



# TESTING

## FITOTERM

## FITOCLIMA

TEMPERATURE / HUMIDITY CONTROL 'REACH-IN' ENVIRONMENTAL  
CHAMBERS FOR CLIMATE AND TEMPERATURE TESTING





**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 climat.**



**FitoTerm & FitoClima**  
**temperature and humidity testing**  
**chambers offer highly precise and**  
**reproducible conditions for**  
**climatic and temperature testing**  
**in many industries.**

#### COMMON APPLICATIONS INCLUDE:

- ENVIRONMENTAL TESTING
- ELECTRONICS, AUTOMOTIVE, AEROSPACE,
- BUILDING MATERIALS, MILITARY
- EQUIPMENT, MATERIALS IN GENERAL
- RESEARCH
- QUALITY CONTROL
- PRODUCTION FACILITIES

#### KEY FEATURES

- The most advanced technology in climate control
- Internal aerodynamic optimization to ensure uniformity of climatic conditions
- Time saving features with easily configurable testing programs that can run, start and stop automatically
- Highly resistant stainless steel interior for maximum durability and easy cleaning
- Flexible interior with height adjustable and removable stainless steel shelves
- Nonpolluting construction and cooling system
- Compliant with international standards and requirements EN, IEC, DIN, ISO, NP and UNE



Certified ISO:9001 for its Quality Management System



'REACH-IN' ENVIRONMENTAL CHAMBERS FOR CLIMATE AND TEMPERATURE TESTING

## TEMPERATURE AND HUMIDITY CONTROL RANGES

### ● ● ● ● FITOTERM CHAMBERS – TEMPERATURE ONLY

FITOTERM CHAMBERS	TEMPERATURE RANGE	HUMIDITY RANGE
FitoTerm E20	-20°C to +180°C	N/A
FitoTerm E45	FitoTerm E45	N/A
FitoTerm E75	FitoTerm E75	N/A

### ● ● ● ● FITOCLIMA CHAMBERS – TEMPERATURE AND HUMIDITY

FITOTERM CHAMBERS	TEMPERATURE RANGE	HUMIDITY RANGE
FitoClima EP, EC & ECP 20	-20°C to +180°C	10 to 98% RH
FitoClima EP, EC & ECP 45	-45°C to +180°C	10 to 98% RH
FitoClima EP, EC & ECP 75	-75°C to +180°C	10 to 98% RH

## TEMPERATURE AND HUMIDITY CONTROL RANGES

### ● ● ● ● FITOCLIMA AND FITOTERM TESTING CHAMBERS

#### Performance in CLIMATIC testing range | only FITOCLIMA chambers

TEMPERATURE RANGE		10°C to 90°C
TEMPERATURE UNIFORMITY		± 0,1°C to ± 1,0°C <sup>(1b)</sup>
TEMPERATURE FLUCTUATION <sup>(1a)</sup>		± 0,1°C to ± 0,3°C <sup>(1b)</sup>
HUMIDITY RANGE		10% RH to 98% RH
HUMIDITY FLUCTUATION <sup>(1a)</sup>		± 0,5% RH to ± 3% RH

#### Performance in TEMPERATURE testing | FITOTERM and FITOCLIMA chambers

TEMPERATURE RANGE		-75°C, -45°C or -20°C up to 180 °C
TEMPERATURE UNIFORMITY <sup>(1a)</sup>		± 0,5°C to ± 1,5°C
TEMPERATURE FLUCTUATION <sup>(1a)</sup>		± 0,1°C to ± 0,5°C
TEMPERATURE RATE OF CHANGE HEATING <sup>(2a) (2b)</sup>		From 2,5°C to 4,5°C / minute. 10°C / minute in "10K" models
TEMPERATURE RATE OF CHANGE COOLING <sup>(2a) (2b)</sup>		From 2,5°C to 4,5°C / minute. 10°C / minute in "10K" models

#### Other technical data

NOISE LEVEL		55 to 64 dBA
ELECTRICAL CONNECTION		3/N/PE AC 400V ± 10% 50Hz

Performances measured in factory with ambient temperatures between 20°C and 25°C

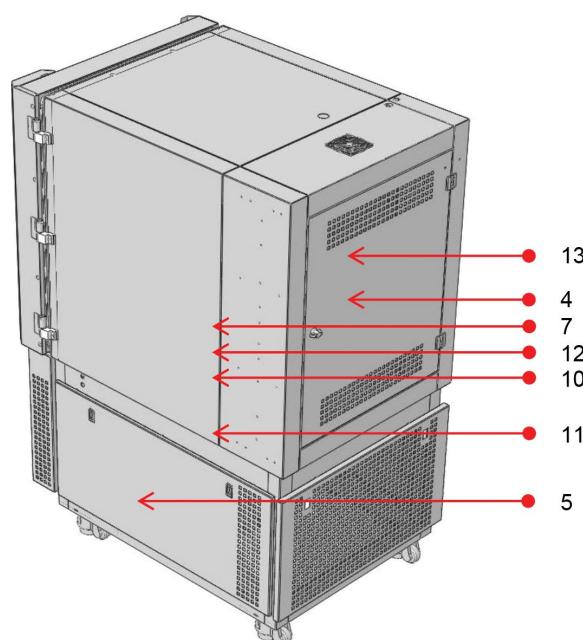
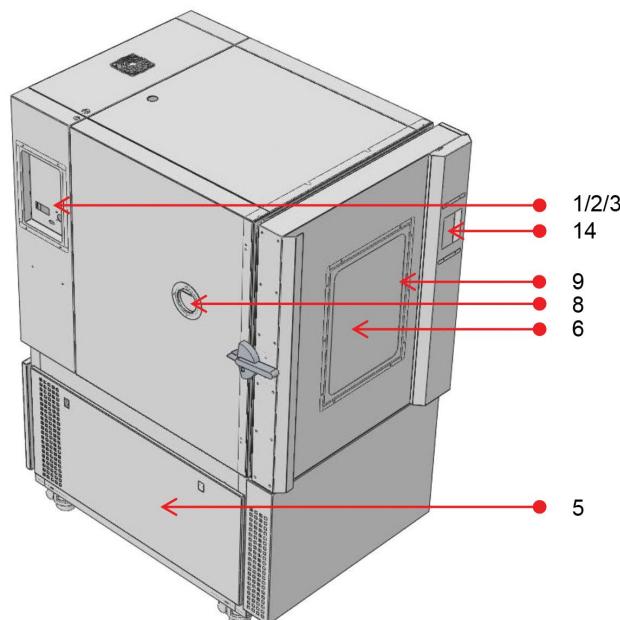
(1a) Measurements at center of test space, with empty chamber and no optional accessories; (1b) in temperature range up to 150°C;

(2a) According to IEC/EN 60068-3-5. Values will vary with FitoClima/FitoTerm model, internal volume, compressor type and condenser cooling system. Temperature rate of change can be adjusted to comply with the needed heating / cooling speed requirements. Optional accessories are available for more demanding heating and cooling temperature change rates.

(2b) The FitoClima 300 -20°C model is a monophasic chamber with a standard temperature rate of change of 1,9°C/minute for heating and 1,8°C/minute for cooling.

## DIMENSIONS AND DRAWINGS

### ● ● ● ● SYSTEM STRUCTURE



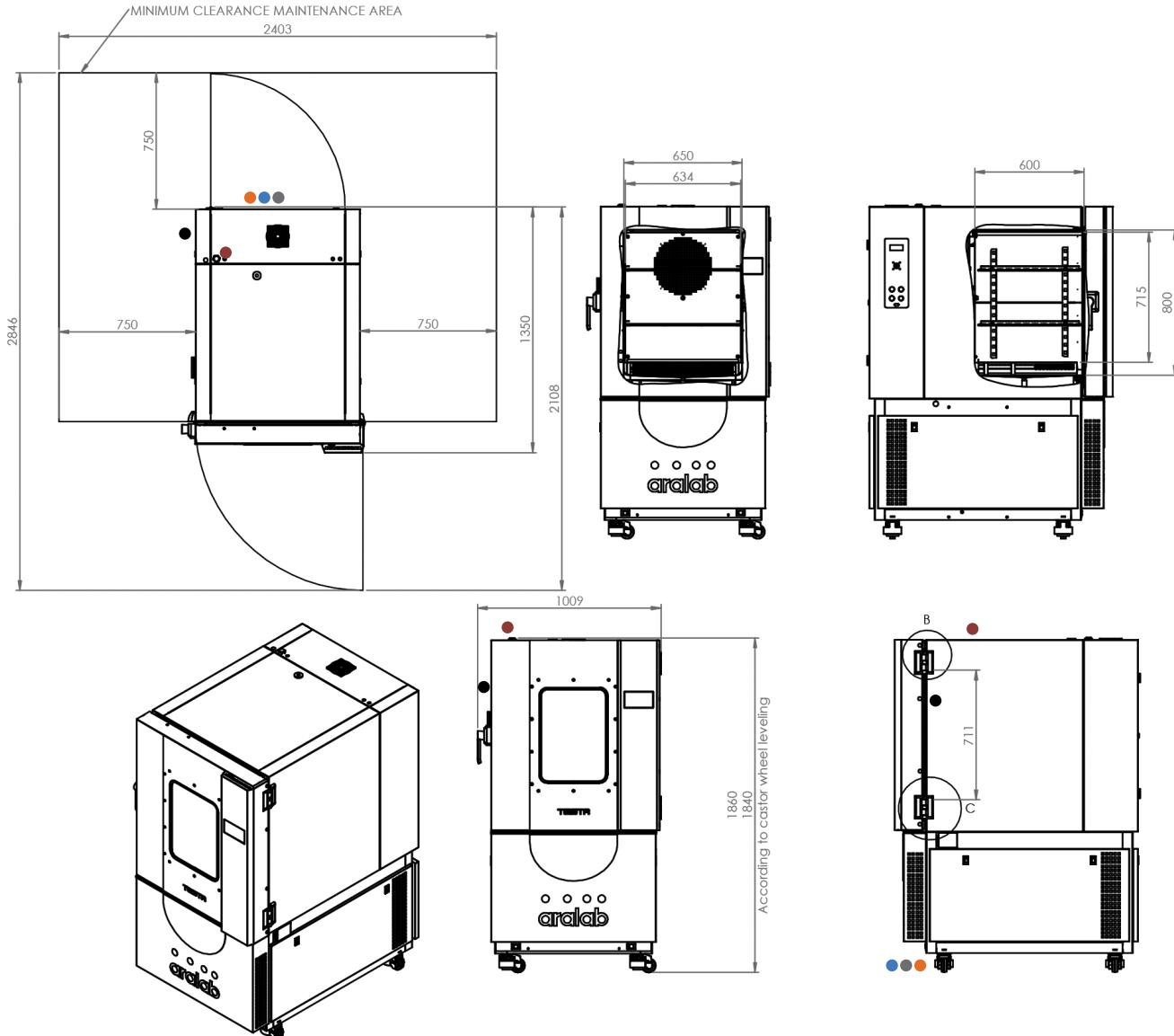
1. Main switch
2. DB9 connector
3. Safety thermostat
4. Powerhouse
5. Machinery compartment
6. Test chamber
7. Sensors

8. Entry points
9. Interior Light
10. Evaporator
11. Dew point bath
12. Heater
13. Ventilation
14. Controller

## DIMENSIONS AND DRAWINGS

### • • • • FITOTERM / FITOCLIMA 300

EXTERNAL DIMENSIONS (HxWxD) (mm)	<input type="checkbox"/>	1.840 x 1.009 x 1.350
INTERNAL DIMENSIONS (HxWxD) (mm)	<input checked="" type="checkbox"/>	715 x 634 x 600



<p>1. Standard refrigeration system is air cooled</p> <p>2. Services hub installation needs:</p> <ul style="list-style-type: none"> <li>● 1/2" demineralized water supply</li> <li>● 50mm water drain at floor level</li> </ul> <p>3. Electrical cabinet installation needs:</p> <p><b>Supply power ECP20:</b></p> <p>400VAC, 50Hz, 16A / 3-Phase + Neutral + Ground</p> <p>Electrical protection: Circuit breaker 3 x 16A + N with 300mA differential</p> <p>Single Phase electrical cable RV-K 5G2,5 on the top</p> <p><b>Supply power ECP45:</b></p> <p>400VAC, 50Hz, 16A / 3-Phase + Neutral + Ground</p> <p>Electrical protection: Circuit breaker 3 x 16A + N with 300mA differential</p> <p>3-Phase electrical cable RV-K 5G4 on the top</p>
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<p><b>Supply power ECP75:</b></p> <p>400VAC, 50Hz, 50A / 3-Phase + Neutral + Ground</p> <p>Electrical protection: Circuit breaker 3 x 63A + N with 300mA differential</p> <p>3-Phase electrical cable RV-K 5G10 on the top</p> <p><b>● RS232 (or RJ45) communications port</b></p> <p><b>● Water cooled option:</b></p> <p>Water flow: up to 2000 litres/hour (at 25 °C)</p> <p>Intake pressure: 2 to 5 bar</p> <p>Water entry and exit pipe: 1" or 28mm</p> <p>Differential pressure between entry and exit: ≥ 2,5 bars</p> <p>Maximum temperature of water entry: 26 °C</p> <p>Minimum temperature of water entry: 16 °C</p> <p>Recommended temperature of water entry: 18 °C</p>
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## DIMENSIONS AND DRAWINGS

### • • • • FITOTERM / FITOCLIMA 500

EXTERNAL DIMENSIONS (HxWxD) (mm)

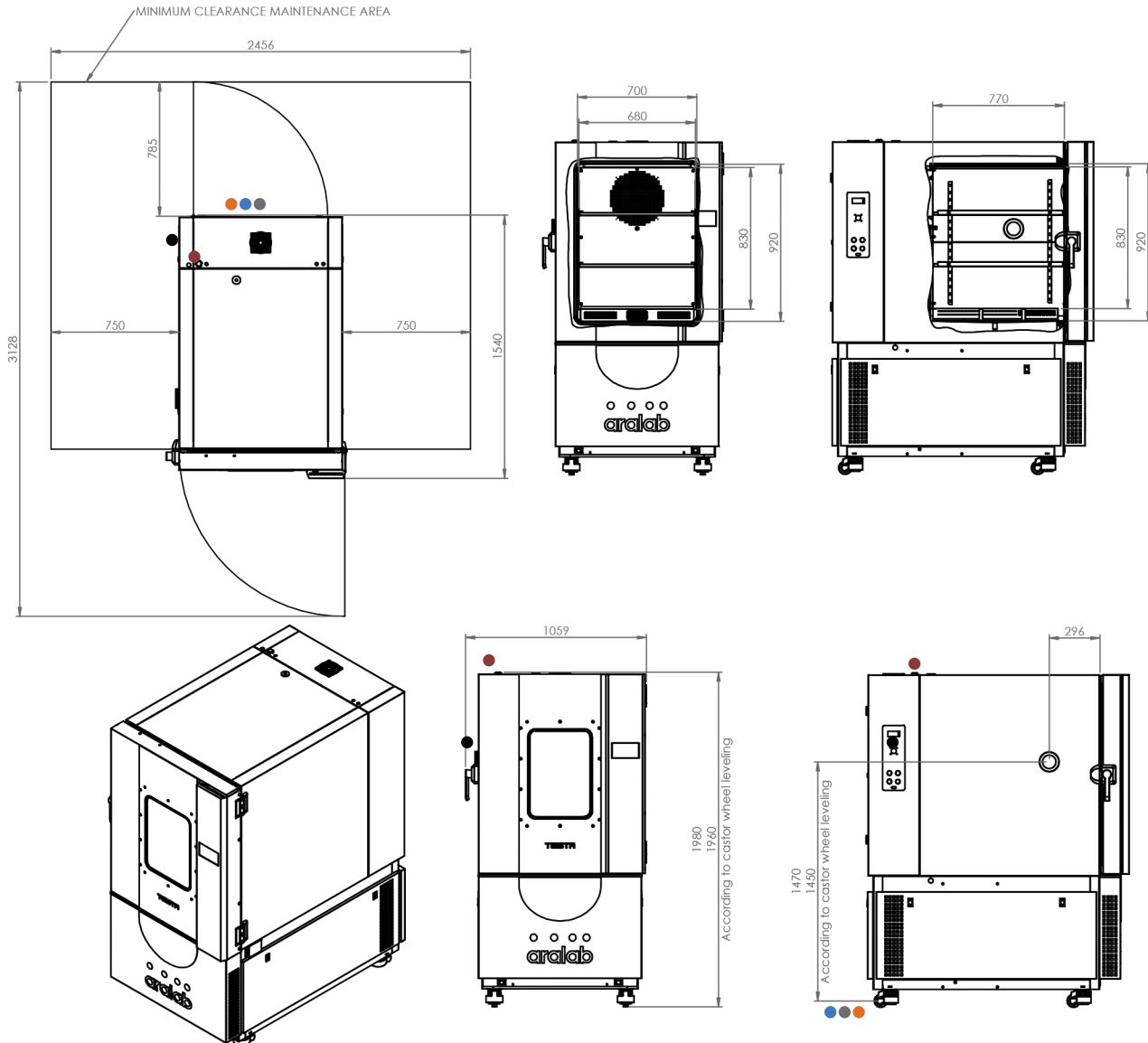


1.960 x 1.059 x 1.540

INTERNAL DIMENSIONS (HxWxD) (mm)



830 x 680 x 770



1. Standard refrigeration system is air cooled
2. Services hub installation needs:

- 1/2" demineralized water supply
- 50mm water drain at floor level

3. Electrical cabinet installation needs:

**Supply power ECP20:**

400VAC, 50Hz, 16A / 3-Phase + Neutral + Ground  
Electrical protection: Circuit breaker 3 x 16A + N with 300mA differential  
Single Phase electrical cable RV-K 5G2,5 on the top

**Supply power ECP45:**

400VAC, 50Hz, 16A / 3-Phase + Neutral + Ground  
Electrical protection: Circuit breaker 3 x 16A + N with 300mA differential  
3-Phase electrical cable RV-K 5G4 on the top

**Supply power ECP75:**

400VAC, 50Hz, 50A / 3-Phase + Neutral + Ground  
Electrical protection: Circuit breaker 3 x 63A + N with 300mA differential

**3-Phase electrical cable RV-K 5G10 on the top**

- **RS232 (or RJ45) communications port**

- **Water cooled option:**

Water flow: up to 2000 litres/hour (at 25 °C)  
Intake pressure: 2 to 5 bar  
Water entry and exit pipe: 1" or 28mm  
Differential pressure between entry and exit: ≥ 2,5 bars  
Maximum temperature of water entry: 26 °C  
Minimum temperature of water entry: 16 °C  
Recommended temperature of water entry: 18 °C

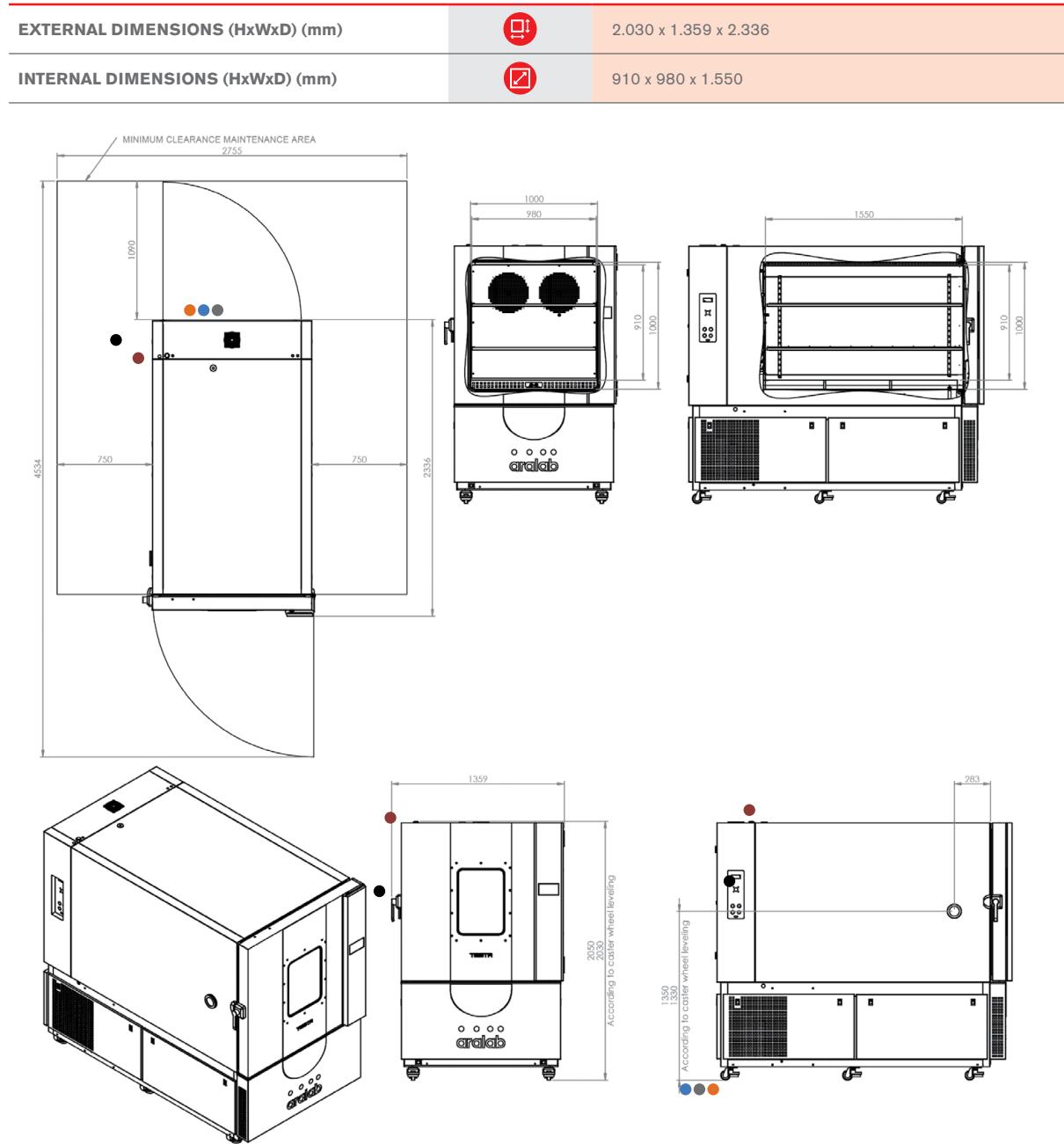
## DIMENSIONS AND DRAWINGS

### • • • • FITOTERM FITOCLIMA 1.000

EXTERNAL DIMENSIONS (HxWxD) (mm)		1.990 x 1.359 x 1.836
INTERNAL DIMENSIONS (HxWxD) (mm)		910 x 984 x 1.052
<p>1. Standard refrigeration system is air cooled</p> <p>2. Services hub installation needs:</p> <ul style="list-style-type: none"> <li>● 1/2" demineralized water supply</li> <li>● 50mm water drain at floor level</li> </ul> <p>3. Electrical cabinet installation needs:</p> <p><b>Supply power ECP20:</b></p> <p>400VAC, 50Hz, 25A / 3-Phase + Neutral + Ground</p> <p>Electrical protection: Circuit breaker 3 x 25A + N with 300mA differential</p> <p>Single Phase electrical cable RV K 5G4 on the top</p> <p><b>Supply power ECP45:</b></p> <p>400VAC, 50Hz, 32A / 3-Phase + Neutral + Ground</p> <p>Electrical protection: Circuit breaker 3 x 32A + N with 300mA differential</p> <p>3-Phase electrical cable RV K 5G4 on the top</p>	<p><b>Supply power ECP75:</b></p> <p>400VAC, 50Hz, 50A / 3 Phase + Neutral + Ground</p> <p>Electrical protection: Circuit breaker 3 x 63A + N with 300mA differential</p> <p>3-Phase electrical cable RV K 5G10 on the top</p> <p><b>● RS232 (or RJ45) communications port</b></p> <p><b>● Water cooled option:</b></p> <p>Water flow: up to 2000 litres/hour (at 25 °C)</p> <p>Intake pressure: 2 to 5 bar</p> <p>Water entry and exit pipe: 1" or 28mm</p> <p>Differential pressure between entry and exit: ≥ 2,5 bars</p> <p>Maximum temperature of water entry: 26 °C</p> <p>Minimum temperature of water entry: 16 °C</p> <p>Recommended temperature of water entry: 18 °C</p>	

## DIMENSIONS AND DRAWINGS

### • • • • FITOTERM FITOCLIMA 1.500



<p>1. Standard refrigeration system is air cooled</p> <p>2. Services hub installation needs:</p> <ul style="list-style-type: none"> <li>● 1/2" demineralized water supply</li> <li>● 50mm water drain at floor level</li> </ul> <p>3. Electrical cabinet installation needs:</p> <p><b>Supply power ECP20:</b></p> <p>400VAC, 50Hz, 25A / 3-Phase + Neutral + Ground</p> <p>Electrical protection: Circuit breaker 3 x 25A + N with 300mA differential</p> <p>Single Phase electrical cable RV K 5G4 on the top</p> <p><b>Supply power ECP45:</b></p> <p>400VAC, 50Hz, 32A / 3-Phase + Neutral + Ground</p> <p>Electrical protection: Circuit breaker 3 x 32A + N with 300mA differential</p> <p>3-Phase electrical cable RV K 5G4 on the top</p>
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<p><b>Supply power ECP75:</b></p> <p>400VAC, 50Hz, 50A / 3 Phase + Neutral + Ground</p> <p>Electrical protection: Circuit breaker 3 x 63A + N with 300mA differential</p> <p>3-Phase electrical cable RV K 5G10 on the top</p> <p><b>● RS232 (or RJ45) communications port</b></p> <p><b>● Water cooled option:</b></p> <p>Water flow: up to 2000 litres/hour (at 25 °C)</p> <p>Intake pressure: 2 to 5 bar</p> <p>Water entry and exit pipe: 1" or 28mm</p> <p>Differential pressure between entry and exit: ≥ 2,5 bars</p> <p>Maximum temperature of water entry: 26 °C</p> <p>Minimum temperature of water entry: 16 °C</p> <p>Recommended temperature of water entry: 18 °C</p>
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## EQUIPMENT DESCRIPTION



### TEMPERATURE

#### TEMPERATURE PRECISION

(in the interior of the chamber, at 5 cm from walls, floor and top)

- In Time  $\leq \pm 0,5^\circ\text{C}$
- In Space  $\leq \pm 1,5^\circ\text{C}$

#### TEMPERATURE SENSORS

- One (1) PT 100 Class A, located in air treatment tunnel
- One (1) PT 100 Class A, movable sensors for flexible placing inside chamber

#### HEATING

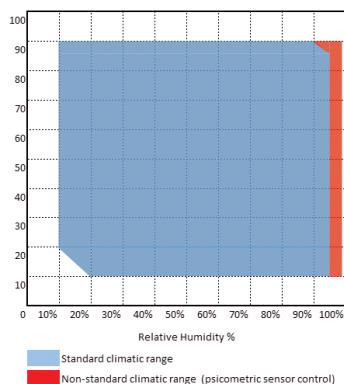
- By tubular stainless steel electric heaters located in the air treatment tunnel

#### COOLING

- Air cooled hermetic scroll compressor group (low noise and high efficiency) with enforced ventilation and without CFC's. Water cooled condensers are also available as standard or as option for models with Temperature cooling rate upgrades.

#### 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 won't stop the chamber and it's only used to record the occurrence and to call the attention of the users with an audible alarm.



### HUMIDITY (FITOCLIMA CHAMBERS)

#### HUMIDITY PRECISION

(in the interior of the chamber, at 5 cm from walls, floor and ceiling)

- In Time  $\leq \pm 1,0\%$  RH
- In Space  $\leq \pm 2,5\%$  RH

#### HUMIDITY SENSORS

- To measure and control humidity Aralab uses two different sensor technologies: Psychrometric, Capacitive, or both simultaneously. 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 hermetically welded, vapor tight, stainless steel
- Exterior: Zinc mild steel with epoxy coating finish (color RAL 7035)
- Insulation: Rock Wool
- Interior illumination: Halogen lamp 12V (only available with optional window)
- Door: Double silicone joints and anti-condensation heating frames (optional window)



## AIR FLOW / VENTILATION

- Air Flow: Forced through 1 or 2 ventilators/fans (300 and 500 liters' models have one ventilator/fan and 1.000 and 1.500 models have two).
- Air Renovation: By lateral port, also for compensating pressure.



## CUT-OFF PANEL, SECURITY AND COMMUNICATIONS

Mounted on left lateral panel of the chamber and equipped with:

- High / Low safety thermostat
- Main Power switch
- Audible alarms
- RS232 communications port (RJ45 also available)



## INCLUSIONS

- 2 Stainless steel shelves
- 1 lateral left panel entry port with Ø 80 mm
- 4 / 6 height leveling casters
- Instructions manual in English (other languages upon request)
- 2 years' warranty

## CONTROLLER

### CLIMA PLUS

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.

Send all control settings and system software and Modbus Tcl

Possibility of programming a delay of the beginning of test

Monitoring and recording of all alarms

Possibility of performing events by external commands

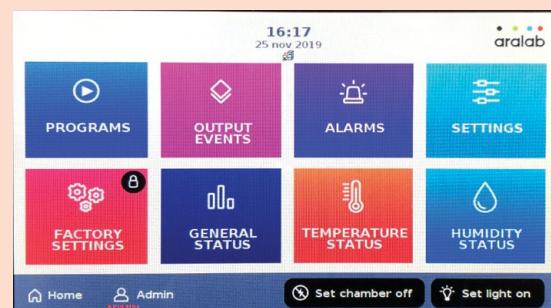
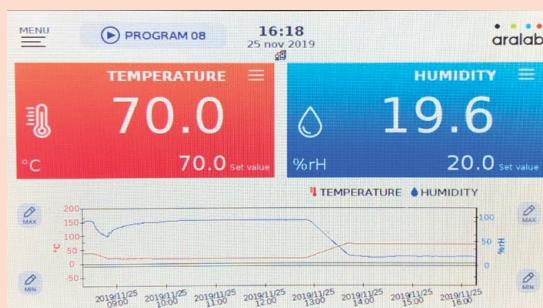
Several outputs for connecting computers or other devices

Alarms management

Graphic representation of the tests and conditions

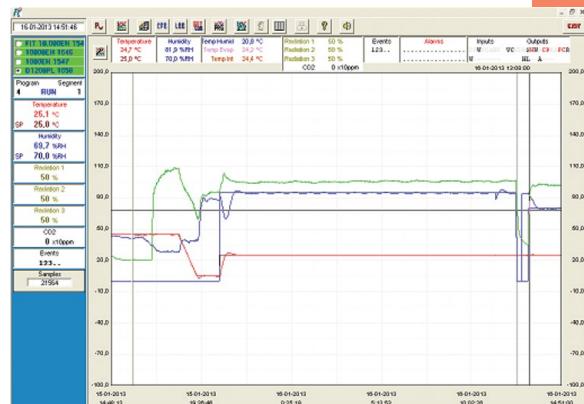
Remote access through VNC server

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



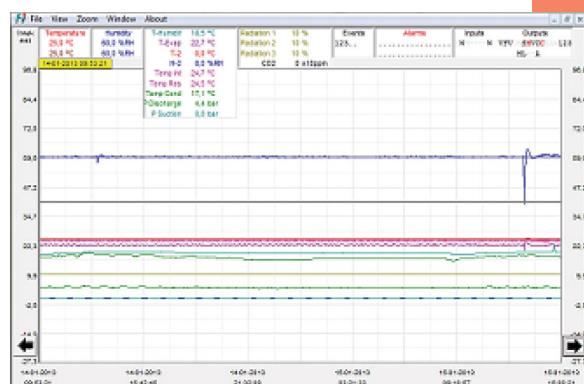
## FITOLOG SOFTWARE

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



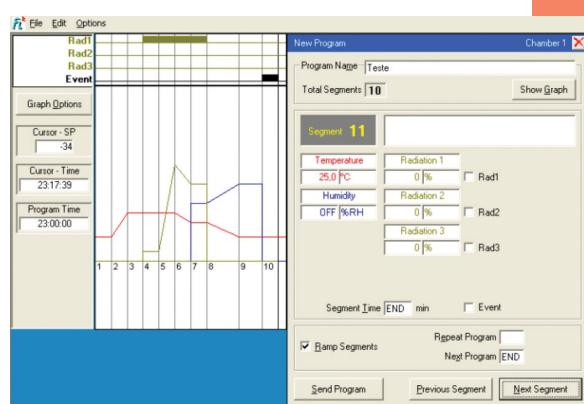
### FITOLOG

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.

## COMMON ACCESSORIES

### PLEASE CONSULT ARLAB FOR OTHER ITEMS

Software pack FitoLog and FitoLogView

Observation anti-condensation windows in multi layered glass

Water demineralizer (for FitoClima Chambers)

Integrated water tank

Air dryer

Additional entry ports

Calibration certificate from accredited external laboratory

Faster heating / cooling temperature change rates up to 10k/minute

## WINDOW OPTION



The observation window is composed of a multilayered glass with optimum levels of thermal insulation. The interior and exterior glasses have a heating system that is activated in cold cycles and damp heat to prevent condensation at the surface.

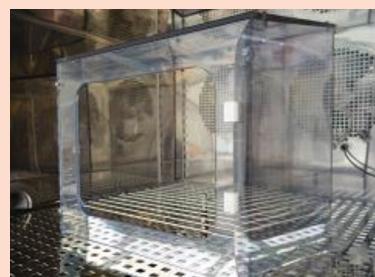
## OTHER TESTING ACCESSORIES AND DEVICES



Cables/Wires winding accessory for 'Cold bend' testing



Combined climatic and vibration test



DIN 50017 – Condensation water test atmospheres

## INSTALLATION REQUIREMENTS

### INSTALLATION SITE

The place should be easily accessible, according to equipment dimensions and weight. It should have good air circulation and a room temperature between 10° and 26°C. The floor should be leveled and a minimum distance of 50cm from the walls and other equipment must be kept.

### ELECTRICAL SUPPLY

Near the equipment with the specified requirements.

### HUMIDIFICATION CIRCUIT AND DEMINERALIZED WATER (FOR FITOCLIMA MODELS)

The humidification circuit works exclusively with distilled or demineralized water. For this circuit, a water admission pressure of 1 to 6 bares and conductivity of  $\leq 10\mu$  Siemens is required.

### WATER CIRCUIT FOR COOLING CONDENSER

**(optional accessory for all models, or specific for models with Temperature/Cooling change rate upgrade)**

A cold water circuit is required for the cold system condenser. Technical characteristics:

- Water flow: up to 2000 liters/hour (at 25°C)
- Intake pressure: 2 to 5 bar
- Water entry and exit pipe: 1" or 28mm
- Differential pressure between entry and exit:  $> 0,5$  bars
- Maximum temperature of water entry: 26°C
- Minimum temperature of water entry: 16°C
- Recommended temperature of water entry: 18°C

### DRAIN

At floor level and near the equipment. The draining of the humidification and cooling systems water is done by gravity.

For a correct draining there should be a minimum inclination of 10° in a descending trajectory from the chambers draining pipe until the sewage system.

Features and specifications are subject to change. Aralab continuously studies ways to further develop its products to achieve better performances and overall product quality. As a result, characteristics and specifications provided in this document may be subject to changes.

Let's meet!  
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**Control the environment**  
Your own climate

