

Adaptive Probe Off Detection™ Technology (APOD™)

What is APOD?

- APOD is a suite of complex and powerful signal processing algorithms that carefully analyze the incoming signal to determine if the pulse oximeter sensor is on or off the patient.
- Adaptive Probe Off Detection (APOD) delivers enhanced protection against erroneous pulse rate and arterial oxygen saturation readings when a sensor becomes detached from the patient.
- By providing another sensitivity level, APOD directly addresses a problem common to pulse oximetry and gives the clinician an unprecedented level of control.

When do I use APOD in a clinical setting?

- APOD may be appropriate under conditions in which the Clinician/Patient ratio is lower than in the intensive care unit and when contact between clinician and patient may be less continuous.
- APOD is recommended for "step down" and "ward" care, and nursing home care situations.
- APOD is appropriate where remote monitoring is employed.
- APOD is useful for patients that are at particular risk of the sensor becoming detached (pediatric, combative, etc).

How does APOD compare to Max or Normal sensitivity?

- APOD is the least sensitive in picking up a reading on patients with low perfusion.
- Normal Sensitivity provides the best combination of sensitivity and probe-off detection performance and is recommended for the majority of patients.
- Max Sensitivity is reserved for the sickest patients, where obtaining a reading is most difficult. Max sensitivity is designed to interpret and display data for even the weakest of signals, and is recommended during procedures and when clinician and patient contact is continuous.
- If low perfusion combined with movement inhibits the Masimo SET monitor from reading, switch from APOD to Normal or Max sensitivity.
- Three sensitivity levels enables the clinician to tailor the response of the Radical to the needs of the particular patient situation - a truly unique and powerful capability.

How does APOD work?

- APOD is the result of years of extensive research and experience in photoplethysmography. After the incoming signal is amplified and digitized, the APOD algorithms carefully examine specific components of the plethysmographic waveform (pleth) and incorporate additional 'checks' on the incoming signal to rigorously validate it against several criteria. The Radical will display arterial oxygen saturation and pulse rate values only after APOD has validated the signal against these stringent criteria.

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- Masimo's advanced hardware architecture, built around state-of-the-art floating point Digital Signal Processing (DSP) technology, enables the inclusion of this powerful feature without requiring hardware upgrades.

How does Masimo SET with APOD compare to other pulse oximeters?

- APOD provides a significant improvement in probe-off detection.
- Internal testing of five pulse oximeters, using several different tests simulating probe off conditions, demonstrated a substantial reduction in erroneous readings compared to the latest pulse oximeters from other companies.
- Figure 1 (below) shows the percentage of time each oximeter displayed a saturation reading of 90% or higher for 60 seconds or more when the sensor was not on the subject. The test was conducted under two scenarios: In the Cold Start scenario, the sensor was left dangling and not connected to a patient before the oximeter was powered on. In the Warm Start scenario, the sensor was removed from a human volunteer after monitoring had begun.

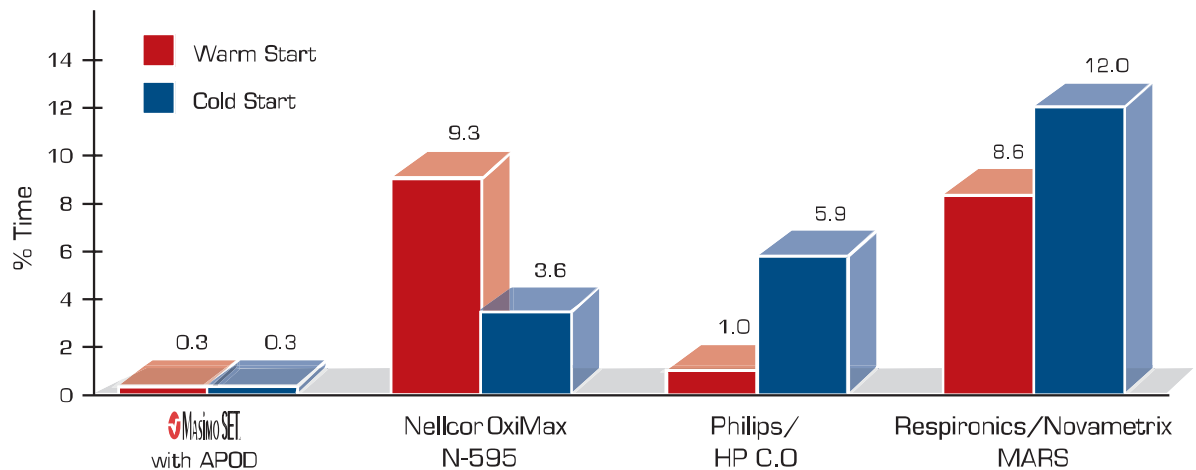


Figure 1: Percentage of time the oximeter displayed falsely reassuring SpO₂ values, even with the sensor off the subject.