

Submersible Thermal Manikin

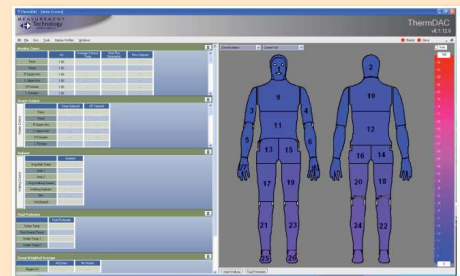


“NEMO” is constructed as a fully sealed aluminum manikin with embedded heating and thermistor sensor elements. All heating and fluid control electronics are inside the manikin for maximum accuracy and easy maintenance. This fully waterproof design was developed using advanced CAD digital modeling, and is rated for immersion testing to depths of 10 feet (3 meters). NEMO is fully jointed, providing motion at the ankles, elbows, knees, and hips to allow virtually any possible body pose. Joints feature adjustable friction settings, which maintain their watertight integrity in any pose.

NEMO packages include ThermDAC, our user-friendly control software program. Total mass (155 lbs/70 kgs standard), zone configurations, and thermal properties can be customized for faster transient response, greater sensitivity, or easier handling. The NEMO system is built in accordance with ASTM and ISO standards to meet the garment evaluation needs of testing institutes and research labs.

FEATURES AT A GLANCE

- Complete turn-key system for standard or immersion testing of protective clothing and survival gear.
- 50th percentile Western Male body form.
- Standard model features 22 independent thermal zones. Custom zone configurations available.
- Ultra-stable heating elements provide uniform heat flux.
- Thermistor temperature sensors distributed across each zone.
- System includes a PC laptop computer with exclusive ThermDAC control software for full thermal control, fault detection, real-time data display, and data logging capabilities.
- Optional removable fabric sweating skin with computerized fluid flow.
- Rapid heat up and steady-state maintenance with automatic detection for test end.



Thermetrics

Submersible Thermal Manikin (NEMO)

Standard Specifications

- Sealed aluminum shell with waterproof joints
- 22 independent thermal zones (includes access hatch)
- Integrated zone heaters and sensors
- Fully sealed body, immersion rated to 10-foot depth
- Multiple thermistor point sensors for each zone
- Optional removable fabric sweating skin with distribution pumps, reservoir, and tubing
- Jointed at shoulders, hips, knees, elbows, and ankles
- Laptop or desktop PC control computer
- Pre-installed ThermDAC control software
- Two ambient temperature sensors, rated for immersion
- One relative humidity sensor
- One (optional) windspeed sensor
- Signal conditioning electronics
- Power, control, and fluid cabling (via eye openings)
- Operators manual
- One year warranty

Environmental

- -20°C to +50°C operating range
- 0 to 100% R.H. including condensation
- Fresh water immersion to 10 foot (3 meter) depths

Performance

- Rapid heat up and steady-state, with automatic detection for test end
- $\pm 0.1^\circ\text{C}$ temperature measurement and setpoint control
- $\pm 3\%$ relative humidity measurement
- 1200 W/m^2 maximum power output
- Meets ISO/DIS 15831 (stationary test), prEN13537, ASTM F1291, ASTM F2370/F2371 (sweating manikin)



“NEMO” Manikin Sizes

- 50th percentile Western Male body form
- Height: 5'9" (175cm)
- Surface area: 19 sq/ft (1.8 sq/m)
- True weight: 155 lbs (70 kg) Garment size: Medium

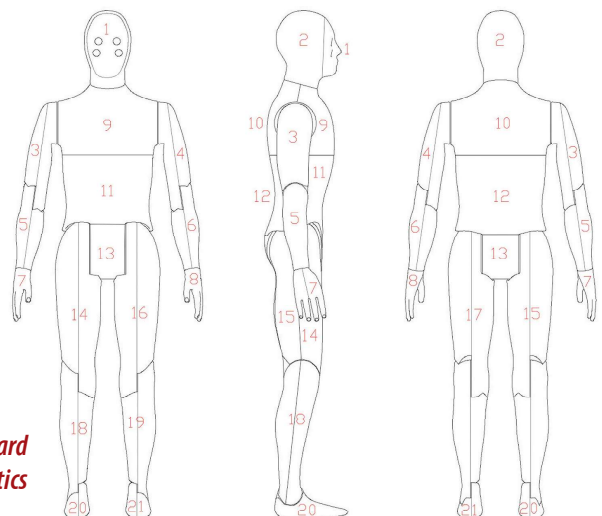
Call for a quote on custom sizes

ThermDAC Control Software

ThermDAC was developed by Thermetrics specifically for manikin and hotplate systems. It is a user-friendly, Windows-based application providing full device control, fault detection, and data logging capabilities. System configuration and calibration can also be carried out within ThermDAC.

ThermDAC includes the following special features:

- Color coded manikin pictorial displays, selectable for any manikin variable (temperature, heat flux, resistance, etc.)
- Automatic steady state detection
- Instantaneous bar graph and time history line graph for any user selectable manikin variable
- Real-time calculation of test statistics over any user defined time interval
- Manikin control modes: temperature regulation, constant heat flux, and comfort equation



NEMO standard thermal zone schematics