TESTING

PSYCHROMETRIC TEST ROOMS

ENVIRONMENTAL CHAMBERS FOR DEVELOPMENT AND TESTING OF AIR CONDITIONERS, GAS BOILERS AND HEAT PUMPS

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ARALAB is a company specialised 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 enjoy the best equipment for their research and testing purposes.

Control the environment. Your own climate.

PSYCHROMETRIC TEST ROOMS

Designed for the development and performance evaluation of air conditioners and heat pumps. Air conditioners may be in the form of through the wall units, floor standing evaporator split systems and Package Units.

The rooms will be side by side simulating "Indoor" and "Outdoor" conditions with temperature, humidity and air flow independently controlled.

Each chamber can include Code Testers (Air Enthalpy Measuring devices) to enable precise measurement of capacity and efficiency of air conditioners and heat pumps in accordance with the air enthalpy method.

RELATED TESTING STANDARDS

DIN EN 14511	ISO 13253	ASHRAE 41.1
DIN EN 14825	ISO 5151	ASHRAE 41.2
DIN EN 16147	JIS B 8615-1	ASHRAE 41.3
		ASHRAE 41.6

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TECHNICAL SPECIFICATIONS AND PERFORMANCES

ARALAB CAN CUSTOMIZE SIZES AND PERFORMANCES OF THE TEST CHAMBERS

● ● ● ● **INDOOR ROOM**

TEMPERATURE		+5°C to +45°C
RH RANGE		20% to 90% RH
TEMPERATURE PRECISION		± 0,5°C
TEMPERATURE UNIFORMITY		± 2,0°c
HUMIDITY PRECISION		± 2 % RH
HUMIDITY UNIFORMITY		± 2 % RH

● ● ● ● **OUTDOOR ROOM**

TEMPERATURE		-30°C to +60°C
RH RANGE		20% to 90% RH
TEMPERATURE PRECISION		± 0,5°C
TEMPERATURE UNIFORMITY		± 2,0°c
HUMIDITY PRECISION		± 2 % RH
HUMIDITY UNIFORMITY		± 2 % RH

DIMENSIONS AND DRAWINGS

● ● ● ● **FITOCLIMA 44.000 EC30**

ARALAB CAN CUSTOMIZE SIZES AND PERFORMANCES OF THE TEST CHAMBERS

Interior Dimension (H x W x D)		2.800 x 3.500 x 4.010 mm
Exterior Dimension (H x W x D)		3.010 x 7.920 x 4.210 mm
Double Access Doors (H x W)		1450 x 2.340 mm
Observation Window (on doors)(H x W)		500 x 400 mm
Interior Light		2 x LED or Halogen spot lights

**PROJECT EXAMPLE
FITOCLIMA 44.000**

Pressure equalizer

Emergency button for door release

7920

4210

2935

3810

Standard lighting

Standard lighting

Fire detection

255

Fire detection

2810

Ø80

Emergency lighting

785

CO2 and R290 sensors

Emergency button for door release
SECTION B-B

400

CO2 and R290 sensors

Outdoor condensing units

1/2" demineralized water supply
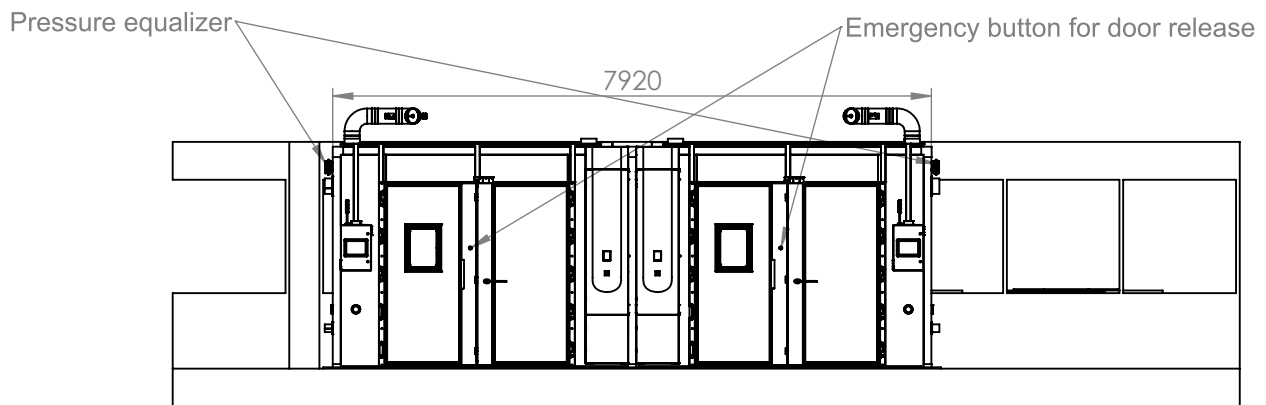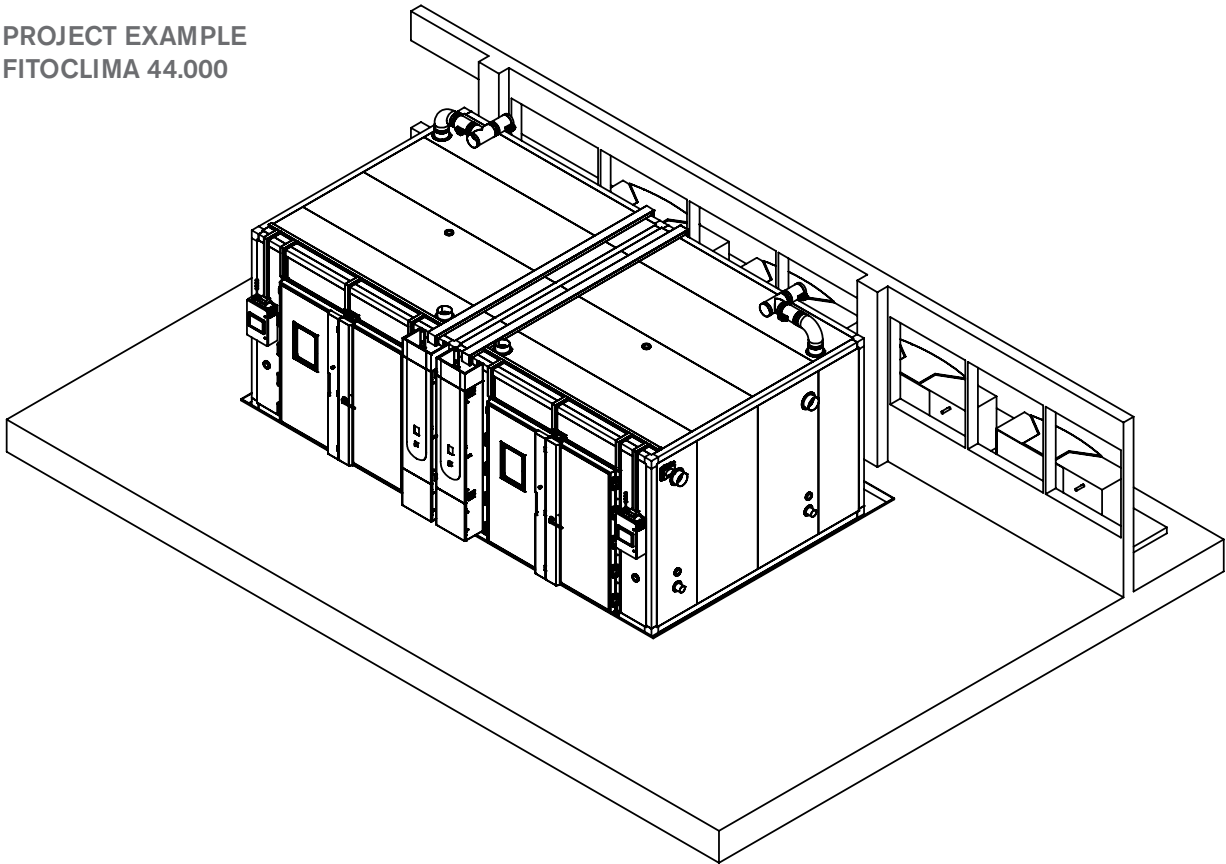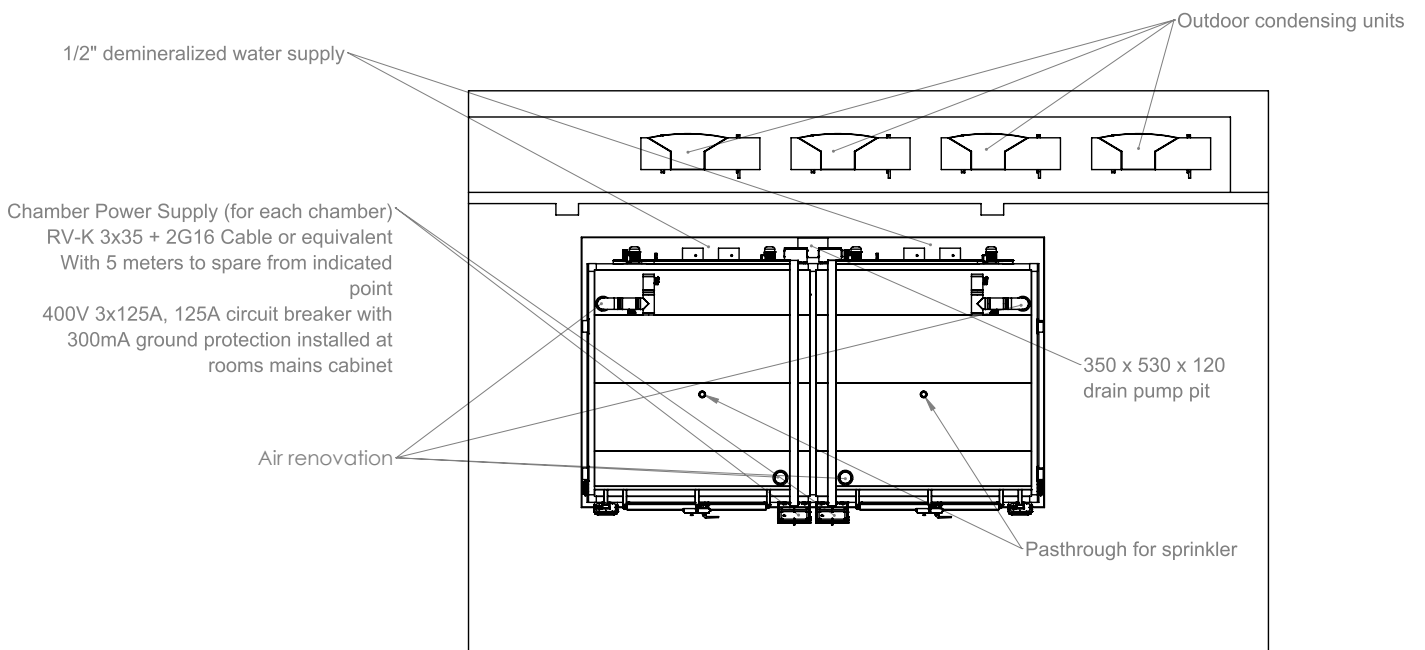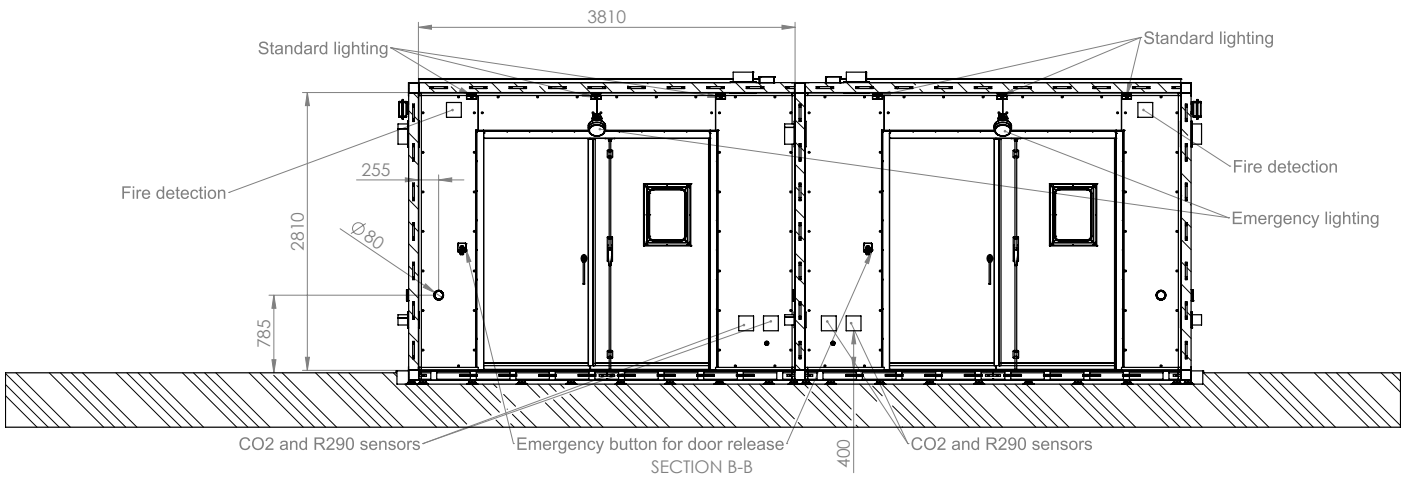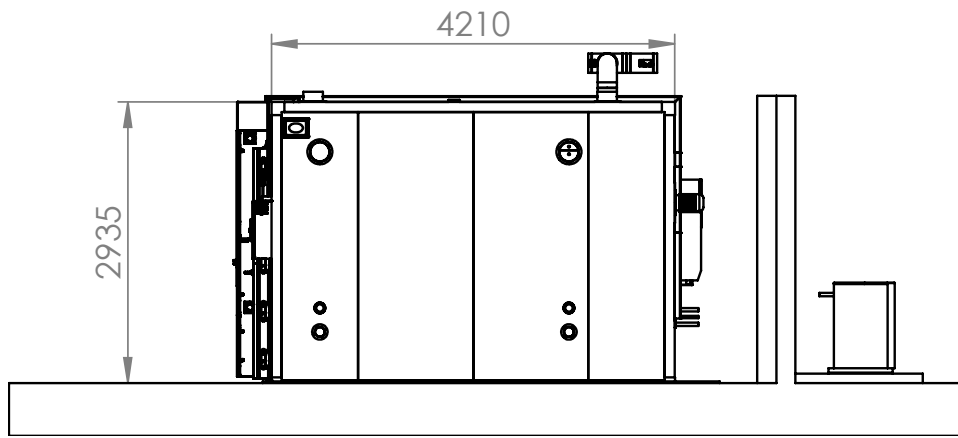
Chamber Power Supply (for each chamber)
RV-K 3x35 + 2G16 Cable or equivalent
With 5 meters to spare from indicated
point
400V 3x125A, 125A circuit breaker with
300mA ground protection installed at
rooms mains cabinet

350 x 530 x 120
drain pump pit

Air renovation

Pasthrough for sprinkler

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EQUIPMENT DESCRIPTION

CONSTRUCTION

- Sandwich panels EN 14509 Class M1 with injected polyurethane insulation 100mm thick, CFC free
- Interior: AISI 304 stainless steel walls and ceiling
- Floor in AISI 304 stainless steel reinforced to 1000 kg / m2 with drainage point
- Exterior: Steel zinc-plated lacquered finish RAL 7035
- Interior security opening
- Access ramps
- Removable inner partition wall
- Pass-through holes and dimensions according to client specifications

HEATING AND COOLING SYSTEMS

- **Heating** provided by electrical heating elements. The variable heater will be powered through a SCR Power Controller. Available heating power – 30kW.
- **Cooling** by direct expansion. Cooling capacity control will be provided by a true 0-100% modulation. Available cooling power – 30kW. Heat compensation of 30kW (at 20ºC)

HUMIDITY SYSTEM

- Humidification with steam generator(s)
- Drying by direct expansion effect

ACCESSORIES
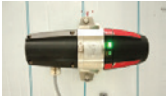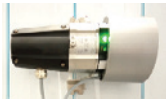
SAFETY SYSTEMS (ATEX)

Air renewal system
Activated by the PLC ATEX system.

ATEX Gas detection system
Refrigerant gas detector - R290/R449A/R410A/R134a
CO sensor gas detector
CO2 sensor gas detector
Flame detection
Fire Detection / extinction

HEAT PUMPS PRECISION THERMAL STABILIZATION WATER CIRCUIT

Water circuit with automatic control to perform the tests according the heat pumps standards.

CONTROL AND DATA ACQUISITION

Hardware and software for automatic control and acquisition of several raw data to perform tests according the air conditioners and heat pumps standards.

With this system we supply all sensors and measurement equipment necessary to comply the air conditioners and heat pumps standards.

TRAINING & SUPPORT

Aralab offers training services to customers new to the hardware, software and testing procedures.

AIR ENTHALPY MEASURING DEVICE

The Code Tester Air Enthalpy Device will measure outlet air enthalpy values and determine air flow values and thermal capacities. The tunnels test **'Room Air Conditioners Indoor'** and **'Outdoor Side Cooling or Heating Capacity'** in a draw-through mode and "fan/blowers" air flow capabilities.

The device provides the sensors needed to automatically obtain the air side enthalpy measurements which are critical to the accuracy of the capacity measurement.
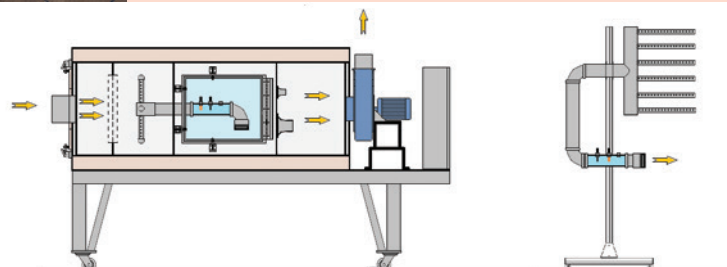
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CLIMAPLUS HMI CONTROLLER

Programmable PLC exclusively developed for ARALAB chambers

Easy to use coloured Touch-Screen Display Interface

Resolution of 0,1°C for Temperature and 0,1% for Relative Humidity

High performance temperature and humidity control with value correction in all ranges

Capability for creating 50 programs of 50 segments each

Internal non volatile memory for storing test data

Automatic restart of tests due to power failure, without losing data and restarting test where it was interrupted

Real-time monitoring of all functions and control of equipment.

Manage control settings via MODBUS/TCP

Possibility of programming a delay of the beginning of test

Monitoring and recording of all alarms

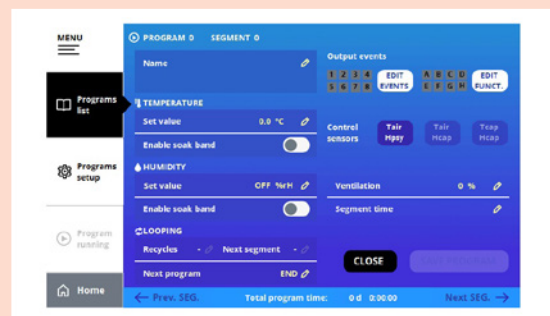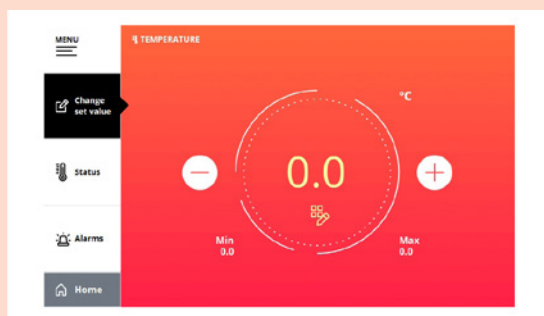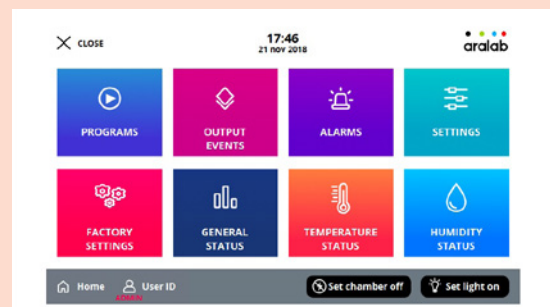Possibility of performing events by external commands

Several outputs for connecting computers or other devices

Alarms management

Graphic representation of the tests and conditions

Remote access through VNC server

Possibility of running computer test programs and export them to the controller

FITOLOG SOFTWARE

The FitoLog software pack is a set of applications designed to facilitate the managing, monitoring and recording of programs and data from the TESTA chambers. It consists of 3 applications: **FitoLog**, **FitoLogView** and **FitoProgram**.

FITOLOG

Records and displays in real time all data and details related to the set-points, running variables and equipment behaviour. It also retrieves information about the active components of the chamber, running processes, errors, alarms and allows the configuration of periodic or alarm triggered remote notifications (by email or SMS, depending on existing connections and accessories).

FITOLOGVIEW

It is a working tool to process the data recorded by the FitoLog program. One can view, print and export the log contents to other file types, and analyse the data in other data management software (Excel, Star Office, Access or others).

FITOPROGRAM

This application simplifies the creation of programs and its integration on the chamber ClimaPlus controller. Up to 32 programs, each with 24 segments, can be designed and linked to create detailed environmental profiles and simulations.

NOTIFICATIONS, FAST DIAGNOSTICS AND PROMPT TROUBLESHOOTING

With FitoLog it is possible to gather data from each of the chambers systems, which makes it a very useful tool to diagnose any necessary maintenance. This tool works as the "black box" of the equipment, giving Aralab technicians the necessary data to remotely carry out a fast and efficient diagnostic. All that is needed is a FitoLog file.

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