



COVIDIEN™

Operating Manual

# Genius™ 2

## Tympanic Thermometer and Base

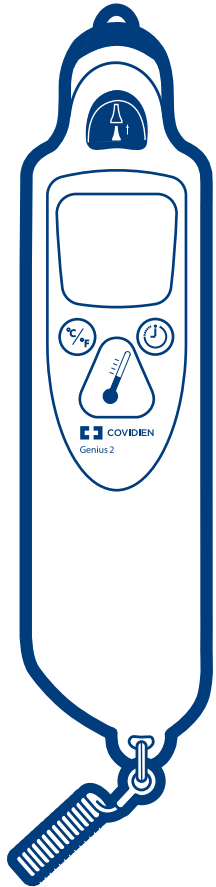
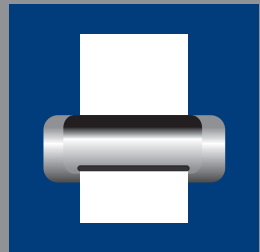
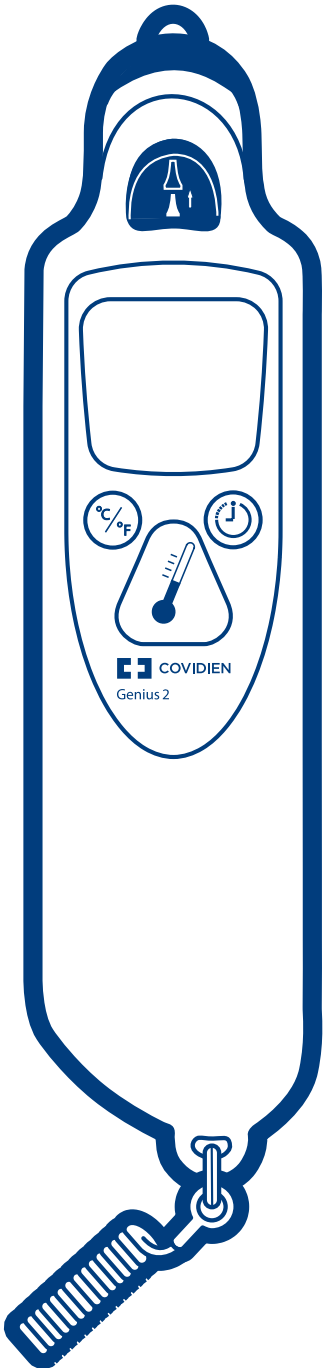


Table of Contents



# Genius™ 2

## Tympanic Thermometer and Base



## Table of Contents

	<b>Page</b>	
<b>Section I</b>	<b>Introduction</b>	<b>1</b>
	Initial Set Up	1
<b>Section II</b>	<b>General Information</b>	<b>1</b>
	Features	1
<b>Section III</b>	<b>Important Precautions</b>	<b>1</b>
<b>Section IV</b>	<b>Icon Identification</b>	<b>2</b>
<b>Section V</b>	<b>Instructions for Use</b>	<b>3</b>
	Peak Select System™	3
	Equivalence Modes	3
	Probe Covers	4
	Temperature Measurement	4
	Temperature Recall	6
	Temperature Display - Toggle	6
	Sleep Mode	6
	Pulse Timer Mode	6
	Thermometer Display Icons and Alarms	6
	Biotech Mode	7
<b>Section VI</b>	<b>Preventative Maintenance</b>	<b>8</b>
<b>Section VII</b>	<b>Cleaning</b>	<b>8</b>
<b>Section VIII</b>	<b>Battery Replacement</b>	<b>9</b>
<b>Section IX</b>	<b>Mounting Instructions</b>	<b>9</b>
<b>Section X</b>	<b>Troubleshooting</b>	<b>9</b>
<b>Section XI</b>	<b>Specifications</b>	<b>9</b>
<b>Section XII</b>	<b>Customer Service</b>	<b>11</b>
<b>Section XIII</b>	<b>Warranty</b>	<b>12</b>
<b>Section XIV</b>	<b>Electromagnetic Conformity Declaration</b>	<b>12</b>

This product contains software solely owned by Covidien llc. Covidien llc grants the user a non-exclusive, limited license to use the software according to the operating instructions. A copy of the license can be obtained from Covidien llc.

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## Section I — Introduction

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This operator's manual was prepared for the operator of the Genius™ 2 Tympanic Thermometer and Base. This manual contains instructions for use, precautions, and available maintenance and service information. To achieve satisfactory results, the operator must read this manual thoroughly before attempting to use the thermometer.

### Initial Set Up

- Unpack the Genius 2 Tympanic Thermometer and Base and examine it for structural integrity.
- If using the wall or cart mount options (sold separately) for the base unit, consult the installation sheet provided with the respective system.
- When first used, the Genius 2 Tympanic Thermometer and Base will show the factory preset settings: ear mode (EAR) and the celsius scale (°C).

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## Section II — General Information

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The Genius 2 Tympanic Thermometer and Base is a fast, accurate, and convenient clinical instrument for measuring patient temperatures. The Genius 2 Tympanic Thermometer and Base is an ear canal thermometer with measurement site equivalence modes including oral, core, and rectal equivalent temperatures. The equivalence modes are explained further in Section V, Instructions for Use.

### Features

- Very fast temperature acquisition that meets CEN and ASTM standards - see Section XI.
- Peak Select System
- Temperature measurement range of 33.0°C to 42.0°C (91.4°F to 107.6°F).
- After a temperature has been acquired, the °C/°F button alternates the displayed temperature between °C and °F.
- Audible and visual indication of completed temperature acquisition.
- Disposable single use probe covers aid in the prevention of a cross contamination of infectious diseases.
- Low and dead battery indicators.
- "Sleep" mode stores the last temperature and conserves battery life.
- 15, 30, 45, and 60 second pulse timer functions.
- The thermometer housing can be wiped clean with common cleaning agents. See Section VII, Cleaning for instructions.
- Base unit protects the thermometer tip and stores probe covers for easy access.
- Easy to read LCD display with icons.
- Unit is designed for ambidextrous use.
- Improved probe design to allow ease of use on the pediatric population.

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## Section III — Important Precautions

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- The Genius 2 Tympanic Thermometer and Base is a precision optical instrument. For reliable and trouble free operation, handle carefully and do not drop.
- Read the operator's manual thoroughly before using the Genius 2 Tympanic Thermometer and Base.
- Prior to use, ensure that the probe tip is clean and clear of any material. If the thermometer tip becomes soiled, gently clean with a lens wipe or lint free swab. The tip should appear shiny and free of fingerprints and/or debris. For further cleaning instructions refer to Section VII Cleaning.

### Important Precautions continued

- Always install a new probe cover prior to taking a temperature. The probe cover membrane should be smooth with no holes, tears, or wrinkles.
- The thermometer was designed to be used only with Genius 2 Tympanic Thermometer and Base probe covers. Use of probe covers manufactured by any company other than Covidien llc may result in erroneous readings.
- Ensure that the probe tip seals the ear canal prior to taking a temperature. Failing to seal the ear canal will result in a loss of accuracy.
- When not in use, the Genius 2 Tympanic Thermometer and Base should be placed in the thermometer base unit.
- The Genius 2 Tympanic Thermometer and Base should not be used on patients with ear drainage, blood, cerebrospinal fluid, vernix, ear wax plugs, or foreign bodies in the ear canal.
- Patients with removable hearing aids should remove the device at least 10 minutes prior to ear temperature assessment. Implanted devices generally do not affect ear temperature.
- Pressure equalization (PE) or tympanostomy tubes will not adversely affect accuracy. For patient comfort, wait one week after surgery before using Genius 2 Tympanic Thermometer and Base.
- When assessing patient temperatures during cold weather conditions, allow the patient to equilibrate to room temperature before use.
- Excessive eardrum scarring may cause lowered temperature readings.
- Under normal conditions, ear wax does not affect accuracy. However, cerumen plugs or impactions containing debris can lower the temperature measurement by several tenths of a degree.
- Always wait at least two minutes before taking another measurement in the same ear.
- Used probe covers must be treated as infectious biological waste and disposed of in accordance with current medical practices and local regulations. Removal of batteries is recommended if the unit is not going to be used for an extended period of time.
- Lithium or alkaline batteries must be disposed of in accordance with local environmental and institutional policies.
- Expired or old equipment must be disposed of in accordance with institutional policy.
- Fluid ingress may cause a reduction in battery life and interfere with unit functionality. Cleaning guidelines should be followed as per Section VII to prevent fluid entering the unit. Do not use this device near flammable anesthetics. Not suitable for use in the presence of flammable anesthetic mixture with air, oxygen, or nitrous oxide.

### Section IV — Icon Identification



Eject Button



°C/°F Button



Timer Button



Scan Button



Choking Hazard



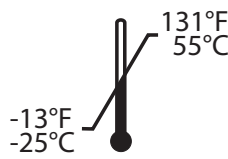
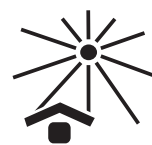
Non-Sterile



By prescription only



DEHP-free

Consult instructions  
for useTemperature  
limitationsKeep away from  
sunlight

Keep dry



Dispose of as  
Electrical and  
Electronic waste



Type BF Protection  
(Degree of protection  
against electrical  
shock -there is  
no conductive  
connection to  
the patient)



Non-ionizing  
electromagnetic  
radiation



CE mark



Authorized  
representative in the  
European Community



Catalog number



Manufacturer



Serial number



Date of manufacture

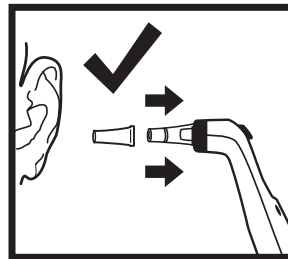


### Medical Electrical Equipment

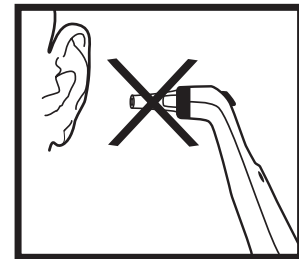
Genius 2 Tympanic Thermometer and Base

(1) Classified with respect to electrical shock, fire and mechanical hazards in accordance with UL60601-1

(2) Classified with respect to electrical shock, fire, mechanical and other specified hazards in accordance with CAN/CSA C22.2 No. 601.1



Probe cover installed



Probe cover not installed

## Section V — Instructions for Use

### Peak Select System

The Genius 2 Tympanic Thermometer and Base uses the patented Peak Select System. This system is well known from our Genius Thermometer. It reduces technique errors by taking multiple readings and automatically selecting the most accurate temperature for display. Whereas the Genius only used 32 readings for Peak Select, the new and improved Genius 2 Tympanic Thermometer and Base uses 100 readings.

### Equivalence Modes

**Genius 2 Tympanic Thermometer and Base is an ear canal thermometer for neonates, newborns, children, and adults.**

Prior to the introduction of tympanic thermometry, patient temperatures were measured in the mouth (oral), in the rectum (rectal), or in special cases with an indwelling Swan-Ganz™\* catheter (core). If a patient's temperature was measured simultaneously with each of these methods, different absolute temperatures would be obtained. The Genius 2 Tympanic Thermometer and Base compensates for the average difference in temperature at each of these sites by adjusting the displayed temperature.

A checker / calibrator is available for this device. The device should be checked if it is dropped or if it is stored at less than -25°C or above 55°C.

“ASTM laboratory accuracy requirements in the display range of 37 to 39°C (98 to 102°F) for Infrared thermometers is  $\pm 0.2^{\circ}\text{C}$  ( $\pm 0.4^{\circ}\text{F}$ ), whereas for mercury-in-glass and electronic thermometers, the requirement per ASTM Standards E 667-86 and E 1112-86 is  $\pm 0.1^{\circ}\text{C}$  ( $\pm 0.2^{\circ}\text{F}$ ).”

**The following equivalence modes are available on the Genius 2 Tympanic Thermometer and Base. Data is available from Covidien llc on request.**

**Ear:** In ear (EAR) mode, the display will indicate the absolute temperature without adjustment.

**Oral:** In oral (ORL) mode, the tympanic temperature is adjusted to display an oral temperature equivalent.  
Oral Mode = Ear Mode + 0.60°C.

**Core:** In core (CORE) mode, the tympanic temperature is adjusted to display the core temperature equivalent.  
Core Mode = Ear Mode + 1.04°C.

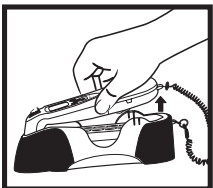
**Rectal:** In rectal (REC) mode, the tympanic temperature is adjusted to display the rectal temperature equivalent.  
Rectal Mode = Ear Mode + 1.16°C.

### Probe Covers

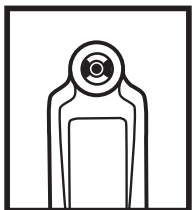
The Genius 2 Tympanic Thermometer and Base utilizes a single use disposable probe cover during temperature measurement. The probe cover was designed especially for use with the Genius 2 Tympanic Thermometer and Base. The use of probe covers produced by any company except Covidien llc will result in erroneous temperature measurement. In order to aid in infection prevention and control, always install a new probe cover prior to taking a temperature. The probe covers are contained in a cassette that is located in the thermometer base. To load a probe cover on the thermometer, firmly insert the probe tip into the probe cover. When installed on the thermometer, the probe cover membrane should be smooth with no holes, tears, or wrinkles. After the patient temperature has been taken, eject the probe cover by pressing the eject button and then dispose of properly.

### Temperature Measurement

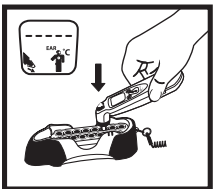
Training on the use of the Genius 2 Tympanic Thermometer and Base is important for user competence. Please follow these basic steps below and for further information please visit [www.Genius2Training.com](http://www.Genius2Training.com)



1. Visually inspect the patient's ear canal. Remove the Genius 2 Tympanic Thermometer and Base from the base.



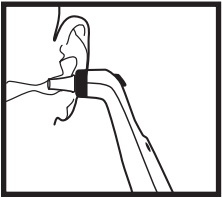
2. Inspect the probe lens. If any debris is present, clean the probe tip per the directions in Section VII, Cleaning. If the probe tip is clean, proceed to step 3.



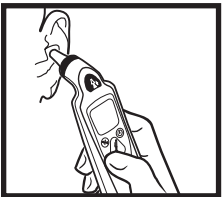
3. Press the scan button to verify functionality and mode selection on the LCD screen. Install a probe cover by firmly inserting the probe tip into a probe cover. After the probe cover is installed, the thermometer will perform a system reset. The thermometer will then display dashes, the equivalence mode, and the thermometer icon.



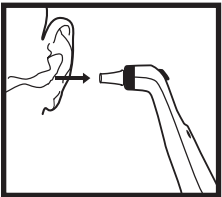
4. Inspect the probe cover to make sure it is fully seated (no space between cover and tip base) and no holes, tears, or wrinkles are present in the plastic film.



5. Place the probe in the ear canal and seal the opening with the probe tip. For consistent results, ensure that the probe shaft is aligned with the ear canal.



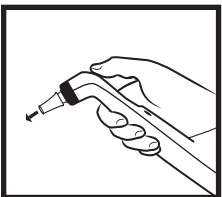
6. Once positioned lightly in the ear canal press and release the scan button. Wait for the triple beep before removing the thermometer.



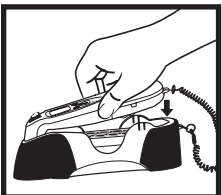
7. Remove the probe from the ear as soon as the triple beep is heard.



8. The patient temperature and the probe eject icons will be displayed.



9. Press the eject button to eject the probe cover into a suitable waste receptacle.



10. Always return the thermometer to base for storage.



## Temperature Recall

After a temperature has been acquired, the thermometer will enter “off” mode after approximately 10 seconds. The temperature can be recalled by pressing and releasing the scan button or by pressing and holding the °C/°F button.

## Temperature Display - Toggle °C or °F

When a temperature is in the display, the user may press and hold the °C/°F button to toggle between degrees Celsius and degrees Fahrenheit.

## Sleep Mode

The Genius 2 Tympanic Thermometer and Base enters sleep mode after 30-40 seconds of non-use. To wake up the thermometer, eject the attached probe cover and/or install a new probe cover. This energy conserving function optimizes battery life.

## Pulse Timer Mode

1. Press and hold the timer button to enter Timer mode. Press again to start the timer. The timer will run from 0 to 60 seconds.
2. The thermometer will issue a single beep at 15 seconds, a dual beep at 30 seconds, a triple beep at 45 seconds, and four beeps at 60 seconds.
3. Pressing the timer button at any point during the timer function will return the thermometer to “off” mode.
4. At the end of the 60 seconds, the thermometer will wait two seconds and then enter sleep mode.
5. Return the thermometer to base for storage.

## Thermometer Display Icons and Alarms

Thermometer operation is communicated to the user via the LCD display and an audible device contained inside the thermometer case. After the probe cover is installed or the batteries have been changed, the thermometer will perform a system reset. The thermometer will perform an internal test to verify that the system components are functioning properly.

### Alarm Condition

### Display Mode

Patient temperature above specified range



Patient temperature below specified range



Ambient Temperature above specified range



Ambient Temperature below specified range



Low Battery



The LCD displays the low battery icon. The low battery icon will remain on until the battery is replaced or until the dead battery icon is displayed. After the low battery icon is displayed, the user may take approximately 100 temperatures until the dead battery icon is displayed.

Dead Battery



The LCD displays the dead battery condition. When any button is pressed, the battery icon will flash several times and then the LCD will turn OFF. After the battery icon is displayed, the batteries must be changed before the thermometer can be used.

If the display shows a system error 4 and the system error icon, the ambient conditions are changing too rapidly for the device to be used. Allow the device to equilibrate for 20 minutes before using.



If the display shows any other system error, then reset the thermometer by installing a probe cover. If the system error does not clear, then contact the factory for available service options. The applicable manufacturer addresses are located in Section XII, Customer Service.

**Biotech Mode**

The biotech function is used to select the operational mode of the thermometer and to verify the installed software version. All operational mode settings in biotech mode are stored in nonvolatile memory and retained through system power cycles, such as changing batteries. All factory calibration parameters are also stored in nonvolatile memory.

**The factory default settings are shown below:**

Temperature mode    °C (unlocked)  
 Site mode            Ear  
 Site text             On

The biotech mode is accessed by pressing and holding the timer and °C/°F buttons for four seconds. All LCD segments will light for one second, the thermometer will issue a single beep, and the display will show scrolling dashes. Pressing the timer button cycles through the biotech modes. When options are available within a mode, the °C/°F button cycles through the options.



Pressing the timer button after the site text display will return the user to the installed software version. To exit biotech mode, two options are available: (1) press and hold the °C/°F and timer buttons for one second, or (2) the device will automatically exit biotech mode after about 30 seconds of inactivity. Any changes are saved.

**The biotech mode sequence is shown below:**

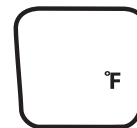
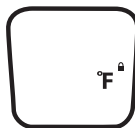
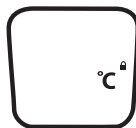
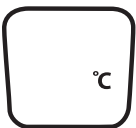
**Software version**

Displays the installed software version of device. Where “00” is the current software version.



**Temperature mode**

°C (unlocked)                      Locked °C                      Locked °F                      °F (unlocked)



**Site mode****Site text**

Pressing the °C/°F button when in this mode turns the body site text labels on or off. The labels will remain on when an "X" appears inside the box icon, and the text will remain off when the box is empty.

**Section VI — Preventative Maintenance**

Functional checks must be performed by technicians trained by Covidien Inc and based on the procedure in the Genius 2 Tympanic Thermometer and Base Checker Operation Manual. Contact your Covidien Inc representative for details. Covidien Inc recommends functional checks at 12 month intervals. Harsh use or environmental conditions may require reduced functional check intervals at some facilities. If the unit is dropped or abused, check the unit prior to next use.

**Section VII — Cleaning**

- The Genius 2 Tympanic Thermometer and Base body may be wiped clean with a damp cloth. Water temperature should not exceed 55° C (130°F). Do not soak, rinse, spray or submerge the Genius 2 Tympanic Thermometer and Base. When cleaning the thermometer body a probe cover should be installed on the thermometer. This will prevent harsh chemicals from damaging the tip and probe lens.
- A mild detergent or detergent wipe may be used for cleaning purposes. Do not use cleaners such as Spray-Nine™, PhisoHex™, Hibiclens™, Vesta-Syde™, Anios DDSH™, Sufanios Citroen™, Perasafe powder™, Sekusept Pulver, Classic™, Sekulyse™, Diesin HG™, Incides N™, Surfa`Safe™ disinfectants as they may result in damage to the thermometer case or electronics.
- We do not recommend using a cleaning agent that contains Chlorine, but if it is necessary, use a 10:1 water hypochlorite mixture. A damp isopropyl alcohol wipe, Cidex™, Manuklenz™, VIROX™ or CaviWipes™ cleansing agents are acceptable. However, prolonged or repeated use of these chemicals may result in damage to the thermometer case, display or electronics. When cleaning the thermometer, make sure the wipe has all excess fluid squeezed from it. If too wet, the chemical may penetrate the handset and affect the thermometer functionality. Never spray the thermometer directly with cleaning chemicals. Spray a cloth or sponge lightly dampening it with the cleaning agent and then apply it to the thermometer.
- The probe tip can be cleaned using an Isopropyl alcohol wipe such as Webcol™ or Curity™. Remove all foreign matter from the thermometer tip. After the foreign matter has been removed, dry the window at the end of the probe tip using a lint free swab, cotton ball or lens wipe. The thermometer lens must be free from fingerprints and / or smudges for proper operation. After cleaning the tip allow the thermometer to air dry for 30 minutes prior to use.
- Use of a clean cloth or sponge is recommended for cleaning. Never use an abrasive pad or an abrasive cleaner on the Genius 2 Tympanic Thermometer and Base.
- The thermometer is a non-sterile device. Do not use ethylene oxide gas, heat, autoclave, or any other harsh method to sterilize this thermometer.
- Allow sufficient time for air drying (30 minutes) before attempting to use the thermometer after cleaning.

## Section VIII — Battery Replacement

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The Genius 2 Tympanic Thermometer and Base batteries should be replaced when the low battery icon is shown on the LCD display. After the low battery icon is displayed, the user will be able to take approximately 100 temperatures before the dead battery icon is displayed and the unit will not allow a temperature to be taken. To replace the batteries, access the battery compartment by unscrewing the battery door that retains the battery cover. Note the polarity of the installed batteries. Remove the old batteries and install fresh batteries, ensuring the correct polarity. Reinstall the battery cover and secure it with the screw.

## Section IX — Mounting Instructions

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If using the wall or cart mount options (sold separately) for the base unit, consult the installation sheet provided with the respective system.

## Section X — Troubleshooting

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If the Genius 2 Tympanic Thermometer and Base is not functioning properly, check the following items:

Symptom	Action
Temperature reading unusually high	Check the probe cover for tears or gaps.
Temperature reading unusually low	Check the probe cover and thermometer tip for obstructions. Check the patient ear canal for obstructions.
Low battery indicator lit	Replace battery
Dead battery indicator lit	Replace battery
Display blank	Replace battery
System error displayed	If system error "4", then let the thermometer equilibrate in the room for 20 minutes before using. For all other system errors, reset the thermometer by installing a probe cover. If the system error does not clear, send the thermometer to the facility Biomedical Engineering department or contact the factory for available service options. The service information is located in Section XII, Customer Service.

The Genius 2 Tympanic Thermometer and Base advisory and alarm conditions are described in the Thermometer Display Icons and Alarms subheading of Section V, Instructions for Use.

## Section XI — Specifications

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Clinical accuracy characteristics and procedures are available from the manufacturer on request. To verify accuracy, use a certified blackbody as specified in EN 12470-5-2003, Annex C or use a Genius 2 Checker/Calibrator – order part number 303097.

### Calibrated Accuracy Limits:

Ambient Temperature	Target Temperature	Accuracy
25°C (77°F)	36.7°C to 38.9°C (98.1°F to 102°F)	± 0.1°C (± 0.2°F)
16°C to 33°C (60.8°F to 91.4°F)	33°C to 42°C (91.4°F to 107.6°F)	± 0.2°C (± 0.4°F)

**Calibrated Accuracy Limits (after Recalibration\*):**

Ambient Temperature	Target Temperature	Accuracy
16°C to 33°C (60.8°F to 91.4°F)	36°C to 39°C (96.8°F to 102.2°F)	± 0.2°C (± 0.4°F)
16°C to 33°C (60.8°F to 91.4°F)	less than 36°C (less than 96.8°F)	± 0.3°C (± 0.5°F)
16°C to 33°C (60.8°F to 91.4°F)	greater than 39°C (greater than 102.2°F)	± 0.3°C (± 0.5°F)

\*Post recalibration accuracy using the Genius 2 Checker/Calibrator may not necessarily be equivalent to factory calibration.

**Displayed Temperature Measurement Range:**

Temperature Range depends on Site Mode as follows:

Mode	Range °C	Range °F
Ear	33.0 to 42.0	91.4 to 107.6
Oral	33.6 to 42.0	92.5 to 107.6
Core	34.0 to 42.0	93.2 to 107.6
Rectal	34.2 to 42.0	93.6 to 107.6

**Ambient Temperature Range:**

16°C to 33°C (60.8°F to 91.4°F) where as CEN defines the standard as 16°C to 35°C (60.8°F to 95°F), 10 to 95 %RH, non-condensing.

**Storage Temperature Range:**

-25°C to 55°C (-13°F to 131°F), up to 95% RH non-condensing. If the unit is stored at extremes, it is recommended that the unit be checked on the field calibration checker or at the factory before returning to service.

**Clinical Repeatability:**

Meets Section A.5 of EN 12470-5: 2003 (E) per Covidien llc technical report. Data is available from Covidien llc on request.

**Response Time:**

Less than 2 seconds

**Pulse Timer:**

60 seconds

**Temperature Resolution:**

0.1°C or 0.1°F

**Power:**

3 AAA alkaline batteries

**Battery Life:**

Minimum of 15,000 temperature readings

**Size:**

Thermometer — 17.8 cm (7")

Base — 20.3 cm (8")

**Weight:**

Thermometer (with batteries) — 160 grams

Base — 100 grams

## Regulatory and Safety standards:

The Genius 2 Tympanic Thermometer and Base follows international regulatory standards.

- EN 12470-5:2003 (E) Clinical Thermometers – Part 5: Performance of infrared ear thermometers where sections 6.3.4 and 6.5.5 were met based on Covidien llc technical report. Data is available from Covidien llc on request.
- UL 60601-1
- EN 60601-1
- EN 60601-1-2
- MDD 93/42/EEC
- BS EN 980: 2003
- ASTM E1965-98
- IEC 1000-4-2: 1995
- IEC 1000-4-3:1995

The device meets EN12470-5:2003 (E) and ASTM E1965-98 subject to the following conditions:

1. The software was modified during testing to increase the precision of the measurements taken from one significant digit to two significant digits.
2. The increased precision numbers were then averaged to account for the known variance in measurements taken due to human factors.

## Section XII — Customer Service

In the event that it is necessary to return a unit for repair, please observe the following:

1. Contact Covidien technical service as shown below for the correct return procedure.
2. Ship insured parcel to your local service contact or the appropriate location below.

### United States

Covidien llc  
Energy Based Devices  
5920 Longbow Drive  
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## Parts Listing

To order repair parts, please contact your local customer service center or sales representative for the parts listed below.

Description	Order Part Number
Genius 2 Thermometer with Base	303000
Genius 2 Probe Cover	303030
Genius 2 Checker/ Calibrator	303097
Genius 2 Replacement Base	F31949WT
Genius 2 Replacement Coil Cord	F31950WT
Genius 2 Replacement Battery Door	F31951WT
Genius 2 Locking Mount for Wall	303058
Genius 2 Cart with Locking Mount	303059

## Section XIII — Warranty

**Limited Warranty:** Covidien llc warrants to the original purchaser (“Customer”) that this product will be free of defects in materials and workmanship, under normal use, for three (3) years from the date of original purchase from Covidien llc or its authorized distributor. If this product does not operate as warranted above during the applicable warranty period, Covidien llc may, at its option and expense, replace the defective part or product, or, if neither replacement nor repair is reasonably available, refund to Customer the purchase price for the defective part or product. Dated proof of original purchase will be required.

Covidien llc does not assume any liability for loss arising from unauthorized repair, misuse, neglect, chemical damage or accident. Removal, defacement, or alteration of serial lot number voids warranty. Covidien llc disclaims all other warranties, expressed or implied, including any implied warranty of merchantability or fitness for a particular purpose or application other than expressly set forth in the product labeling.

## Section XIV – Electromagnetic Conformity Declaration

The Genius 2 Tympanic Thermometer and Base has been built and tested according to IEC60601-1, CAN/CSA C22.2 No. 601.1, and EN60601-1-2 Standards.

<b>Guidance and manufacturer’s declaration – electromagnetic emissions</b>		
The Genius 2 Tympanic Thermometer and Base is intended for use in the electromagnetic environment specified below. The user of the Genius 2 Tympanic Thermometer and Base should assure that it is used in such an environment.		
<b>Emissions Test</b>	<b>Compliance</b>	<b>Electromagnetic Environment - Guidance</b>
RF emissions (CISPR 11)	Group 1	The Genius 2 Tympanic Thermometer and Base uses RF energy only for its internal function. Therefore, its RF emissions are very low and are not likely to cause any interference in nearby electronic equipment.
RF emissions (CISPR 11)	Class B	The Genius 2 Tympanic Thermometer and Base is suitable for use in all establishments, including domestic establishments and those directly connected to the public low-voltage power supply network that supplies buildings used for domestic purposes.
Harmonic emissions (IEC 61000-3-2)	Not applicable	

### Guidance and manufacturer's declaration – electromagnetic immunity

The Genius 2 Tympanic Thermometer and Base is intended for use in the electromagnetic environment specified below. The user of the Genius 2 Tympanic Thermometer and Base should assure that it is used in such an environment.

Immunity test	IEC 60601 test level	Compliance level	Electromagnetic environment guidance
Electrostatic discharge (ESD) (EN 61000-4-2 per EN 60601-1-2: 2007)	± 6 kV contact ± 8 kV air	± 6 kV contact ± 8 kV air	Floors should be wood, concrete or ceramic tile. If floors are covered with synthetic material, the relative humidity should be at least 30 %.
Electrical fast transient / burst IEC 61000-4-4	± 2 kV for power supply lines ± 1 kV for input/output lines	not applicable not applicable	Mains power quality should be that of a typical commercial or hospital environment.
Surge IEC 61000-4-5	± 1 kV differential mode ± 2 kV common mode	not applicable not applicable	Mains power quality should be that of a typical commercial or hospital environment.
Voltage dips, short interruptions and voltage variations on power supply input lines IEC 61000-4-11	< 5 % UT (>95 % dip in UT ) for 0,5 cycle  40 % UT (60 % dip in UT ) for 5 cycles  70 % UT (30 % dip in UT ) for 25 cycles  < 5 % UT (>95 % dip in UT ) for 5 sec	not applicable	Mains power quality should be that of a typical commercial or hospital environment. If the user of the Genius 2 Tympanic Thermometer and Base requires continued operation during power mains interruptions, it is recommended that the P-STIM be powered from an uninterruptible power supply or a battery.
Power frequency (50/60 Hz) magnetic field (EN 61000-4-8 per EN 60601-1-2: 2007)	3 A/m	3 A/m	Power frequency magnetic fields should be at levels characteristic of a typical location in a typical commercial or hospital environment.

**Note** UT is the a. c. mains voltage prior to application of the test level.



## Recommended separation distances between portable and mobile RF communications equipment and the Genius 2 Tympanic Thermometer and Base

The Genius 2 Tympanic Thermometer and Base is intended for use in an electromagnetic environment in which radiated RF disturbances are controlled. The customer or the user of the Genius 2 Tympanic Thermometer and Base can help prevent electromagnetic interference by maintaining the minimum distance between portable and mobile RF communications equipment (transmitters) and the Genius 2 Tympanic Thermometer and Base recommended below, according to the maximum output power of the communication equipment.

Rated maximum output power of transmitter W	Separation distance according to frequency of transmitter m		
	150 kHz to 80 MHz $d=1,2\sqrt{P}$	80 MHz to 800 MHz $d=1,2\sqrt{P}$	800 MHz to 2,5 GHz $d = 2,3\sqrt{P}$
0,01	0,12	0,12	0,23
0,1	0,38	0,38	0,73
1	1,2	1,2	2,3
10	3,8	3,8	7,3
100	12	12	23


For transmitters rated at a maximum output power not listed above, the recommended separation distance  $d$  in meters (m) can be estimated using the equation applicable to the frequency of the transmitter, where  $P$  is the maximum output power rating of the transmitter in watts (W) according to the transmitter manufacturer.

**Note 1** At 80 MHz and 800 MHz, the separation distance for the higher frequency range applies.

**Note 2** These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects and people.

## Guidance and manufacturer's declaration – electromagnetic immunity

The Genius 2 Tympanic Thermometer and Base is intended for use in the electromagnetic environment specified below. The customer or the user of the Genius 2 Tympanic Thermometer and Base should assure that it is used in such an environment.

Immunity Test	IEC 60601 test level	Compliance level	Electromagnetic environment –guidance
Conducted RF IEC 61000-4-6	3 Vrms 150 kHz to 80 MHz	Not applicable	Portable and mobile RF communications equipment should be used no closer to any part of the Genius 2 Tympanic Thermometer and Base, including cables, than the recommended separation distance calculated from the equation applicable to the frequency of the transmitter.  <b>Recommended separation distance</b>  Not applicable $d = 1,2\sqrt{P}$ 80 MHz to 800 MHz $d = 2,3\sqrt{P}$ 800 MHz to 2,5 GHz  Where P is the maximum output power rating of the transmitter in watts (W) according to the transmitter manufacturer and d is the recommended separation distance in meters (m).  Field strengths from fixed RF transmitters, as determined by an electromagnetic site survey, <sup>a</sup> should be less than the compliance level in each frequency range. <sup>b</sup> Interference may occur in the vicinity of equipment marked with the following symbol:  
Radiated RF (EN 61000-4-3 per EN 60601-1-2: 2007)	3 V/m 80 MHz to 2,5 GHz	3 V/m	

**Note 1** At 80 MHz and 800 MHz, the higher frequency range applies.

**Note 2** These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects and people.

<sup>a</sup> Field strengths from fixed transmitters, such as base stations for radio (cellular/cordless) telephones and land mobile radios, amateur radio, AM and FM radio broadcast and TV broadcast cannot be predicted theoretically with accuracy. To assess the electromagnetic environment due to fixed RF transmitters, an electromagnetic site survey should be considered. If the measured field strength in the location in which the Genius 2 Tympanic Thermometer and Base is used exceeds the applicable RF compliance level above, the Genius 2 Tympanic Thermometer and Base should be observed to verify normal operation. If abnormal performance is observed, additional measures may be necessary, such as re-orienting or relocating the Genius 2 Tympanic Thermometer and Base.

<sup>b</sup> Over the frequency range 150 kHz to 80 MHz, field strengths should be less than 3 V/m.



Identification of a substance that is not contained or present within the product or packaging.  
 Identification d'une substance non présente dans le produit ou l'emballage.  
 Identifizierung einer Substanz, die weder im Produkt noch in der Verpackung enthalten bzw. vorhanden ist.  
 Identificazione di una sostanza che non è contenuta né presente nel prodotto o nella confezione.  
 Identificación de una sustancia no contenida o que no esté presente dentro del producto o embalaje.  
 Identifiering av ett ämne som inte ingår eller förekommer i produkten eller förpackningen.  
 Identificatie van een stof die niet in het product of de verpakking is vervat of aanwezig is.  
 Identificação de uma substância não contida ou não existente no produto ou embalagem.  
 Tuotteessa tai pakkauksessa olemattoman aineen tunnistus.  
 Identifikation af et stof, der ikke er indeholdt eller til stede i produktet eller emballagen.  
 Αναγνώριση ουσίας που δεν περιέχεται ή δεν υπάρχει στο προϊόν ή στη συσκευασία.  
 Identifikace látky, která není obsažena nebo přítomna v produktu nebo obalu.  
 Olyan anyag azonosítása, amelyet sem a termék, sem a csomagolás nem tartalmaz, vagy amely azokban nincs jelen.  
 Определение вещества, не содержащегося или не присутствующего в продукте и упаковке.  
 Identyfikacja substancji nie zawartej i nieobecnej w produkcie lub jego opakowaniu.  
 Ürün veya ambalajında bulunmayan veya var olmayan bir madde tanımlaması.  
 Identifikasjon av et stoff som ikke er til stede i produktet eller emballasjen.



Manual No. SMF0211-041

U.S. Patents 7,108,419; 7,237,949; 7,354,194; 7,434,991; 7,478,946; 7,507,021; 7,520,671; 7,536,568; 7,556,424; 7,686,506; 7,731,418; 7,841,767.

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REV 09/2011

