



# TOOLS OF THE TRADE

## NEW ADVANCEMENTS IN MULTI-PARAMETER SIMULATOR DESIGN

**E**LECTROCARDIOGRAPHY (ECG) SIMULATORS ARE ONE OF THE MOST FREQUENTLY USED TOOLS in a biomedical engineer's arsenal. These devices have been on the market for more than 40 years, but true advances in the technology have been elusive. Pronk Technologies, a Sun Valley, Calif.-based simulator company, has recently overcome technological hurdles by miniaturizing a full-featured patient simulator.

SimSlim was designed with a full range of vital signs parameter simulations – a total of 50 user-selectable simulations – and integrates several innovative developments. For example, SimSlim's patent-pending advancement in power management technology was achieved by designing the electronics to draw only 11  $\mu$ A of current. This, combined with an internal lithium metal thionyl chloride battery, provides 10 years of continuous run time without having to plug it into a wall outlet or replace the batteries. Both are actions required with typical simulators.

### KEY PRODUCT FEATURES

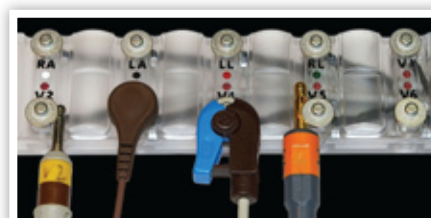
What's more, SimSlim can run all parameters simultaneously, including ECG, respiration, four channels of invasive blood pressure, cardiac output (CO), and temperature. In fact, all four channels of the invasive blood pressure are independent of one other and can simulate different dynamic waveforms across each channel at the same time. Performing a preventive maintenance test on a fully loaded ICU patient monitor, for example, can be done in a substantially shorter amount of time than other simulators.



THE SIMSLIM FULL-FEATURED PATIENT SIMULATOR

Another key advancement with SimSlim is its patented approach to CO simulations. Other simulators necessitate expensive adapters to perform CO simulations, and even multiple adapters for different manufacturers. SimSlim requires no adapters or accessories for CO simulations, reducing cost and complexity.

SimSlim also features a rugged design for extended reliability. Its enclosure was



SIMSLIM CONNECTS WITH A WIDE RANGE OF ECG LEAD WIRES AND BANANA PLUGS.



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crafted with a polycarbonate blend, similar to Lexan, a material often used for bulletproof glass applications. This proved to be a very durable enclosure, which was confirmed during validation when SimSlim passed a drop test involving 50 drops from 3 feet with zero failures.

With the wide range of ECG lead wires currently available in the market, biomedical engineers often report having a difficult time getting a solid connection with 12 lead EKG carts or wide-clip ECG snaps to a simulator. Pronk Technologies addressed this challenge and developed a patent-pending design that permits easy connections with a wide range of ECG lead wires and banana plugs. Simply slide the banana plug into the groove on the enclosure, making an immediate solid connection to the underside of each snap. The grooves support both 1/8-inch and 4 mm banana plugs. ⚙️

For more information regarding this product, contact 818-768-5600 or visit [www.pronktech.com](http://www.pronktech.com).

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