



TESTING FOR
A BETTER PLANET

ACCESSORIES FOR CLIMATIC CHAMBERS



INDEX

Basic configuration	page 3
1. Mechanical accessories	page 5
2. Electrical accessories	page 7
3. Control accessories	page 8
4. Thermoregulation accessories	page 10
5. Test	page 11

ACCESSORIES FOR ACS CLIMATIC CHAMBERS CS

DiscoveryMy climatic and thermostatic chambers are equipped with a vast range of accessories included in the basic, extremely functional configuration:

MyKratos™ The integrated, ACS chamber control and supervisory software, which allows you to manage and supervise all the chamber functions, from manual control to the creation of test profiles, including data monitoring, recording, processing and analysis. The software can be accessed directly via the operator panel, from the PC via Internet browser, or from mobile devices using the free APP

MyAngel24™ The innovative remote-controlled assistance service, activated on request. This service enables the operator and Service Station to connect to the chamber via remote control, monitor test progress and carry out checks as though you were operating on site, thanks to the safe connection connecting the chamber to the Angelantoni server.

10 inch on-board display The new interface consists of a 10 inch, colour, touch screen panel, which allows you to have the same software on the machine with the same rapid, intuitive, graphic interface panel, available on your PC, tablet and Smartphone.

Heated inspection window A fully transparent double heating system (dimensions: 550h X 450 mm) makes it easy to inspect the test compartment and prevents condensation from forming on the glass.

Electromagnetic locking system This system guarantees the safety of environmental tests. It is managed by a login system and disconnects via a security password. The door must be opened only if the internal temperature is not dangerous for the operator. The electromagnetic locking system allows the door to be opened only during the interval, in which the temperature can be set by the control system.

Wheels and feet The chamber can be moved to its work position without any effort even on uneven floors, thanks to its adjustable feet and wheels.

Internal light The internal lighting makes it easy to carry out maintenance and clean inside the chamber.

Internal shelf The standard configuration for ACS test chambers is equipped with an internal grid shelf to support the specimens. Its installation is even easier thanks to the new supports.

Silicone port-holes The chamber is equipped with 80 mm (left-hand side) and 150 mm (right-hand side) port-holes, each with a silicone cap. The port-holes allow electrical, mechanical or hydraulic connections between the inside and the outside of the chamber.

Min/Max digital thermostat The operator can set the chamber temperature minimum and maximum alarm thresholds.

Auxiliary contacts Digital outlets which allow:

- Remote controlled alarms (the user can use other external devices to remotely control the chamber alarms)
- Equipment run (the user can switch on/off the test according to the chamber alarms).

Ethernet port The interface enables connection to a LAN network. This connection needs to be used if the operator decides to use the supervision and control software via a cable connection.

Serial interface RS232 It enables a standard RS232 cable to be used to connect the PLC to an external controller.

Water softener This component allows you to fill the climatic equipment with water directly from the mains network, provided the water specifications are within a precise range. Otherwise you can bypass the water softener and connect the chamber to a network using demineralised water.

Water tank In addition to connecting the chamber to the mains water supply via the softener, ACS chambers are equipped with a tank for the dehumidification system which is easily accessed via the bottom door of the chamber to facilitate filling with demineralised water.

Eco-friendly gas The eco-friendly charge of the new refrigerating gas R449A, used in the high stage of the cascade refrigeration system, has a low GWP (global warming potential <2500) and therefore enables compliance with the limit of refrigerant gas emissions imposed by the new European Regulation 517/2014.

Smart Cooling Kit A new compressor stand-by concept features an innovative configuration capable of improving the performance of the refrigeration circuit. The new system ensures more efficient pressures up and downstream of the compressor to control refrigeration power better and reduce mechanical stress. These considerable benefits make the system more reliable and reduce energy consumption and noise emissions.

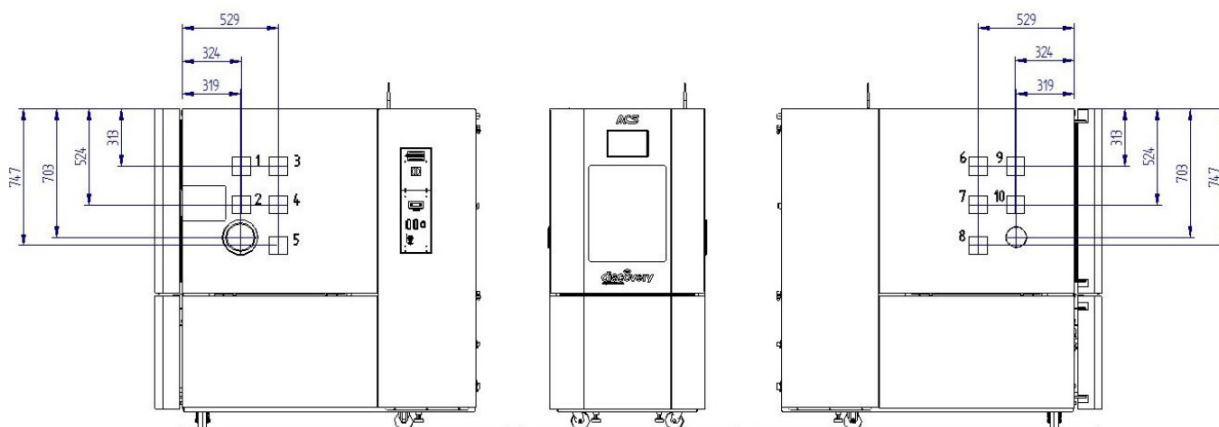
A complete list of options and possible customisations is available to fulfil the majority of demands by the environmental test market. To make the document easier to read we have tried to classify the accessories into: mechanical, electrical, control, thermo-regulation and accessories for standard tests.

1. Mechanical accessories

Additional portholes

The port-holes allow electrical, mechanical or hydraulic connections (depending on the type of connection required by the specimen) between the inside and the outside of the chamber. The port-holes are equipped with a silicone plug, a material which acts as a thermal insulator and enables any dispersion to the exterior to be reduced to the minimum to guarantee the chamber performs at its best.

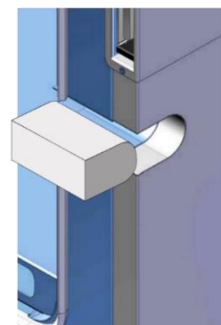
The additional port-holes can have an 80 or 150 mm diameter and their position and number can be selected using a specific matrix, as shown in the example below.



Esempio scheda di posizionamento passanti supplementari

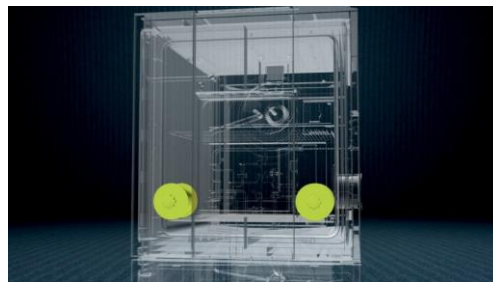
Die-cut port-hole

As an alternative to the additional port-hole on the wall, the chamber can be equipped with a die-cut port-hole on the door jamb (on the door gasket) to allow cables or measuring instruments to be passed between the inside and outside of the chamber. This type of port-hole allows the operator to remove a device during a test without necessarily having to disconnect its supply cable. Standard dimensions: 50x70 mm (HxW).



Handling port-holes

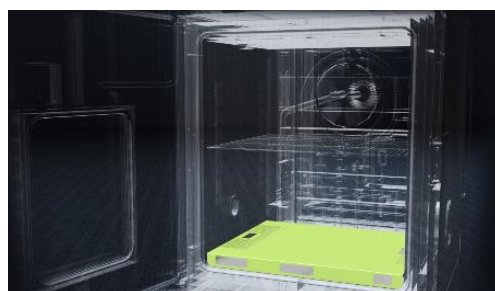
Handling port-holes can be made in the bottom of the chamber to allow the operator to safely handle the test specimens during the test. A maximum of two handling port-holes measuring 125 mm in diameter can be added.

**Internal shelves**

In addition to the shelf supplied in the standard configuration, additional shelves to hold test specimens are available. The shelves are made entirely of stainless steel (material 1,4301, equivalent to AISI 304) grid, which can be adjusted in height for a maximum, evenly distributed load of approximately 50 kg.

**Reinforced floor**

A reinforced floor is supplied if you need to test particularly heavy samples. This accessory can support a weight of up to 500 kg equally distributed and guarantees excellent air circulation within the chamber.

**Right-hand hinged door**

The direction in which the door opens can be inverted under certain circumstances to optimise the space in particularly tight areas.

Water condenser

The majority of Discovery My chambers have air condensing units. They can also be equipped with a water condenser. This accessory is particularly useful if you want a reduced thermal load inside the laboratory where the chamber stands.

Remote air condenser

As an alternative to the water condenser, we can also install a separate remote-controlled air condenser. This accessory is particularly useful if you want a reduced thermal load inside the laboratory where the chamber stands.

Ventilation control

The chamber can be equipped with a ventilation motor to regulate speed, which allows you to use the chamber control panel to reduce the ventilation speed inside the chamber.

Airflow booster

Unlike the ventilation control accessory, the airflow booster can increase and regulate ventilation speed inside the chamber using the chamber control panel.

2. Electrical accessories

UPS for PLC

The DC-UPS 24VDC module, equipped with a battery for the uninterrupted power supply unit, prevents the devices from switching off in the event of a blackout or power trip for a certain period of time. The devices prepared for connection under UPS are the PLC and the control panel.

Pre-set UPS supply line

Angelantoni Test Technologies pre-sets a preferential line for UPS, for which the end user is responsible. It allows the customer to select the most suitable UPS unit for its requirements.

3. Control accessories

Specimen switching off in case of chamber alarm

This accessory blocks the power supply for the test specimen as soon as an alarm is triggered in the chamber.

Set of 4 analog inputs/outputs

The analog signals (0-10 V or 4-20 mA) of any sensor can be purchased, viewed and/or recorded by the user and connected via the special connector on the machine.

Set of 8 auxiliary contacts

Angelantoni supplies a set of 8 clean, auxiliary contacts (digital outputs) connected via the special connector on the machine.

Set of 4 inputs for PT100 probes

The PT100 probes enable the test specimen temperature to be measured precisely. The chamber can be equipped with a set of 4, 3-wire, PT100 probes, connected via the special connector on the machine. They can be placed according to the customer's needs inside the test compartment.

Set of 4 PT100 probes

The PT100 probes enable the test specimen temperature to be measured precisely. The chamber can be equipped with a set of 4, 3-wire, PT100 probes, connected via the special connector on the machine. They can be placed according to the customer's needs inside the test compartment.

Capacitive probe to control and monitor R.H.

According to the customer's test requirements, the capacitive probe monitors humidity differently from the psychrometric system. It is enabled by the control system and it excludes the psychrometric system (and vice versa). The psychrometric system is better for tests lasting a long time with a high temperature and high humidity.

Cascade control of the temperature with PT100 probe

PPT100 probe no. 1 can be placed next to the test specimen inside the test compartment to control thermo-regulation and also to take into account the test specimen's thermal inertia (cascade regulation).

Analog re-transmission of the temperature (plus R.H. for climatic chambers)

This accessory transmits the analog temperature readings to an external device. Analog humidity readings for climatic tests can also be retransmitted.

MyKratos™ Software to manage multiple chambers via PC

The MyKratos™ software installed in the PC enables numerous chambers to be controlled and monitored:

- A variable number of chambers can be managed depending on the resources available in the computer used
- All the chambers can be managed simultaneously and, if necessary, display the chamber of interest on full screen
- The order of the chamber in the display grid can be changed
- Any compatible web app can be displayed in the grid (e.g. software for video-cameras or other similar tools)
- The software can be used on all the main operative systems
- The software can warn the operator of an alarm and indicate in which chamber it was triggered
- It displays the state of connectivity and run/stop of the chambers



Temperature and R.H. calibration certificate

The calibration certificate is a document, which certifies the use of calibrated instruments with the accredited metrological chain (probe) of the calibration laboratory. Angelantoni provides the calibration certificate for temperature and humidity on request.

4. Thermoregulation accessories

Extension of the temperature to +200°C

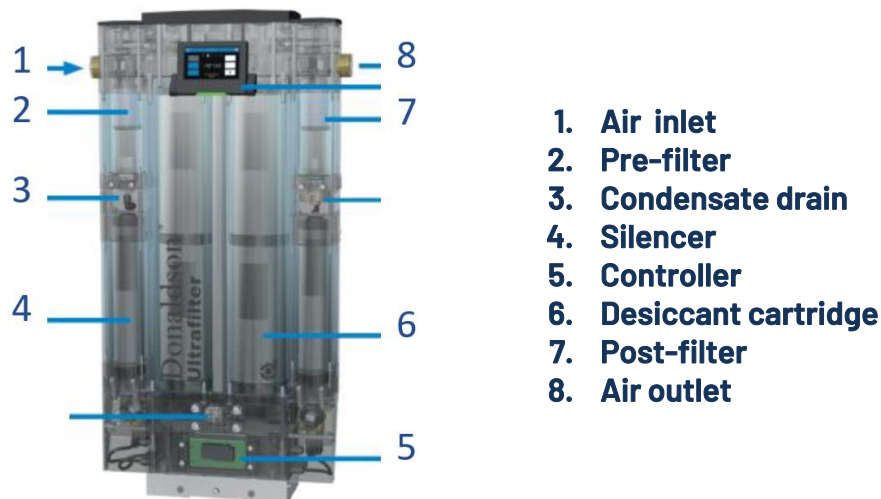
This accessory can extend the maximum temperature of the chamber up to +200°C.

Compressed air dehumidification kit

The kit enables tests to be carried out that reach negative dew point values (down to - 40° C) by introducing desiccated air into the test compartment.

The purification system consists of a pre-filter with an automatic condensate trap, an absorption drier and a post-filter.

The pre-filter withholds the solid particles and condensate (mixture of oil/steam), the drier absorbs the humidity in the compressed air, whereas the post-filter withholds the particles left by the desiccant agent.



Control of the Dew Point value down to -20°C

This accessory can be added to the compressed air dehumidification kit and capacitive probe. This accessory can be used to control the dew point down to - 20°C, by setting any temperature and humidity value up to the dew point value declared.

Auxiliary cooling with LN2

The introduction of liquid nitrogen into the test compartment improves gradient performance during the descent. The nitrogen compensation line has a diameter of 120 mm and its input connection is placed vertically above the ceiling of the chamber. The injection of liquid nitrogen is controlled by 2 automatic valves, connected in series for redundancy purposes: one valve is controlled with an on/off command, whereas the second opens at the same time as the first and closes with a 30-second delay.

The end user is responsible for the drain-off line.

5. Test

Ultraviolet ray lamp for UV Test

The UV ray lamp enables early ageing tests to be carried out on painted surfaces, plastic, rubber and other types of materials.

Together with the UV ray lamp, a pad is provided outside the chamber to protect the operator from the ultraviolet rays. The pad can easily be removed to inspect inside the chamber even with a standard configuration.



Fig. 1

Dewing Test Kit (standard BMW GS 95011-4)

The dewing test kit aims to investigate the behaviour of the test specimen when it is subjected to dew, in order to identify possible malfunctions or faults generated by possible product defects. The dewing test kit developed by Angelantoni can easily be removed in order to use the chamber in its standard configuration.

The kit includes the following main components:

- Water tank (stainless steel) with heater for thermal control
- Plexiglass cover
- Water supply pump

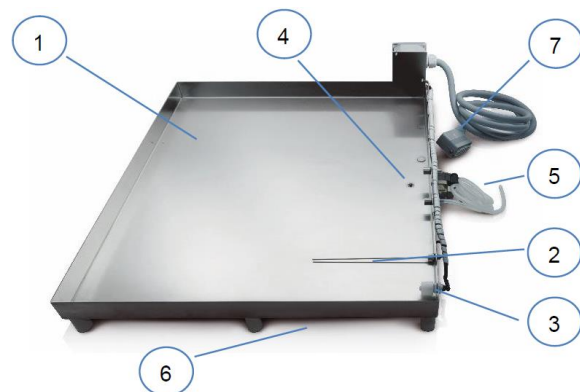
ACS has a unique design on the market to carry out the BMW GS 95011-4 test.

Plexiglass cover: The special shape of the plexiglass cover ensures a strong concentration of condensate around the test specimen and prevents drops of water falling on it.

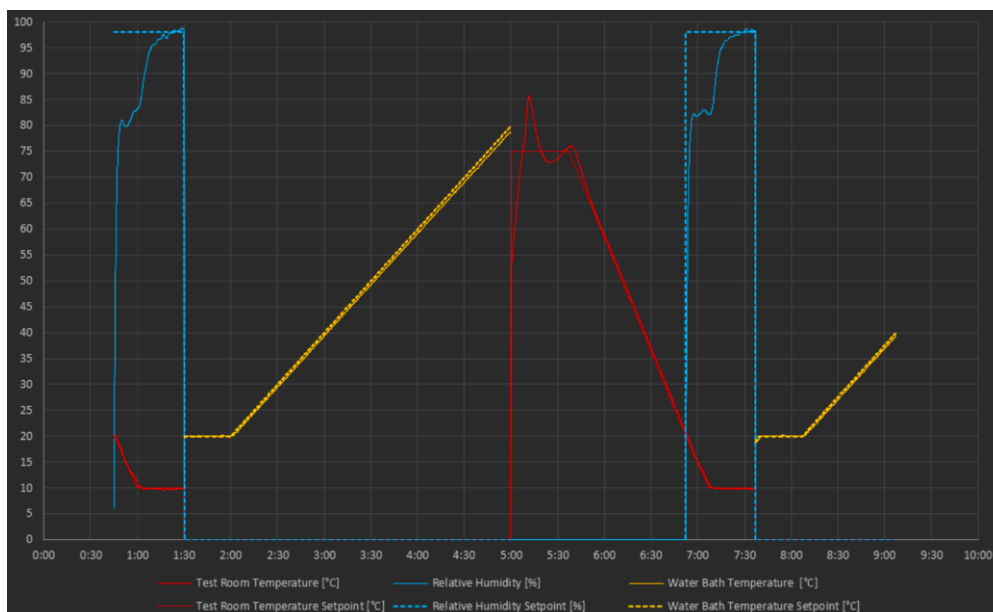


Water tank: The thermo-regulated water tank is the same size as the plexiglass cover and allows water evaporation over the entire surface and perfectly under the test specimen (as required by the standard BMW GS 95011-4).

1. AISI 304 tray
2. PT100 probe
3. Level sensor
4. Trap
5. Water inlet
6. Resistors
7. Quick connection



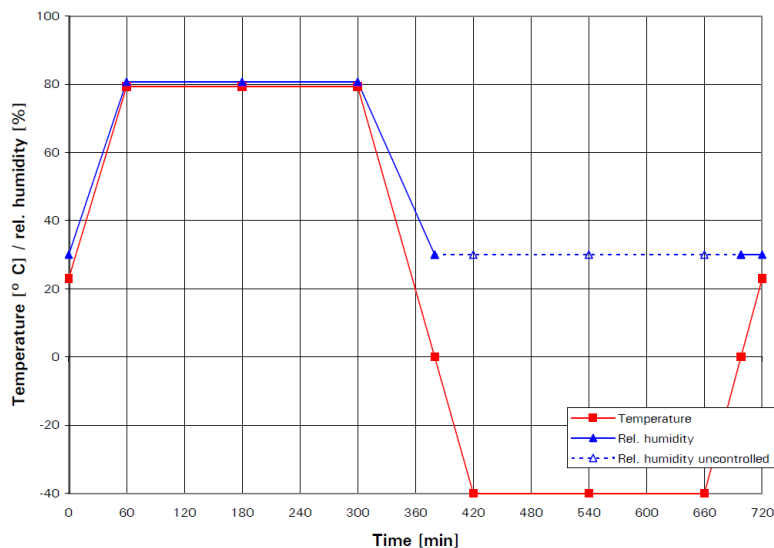
The maximum temperature permitted inside the chamber with dewing test is +75°C.



Example of the test with a model of Discovery My climatic chamber.

PV1200 Test (Climatic chambers)

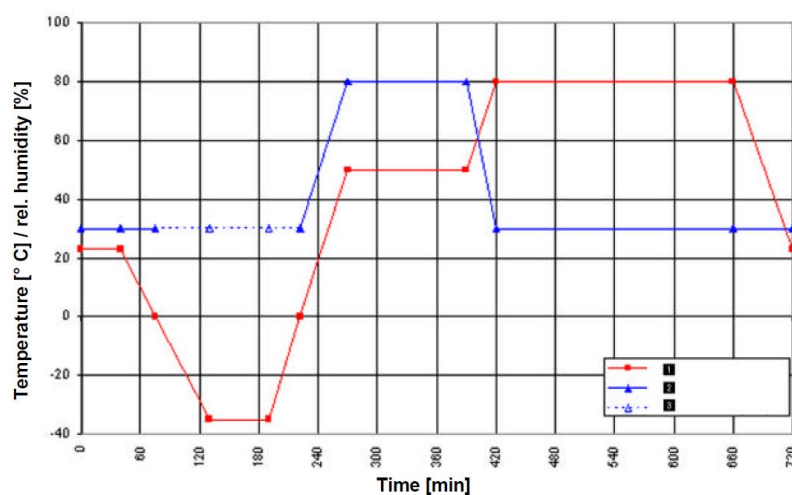
The PV1200 test consists of a climatic test applicable to all those components, such as parts of vehicles inside the engine compartment, which need to be controlled and assessed when under stress during temperature and humidity cycles. The test aims to identify the weak points of the components using short-term tests.



Graph showing PV1200 test with a model of an ACS climatic chamber

PV2005 Test variation A (Climatic chambers)

The test specification for variation A of the PV2005 test is usually used in tests to monitor samples (individual vehicle parts), when an assessment is required of how the test specimens react under conditions of environmental stress. When under stress during the environmental cycle, the components could be subjected to deformation, the formation of cracks, etc.



Graph showing PV2005 test variation A with a model of an ACS climatic chamber



Angelantoni Test Technologies

Loc. Cimacolle, 4 - 05050 Massa Martana (Pg) - Italy Tel.
+39 075.89551(a.r.) - Fax +39 075 8955200
info@acstestchambers.it

www.acstestchambers.com

Part of Angelantoni Industrie

Angelantoni