

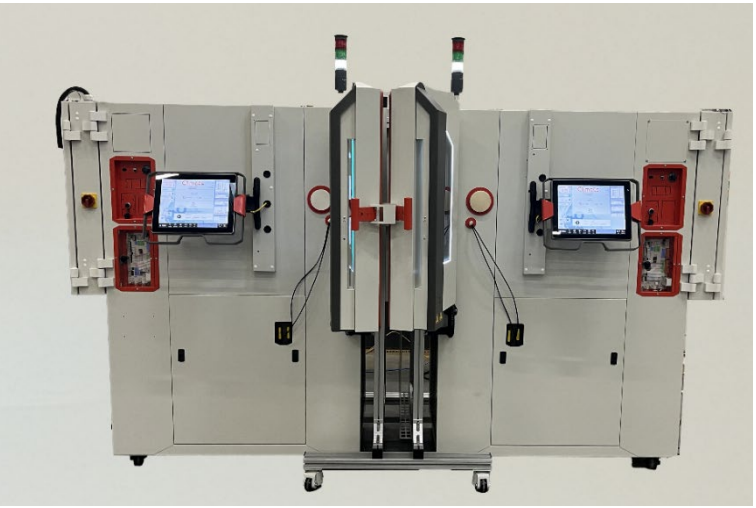
Excal Bi-Climatic

Climats

Environmental test pilot

Bi-climatic Environmental test bench

This bi-climatic environmental test bench is designed for laboratories, research centers, and industrial organizations seeking to evaluate the behavior of materials or products under controlled environmental conditions. It consists of two environmental test chambers that can operate completely independently from one another.



The system enables testing of a wide range of samples, including construction materials and industrial components. For bi-climatic testing, a mobile test ring mounted on wheeled profiles can accommodate a specimen measuring **400 × 400 × 200 mm (thickness)**, with a maximum load capacity of **130 kg**.

The main purpose of this equipment is to reproduce different climatic conditions on either side of the same specimen in order to accurately assess its thermal performance, airtightness, and durability under simulated real-life conditions. This approach allows the characterization of material behavior under contrasting environmental constraints and supports the optimization of product design and implementation.

Thanks to its advanced features, this test bench can perform a wide range of tests in either **single-chamber mode** or **bi-climatic mode**. The combination of bi-climatic simulation, dry-air injection, and ventilation control ensures reliable and repeatable results. Its custom-designed architecture facilitates the integration of measurement equipment, ensuring high analytical accuracy. Ergonomic features further enhance user comfort and operational safety. Compared with standard market solutions, it stands out for its flexibility, measurement precision, and high degree of customization, perfectly meeting the needs of research and engineering projects.

Spirale

This chamber benefits from the Spirale Vision control offering a high regulation quality.
You would also appreciate the programming and archiving features this control system is known for. Spirale, already established in more than 6,000 environmental test chambers and test benches in the world, is the most intuitive and versatile human-machine interface on the market.

www.climats-tec.com

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TECHNICAL FEATURES

CHARACTERISTICS

- Two environmental test chambers combined to operate as a **bi-climatic test bench**
- Temperature range: **-70°C to +180°C**
- Relative humidity range: **10% RH to 95% RH**

DIMENSIONS

Dimensions (mm)	Width	Depth	Height
Useful	540	400	700
Overall	783	1634	1842

BI-CLIMATIC MODE OPERATION

Bi-climatique configuration

The two environmental test chambers are positioned facing each other, with the test ring installed between them. The assembly is securely maintained using toggle latches, enabling quick setup while ensuring excellent sealing performance.

In bi-climatic mode, the control panels and service components are grouped on the same side of the system. This configuration simplifies operation and maintenance while providing easy access to controls.

This design ensures a homogeneous distribution of climatic conditions around the test specimen.



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Instrumentation and control

PT100 temperature probes and HMT capacitive humidity sensors are designed to be installed as close as possible to the test specimen. This arrangement enables highly accurate control of environmental conditions directly at the sample location, improving the representativeness of test results.

The test ring also incorporates a feed-through port in its upper section, allowing the installation of independent temperature probes. This feature makes it possible to monitor temperature directly within the specimen and obtain a more precise analysis of its thermal behavior during testing.

System control

Operation in bi-climatic mode requires a wired connection between the two control PLCs. This communication architecture provides Master/Slave management, ensuring synchronization between both environmental test chambers and maintaining consistent test conditions throughout the test cycle.





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