



GreenLine

**WRS 96 - 85 series
refrigerated chambers
with photoperiod control
for environmental simulation**





WRS 96 - 85 series

refrigerated chambers with photoperiod control for environmental simulation

This equipment is particularly recommended for the study of the growth of vegetal and plant tissues, as well as for the execution of toxicity tests carried out according to IRSA, OECD and ASTM procedures.

The conditions that can influence the growth and development of plants and microorganisms are primarily temperature and light, in addition to, naturally, the presence of water and nutritive substances.

The temperature is as indicative of the climatic conditions as provision of light is essential for the biosynthesis of cellular components. The lighting system is composed of fluorescent lamps and a system of scheduling when to switch them on and off, for the regulation of light intensity inside the chamber.

The correct balance of heating, refrigeration and air circulation, combined with a special geometry of the aeraulic circuit, ensures the same temperature conditions for all samples inside the chamber and therefore the same growth rate.

All the models are designed and built according to the ISO 9001:2000 International Quality System and created in accordance with CE Mark European safety standards and UNI-EN-61010 for laboratory equipment.

WRS 96 - 85 series refrigerator units are built using HFC refrigerants (CFC and HCFC free) for the protection of the environment.

The PID microprocessor control and the DIN 12880 class 3.1 overtemperature regulator ensure a precise and uniform internal temperature, in conditions of maximum operating security.



WRS 85

WRS 85 opened

WRS 96 - 85 series

refrigerated chambers with photoperiod control for environmental simulation

STRUCTURE AND SYSTEM:

The body is built in pre-painted or plastic-coated zinc, the internal chamber and shelves are in AISI 304 stainless steel, and the insulation is composed of mineral fibres.

The shelves can be positioned as desired through mobile supports on racks; these are placed in the internal walls.

WRS 96 - 85 incubators are easy to clean and decontaminate.

All models are equipped with a transparent internal door to allow observation of the samples without alteration of the internal temperature.

Each incubator is equipped with a vent aerator, with adjustable opening.

The heating is obtained by means of special low thermal density finned tubular resistors for maximum temperature stability; the cooling is achieved by a special KW designed tubular evaporator; both are placed in an area separate from the working chamber.

The thermostating flow is driven by a high efficiency helical fan; the aerodynamic speed – in the working volume – can in any case be adjusted through the variable speed drive of the fan.

The refrigeration system is composed of an air condensing unit, with expansion by means of capillary tube and with hermetic compressor. The system is completely sealed and low noise. There is plenty of condensing surface to allow proper function even at very high ambient temperatures ($T \leq +32^{\circ}\text{C}$) or in environments with poor air exchange. There is a device that collects and automatically evaporates the condensation water.

The refrigerants used are non-toxic, non-flammable, non-explosive and above all eco-friendly (ODP=0).

THERMOREGULATION AND CONTROLS INCLUDE:

- Lighted general ON/OFF switch
- Digital electronic μP controller, with LED display, with Set value and Process indication. RTD Pt 100 Ω probe; PID regulation (proportional, integral, derivative), for maximum stability of T parameter; use of SSR static relays (zero crossing).
- Regulation parameters optimizable by keyboard, for maximum temperature stability
- pressure safety switch against maximum overpressure in condensation, manually reactivated, with visual alarm indication on panel.
- Adjustable overtemperature controller, in conformity with DIN 12880, with separate sensor (protection class 3.1) and visual alarm indication on panel and with heating exclusion, in case of alarm, for maximum safety of the product, the environment and the operator.

LIGHTING:

Lighting is obtained with fluorescent tubes, with wavelengths in the visible spectrum (simulation of sunlight) arranged vertically, in the internal chamber walls, so as to illuminate between shelves. Their quantity is based on the maximum light intensity requested; standard performance is approximately 4000 lux (WRS96) and 10000 lux (WRS85), or as requested otherwise, up to and over 10000 lux.

The number of working tubes can be selected by the user, based on the desired light intensity, by means of on-panel switches; scheduling, in any case, takes place by means of an automatic cyclic programmer (with hourly, daily or weekly cycle).

ACCESSORIES:

- Performance up to and over 10000 lux
- tubular structure support base, with wheels for model WRS96
- wheel kit for WRS85 model
- additional shelf in AISI 304 stainless steel
- control panel closure, in plastic
- internal – external opening
- internal electric socket (5/10 A)
- on-disc recorder with weekly cycle and autonomous power supply by means of 1.5Vdc battery
- electronic strip-chart recorder with V230/1/50 power supply
- RS485 serial port
- RS485-RS232 converter
- management software
- supplementary RTD Pt 100 Ohm probe, for connection to external acquisition system and T recorder, such as **T-GUARD®** and **SensiNet®**, or similar systems
- additional RTD Pt 100 Ohm probe, complete with 4-20 mA converter, mounted on DIN rails, for connection to external recording system
- BIO-AS-KW, digital electronic device for general surveillance, 12Vdc self-powered, includes all alarms: T min/max, power failure, with automatic test of battery status and constant status indicator (internal self-diagnostic); complete with contacts for remote alarm setup
- Digital electronic microprocessor programmer, multifunctional for thermal cycles: Various programmes, each with many segments, all storable: temperature and duration can be scheduled for each segment

An I.Q. (Installation Qualification) and O.Q. (Operational Qualification) can be carried out on this series of equipment; for an evaluation of the costs of these activities, consult the KW commercial office. KW is also available for ISO calibration certification services for SIT sample comparisons.

Model	External dimensions (WxDxH)	Internal dimensions (WxDxH)	Capacity (usable)	Range of adjustment	Power	Weight
WRS 96	cm. 104x65x170 h	cm. 80x50x65 h	260 litres	+10°C +50°C	Watt. 1000	Kg. 160
WRS 85	cm. 110x75x200 h	cm. 75x55x105	433 litres	+10°C +50°C	Watt. 1800	Kg. 250

V230/1/50 power supply

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 = Min. / max. temperature alarm

 = Internal light

 = Power failure alarm

 = Open door alarm

 = Lock

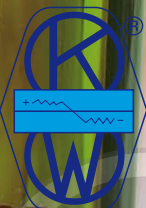
 = Temperature programmer for thermal cycling

 = Graphic temperature recorder

 = Wheels

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- **GreenLine** Introduction
- **W-LAB WR-LAB** series legend
- **WI** series
natural guided convection incubators
- **WPL** series **INCUBATORS**
table and floor incubators
- **WPLR** series **INCUBATORS**
refrigerated table and floor incubators
- **W-LAB** series **INCUBATORS**
forced air circulation incubators
- **WR-LAB** series **INCUBATORS**
forced air circulation
refrigerated incubators
- **WRC** series
forced air circulation
thermal refrigerator
for modern scientific
and industrial laboratories
- **W 90 - 102** series
thermostatic chambers / precision incubators
with water jacket

DATA LOG

- **WR 90 - 102** series
thermostatic chambers / precision incubators
refrigerated with water jacket
- **W.80 - W.82** series
precision water bath
- **W.82/O - W.84/O** series
precision water bath
with linear and/or orbital shaking
- **W180CCI.IR** model **CO2** Incubator series
- **WRS 96 - 85** series
thermal refrigerating chambers with photoperiod
control for environmental simulation
- **WR UR700C** model Climate Chamber series
for pharmaceutical stability tests
and environmental simulation
- **KW 20/B-100/B KW 6/B-12/B-18/B** series
modular glass or plastic bottle rollers ø80-120mm
- Walk-in incubator
- Walk-in stability chamber