

TESTING

TESTA ‘V’ Series

Environmental Chambers for Shaker Integration

Flexible climatic solutions for combined temperature, humidity and vibration testing



aralab

ARALAB is a company specialized in designing, developing, manufacturing and servicing of high quality climatic chambers and controlled environment rooms.

Since 1985 we have been perfecting ways to create and control temperature, humidity, light, air flow and many other environmental conditions.

Only the highest quality components are used to manufacture our chambers so customers can have the best equipment for their research and testing purposes.

Control the Environment. Your Own Climate.



Aralab designs and manufactures environmental chambers for demanding thermal and climatic tests – from compact reach-in cabinets to large walk-in and drive-in rooms.

Over the last decades, our engineering teams have delivered multiple integrated solutions with vibration systems, from standard shakers to multi-axis and MAST platforms.

With TESTA V chambers, we provide the climatic envelope, mechanical integration and control architecture needed to combine temperature, humidity and vibration in a single, reliable test setup – fully agnostic to the shaker brand or model.

CERTIFIED
ISO 9001
ISO 14001


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TESTA V range – Environmental chambers for shaker integration

Aralab offers TESTA V chambers in standard and customized volumes, designed from the outset for integration with shaker systems:

- **Reach-in chamber:**
  - **TESTA 1000 V** – approx. 1000 L test space, ideal for component testing and medium-sized fixtures.
- **Walk-in chambers:**
  - **TESTA 8000 V** – large welded chambers for full assemblies, racks or multiple DUTs.
  - Other volumes and geometries available on request.
- **Climatic performance (typical, model-dependent):**
  - Temperature ranges down to **–40 / –52 / –60 / –75 °C** and up to **+150 / 180°C**.
  - Humidity on CT versions typically **10–95 % rH** in a large part of the temperature envelope.

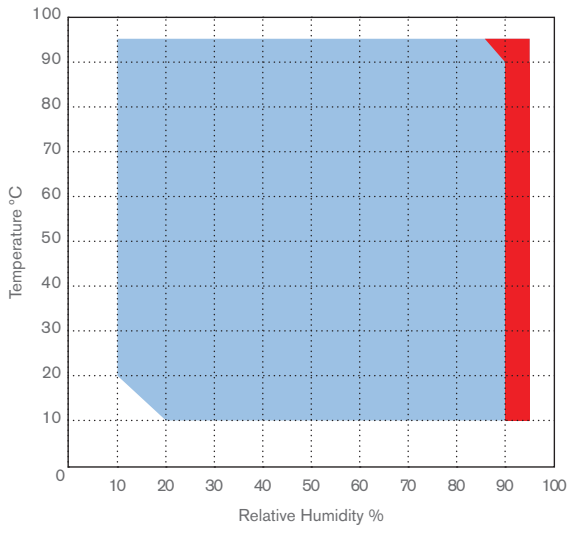
Each TESTA 'V' project is engineered and validated for the required envelope and fixture layout.

Model	TEMP. RANGE	HUMIDITY RANGE	COOLING RATE (K/MIN) *	HEATING RATE (K/MIN)*	TEMP. UNIFORMITY	INTERNAL DIMS H×W×D (MM)
TESTA 1000 V – Reach-In (~967 L)						
TESTA 1000 EC50 V REACH-IN	–52 to +180 °C	10–98 % rH (CT)	5.0	5.0	±0.5 to ±1.5 °C	910 × 984 × 1,052
TESTA 1000 EC75 V REACH-IN	–75 to +180 °C	10–98 % rH (CT)	4.0	4.5	±0.5 to ±1.5 °C	910 × 984 × 1,052
TESTA 8000 V – Walk-In (~8,000 L)						
TESTA 8000 EC40 V WALK-IN	–40 to +150 °C	10–95 % rH (CT)	3.5	4	±1 to ±2.0 °C	1,980 × 2,000 × 1,990
TESTA 8000 EC60 V WALK-IN	–60 to +150 °C	10–95 % rH (CT)	5.0	4	±1 to ±2.0 °C	1,980 × 2,000 × 1,990

* Temperature change rates measured per IEC 60068-3-5, in supply air, at 25 °C ambient, without specimen. Cooling rates can be customized to meet customer requirements. High temperature cooling rates available with mechanical upgrade and/or LN2 integration. Aralab Testing chambers are configured and factory calibrated to comply with the necessary heating / cooling rate requirements.
* Specifications and performance values are indicative and subject to change. Contact Aralab to tailor the solution to your specific project requirements.







The effective temperature and humidity envelope may vary depending on the integration configuration and shaker coupling method. Contact Aralab to validate feasibility for your specific test setup.

Shaker-agnostic by design

TESTA V chambers are designed to work with any shaker manufacturer or vibration system – vertical, horizontal, multi-axis or slip-table based.

The mechanical integration is defined in close collaboration with the shaker supplier and the customer and may include:

- Adaptation to armature, head extender, head expander or slip-table geometries.
- Custom adapter frames, gaskets and thermal barriers to ensure sealing between the chamber and the vibrating element.
- Structural design of chamber floors and openings to withstand repeated vibration and thermal cycling.
- Rail-mounted chamber systems, allowing the climatic chamber to be slid, positioned or docked accurately over different shaker interfaces.
- Manual or motorized displacement and lifting solutions, enabling horizontal and/or vertical positioning of the chamber relative to the shaker.
- Defined operating, parking and service positions, allowing the chamber to be used with different shaker configurations or as a standalone climatic chamber when vibration is not required.

This approach maximizes test flexibility while optimizing laboratory space and equipment utilization.

Floor Configurations

The chamber floor is the mechanical heart of every shaker integration. Three standard configurations are available, each matched to a specific vibration axis and coupling method:

Floor Type	DESCRIPTION & INTEGRATION
Vertical vibration floor	Circular or square opening centred in floor, with heated perimeter seal and sealing collar for head extender / head expander coupling.
Horizontal vibration floor	Rectangular off-centre opening in floor, with heated seal and coupling collar for slip-table integration. Allows full horizontal excitation.
Closed floor (blind plug)	Chamber used as standalone climatic unit without active shaker. Full climatic envelope available. Parking / service position.

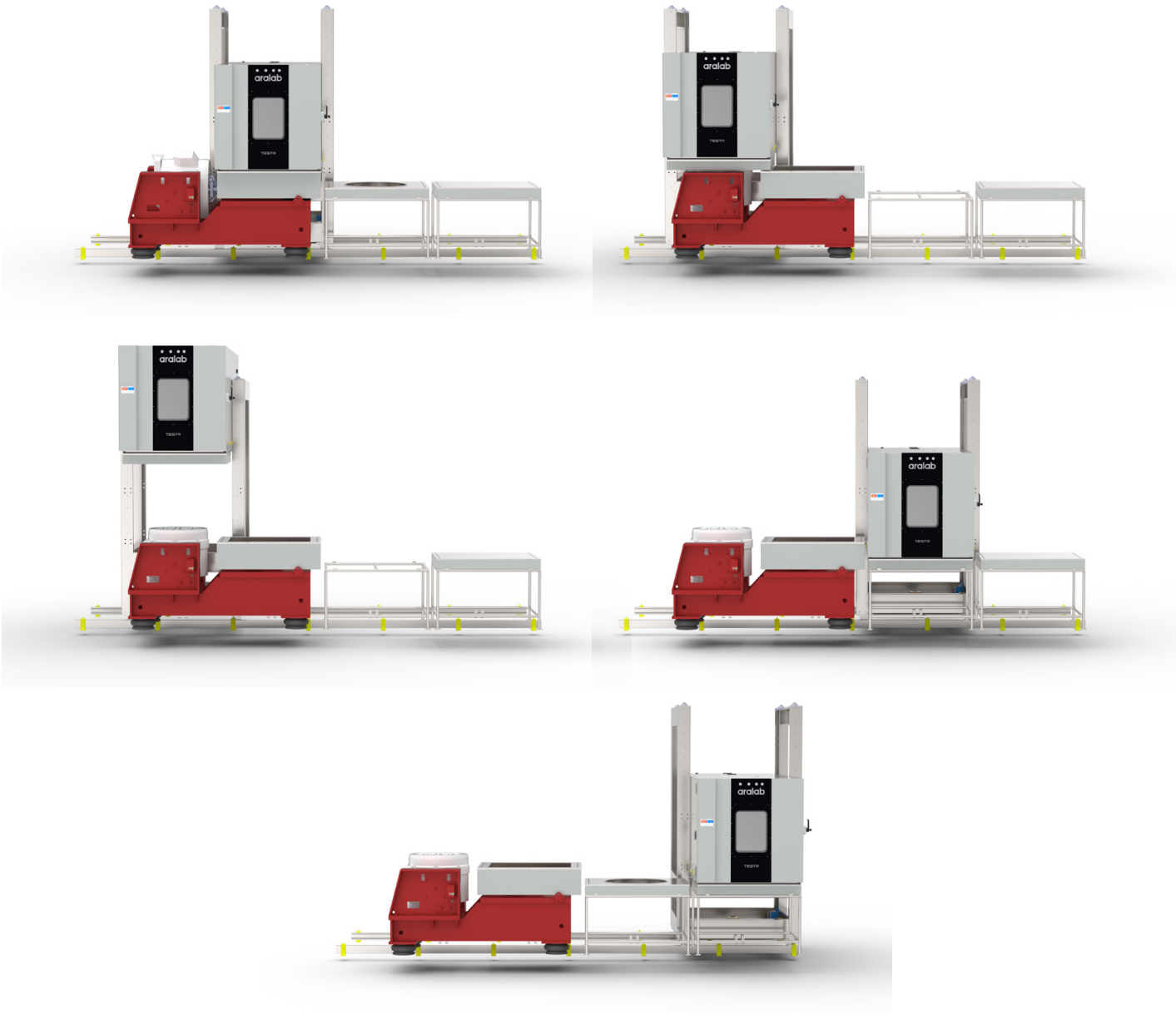


Integration layouts – horizontal and vertical vibration

Depending on your tests and shaker configuration, TESTA V chambers can be installed in different layouts. The most common are:

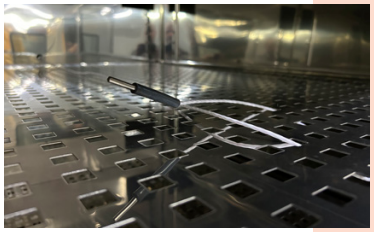
- Horizontal vibration with slip table.
- Vertical vibration with head expander (shaker below the chamber).
- Vertical vibration with head expander at floor level (chamber lifted).
- Direct front installation for compact reach-in solutions.

The chamber, rails and lifting systems are tailored to your shaker footprint and stroke, always keeping a sealed test space and unobstructed airflow.



EQUIPMENT DESCRIPTION





TEMPERATURE

TEMPERATURE SENSORS

- One (1) PT 100 Class A
- One (1) PT 100 Class A, movable sensors for flexible placing inside chamber

HEATING

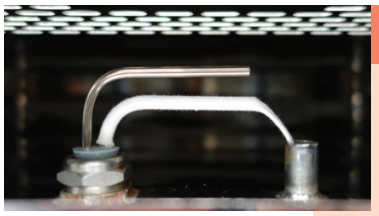
- By stainless steel electric heaters located in the air treatment tunnel

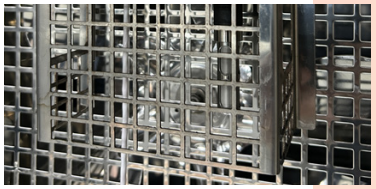
COOLING

- Hermetic compressor group (low noise and high efficiency). Reach-in: air-cooled condenser standard; water-cooled standard on -75 °C and rate-upgrade models. Walk-in: water-cooled condenser standard (air-cooled optional on -40 °C models).

THERMAL SECURITY

- Safety thermostat with High / Low temperature configuration, with automatic stop of all thermic systems.
- High / Low temperature alarms programmed in the controller, with mute function. This function will not stop the chamber and it is only used to record the occurrence and to call the attention of the users with an audible alarm.





HUMIDITY (TESTA CT CHAMBERS)

HUMIDITY SENSORS

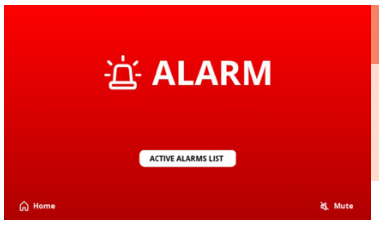
- To measure and control humidity Aralab uses two different sensor technologies: Psychrometric (EP models), Capacitive (EC models), or both (ECP models). Consult Aralab for technical support on the appropriate selection.

HUMIDITY / DRYING

- Humidity: Through thermostatic bath with dew point control
- Drying: Through thermostatic bath with dew point control and additional dry coil

HUMIDITY SENSORS: HUMIDITY VS. TEMPERATURE RANGES GRAPHIC

- For climatic tests that require humidity and temperature ranges highlighted in red on the graph, a Psychrometric sensor is recommended (EP and ECP models). Please consult Aralab for help on the choice between these two models.



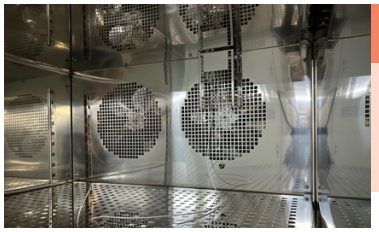
SECURITY

- Automatic stop function in case of water failure, with indication on the controller; High / Low Temperature alarms; High / Low humidity alarms.



CONSTRUCTION

- Interior: AISI 304 hermetical welded, vapour tight, stainless steel
- Exterior: Zinc mild steel with epoxy coating finish (color RAL 7035)
- Insulation: Rock Wool
- Interior illumination: Included with Optional Observation Window
- Door: Double silicone joints and anti-condensation heating frames (optional window)



AIR FLOW / VENTILATION

- Air Flow: Forced airflow through fans in the air treatment tunnel, sized for each chamber volume; airflow speed control available as an option
- Air Renovation: By lateral port, also for compensating pressure.

CLIMAPLUS CONTROLLER

ClimaPlus Web – Key Capabilities for Shaker Integration

- Unlimited programmable profiles and segments – no restriction on cycle complexity or number of steps.
- 7" colour touchscreen HMI, web-based – accessible from any device on the same network via standard browser (no proprietary software required).
- Real-time trend graphs – temperature, humidity, and up to 4 external sensor channels displayed simultaneously
- Modbus TCP/IP as standard – native integration with shaker controllers, PLCs, BMS, and SCADA systems; read/write of setpoints, alarms, and chamber status.
- Digital I/O for shaker interlocks – configurable start/stop, alarm relay, and fault handshake channels.
- Remote access via Ethernet – monitor and control the chamber from the control room or remotely.
- FitoLog® integration – optional PC software for advanced data logging, alarm management, trend analysis, and compliance reporting (including FDA 21 CFR Part 11 version).
- Auto-recovery – chamber resumes programme automatically after a power interruption.

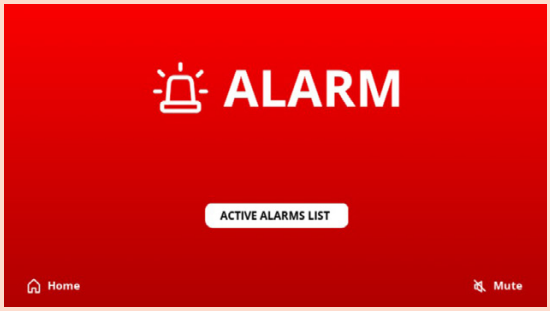
ClimaPlus Web is part of Aralab's digital ecosystem – the same controller platform across the TESTA reach-in and walk-in range, enabling consistent operation procedures across the test laboratory.

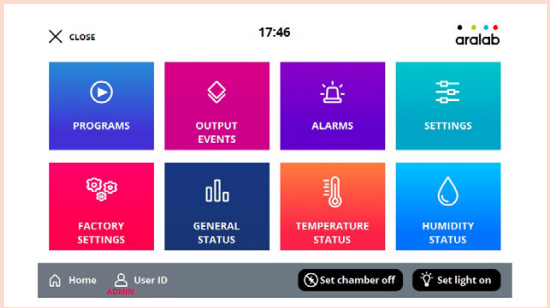
Control Integration & Safety

TESTA V chambers are designed for bidirectional control integration with the shaker controller. Key capabilities include:

- Modbus TCP/IP as standard – enables the shaker controller or a central test management system to read chamber status (temperature, humidity, alarms) and write setpoints, reducing manual intervention during complex test sequences.
- Digital I/O for start/stop and safety interlocks – allows direct hardware signalling between the shaker and the chamber. If the shaker controller signals a fault, the chamber can be configured to safely ramp down or hold setpoint. Similarly, the chamber can signal the shaker to pause if a climatic alarm is triggered.
- ClimaPlus Web controller – provides native Ethernet remote access, real-time graphical monitoring, and unlimited programmable profiles for complex combined stress sequences.
- Emergency stop and safety thermostat – independent hardware safety layer, operative regardless of software state.

The specific interlock architecture (discrete wiring, relay outputs, PLC-to-PLC communication) is defined per project in collaboration with the shaker supplier. Consult Aralab Engineering during the integration scoping phase.

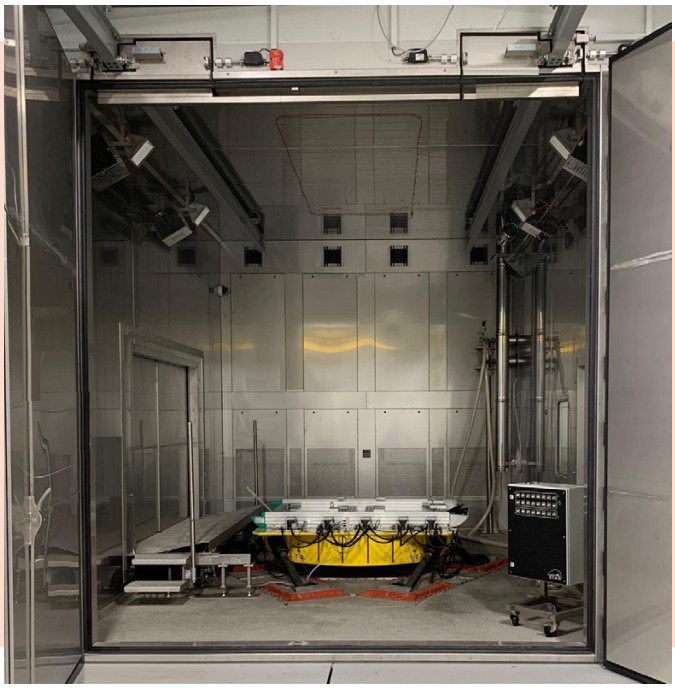




APPLICATIONS & SECTORS

Sector	STANDARDS	Applications	Aralab capability note
Defence / Military	MIL-STD-810H (Methods 501–514 and 520) DEF STAN 00-35	Ground, airborne and shipboard equipment qualification	Suitable for combined temperature, humidity and vibration tests according to MIL-STD-810H Method 520.5 (altitude not included)
Aerospace / Avionics	Applicable environmental qualification standards	Avionic LRU, sensors, harness and structural component qualification	Full climatic envelope; shaker-agnostic; customisable DUT fixture frames
Automotive / EV	IEC 60068-2-14 / -2-30 ISO 16750-4 LV 124	ECU, battery modules, powertrain components, connectors	Rapid thermal cycling combined with vibration; water-cooled condensers standard on walk-ins
Electronics / ESS	IEC 60068-2-6 / -2-64 MIL-HDBK-2164	PCB, connectors, sensors, consumer electronics stress screening	TESTA 1000 V ideal for component and sub-assembly ESS; TESTA 8000 V for rack-level or system ESS
Rail / Infrastructure	EN 50125 / IEC 61373	Rolling stock on-board equipment; trackside assemblies	Consult Aralab for envelope validation against specific test profiles





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Control the environment

Your own climate