

KBWF 720 (E2) - 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: -5 °C to 100 °C (23 °F to 212 °F) without humidity and illumination
- Temperature range: 20 °C to 90 °C (68 °F to 194 °F) with humidity respective illumination
- Humidity range 10 % - 90 % RH
- MCS controller for temperature, humidity, and illumination with 25 storable programs of 100 sections each for a maximum of 500 program segments, for programming day/night cycles
 - 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
- Illumination system with daylight fluorescent tubes in the doors, thermally isolated from the inner chamber and ventilated (optimized illumination)
- Controlled humidification and dehumidification system with capacitive humidity sensor using tap water
- Independent adjustable temperature safety device class 3.1, providing full protection against chamber over-temperature, with visual and audible temperature alarm
- Access ports Ø 30 mm (1.18 inch), right side, top and bottom
- 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 GLP/GMP 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)	1234 / 48.6
Height (inclusive castors) (mm/inch)	1816 / 71.5
Depth (mm/inch)	867 / 34.1
Plus door handle, I-panel, connection (mm/inch)	100 / 3.9
Wall clearance rear (mm/inch)	100 / 3.9
Wall clearance side (mm/inch)	160 / 6.3
Steam space volume (l/cu.ft.)	855 / 30.2
Height of water connections (±3 mm/±0.12 inch) (mm/inch)	190 / 7.5
Number of doors	2
Number of inner glass doors	2
Interior dimensions	
Width (mm/inch)	1000 / 39.4
Height (mm/inch)	1168 / 46.0
Depth (mm/inch)	600 / 23.6
Interior volume (l/cu.ft.)	700 / 25.1
Racks (number standard / max.)	2 / 14
Load per rack (kg/lbs.)	45 / 99
Permitted total load (kg/lbs.)	120 / 265
Weight (empty) (kg/lbs.)	345 / 762
Temperature data	
Temperature range	
without humidity / without illumination (°C/°F)	-5 - 100 / 23 - 212
with humidity / with illumination (°C/°F)	5 - 100 / 41 - 212
with humidity / without illumination (°C/°F)	20 - 90 / 68 - 194
with humidity / with illumination (illumination in the door) (°C/°F)	20 - 90 / 68 - 194
Temperature variation	
without humidity at 10 °C (50 °F) (± °C)	0.4
without humidity at 37 °C (98.6 °F) (± °C)	0.4
with humidity (± °C)	1.0
Temperature fluctuation during heating operation (± °C)	0.1
Temperature fluctuation during cooling operation (± °C)	0.5
Heating up time 1) to 37 °C (98.6 °F) (Min.)	28
Cooling down time from room temperature 1), 2) to 10 °C (50 °F) (Min.)	35
Recovery time after door was open for 30 sec 1), 2)	
at 37 °C (98.6 °F) (Min.)	5
at 50 °C (122 °F) (Min.)	4
Humidity fluctuation 3) (± % RH)	1.5
Illumination data /Light intensity	
Daylight fluorescent tubes, light color 865 (distance of measuring level to the glass door: 12 cm) (LUX)	16.600
Daylight fluorescent tubes, light color 865 (distance of measuring level to the glass door: 12 cm) (µE/S x m²)	250
OPTION Fluora® growth lamps, light color 77 (distance of measuring level to the glass door: 12 cm) (LUX)	7.500
OPTION Fluora® growth lamps, light color 77 (distance of measuring level to the glass door: 12 cm) (µE/S x m²)	164
OPTION additional illumination under the ceiling, daylight lamps light color 865 (LUX)	19.000
Electrical data	
Housing protection acc. to EN 60529	IP 20
Nominal voltage (±10 %) 50 / 60 Hz (V)	230 1N~
Nominal power (kW)	2.95
Energy consumption 4) at 37 °C (98.6 °F) (W)	970

1) up to 98 % of the set value

2) value without illumination

3) upon door opening or water exchange in humidity cylinder: > ±1.5 % RH, recovery time approx. 20 min.

4) these values can be used upon calculation of air conditioning systems

5) Distance of measuring level to the glass door: 12 cm (7.4 inch)

All technical data are specified for units with standard equipment at an ambient temperature of 20 °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. All indications are average values, typical for units produced in series. Technical data refers to 100 % fan speed. We

reserve the right to alter technical specifications at all times.



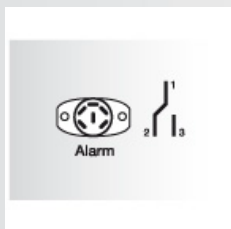
► Different illumination

Lighting can be selected based upon application and light intensity. For example: FLUORA® growth lamps set as replacement for the standard tubes. (KBWF 720 has the illumination tubes in the 2 doors.)



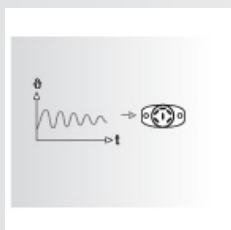
► Waterproof interior power socket in the inner chamber

Maximum 500 W, switched via the main switch, with associated plug (protection type IP 65), 230 V 1N ~50/60 Hz.



► Zero-voltage relay alarm outputs

Monitoring function for temperature and humidity monitoring, forwarding of alarm signals (e.g. computer, cell phone).



► Analog outputs

For temperature 4 - 20 mA with 6-pin DIN socket (non-adjustable output).

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Access port with silicone plugs, 10 mm (0.39 inch), 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"/>
Locking of controller keyboard	<input type="radio"/>
Lockable door	<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"/>
Temperature safety device, Class 3.3 (DIN 12880) with optical alarm	<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"/>
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"/>
4 - 20 mA analog output for temperature and humidity measurements (e.g. chart recorder connection), with 6 - pin DIN socket. Output is adjustable	<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"/>
Additional PT 100 temperature sensor, flexibly installed, with external connection, including LEMO connector (3 - pin)	<input type="radio"/>
Intensified lighting under ceiling of chamber with additional daylight fluorescent tubes, 8x18 W, thermal isolation and ventilation, to simulate natural lighting	<input type="radio"/>
FLUORA® growth lamps, as replacement for the daylight illumination tubes	<input type="radio"/>
Arabidopsis fluorescent tubes set as replacement for the standard tubes	<input type="radio"/>