

Epoxy Thermal Manikin

- Complete turn-key system for clothing/environmental thermal testing.
- 50th percentile Western Male or Asian Male body forms are available.
- Standard models feature 20, 26, or 34 independent thermal zones. Custom configurations of 14 to 46 zones upon request.
- Ultra-stable resistance wire heating provides uniform heat flux.
- Separate sensor wire elements distributed over each zone and protected by an epoxy coating.
- System includes a PC computer and monitor 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.
- Roll around support stand and motorized walking system (per ENV 342).



“Newton” is constructed of a thermally conductive aluminum filled carbon-epoxy shell with embedded heating and sensor wire elements. Our most affordable manikin was developed using advanced CAD digital modeling to ensure repeatability in manufacturing. The system is built in accordance with ASTM and ISO standards to meet the garment evaluation needs of testing institutes, clothing, and sleeping bag manufacturers. Simplified construction and modular control electronics help bring system cost into the realm of commercial use. Newton's mass, zones, and thermal properties can be customized for faster transient response, greater sensitivity, or easier handling.

As with our other thermal manikin models, “Newton” is fully jointed, providing motion at the shoulders, elbows, hips, knees, and ankles (optional joints at wrists and neck) to allow virtually any possible body pose. Joints feature adjustable friction, with ball bearings for walking manikins, and all packages include our automatic manikin control software program, ThermDAC.



Instruments for Textile and Biophysical Testing

Epoxy Thermal Manikin (Newton)

Standard Specifications

Aluminum filled carbon-epoxy shell
User-defined number of independent thermal zones
Zone heaters and sensors - installed
Ultra-stable resistance wire heating
Distributed wire sensors for each zone
Optional removable fabric sweating skin with distribution pumps, reservoir, and tubing
Dell laptop control computer
Pre-installed ThermDAC control software
Two ambient temperature sensors
One RH sensor and Windspeed sensor
Signal conditioning electronics
Power and control cabling (via eye openings)
Operators manual
One year warranty

Environmental

-20°C to +50°C operating range
0 to 100% R.H. including condensation

Performance

± 0.1°C temperature measurement and setpoint control
± 3% relative humidity measurement
700 W/m² maximum power output
Meets ENV342, ISO/DIS 15831,
prEN13537, ASTM F1291

"Newton" Manikin Sizes

50th percentile Western or Asian Male body forms
Height (Western Male): 5'9" (175cm)
Surface area (Western Male): 19 sq/ft (1.8 sq/m)
Base weight: 66 lbs (30 kg) Garment size: Medium

Call for a quote on custom sizes

ThermDAC Control Software

ThermDAC was developed by Measurement Technology Northwest specifically for manikin and hotplate systems. It is a user-friendly, intuitive, Windows-based application provides full device control, fault detection, data logging and analysis capabilities. Manikin 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
- User programmable work cycle simulation
- 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.

Standard thermal zone schematics

