

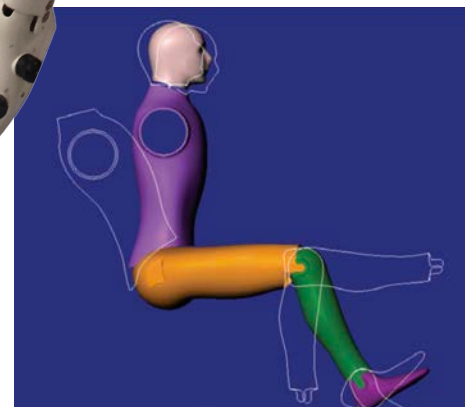
THE WORLD'S MOST ADVANCED SENSOR MANIKIN

THERMAL MANIKIN - AUTOMOTIVE HVAC

The Automotive HVAC Manikin measures passenger comfort and environmental conditions in automobile/truck/transit cabins.

The system includes a carbon epoxy body form with surface-mounted sensors that measure air speed, temperature, relative humidity, and dual spectrum radiant heat flux. Sensors are protected to ensure no damage occurs during manikin loading and positioning.

The Automotive HVAC Manikin is designed for toolless disassembly at the waist and neck for easy insertion into any vehicle. The shape of the hands does not impact air movement, but permits airflow similar to that of a human grip/fist. Thigh backs are flattened to simulate compression for realistic airflow patterns. System includes manikin, laptop PC computer with ThermDAC software, sensors, and Ethernet/wireless network capability.



Jointed parts allow for a variety of test positions and ease of placement





HVAC Specifications

- Male body form height: 5 ft. 10 in./178.5 cm
 - Chest: 35.7 in./90.8 cm
 - Waist: 28.8 in./73.2 cm
 - Hip: 36.1 in./91.8 cm
- Small male body form height: 5. ft. 6 in./168.4 cm
 - Chest: 35.7 in./90.8 cm
 - Waist: 28.8 in./73.2 cm
 - Hip: 36.1 in./91.8 cm
- Weight: 50 lbs./23 kg
- Surface area: 1.8 sq/m/19 sq/ft.
- Air temperature (46 locations):
 - -20°C to +70°C measuring range
 - ± 1.0°C calibrated accuracy
 - ± 0.1°C resolution
- Air Velocity (46 locations):
 - Omnidirectional 0.1–5.0 m/sec measuring range
 - Temperature compensated from -20°C to +70°C
- Dual Spectrum Radiant Heat Flux (46 locations):
 - Up to 2,000 W/m² measuring range, 1-20 μm
 - Reports Mean Radiant Temp and Solar Heat Flux
- Relative Humidity (4 locations): 0 to 95% R.H., non-condensing
- Operating Range -20°C to +50°C operating range, 0 to 95% R.H. non-condensing
- Data communication via ethernet and 802.11g wireless



Combination temperature and windspeed sensor, with protective cap removed

HVAC Feature Highlights & Benefits

- Complete turnkey system for measuring the effect of vehicle heating and air conditioning designs on passenger comfort
- Reports real-time PMV and PPD. ManikinPC option adds full physiology simulation
- Sensor matrix measures air speed, temperature, dual spectrum radiant heat flux, and relative humidity
- Fully jointed manikin separates at waist and neck for easy placement into vehicles
- Mitten-shaped hands feature a curved, gripping shape for positioning onto the vehicle steering wheel
- High speed data transmission over Ethernet or wireless network
- Ball joints with integral friction at shoulders, hips, elbows, knees, ankles
- CAD manikin geometry is available for integration into vehicle CFD simulation
- Operational with vehicle 12V power outlet
- Available with CAN bus connection

Base Products Include:

- Lightweight articulated carbon-fiber/ epoxy manikin
- Pre-installed sensors measure boundary conditions
 - 46 temperature, 46 wind, 46 dual-spectrum radiant heat flux, 4 RH
- External power supplies for in-vehicle and in-lab use
- Laptop PC preinstalled with ThermDAC software
- Manikin transport chair
- Standard one-year warranty



ThermDAC Control Software

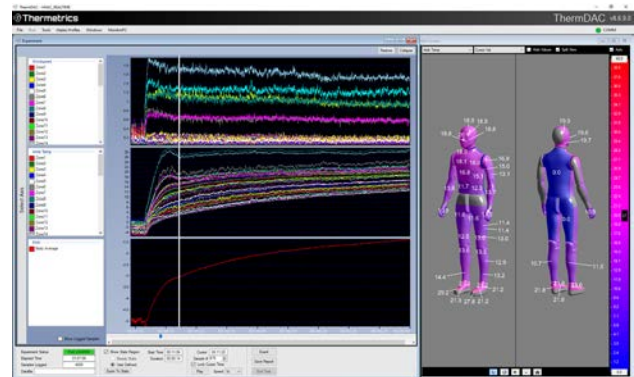
ThermDAC is an engineered user interface for thermal manikin systems providing real-time device control, automated testing, and flexible display and logging capabilities, including:

- Comfort equation and 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



508 - Thermal Manikin - Automotive - HVAC	Item #	Description	Product Name
Standard Base Product	19-50800	HVAC Manikin, 46Z, Standard Windspeed	508-XXX_46.M
Standard Options	11-01407	Software, ManikinPC License (Permanent) - US	—
	11-03396	Software, ManikinPC License (Permanent) - OUS	—

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