by a rotating .  
5. Progress of the transmission is shown on the Model 4000 display with the  symbol. To stop the transmission, press the ON/OFF button on either stethoscope.

### Sending a copy of a soundtrack to a computer using Microsoft® Windows® 95/98/2000<sup>1</sup> with an infrared (IR) port

1. Select the soundtrack to be transmitted.  
2. Position the two IR ports within two feet.  
3. Press the Model 4000 TRANSMIT button. The arrow will blink until the infrared connection is made.  
4. Transmission is indicated on the Model 4000 display by a rotating .  
The computer status bar will display two red lights flashing towards one another.  
5. Progress of the transmission is shown on the Model 4000 display with the  symbol.  
6. **WINDOWS 95/98** - Downloaded soundtracks are stored in: C:\My Received Files.

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1. Prompts may vary between versions of Windows and are the responsibility of the Microsoft. References to Windows as it pertains to use of the Littmann Electronic Stethoscope Model 4000 are for clarification only. Please consult your Microsoft users manual for specific instructions. Microsoft® and Windows® are trademarks of Microsoft Corporation.

**WINDOWS 2000** – Downloaded soundtracks are stored in:

C:\Documents and Settings\username\Desktop and appear on the desktop.

7. The soundtrack filename format is: 'Trk\*.e4k' (\* is the soundtrack number on the stethoscope)

*Example: soundtrack 2 = 'Trk2.e4k'*

If the default soundtrack filename already exists, a new name, 'Copy of Trk\*.e4k' or 'Copy # of Trk\*.e4k' is given, example: soundtrack 2 = 'Copy of Trk2.e4k' (# is the number of duplicates from the same soundtrack)

It is advisable to rename the soundtrack files once they are transmitted to avoid confusion. It is not necessary to maintain the file extension \*.e4k.

If  $\text{Er}$  appears in the display of the stethoscope, refer to the Error Messages section of this manual to determine a possible cause.

### Receiving a copy of a soundtrack from a computer using Microsoft® Windows® 95/98/2000<sup>2</sup> with an infrared (IR) port

**WINDOWS 95/98** - From the Start menu select 'Start – Programs – Windows Explorer'. Open the folder "My Received Files" and locate the soundtrack file to be transmitted.

**WINDOWS 2000** – From the desktop (or within the folder that contains the soundtrack file to be transmitted) locate the soundtrack file to be transmitted.

1. Select the Model 4000 soundtrack to receive the transmitted file


**Caution:** If the selected soundtrack contains a recording, the transmitted


file will replace it. Erased soundtracks cannot be recovered.

2. Position the two IR ports within two feet.

3. Press the Model 4000 RECEIVE button. The arrow will blink until the infrared connection is made.

4. Immediately right click on the soundtrack file to be transmitted and select 'Send To – Infrared Recipient'

5. Transmission is indicated on the Model 4000 display by a rotating . The computer status bar will display two red lights flashing towards one another.

6. Progress of the transmission is shown on the Model 4000 display with the  symbol.

**Note:** The soundtrack filename is not transmitted to the stethoscope. If  $\text{Er}$  appears in the display of the stethoscope, refer to the Error Messages section of this manual to determine a possible cause.


## Error Messages

If  $\text{Er}$  shows while transmitting data to another Model 4000 or a computer:

- The path of infrared light may be blocked. Position the infrared ports at each other and retry the operation.
- The infrared port may be dirty. Clean both infrared ports.
- The Model 4000 was removed before the soundtrack was

<sup>2</sup> Prompts may vary between versions of Windows and are the responsibility of the Microsoft. References to Windows as it pertains to use of the Littmann Electronic Stethoscope Model 4000 are for clarification only. Please consult your Microsoft users manual for specific instructions. Microsoft® and Windows® are trademarks of Microsoft Corporation



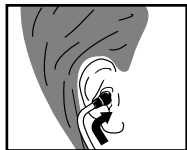
completely transferred. Do not move the stethoscopes until the  is finished rotating.

- The Model 4000 may be exposed to excessive EMI/RFI, electromagnetic noise. Remove the source of noise.

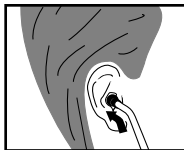
If none of these is the cause, refer to the Littmann Stethoscope Service and Warranty section.

## Headset Positioning

The Littmann Electronic Stethoscope Model 4000 is designed to provide a comfortable, acoustically sealed ear fit. Notice that the eartubes are permanently set at an angle to accommodate the typical anatomy of the ear canal. The eartips should point in a forward direction when inserted into the ear canals.



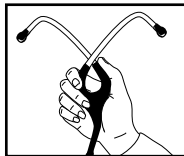
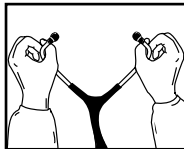
**Correct**



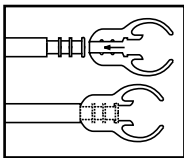
**Incorrect**

To reduce spring tension in the headset, hold each eartube at the bend near the eartip and gradually pull apart until fully extended.

To increase spring tension, grasp the headset with one hand where the eartubes enter the plastic tubing and squeeze until the plastic tubing on one eartube touches the other. Repeat as necessary.



For maximum acoustic performance, comfortable patented 3M™ Littmann® Soft-Sealing Eartips are provided with the stethoscope. The stethoscope utilizes a unique design for attaching the eartip to the eartube.



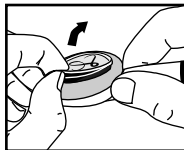
The eartips are pushed onto the end of the eartube and snapped in place. To remove, pull firmly on the eartip.

## Diaphragm Removal and Replacement

Under normal conditions, it is unnecessary to remove the rim and diaphragm for cleaning. The diaphragm can easily be cleaned with an alcohol wipe. If, however, it is necessary to remove the rim and diaphragm, carefully follow instructions:

### Rim Removal:

- With diaphragm side up, using a thumbnail, pry the rim out of its designated groove, and pull towards you. If the diaphragm does not come off along with the rim, remove this separately.



Do not disturb the components located under the diaphragm once it is removed.

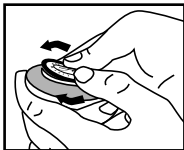
### Cleaning of the Rim and Diaphragm:

- Separate the diaphragm from the rim, and clean with mild soapy water and/or alcohol. The surface of the chestpiece can also be wiped with alcohol. Take care not to saturate the chestpiece. Excess liquid used in the cleaning process can result in moisture getting into the internal components.

### Diaphragm and Rim

#### Reassembly:

- Once the rim and diaphragm are completely dry, place the rim on a firm surface. Insert the diaphragm into the inside



groove of the rim, starting at one point, and running your finger around the inside of the rim. This technique will position the diaphragm properly in the designated groove.

- Place the rim and diaphragm assembly on the chestpiece surface. Totally engage the assembly in the groove on chestpiece at one point and hold in place with thumb. Slowly roll the rim around the chestpiece edge using both thumbs moving in opposite directions.

## General Use and Maintenance

- The entire stethoscope can be wiped clean with alcohol.
- Do not immerse the stethoscope in any liquid or subject it to any sterilization process.
- Eartips can be removed for a thorough cleaning.
- Remove the battery whenever the stethoscope is stored or will not be used for several months.
- Avoid extreme heat, cold, solvents and oils. Recommended storage conditions are from -4°F to 140°F (-20°C to 60°C), 15 to 95% relative humidity.

Failure to follow care and maintenance recommendations could result in damage to the internal components of the Model 4000. Internal damage could cause malfunction of the product, ranging from a slight decrease in auditory response to complete failure of the product.

If you experience any problems with the Model 4000 do not attempt to repair it yourself. Please notify the 3M Health Care Service Center for directions on shipping and receiving.

## Littmann Stethoscope Service and Warranty Program

The Littmann Electronic Stethoscope Model 4000 is warranted against any defects in material and manufacture for a period of two years. If a material or manufacturing defect is discovered during the warranty period, repairs will be made

without charge upon the return of the instrument to 3M, except in cases of obvious abuse or accidental damage.

For technical questions, call the 3M Health Care Tech Line at 1-800-441-1922.

For maintenance or repair services in the United States, send your stethoscope directly to:

3M Health Care Service Center

3M Building 502-1W-01  
3350 Granada Ave N  
Suite 200  
Oakdale, MN 55128  
1-800-292-6298

Enclose your name, address, phone number and reason for repair with your stethoscope.

In Canada:



3M Health Care Service Center  
3M Canada Inc.  
80 Enterprise Drive South  
London, Ontario  
Canada N6N1C2  
1-519-668-3663

Outside of the United States and Canada, contact your local 3M subsidiary for maintenance and repair information.



Made in Denmark for **3M Health Care**, St. Paul, MN 55144  
(U.S.A.) 1 800 228-3957 • Fax 612 736-2803

Visit our web site: <http://www.3M.com/Littmann>

  Attention, see instructions for use.  
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