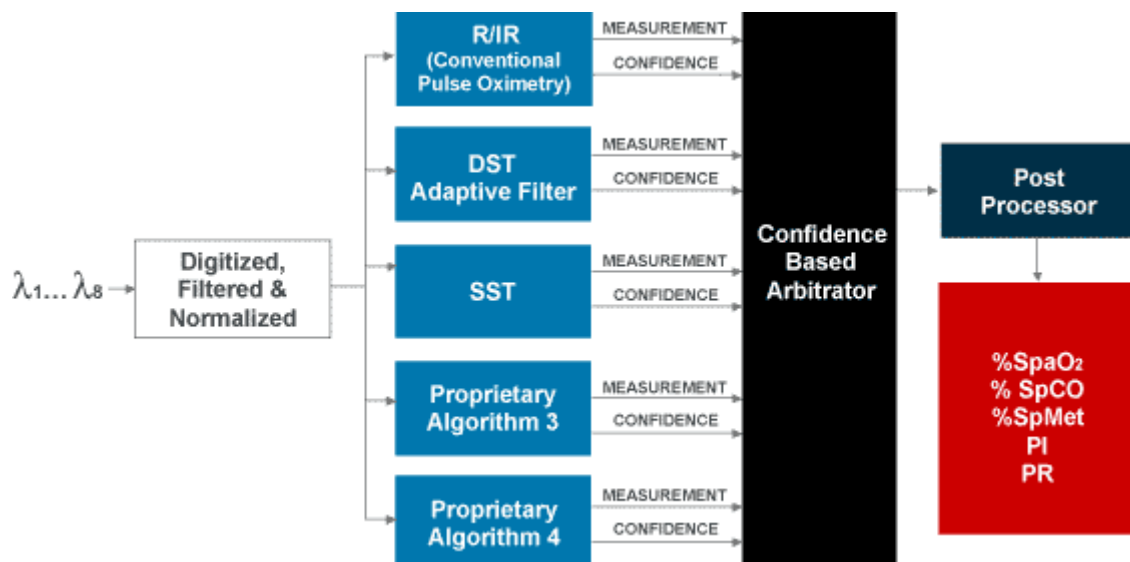


system overview & performance information

What is Masimo SET[®] Technology?

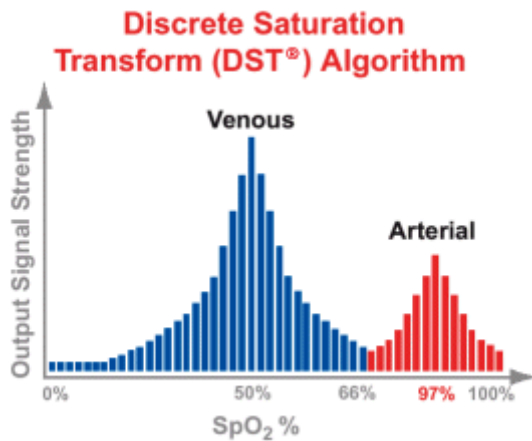
Masimo SET technology is a fundamentally distinct method of acquiring, processing and reporting arterial oxygen saturation and pulse rate. Combining proprietary signal processing algorithms with innovative sensor technologies, Masimo SET technology enables adaptive filters to work in real time to accurately report human physiology. Masimo SET pulse oximetry systems are designed to substantially eliminate the problems of motion artifact, low peripheral perfusion and most weak signal-to-noise situations, greatly extending the utility of pulse oximetry into high motion, low signal and noise intensive environments. **Click here for more details.**

Masimo SET SpO₂ Parallel Engines



Masimo SET uses Adaptive Filter, DST, FST and SST, in parallel processing mode (all patented by Masimo). Masimo SET's four unique algorithms, along with conventional red over infrared algorithm allows for unprecedented fidelity, sensitivity and specificity. Patient data is presented to the set of algorithms. Each algorithm's unique strengths are leveraged to ensure accurate readings through all patient conditions.

Masimo SET's most powerful algorithm is DST. All algorithms depend upon assumptions. The more assumptions, the weaker the algorithm. DST makes only one assumption - that arterial blood has a higher oxygenation than venous - making it the most powerful pulse oximetry algorithm.



[Click here for more information on DST](#)

<http://www.masimo.com/technology/testresu.htm>

test results conclusion

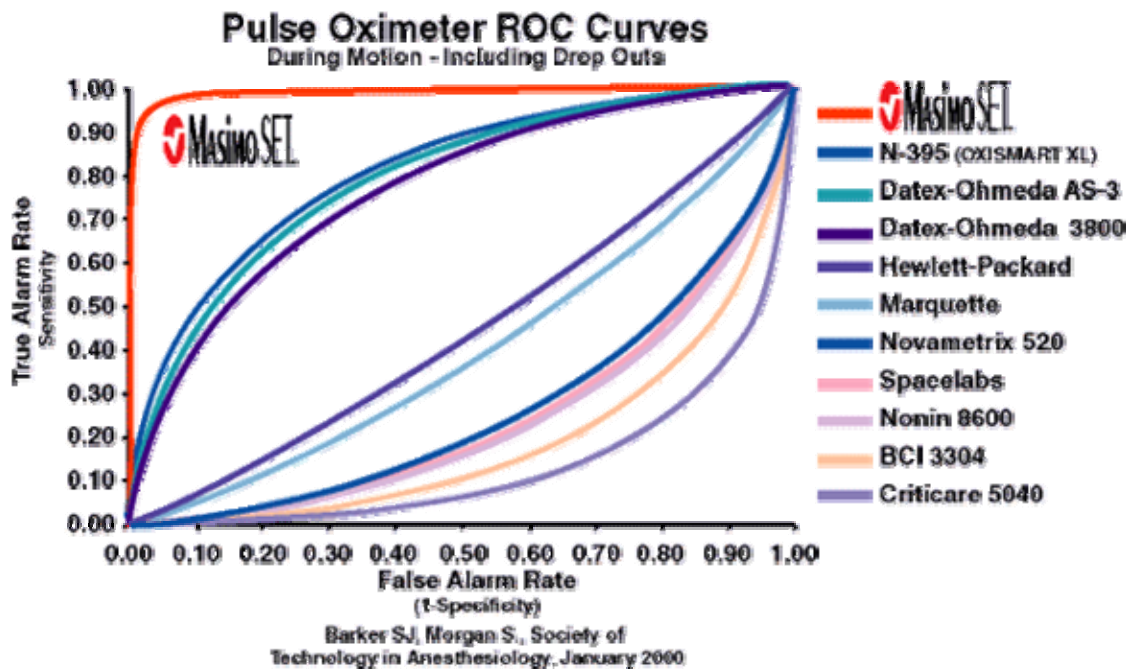
Masimo SET® has been validated by over 50 published clinical studies since 1994. The following are the results of the latest studies.

Motion and Low Perfusion Study

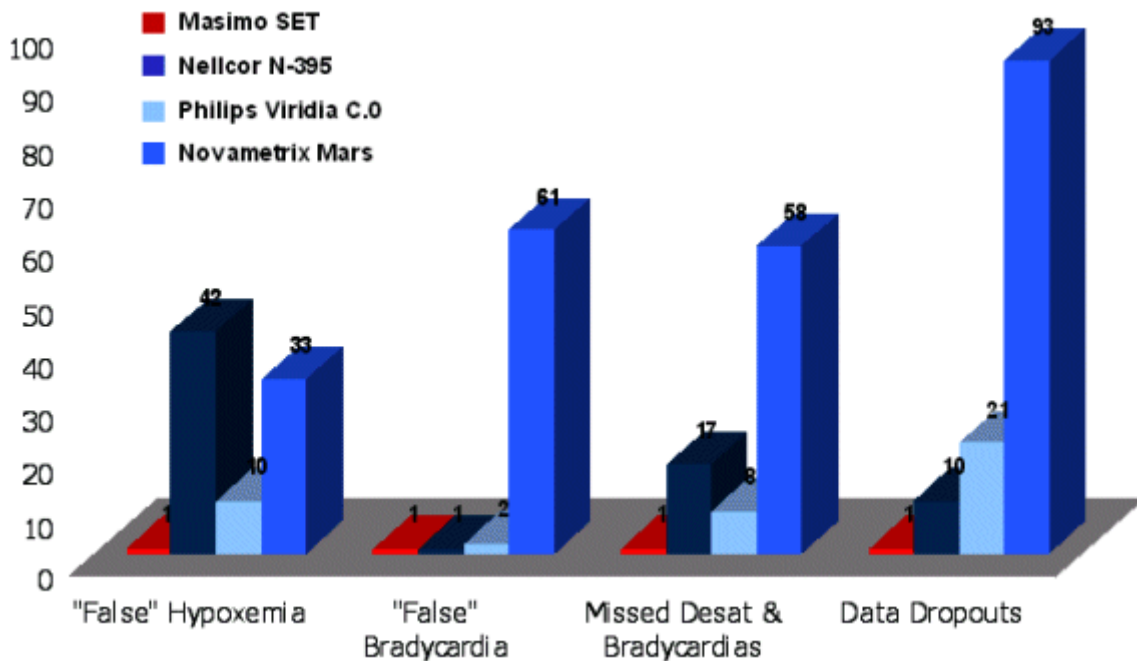
| Oximeter | SpO2 Sensitivity | SpO2 Specificity | SpO2 Performance Index | Drop Out |
|--------------------|------------------|------------------|------------------------|----------|
| Masimo SET | 99% | 97% | 93% | 0.0% |
| Philips/HP CMS B.0 | 70% | 83% | 80% | 3.7% |
| Nellcor N-395 | 70% | 73% | 73% | 4.0% |
| Datex-Ohmeda 3900 | 60% | 52% | 68% | 1.0% |
| Novametrix MARS | 40% | 42% | 58% | 2.4% |
| Nellcor N-295 | 39% | 53% | 55% | 7.8% |

Barker SJ. Anesthesia and Analgesia 2002;94(S1):S17-21.

Pulse Oximeter ROC(Receiver Operating Characteristic) Curves:

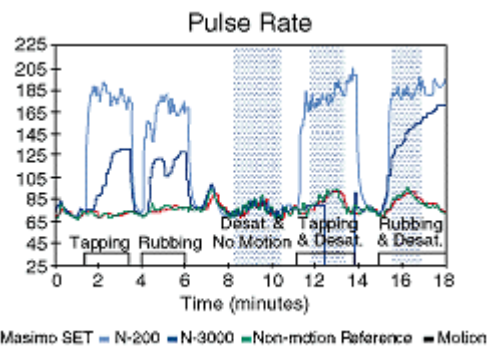
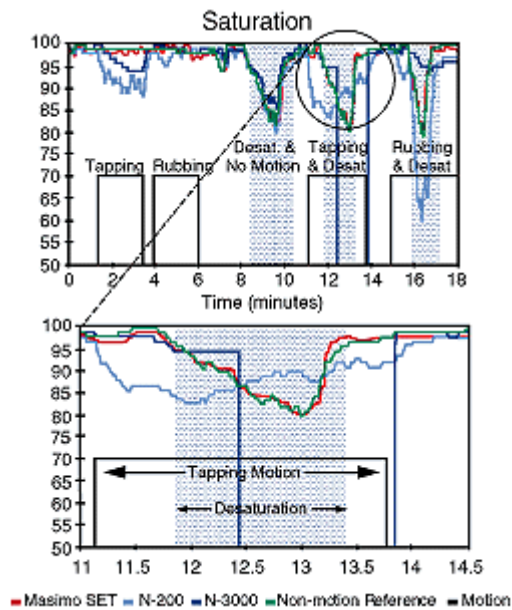


Masimo SET versus other new generation pulse oximeters:



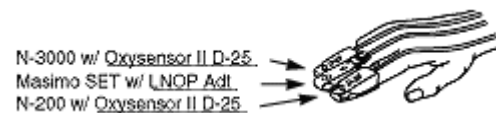
Hay WW, et al. Hot Topics in Neonatology 2001, Washington DC, 12/9-11/2001

Desaturation Test With Masimo SET vs. Nellcor N-3000 (Oxismart) and N-200:

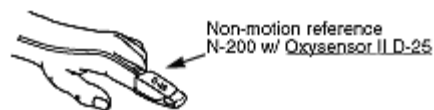


Test Protocol:

Right hand is "test"; undergoing motion



Left hand is "control"; held still through test sequence



| Test Instruments | Correlation to Reference |
|------------------|--------------------------|
| Masimo SET | $r = 0.97$ |
| N-200 | $r = 0.74$ |
| N-3000 | $r = 0.46$ |

Test instrument correlation to non-motion hand (reference pulse oximeter)

Saturation and pulse rate data recorded during indicated motions. Arterial desaturations to approximately 80% induced via breathing reduced FiO2 levels.

<http://www.masimo.com/technology/qa.htm>

questions and answers knowledge

- [What is so different about Masimo SET technology?](#)
- [With Masimo SET technology, is the performance enhancement due to the LNOP sensor design or the Masimo SET Algorithms?](#)
- [What is the white "bump" on the LNOP sensors?](#)
- [Can the Masimo SET system be utilized in high ambient light conditions?](#)
- [Does Masimo SET technology provide improved performance in patients with poor perfusion or who are otherwise vasoconstricted?](#)

Q: What is so different about Masimo SET technology?

A: Masimo SET[®] technology is a fundamentally distinct method of acquiring, processing and reporting arterial oxygen saturation and pulse rate. The technology represents a "novel" and "unique" method for calculating the appropriate noise reference in the detected red and infrared signals thus enabling the use of an adaptive noise canceller to remove the noise components. This approach is fundamentally different from a conventional "red over infrared" approach and results in significant performance enhancements unmatched by conventional pulse oximetry systems. A more detailed description of the Masimo SET algorithm is contained in Technical Bulletin #1 Pulse Oximetry Algorithm.

Q: With Masimo SET technology, is the performance enhancement due to the LNOP sensor design or the Masimo SET algorithms?

A: While there is no specific data to determine the relative contribution between the sensor design and algorithm performance, Masimo feels that approximately 50%-75% of the overall benefit is due to the signal processing algorithms with the remaining 25%-50% attributable to the LNOP sensor design.

Q: What is the white "bump" on the LNOP sensor?

A: The Masimo LNOP family of sensors are designed to significantly reduce the front end noise contribution from routine patient movements, electromagnetic interference, and ambient light. The white bump on the sensor incorporates the LNOP cavity allowing the photo-detector to be recessed away from the soft tissue of the finger, thereby stabilizing the optical path length between the LED emitters and the photo-detectors during routine patient motion. A more conventional configuration, with the detector tightly attached to the soft tissue of the finger is more susceptible to motion induced "noise" due to a mechanical change in the optical path length.

Q: Can the Masimo SET system be utilized in high ambient light conditions?

A: The recessed LNOP photo detector, in combination with Masimo's proprietary signal processing algorithms, is designed to improve system performance in high ambient light conditions such as those encountered in the NICU, OR or even use in direct sunlight.

Q: Does Masimo SET technology provide improved performance in patients with poor perfusion or who are otherwise vasoconstricted?

A: The Masimo SET system (both signal processing and sensors) is designed to be able to monitor extremely weak peripheral pulses which in many instances are smaller than those capable of being acquired or processed by conventional pulse oximeter systems. This is accomplished through the unique nature of the Masimo SET algorithm and sensor design which is capable of separating the signal from the noise prior to calculating the physiologic measurement.