

## KBW 240 (E5.1) - Plant growth chamber with optimal lighting conditions

Precision combined with maximum dynamics. KBW exceeds any requirements with respect to optimal lighting and temperature conditions for exactly defined culture processes. Extremely short reaction times keep all growth parameters in equilibrium - natural simulation as never before. Handling is truly enhanced by the integrated week program timer function in the controller.



### ► Performance features and equipment:

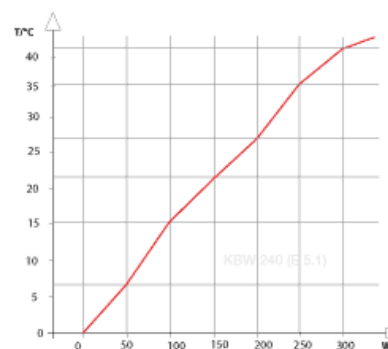
- Electronically controlled APT.line™ preheating chamber assuring temperature accuracy and reproducible results
- Temperature range 0 °C (32 °F) up to 70 °C (158 °F) with illumination at ambient temperature ≤ 25 °C (77 °F)
- MP controller with 2 programs with 10 sections each, alternatively switchable to 1 program with 20 sections
  - Integrated week program timer with real time function
  - Adjustable ramp functions via program editor
  - Digital temperature setting with an accuracy of a tenth of a degree
- Adjustable fan speed
- Elapsed time indicator
- Flexible illumination cassettes with 5 daylight fluorescent illumination tubes each
- Access port Ø 30 mm (1.18 inch), left side
- Inner glass door
- Independent adjustable temperature safety device class 3.1, providing full protection against chamber over-temperature, with visual and audible temperature alarm
- Environmentally friendly refrigerant R 134a
- RS 422 interface for communication software APT-COM™ DataControlSystem, or switch over to printer output with RS 232 / RS 422 interface converter
- Adjustable intervals for printer
- Stainless steel racks included
- BINDER test certificate



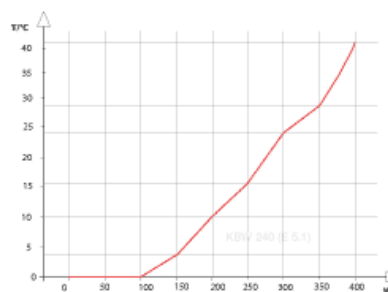
**KBW 240 (E5.1)**

<b>Exterior dimensions</b>	
Width (mm/inch)	925 / 36.4
Height (inclusive castors) (mm/inch)	1460 / 57.5
Depth (mm/inch)	800 / 31.5
Plus door handle, I-panel, connection (mm/inch)	50 / 2
Wall clearance side (mm/inch)	100 / 3.9
Wall clearance rear (mm/inch)	100 / 3.9
Steam space volume (l/cu.ft.)	348 / 12.3
Number of door(s) / inner glass door(s)	1 / 1
<b>Interior dimensions</b>	
Width (mm/inch)	650 / 25.6
Height (mm/inch)	785 / 30.9
Depth (mm/inch)	485 / 19.1
Interior volume (l/cu.ft.)	247 / 8.6
Load per rack (kg/lbs.)	30 / 66
Permitted total load (kg/lbs.)	100 / 221
Weight of the unit (empty) (kg/lbs.)	202 / 446
Racks (number standard/max.)	2 / 7
Flexible adjustable illumination cassetts	2
<b>Temperature data without illumination</b>	
Temperature range 1) (°C/°F)	0 - 70 / 32 - 158
Temperature variation (± K)	0.5
Temperature fluctuation (± K)	0.1
Max. Heat compensation up to 40 °C (W)	350
<b>Temperature data with 100 % light intensity</b>	
Temperature range 1) (°C/°F)	5 - 60 / 41 - 140
Temperature variation (± K)	0.5
Temperature fluctuation (± K)	0.1
Max. Heat compensation up to 40 °C (W)	250
<b>Illumination data (for 1 light cassette)</b>	
Daylight tubes 3) (Lux) / (W/m <sup>2</sup> )	10.000 / 36
Fluora® growth lamps 3) (Lux) / (W/m <sup>2</sup> )	6.500 / 34
Arabidopsis lamps 3) (Lux) / (W/m <sup>2</sup> )	10.000 / 40
<b>Electrical data</b>	
Housing protection acc. to EN 60529	IP 20
Nominal voltage (±10 %) 50 / 60 Hz (V)	200-240 1N~
Nominal power (kW)	1.4
Energy consumption without illumination 4) at 0 °C / 32 °F (W)	360
Energy consumption with 100 % light intensity 4)	
at 4 °C (39.2 °F) (W)	520
at 25 °C (77 °F) (W)	495
at 37 °C (98.6 °F) (W)	525

## Heat compensation with light

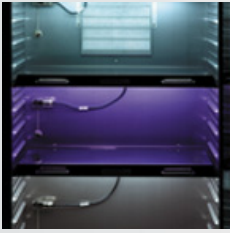


## Heat compensation without light



- 1) Lower values are valid up to an ambient temperature of max. 25 °C (77 °F)
- 2) up to 98 % of the set value
- 3) average value, measured with a spherical sensor 12 cm (4.7 inch) below the light cassette. The values given in W/m<sup>2</sup> refer to global radiation
- 4) these energy consumption values can be used upon calculation of air conditioning systems

All technical data is specified for units with standard equipment at an ambient temperature of 25 °C (77 °F) and a mains voltage fluctuation of  $\pm 10$  %. The temperature data is 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. We reserve the right to alter technical specifications at all times.



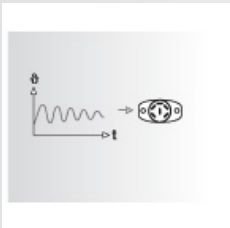
► Different illumination

Lighting can be selected based upon application and light intensity. For example: FLUORA® growth lamps set as replacement for the standard tubes.



► Waterproof interior power socket in the inner chamber

Switchable waterproof interior socket 230 V AC (max. 500 W), IP 65 protected, with corresponding plug (IP 66 protected)



► Analog output

Analog temperature output, 4 - 20 mA, with 6 - pin DIN socket (output not adjustable)

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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"/>
Additional PT 100 temperature sensor, flexibly installed, with external connection, including LEMO connector (3 - pin)	<input type="radio"/>
Ethernet interface for communication software APT - COM™ DataControlSystem	<input type="radio"/>
Temperature measurement acc. to DIN 12880 (27 measuring points) at 37 °C (98.6 °F) or at specified temperature with measuring protocol and certificate	<input type="radio"/>
Factory calibration certificate. Measurement in center of chamber at 25 °C (77 °F) or at specified testing temperature	<input type="radio"/>
Extension to factory calibration certificate. Each additional measurement at an additional measuring point or temperature	<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"/>
Switchable waterproof interior socket 230 V AC (max. 500 W), IP 65 protected, with corresponding plug (IP 66 protected)	<input type="radio"/>
Safety device, Class 3.3 (DIN 12880) with optical alarm	<input type="radio"/>
Analog temperature output, 4 - 20 mA, with 6 - pin DIN socket (output not adjustable)	<input type="radio"/>
Zero - voltage relay outputs accessible via 6 - pin DIN socket. Additional module for controlling 2 relay outputs via 2 of the programmable controller's controller contacts	<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"/>