

Newton Thermal Manikin



The popular "Newton" thermal manikin was designed in accordance with ASTM and ISO standards to meet the garment evaluation needs of testing institutes, apparel designers, and sleeping bag manufacturers.

Constructed using a thermally conductive carbon-epoxy shell with embedded heating and sensor wire elements, Newton is fully articulated - providing motion at the shoulders, elbows, hips, knees, and ankles to allow for virtually any possible body pose. Optional jointing is available at the wrists and neck.

3D CAD modeling was used to ensure accurate morphology as well as repeatability in manufacturing. Standard models (26 zones) satisfy general garment or environmental testing needs, but Newton can be customized for faster transient response, greater ambient range, or fitted for other research capabilities.

All Newton systems are supplied as complete turn-key packages, including manikin form, control electronics, laptop PC, and exclusive ThermDAC control software.

ASSOCIATED TEST METHODS

- ASTM F1291
- ASTM F1720
- ASTM F2370
- ASTM F2371
- ASTM F2732
- ENV 342 (requires walking stand)
- EN 13537
- EN ISO 23537 (Part 1)
- ISO 15831

FEATURES AT A GLANCE

- Standard models feature 26 independent thermal zones.
- Available in dry or sweating skin configurations. Sweating systems feature computerized fluid delivery and removable wicking fabric skin.
- 50th percentile Western Male or Asian Male body forms are available.
- Ultra-stable resistance wire heating provides uniform heat flux.
- Temperature sensor elements are distributed over each zone and are protected by an epoxy coating.
- Standard options include walking motion stand, external breathing, female conversion capability, and ManikinPC physiological software.
- Advanced options include Dynamic Heat Flux Sensor Technology and Active Cooling.
- All systems include a Dell laptop computer installed with ThermDAC control software.



Thermetrics

Newton Thermal Manikin

Specifications

Standard

- Thermally conductive carbon-epoxy shell
- Ultra-stable resistance wire heating
- Distributed wire sensors for each zone
- 26 thermal zones
- Dell laptop computer pre-installed with ThermDAC control software
- Ambient sensors: Temperature (2), RH (1), Windspeed (1), with all cables and connectors
- External power enclosure and 25ft (8m) cables

Options

- Sweating system with fluid distribution system, reservoir, and wicking fabric skin layer
- Walking motion stand - standard or elliptical
- Connector location: eyes, torso, or custom
- External breathing system
- Female conversion capability
- Cold capable for operation to -30° C

Call for a quote on custom features

Range / Performance / Accuracy

- -20°C to +50°C operating range
- ± 0.1°C temperature measurement
- 0 to 100% R.H. including condensation
- ± 3% relative humidity measurement
- 700 W/m² maximum power output
- Sweating system: 0–1000 ml/hr

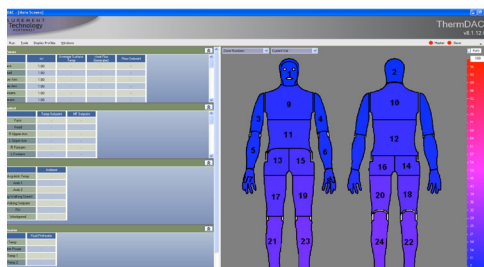
Size / Weight / Power

- Manikin body form, Western or Asian Male
- Height: Western Male: 5'10" (178.5cm)
Asian Male: 5'6" (168.5cm)
- Weight: 60 lbs (27.5 kg) Garment size: Medium
- Power Requirements: 208-265 VAC, 50/60Hz, Single-phase.

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



Warranty and Service

All systems come with a one year warranty. Additional service options are available, including startup installation and training, extended warranty,

and Annual Service Care Package, a periodic maintenance and service contract designed to keep your Thermetrics equipment calibrated and in top operating condition.

*Standard
thermal zone
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