

# Thermometers, electronic, infrared

## UMDNS

17887 Thermometers, electronic, infrared, ear  
17888 Thermometers, electronic, infrared, skin

## GMDN

17887 Infrared thermometer, ear

### Other common names:

Tympanic thermometers; tympanic membrane thermometers; ear thermometers; IR ear thermometers; skin thermometers; IR skin thermometers

### Health problem addressed \_\_\_\_\_

IR thermometers allow users to measure body temperature quickly and noninvasively.

### Product description \_\_\_\_\_

IR thermometers consist of an IR probe, electronic circuitry, a microprocessor, and an LCD or LED display. There are two types of IR thermometry: ear and skin. Ear temperatures can be measured either at the TM or at the walls of the inner ear canal. In tympanic thermometry, the temperature of the TM and its surrounding tissues is measured directly. IR skin thermometry is used to estimate the temperature of a site on the skin (e.g., axilla, forehead). Some units may include rechargeable batteries, built-in timers for measuring pulses and respiration rates, designs for use with neonates, and user-replaceable probes. Calibration-checking devices may also be available.

### Principles of operation \_\_\_\_\_

Probes are made up of electronic thermal radiation transducers and waveguides. The radiation collected by the waveguide is converted to an electrical signal by the transducer and displayed as a temperature reading. The transducer is either pyroelectric or a thermopile sensor. A pyroelectric sensor measures the average temperature of the tissue within its field of view. It must be used with a shutter mechanism to provide a controlled period of exposure to the tissue's IR emission. A thermopile sensor allows continuous readings and thereby facilitates scanning for the highest temperature.

### Operating steps \_\_\_\_\_

- Place disposable cover over temperature probe.
- Insert the probe into the ear canal or place probe on the skin.
- Wait a few seconds until a measurement is taken.

### Reported problems \_\_\_\_\_

The most common problem with ear thermometers is inaccurate and inconsistent measurements. Inconsistent technique can lead to contradictory temperature readings. Earwax and skin/oil buildup on the probe can lead to inaccuracy. Poor penetration, improper aiming, or obstruction will result in significantly lowered readings. Many malfunctions result from thermometers being dropped.



### Use and maintenance \_\_\_\_\_

**User(s):** Physicians; nurses; other medical staff

**Maintenance:** Medical staff; technician; biomedical engineering staff and/or service contract with the manufacturer or third-party organization

**Training:** Initial training by manufacturer, operator's manuals, user's guide

### Environment of use \_\_\_\_\_

**Settings of use:** Hospital; clinic; physician office

**Requirements:** NA (battery-operated handheld devices do not have special settings requirements)

### Product specifications \_\_\_\_\_

**Approx. dimensions (mm):** 125 x 60 x 50

**Approx. weight (kg):** 0.075

**Consumables:** Probe covers

**Price range (USD):** 13-900 (150 typical), 2.50-5 for 100 probe covers; price covers all types and variations

**Typical product life time:** 8 years

**Shelf life (consumables):** Variable

### Types and variations \_\_\_\_\_

- Ear
- Skin