

KBWF 240 (E5.1) - Plant growth chamber with optimal climatic conditions

The closest thing to natural conditions. Making use of the multifaceted programming options, we achieve perfect interaction between heat or cold, humidity and light. This wide climatic range can simulate any climatic condition precisely and constant over extended periods of time, including natural lighting conditions and day-night simulation.



► Performance features and equipment:

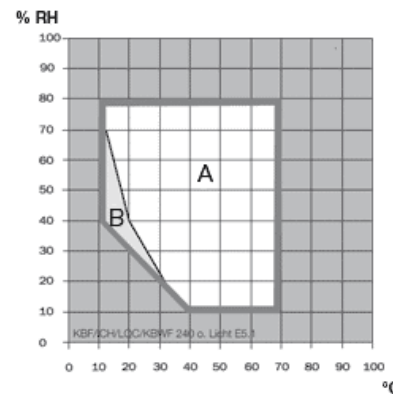
- Electronically controlled APT.line™ preheating chamber assuring temperature accuracy and reproducible results
- Temperature range 0 °C to 70 °C (32 °F to 158 °F) (without illumination), 10 °C to 60 °C (50 °F to 140 °F) (with illumination)
- Humidity range: without illumination cassette: 10 % - 80 % RF
- Humidity range: with illumination cassette: 10 % - 75 % RF
- MCS controller with 25 storable programs of 100 sections each for a maximum of 500 program segments
- Features:
 - User friendly LCD screen
 - Easy-to-read menu guide
 - Integrated electronic chart recorder
 - Variety of options for the graphic display of process parameters
 - Real-time clock
- 2 variable positionable illumination cassettes with 5 daylight fluorescent illumination tubes
- Controlled humidification and dehumidification system with capacitive humidity sensor
- Independent adjustable temperature safety device class 3.1, providing full protection against chamber over-temperature, with visual and audible temperature alarm
- Access port Ø 30 mm (1.18 inch), left side
- Environmental friendly refrigerant R 134a
- Inner glass door
- Complete safety connection kit for water supply and drainage, including water hose, total length 6 m (19.7 ft.)
- RS 422 interface for use with optional GMP/GLP and FDA guideline 21 CFR Part 11 compliant APT-COM™ DataControlSystem software
- 2 stainless steel racks included
- BINDER test certificate



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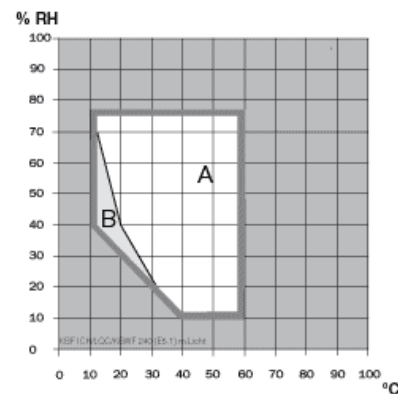
Exterior dimensions	
Width (mm/inch)	925 / 36.4
Height (incl. castors) (mm/inch)	1460 / 57.5
Depth (mm/inch)	800 / 31.5
Plus door handle, I-triangle, connection (mm/inch)	100 / 3.9
Wall clearance rear (mm/inch)	100 / 3.9
Wall clearance side (mm/inch)	100 / 3.9
Steam space volume (l/cu.ft.)	348 / 12.3
Number of doors	1
Number of inner glass doors	1
Interior dimensions	
Width (mm/inch)	650 / 25.6
Height (mm/inch)	785 / 30.9
Depth (mm/inch)	485 / 19.1
Interior volume (l/cu.ft.)	247 / 8.7
Racks (number standard/max.)	2 / 7
Load per rack (kg/lbs.)	30 / 66
Permitted total load (kg/lbs.)	100 / 221
Weight (empty) (kg/lbs.)	214 / 472
Temperature data (without humidity)	
Temperature range without light cassettes 1) (°C/°F)	0 - 70 / 32 - 158
Temperature range with light cassettes and illumination 1) (°C/°F)	10 - 60 / 50 - 140
Max. heat compensation up to 40 °C (104 °F) with illumination (W)	400
Climatic data (with humidity)	
Temperature range without light cassettes 1) (°C/°F)	10 - 70 / 32 - 158
Temperature range with light cassettes and illumination 1) (°C/°F)	10 - 60 / 50 - 140
Temperature variation with illumination (± K)	0.5 - 1.0
Temperature fluctuation with illumination (± K)	0.1 - 0.5
Humidity range without light cassettes (% RH)	10 - 80
Humidity range with light cassettes and illumination 1) (% RH)	10 - 75
Humidity fluctuation with illumination (± % RH)	2
Illumination data per light cassette	
Daylight tubes 2) (Lux)	10000
Daylight tubes 2) (W/m²)	36
Fluora® growth lamps 2) (Lux)	6500
Fluora® growth lamps 2) (W/m²)	34
Arabidopsis lamps 2) (Lux)	10000

Temperature-humidity chart without light



A: Standard Climate range / B: Discontinuous range

Temperature-humidity chart with light



A: Standard Climate range / B: Discontinuous range

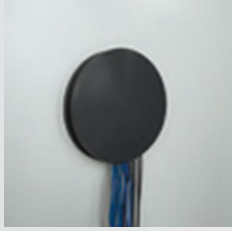
Arabidopsis lamps 2) (W/m²)	40
Electrical data	
Housing protection acc. to EN 60529	IP 20
Nominal voltage (±10 %) 50 / 60 Hz (V)	200-240 1N~
Nominal power at 240 V (kW)	2.4
Energy consumption at 37 °C (98.6 °F) / 75 % RH 3) (W)	600
Noise level approx. (dB (A))	52



1. Tap water [municipal] with a max. hardness of 8.0° dH = 1.4285 mmol/l.
(The hardness can be established from the water analysis of your water supplier.)
2. We recommend the BINDER Pure Aqua Service for longer maintenance intervals, regardless of water quality.
3. Demineralized or deionized water available at the customers location.

- 1) Lower values are valid up to an ambient temperature of max. 25 °C (77 °F)
 2) Average value, measured with a spherical sensor (±10 %) by 12 cm (4.7 inch) below the light cassette. The values given in W/m² refer to global radiation.
 3) Use this value for dimensioning air condition systems

All technical data are specified for units with standard equipment at an ambient temperature of 25 °C and a voltage fluctuation of ±10 %. The temperature data are determined in accordance to factory standard following DIN 12880 respecting the recommended wall clearances of 10 % of the height, width and depth of the inner chamber. Technical data refers to 100 % fan speed. All indications are average values, typical for units produced in series. We reserve the right to alter technical specifications at all times.



► Access ports

With silicon plugs for inserting external measuring devices into the chamber. Access ports with 10, 50 and 100 mm diameter.



► BINDER Pure Aqua Service

Our efficient, flexible water purification system delivers top water quality and extends the maintenance period. Special feature: Our system uses a disposable purification cartridge and also has a water quality indicator.



► External fresh water supply set

External fresh water supply set consists of fresh and waste water canister, cabling and pump.



► Specimen temperature measurement

Additional flexible PT 100 temperature sensor for precise temperature measurement of the specimen with digital temperature display. Recording of measured data possible via Ethernet or RS 422 interface.



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Access port with silicone plugs, 30 mm (1.18 inch), 50 mm (1.97 inch), 100 mm (3.94 inch)	<input type="radio"/>
Securing elements for additional fastening of racks (1 set of 4)	<input type="radio"/>
Ethernet interface for communication software APT - COM™ DataControlSystem	<input type="radio"/>
External fresh supply set consists of fresh and waste water canister, cabling and pump	<input type="radio"/>
BINDER PURE AQUA SERVICE consisting of disposable cartridge, hose set and measuring unit	<input type="radio"/>
Temperature precision measurement according to DIN 12880 and 9 - point humidity measurement / factory standard with measurement log and certificate, measured at 25 °C (77 °F) / 60% RH or at specified values	<input type="radio"/>
Factory calibration certificate for temperature and humidity. Measurement in center of chamber at 25 °C (77 °F) / 60% RH or at specified values	<input type="radio"/>
Extension to factory calibration certificate for temperature and humidity. Each additional measurement at an additional measuring point or set of values	<input type="radio"/>
Rack, stainless steel	<input type="radio"/>
Shelf, perforated, stainless steel	<input type="radio"/>
Reinforced rack, stainless steel, with 1 set of securing elements (4 pieces) (max. load 70 kg / 154 lbs.)	<input type="radio"/>
Vibration compatible shelf / platform to be mounted inside the chamber for shaker / spinner / roller operation (> 500 rpm to be supported)	<input type="radio"/>
4 - 20 mA analog output for temperature and humidity measurements (e.g. chart recorder connection), with 6 - pin DIN socket. Outputs are adjusted automatically as the controller is adjusted	<input type="radio"/>
Zero-voltage relay alarm outputs for temperature (± 2 °C) and humidity (± 5 % RH), accessible via 6-pin DIN socket, with acoustic signal that can be switched off (maximum power rating 24 V AC/DC, 2.5 A)	<input type="radio"/>
Switchable waterproof interior socket 230 V AC (max. 500 W), IP 65 protected, with corresponding plug (IP 66 protected)	<input type="radio"/>
FLUORA® growth lamps set as replacement for the standard tubes	<input type="radio"/>
Arabidopsis fluorescent tubes set as replacement for the standard tubes	<input type="radio"/>
Lockable door	<input type="radio"/>
Temperature safety device, Class 3.3 (DIN 12880) with optical alarm	<input type="radio"/>