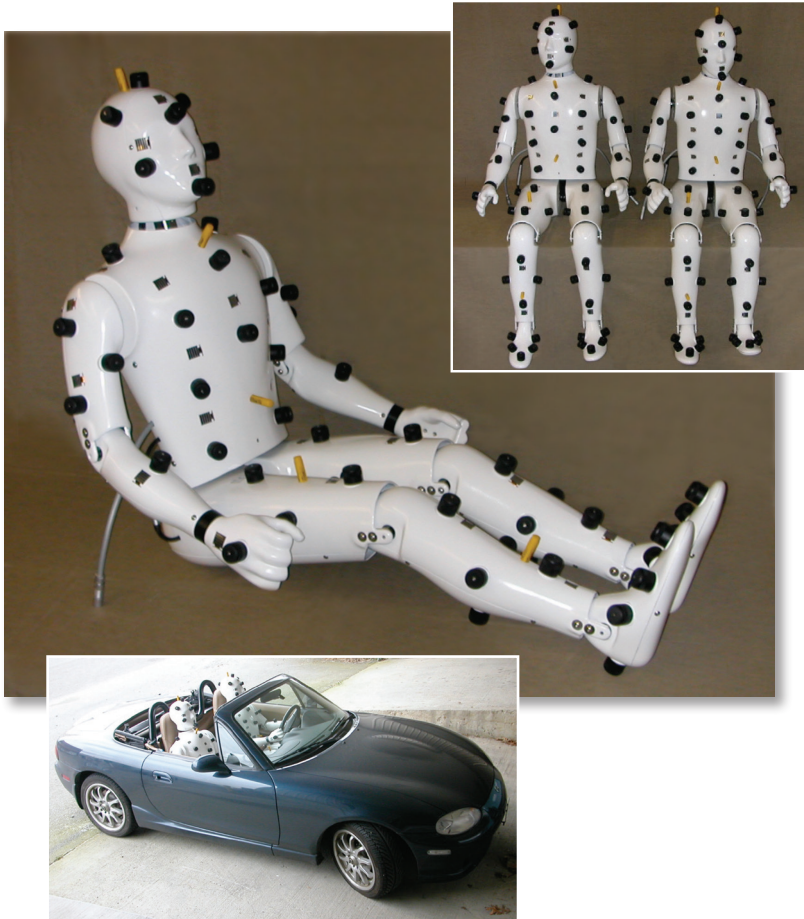


Automotive HVAC Manikin



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

System includes a carbon epoxy body form with surface-mounted sensors that measure air velocity, temperature, radiant heat flux, and relative humidity. 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. Hands are mitten-shaped, with a curved, gripping design to allow for proper positioning onto the vehicle steering wheel. Their shape 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.

FEATURES AT A GLANCE

- Complete turn-key system for measuring the effect of car/truck heating and air conditioning designs on passenger comfort.
- Sensor matrix measures air velocity, temperature, radiant heat flux, and relative humidity,
- 50th percentile Western or Asian Male body form
- Manikin jointed at the shoulders, hips, elbows, knees, and ankles.
- Manikin separates at waist and neck for easy placement into driver or passenger seats.
- Mitten-shaped hands feature a curved, gripping shape for positioning onto the vehicle steering wheel.
- Flattened seat contact surfaces closely approximates human thigh compression when seated.
- High speed data transmission over Ethernet or wireless network.



Thermetrics

Automotive HVAC Manikin

System Includes

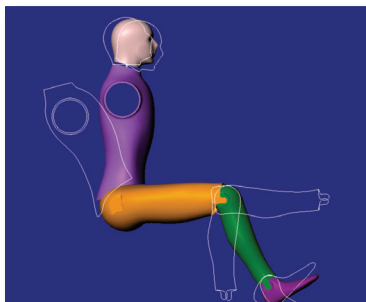
- Lightweight articulated carbon-fiber/epoxy manikin
- Preinstalled sensors measure boundary conditions
- Portable power supply enclosure and interconnect cables
- Laptop PC preinstalled with ThermDAC software
- Operators manual
- One year warranty

System Features

- Ball joints with integral friction at shoulders, hips, elbows, knees, ankles
- Toolless disassembly at waist and neck
- Mitten-shaped hands and flattened seat contact surfaces for realistic occupant packaging
- Data communication via ethernet and 802.11g wireless
- Operating Range -20°C to +50°C operating range, 0 to 95% R.H. non-condensing
- CAD manikin geometry is available for integration into vehicle CFD simulation



Combination temperature and windspeed sensor, with protective cap removed



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

Joint	Rotary Motion	Lateral Motion	Ball Joints
Neck	0 to 20 degrees	none	no
Shoulders	-45 to 180 degrees	none	yes
Hips	-30 to 90 degrees	none	yes
Elbows	0 to 90 degrees	± 8 degrees	yes
Wrists	± 180 degrees at axis	none	no
Knees	0 to 90 degrees	± 8 degrees	yes
Ankles	± 30 degrees	± 8 degrees	yes

Sensor Specifications

- 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

Other sensor combinations can be accommodated

“HVAC” Manikin Sizes

- 50th percentile Western or Asian Male body form
- Height: Western 178.5 cm (70.3")
Height: Asian 168.5 cm (66.3")
- Surface area: 1.8 sq/m (19 sq/ft)
- Weight: 22 kg (55 lbs)

Call for a quote on custom sizes

ThermDAC (HVAC) Control Software

ThermDAC was developed by Thermetrics specifically for manikin data collection and analysis. It is a user-friendly, intuitive, Windows-based application providing full device control, fault detection, and data logging capabilities.

HVAC ThermDAC software can output data files 100% compatible with TAItherm analysis software (ThermoAnalytics). Using this method, manikin measurements can be directly applied as boundary conditions to the human model to predict comfort and sensation.

