

Masimo Sensor Adapter Cable, AC-1 for Nellcor Compatible Equipment

Pulse oximeter sensors have two basic optical components, the emitter and the photodetector. The emitter usually has two light-emitting diodes, or LED's. One LED is the red color that is easily seen, while the other is invisible infrared. These LED's shine light through the tissue at the monitoring site, which is ultimately measured by the photodetector. All current pulse oximeter sensors contain these basic components. The Masimo AC-1 sensor adapter cable allows the use of Masimo sensors on equipment from many manufacturers that are compatible with Nellcor sensors. The AC-1 cable has been carefully tested to work properly with such monitors.

Since the wavelength of LED's vary, pulse oximetry manufacturers have historically used mathematical compensation in the pulse oximeter to address the range of LED wavelengths in their sensors. The variation in wavelength requires the use of multiple sets of calibration data stored within the instrument.

Masimo uses state-of-the-art production techniques to create LED's with precise wavelengths, which do not require this mathematical compensation. Masimo sensors function accurately using a single set of calibration data, even when used with Nellcor compatible equipment, and thus do not need nor utilize the multiple sets of calibration data currently stored in the Nellcor compatible instrument. Instead, the Masimo sensor adapter cable adapts the physical connection of the Masimo sensor to a single set of sensor calibration data within the Nellcor compatible device. The Masimo sensors will not reduce the accuracy specifications of the pulse oximeter system as compared to Nellcor brand sensors connected to the same system. In fact, due to unique features of the Masimo sensors, customers using Masimo sensors may see reliability improvement when compared to other sensors, including Nellcor brand sensors.

Regardless of the sensor type connected, the pulse oximeter is responsible for the proper delivery of energy, or current, to the LED's in the sensor. The pulse oximeter is also responsible for shutting down current delivery to the sensor if a fault condition is detected. The amount of current that is delivered to the sensor LED's by the pulse oximeter during normal operation is directly related to how much light is required to penetrate the monitoring site for measurement by the detector. This drive level is raised or lowered, as the instrument determines is necessary, to maintain proper signals required for accurate pulse oximetry readings. Masimo sensors, when used with a Masimo AC-1 sensor adapter cable on a Nellcor compatible device, are within the skin temperature requirements prescribed in international standards and regulations.

Masimo sensors have been designed to meet or exceed all international requirements for safety. These include temperature, biocompatibility, and electrical isolation. This performance has been verified with Masimo instruments, as well as with Nellcor compatible instruments using an adapter cable for the specified accuracy range of 70% - 100%.¹

It is important to emphasize that the overall performance of the system will not change when using the Masimo adapter cable with Masimo sensors on Nellcor compatible instruments (i.e. you will not get Masimo SET performance unless you use Masimo SET sensors with Masimo SET branded instruments). The cable is simply used to adapt the connection to enable Masimo sensors to operate on the instrument. Other benefits associated with Masimo sensors can be realized such as sensor durability, shielding against ambient light and electrosurgical interference, and the ability to rejuvenate the adhesive using isopropyl alcohol wipes.

In conclusion, the use of Masimo sensors on Nellcor compatible instruments using the Masimo sensor adapter cable AC-1, has been validated as safe and accurate.

¹ References available upon request.