

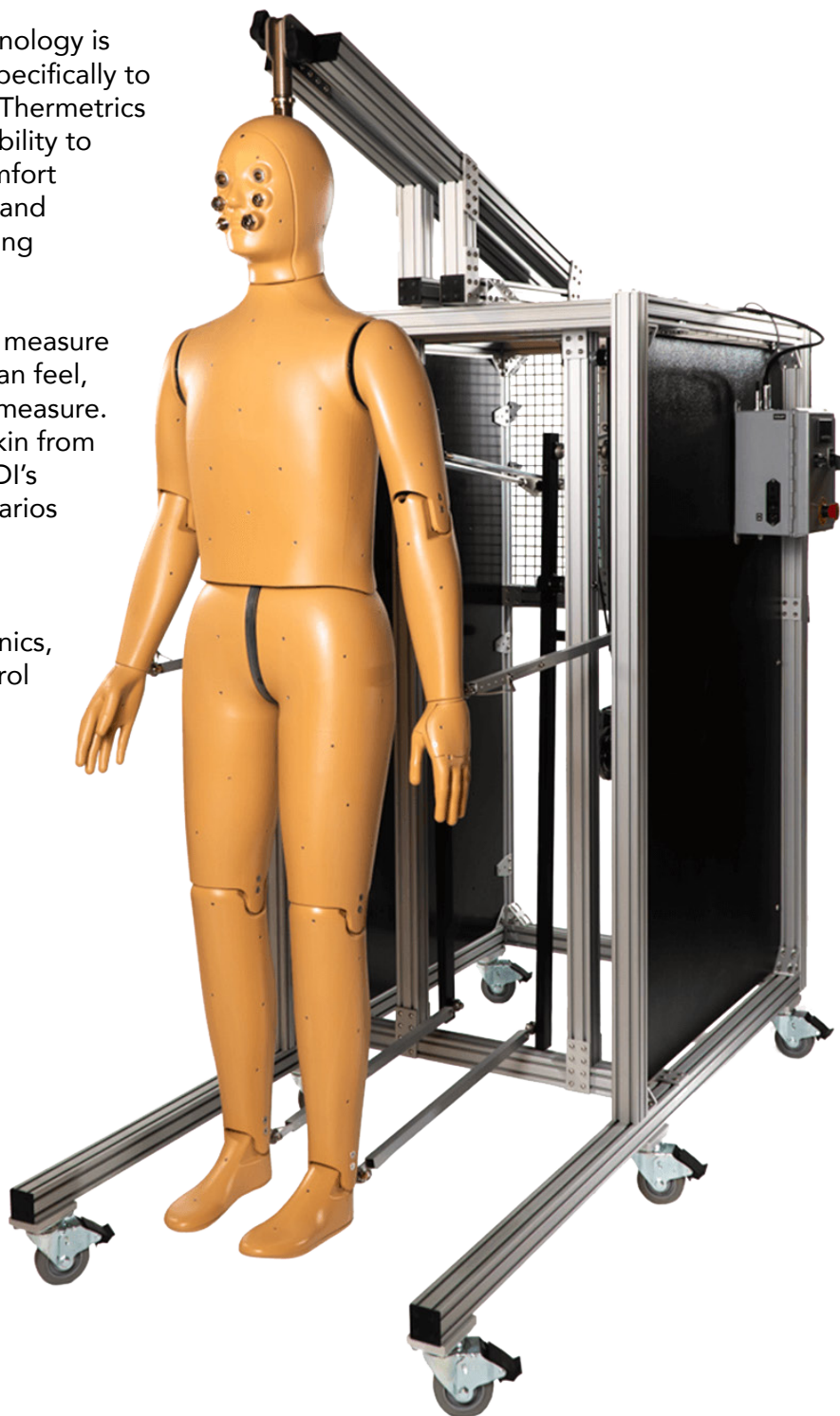
THE WORLD'S MOST ADVANCED THERMAL MANIKIN

THERMAL MANIKIN ANDI

Environments are changing and garment technology is evolving. Our ANDI manikin was developed specifically to take on these challenges. Building on proven Thermetrics manikin technology, ANDI has the unrivaled ability to support advanced thermal protection and comfort research, including measurement of heat loss and heat gain, while adeptly responding to changing environmental conditions.

ANDI's Dynamic Heatflux Sensing capabilities measure the smallest transient events, which humans can feel, but traditional manikins have been unable to measure. Active Cooling technology prevents the manikin from overheating in hot conditions, expanding ANDI's temperature range to support the actual scenarios your garments are designed for.

All ANDI systems are complete, ready-to-use instruments including manikin, control electronics, laptop PC, and our exclusive ThermDAC control software. Just add your own climate chamber for a comprehensive testing solution.



Test Methods Supported

ANDI complies with

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





ANDI Specifications

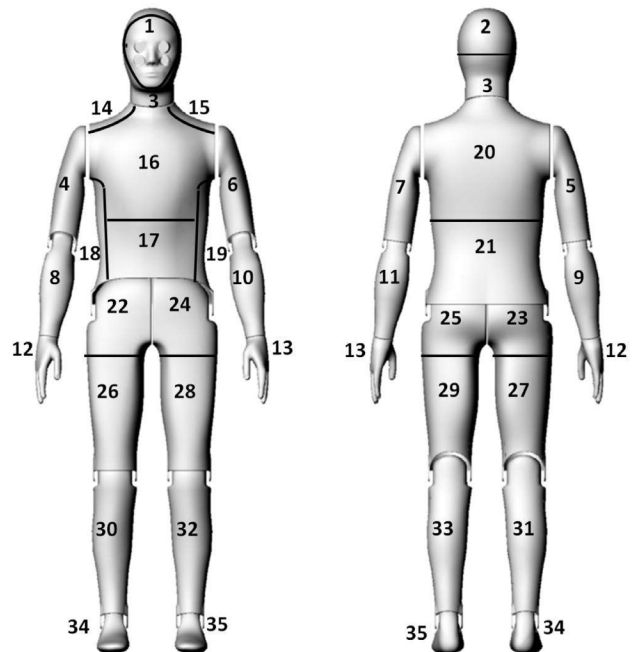
- Male body form: height: 5 ft. 10 in./178.5cm
 - Chest: 37 in./94 cm
 - Waist: 33 in./84 cm
 - Hip: 39 in./99 cm
- Manikin weight: 77 lbs./35 kg
- Standard operating range: -20°C to +50°C
- Extended operating range: -40°C to +50°C (with “cold capable” option)
- 0 to 100% RH, including condensation
- Temperature accuracy: $\pm 0.1^\circ\text{C}$
- RH accuracy: $\pm 3\%$
- Sweating delivery range: 0-1,000 ml/hr/m²
- Maximum heating output: 1,000 W/m²
- Continuous heat removal capacity: 350 W/m²
- Power: 208-265 VAC, 50/60Hz, Single-phase
- Power/communication cable length: 25 ft./7.5 m.

Base Products Include:

- Manikin body form with heaters and sensors
- Control electronics
- Two Ambient temperature sensors
- Laptop loaded with ThermDac control software
- Power and control cabling
- One relative humidity sensor
- One omni directional wind-speed sensor
- Recirculating chiller and supply tubes
- Manikin transport chair
- Standard one-year warranty

ANDI Feature Highlights & Benefits

- Dynamic Heatflux Sensing (positive/negative) with active cooling provides real-time measurements of heat loss and gain
- 35 thermal zones, independent heaters, and distributed temperature sensors provide the ideal density of measurements
- Replicate multiple testing positions with poseable joints at shoulders, hips, elbows, knees, and ankles
- Sweating version features computerized fluid delivery by zone
- Active cooling simulates human body mass without requiring a real weight manikin
- Measure boundary conditions to ensure repeatability (ambient temperature, relative humidity, and windspeed)
- Easily go from raw measurements to workable data with our customizable ThermDAC user interface software; optional ManikinPC physiological control



Standard thermal zone schematics



ThermDAC Control Software

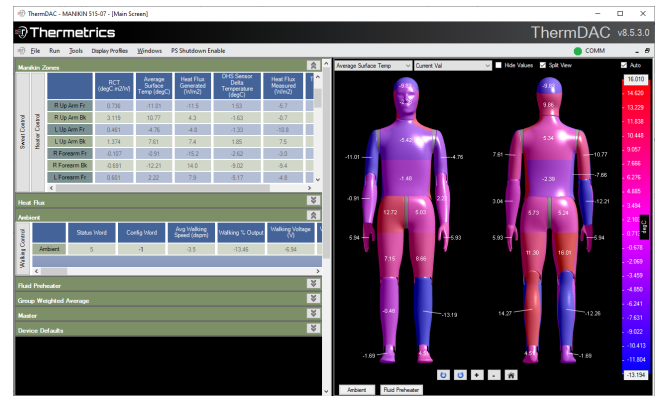
ThermDAC is an engineered user interface for thermal manikin systems providing real-time device control, automated testing, and flexible display and logging capabilities, including:

- Manikin control by skin temperature, constant heat flux, comfort equation, ManikinPC
- User-programmable test configurations, stability criteria, linked work cycles
- Automatic steady-state detection
- Color-coded manikin pictorial displays, selectable for any manikin variable
- Zoomable time-history graph of multiple device and ambient variables
- Real-time statistical analysis over any user-selected time range
- Logging of raw data, statistical analysis, user-reports
- Device calibration and fault detection

4D **PHYSIOLOGY & COMFORT MODEL INTEGRATION**

Bring your manikin to life with the next dimension in testing; ManikinPC

- Real-time data
- Reduce dependence on human testing
- Shorten design cycles
- Design based on comfort metrics



515 - Thermal Manikin - ANDI	Item #	Description	Product Name
Standard Base Products	19-51502	ANDI Manikin, 35Z, Dry/Active Cooling, Male 178.5 cm	515-XXX_d35.M
	19-51501	ANDI Manikin, 35Z, Sweating/Active Cooling, Male 178.5 cm	515-XXX_s35.M
	19-51503	ANDI Manikin, 35Z, Sweating/Active Cooling, Male 178.5 cm, Breathing Prepped	515-XXX_s35.b.M
Standard Options	19-00001	Non-Humidified Breathing System	—
	19-00002	Humidified Breathing System	—
	20-00341	Walking Stand, 120VAC	—
	20-00340	Walking Stand, 240VAC	—
	20-00222	Hanging Stand	—
	20-00880	ASTM Cal Garment, Set, ANDI	—
Custom Options	11-01407	Software, ManikinPC License (Permanent) - US	—
	11-03396	Software, ManikinPC License (Permanent) - OUS	—
	XX-XXXX	Back Mount Modification	—
	20-00846	Hanging Stand, Back Mount	—
	20-00848	Walking Stand, Back Mount, 120VAC	—
	XX-XXXX	Walking Stand, Back Mount, 240VAC	—
XX-XXXX	Cold Capable (Extended range to -40oC)	—	

Don't see what you need above? Contact Thermetrics to customize your perfect system. Keep your ANDI in tip-top shape. Discuss service plan options and point-of-sale discounts with us at sales@thermetrics.com.