

Thermal Head Manikin



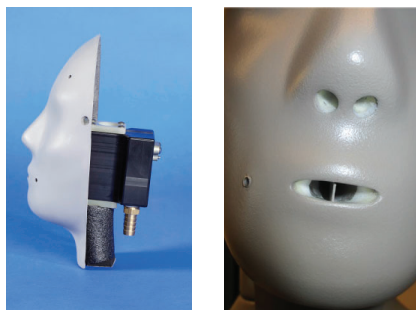
The advanced Thermal Head Manikin system was developed to provide accurate test measurements for all types of protective helmets, goggles, and headwear.

Precise measurements of heat loss allow our Thermal Head Manikin to quantify the effects of clothing or safety gear design, insulation, and ventilation with repeatable accuracy through a wide range of environmental conditions.

Standard 9-zone segmentation is based on the isolation of head regions affected by clothing, respirators, protective eyewear or earwear, and those head areas which have significantly different heat loss characteristics.

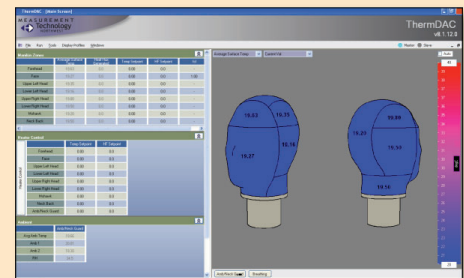
The forehead and/or face are isolated due to their typically high perspiration rates, and to accommodate the effect of headwear that includes straps at the forehead. The hairline is defined to maintain valid test measurements even with the addition of wigs to simulate hair effects. The Thermal Head Manikin system is available in dry or sweating skin models.

A breathing manifold can be installed behind the manikin face which allows for breathing through the nose, or mouth, or nose/mouth combination.



FEATURES AT A GLANCE

- Zone segmentation isolates key regions of the head which are affected by clothing and safety gear, or that possess significantly different heat loss characteristics, such as the forehead, scalp, and neck.
- 50th percentile Adult Male head form.
- Now available as a 9-zone thermal format. Custom formats available.
- Model designed for easy fitting of headwear.
- Ultra-stable resistance wire heating provides uniform heat flux.
- Wicking fabric sweating skin system available.
- External Breathing System available to replicate the cycle, frequency, and volume of human breathing.
- Integrated chamber package also available, for steady-state control of ambient conditions.
- System includes a Dell laptop computer installed with ThermDAC control software.



Thermetrics

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Thermal Head Manikin System

Specifications

Standard Package

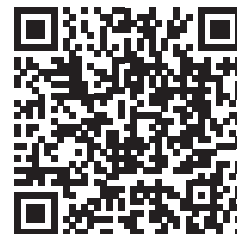
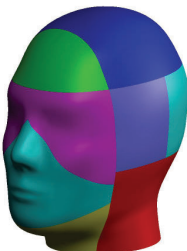
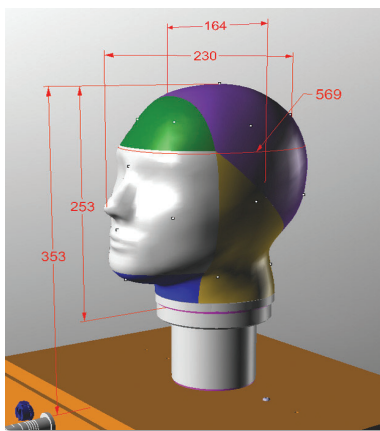
- Thermally conductive carbon-epoxy shell
- 50th percentile Adult Male
- Helmet/Cap size Medium
- 9-zone segmentation, standard
- Ultra-stable resistance wire heating
- Distributed wire sensors for each zone
- Two ambient temperature sensors
- Signal conditioning electronics
- Power and control cabling
- Dell laptop computer installed with ThermDAC control software

Options

- Custom zone configurations available
- Sweating Skin System, with distribution pumps, reservoir, tubing, and wicking fabric skin suit. Includes one relative humidity sensor
- External Breathing System, which connects to the manikin with hoses for inhaling and exhaling through the nose, or mouth, or any nose/mouth combination
- Breathing system is configured to provide temperature controlled and humidified air.

Range / Performance / Accuracy

- $\pm 0.1^{\circ}\text{C}$ temperature measurement
- $\pm 1\%$ power measurement accuracy
- $\pm 3\%$ relative humidity measurement
- -20°C to $+40^{\circ}\text{C}$ ambient range. Manikin must be preheated before use in below-freezing conditions
- 0 to 100% R.H. including condensation
- Sweating system: 0–1000 ml/hr



Model Information

- Thermal Head Dimensions: see CAD graphic below
- Power Requirements: 208-265 VAC, 50/60Hz, Single-phase. 600 W/m² maximum power output

ThermDAC Control Software

ThermDAC is a Windows-based application providing full device control, fault detection, data logging and analysis capabilities. Manikin system configuration and calibration can be carried out within ThermDAC.

- Define non-standard test conditions and custom tolerance criteria
- View multiple device and ambient variables on a single graph screen
- Apply real-time statistical functions to test data over any user-selected time range
- Color coded manikin pictorial displays, selectable for any manikin variable (temperature, heat flux, resistance, etc.)
- Automatic steady state detection
- Manikin control modes: temperature regulation, constant heat flux, and comfort equation.

Service

All systems come with a one year warranty.

Please ask about these service options:

- Startup installation and training
- Extended warranty
- Annual Service Care Package—a periodic maintenance and service contract designed to keep your Thermetrics equipment calibrated and in top operating condition