

E1™ Ear Sensor

Faster Detection of Oxygen Saturation Changes with a Single-Patient-Use Sensor Designed for the Ear Concha



E1 EAR SENSOR

Faster response to oxygenation changes during low perfusion.

While Masimo SET® Measure-through Motion and Low Perfusion™ pulse oximetry overcomes the limitations of conventional pulse oximetry and offers 97% sensitivity and 95% specificity for alarms during motion and low perfusion conditions¹, there are still some advantages to monitoring on the head such as faster response to oxygenation changes during low perfusion and the use of an alternative site when the digit is unavailable.

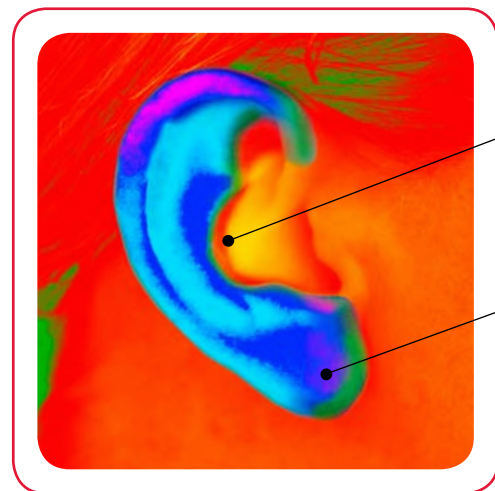
As a single-patient-use ear sensor that is placed securely in the cavum conchae (the deep hollow near the ear canal opening), the E1 allows clinicians to combine Masimo SET performance with a reliable alternative monitoring site while minimizing cross-contamination.



"In my experience, the E1 ear sensor detected hypoxemia up to 2-3 minutes sooner, which is critically important during airway management, resuscitation, and inpatient apnea/hypopnea episodes."

DR. DANIEL DAVIS

*Contributor on the design of the E1 ear sensor, Professor of Clinical Emergency Medicine
Director of the UCSD Center for Resuscitation Science, San Diego, California*



Red, orange, and yellow areas show areas of heat due to higher perfusion

Blue, purple, and green show areas of coolness due to lower perfusion

Figure 1. This thermographic image shows how well perfused the Cavum Conchae² site is compared to outer aspects of the ear.



Figure 2. The tip of the E1 sensor is placed on top of the high perfusion area in the Cavum Conchae.

FEATURES AND BENEFITS

Advantages of Single-Patient-Use versus Reusable Sensors

- > Avoids cross-contamination risks
- > Reduces complexity of reusable ear sensor management (cleaning, storage, and inter-departmental transport)

Advantages of Head versus Digit Monitoring

- > Faster detection of desaturation / resaturation compared to digit sensors during low perfusion³
- > Alternate monitoring site with easy access during surgery, resuscitation, in patients with finger deformities, or when digit access is not possible
- > Offers reliable measurements during extremely low perfusion when Masimo Max™ Sensitivity setting is not enabled⁴
- > Allows for hands-free monitoring
- > Ear site may offer advantages for pleth variability (PVI®) monitoring to help clinicians assess fluid responsiveness⁵

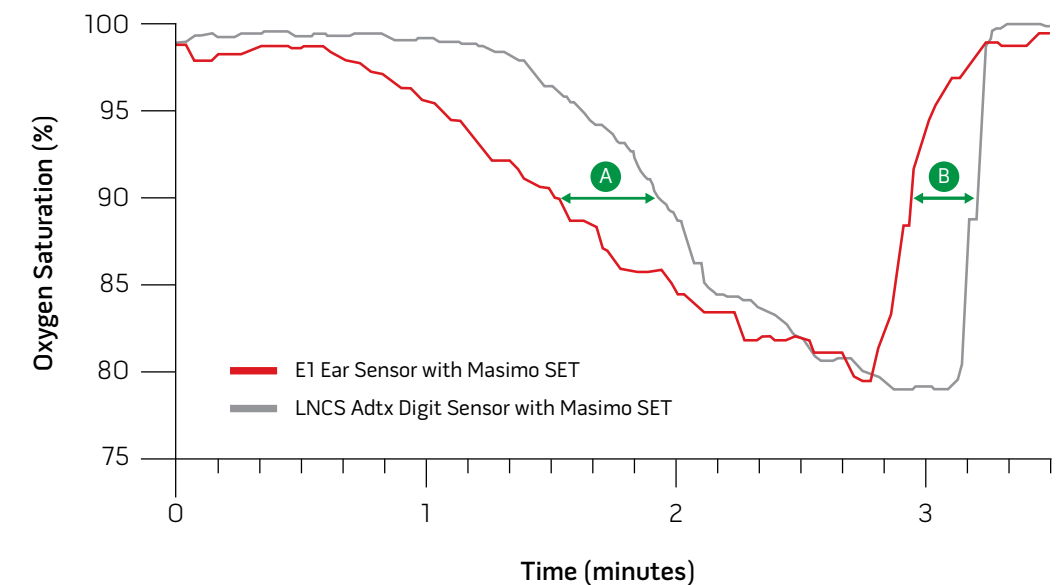


Figure 3. Desaturation of a Healthy Subject with Low Perfusion. In patients with low peripheral perfusion, the E1 Ear Sensor offers (A) faster detection of desaturation events; (B) faster indication of resaturation. The lower the peripheral perfusion, the faster the E1 will indicate saturation / desaturation changes compared to digit monitoring.

Advantages of Ear versus Forehead Monitoring

- > Alleviates known accuracy limitations of forehead sensors including venous pulsations and when patients are in a supine or Trendelenburg position^{3,6}
- > Provides alternative to digit sensor when forehead site is unavailable (brain function monitoring, cerebral oxygenation monitoring, or neck stabilization during trauma)

Advantages of Cavum Conchae versus Ear Lobe Monitoring

- > Stays in place more securely than traditional clip-style sensors on ear lobe
- > Sensor location offers better perfusion than ear lobe for improved signal quality

E1 Ear Sensors

LNCS® E1 Sensor



M-LNCS™ E1 Sensor



Performance & Ordering Information

E1 Single-Patient-Use Ear Sensors

Non-Sterile, No Natural Rubber Latex, Packaged 10/Box

LNCS E1	
Part Number	2918
Description	Adult single-patient-use ear sensor
Application Site	Ear, inner aspect (cavum conchae)
Patient Weight	> 30kg
M-LNCS E1	
Part Number	2919
Description	Adult single-patient-use ear sensor
Application Site	Ear, inner aspect (cavum conchae)
Patient Weight	> 30kg

OXYGEN SATURATION ACCURACY*	
Saturation	70% – 100%
No Motion	
Adults, Pediatrics	±2.5% (1 Std. Dev)
Low Perfusion	
Adults, Pediatrics	±2.5% (1 Std. Dev)
PULSE RATE ACCURACY*	
Pulse Rate	25 – 240 bpm
No Motion	
Adults, Pediatrics	±3 bpm (1 Std. Dev)
Low Perfusion	
Adults, Pediatrics	±3 bpm (1 Std. Dev)
COMPATIBLE DEVICES	
Masimo or OEM monitors equipped with rainbow SET or Masimo SET MS-2000 circuit boards.	

¹ Shah N et al. *J Clin Anesth*. 2012 May 22.

² The Cavum Conchae is the inner shell-like feature of the ear.

³ Tokuda K et al. *Anesthesiology*, 2007;107:A1544.

⁴ Redford DT et al. *Anesth Analg*, 2004;98(2S):S-94.

⁵ Pavlakovitch I et al. *Eur J Anaesthesiol*, 2011; May:Abs 1306.

⁶ The OXIMAX MAX-FAST sensor is contraindicated for patients who exhibit allergic reactions to the adhesive pad; for patients who perspire profusely; or under conditions where the patient is in the Trendelenburg position (head lower than the heart).

* SpO₂ accuracy has been validated on healthy adult male and female volunteers with light to dark skin pigmentations in the range of 70% - 100% against a laboratory CO-Oximeter. Pulse Rate accuracy has been validated in the range of 25-240 bpm in bench top testing against a Biotek Index2 simulator. The variation in accuracy specifications equals plus or minus 1 standard deviation which encompasses 68% of the population. Contact Masimo for testing specifications.

Caution: Federal law restricts this device to sale by or on the order of a physician.