

Climate chambers with illumination

The BINDER KBW series climate chamber with illumination achieves homogeneous light distribution and ensures consistent temperature conditions with its natural illumination.



Advantages:

- Homogeneous light distribution
- Natural growth conditions
- Temperature, humidity & light in one unit

Areas of application:



Cosmetics Industry



Plant / Insect Growth



Packaging Industry

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Features	Customer benefits	Characteristics
APT.line™ climate technology	<ul style="list-style-type: none"> • Same test conditions throughout the chamber interior • Independent of specimen size and quantity • No drying out of specimens 	APT.line™ <ul style="list-style-type: none"> • Constant and gentle circulation of air through large-surface side walls even under a full load • Homogeneous climate conditions throughout all specimens
Light	<ul style="list-style-type: none"> • Up to 20% greater usable space • Light sources adjustable to specimen sizes • Same irradiation results throughout the chamber interior 	<ul style="list-style-type: none"> • Flexible positioning and fully removeable illumination cassettes • Excellent light uniformity for all specimens on the entire shelf • Different light spectra can be used
Cooling system	<ul style="list-style-type: none"> • Reliable testing independent of ambient conditions 	<ul style="list-style-type: none"> • Powerful compressor cooling system with large power reserves for lighting applications • No freezing thanks to double evaporator plate • Carefully measured cooling
Standard equipment	<ul style="list-style-type: none"> • No extra costs • Chamber is easily moved on casters 	Comprehensive standards <ul style="list-style-type: none"> • Communication interface • Access port diameter 30 mm • BINDER test certificate • Casters • Inner glass door and double outer door seal • Door heated against condensation
Unit design	<ul style="list-style-type: none"> • Minimum space requirements • Easy assembly • Large chamber interior volume • Easy cleaning 	<ul style="list-style-type: none"> • Optimal ratio of usable space and footprint • Large access area thanks to wide design • Chamber interior made out of high-quality stainless steel • Closed illumination cassettes • No permanent fixtures
Accessories and Services	<ul style="list-style-type: none"> • Complete solution • Everything from one source • BINDER Service is always nearby 	Comprehensive product portfolio <ul style="list-style-type: none"> • Various options: BINDER Data Logger Kits, access ports in various sizes and positions, control and documentation software APT-COM™ • Years of proven and recognized validation and documentation materials • Worldwide service network

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- Electronically controlled APT.line™ preheating chamber assuring temperature accuracy and reproducible results
- Temperature range 0 °C to 70 °C (without illumination)
- Temperature range 5 °C to 60 °C (with illumination)
- 3 variable position illumination cassettes each with 5 daylight fluorescent illumination tubes
- Patented light system for unique homogeneous light distribution over the entire usable area
- 3 racks, stainless steel
- MP controller with 2 programs with 10 sections each, alternatively switchable to 1 program with 20 sections
- Integrated weekly program timer with real-time function for programming day/night cycles
 - Digital temperature setting with an accuracy of a tenth of a degree
 - Adjustable ramp function via program editor
 - Adjustable fan speed
 - Elapsed time indicator
- Access port Ø 30 mm, left side
- Inner glass door
- Independent temperature safety device class 3.1 (DIN 12880) with optical and audible temperature alarm
- RS 422 interface for use with APT-COM™ DataControlSystem communication software or switch over to printer output with RS 232 / RS 422 interface converter
- Adjustable intervals for printer
- BINDER test certificate

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KBW 400 (E5.1)

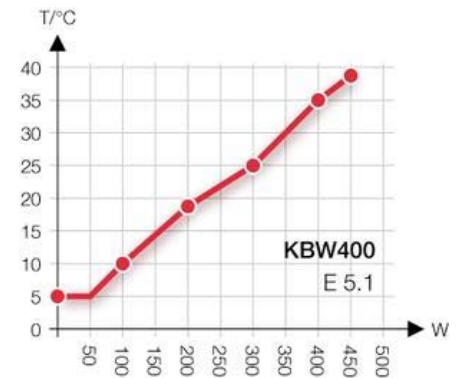
▶ Exterior dimensions	
Width (mm)	925
Height (incl. feet) (mm)	1945
Depth (incl. door handle, I-panel, connection) (mm)	850
Wall clearance, rear (mm)	100
Wall clearance, side (mm)	100
Steam space volume (l)	564
Number of doors (ea.)	1
Number of inner glass door(s) (ea.)	1

▶ Interior dimensions	
Width (mm)	650
Height (mm)	1270
Depth (mm)	785
Interior volume (l)	400
Racks (number standard/max.)	3 / 12
Load per rack (kg)	30
Permitted total load (kg)	120
Weight (empty) (kg)	267
Variable position illumination cassettes	3

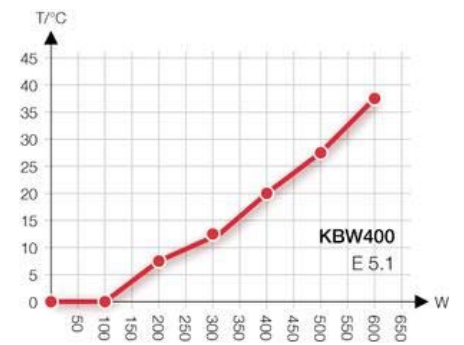
▶ Temperature data (without illumination)	
Temperature range (°C)	0 - 70
Temperature variation (± K)	0,5
Temperature fluctuation (± K)	0,1
Max. heat compensation up to 40 °C (W)	600

▶ Temperature data (with 100% illumination)	
Temperature range (°C)	5 - 60
Temperature variation (± K)	1,5
Temperature fluctuation (± K)	0,1
Max. heat compensation up to 40 °C (W)	450
Illumination data (per illumination cassette)	
Daylight tubes (Lux) / (W/m2)	10.000 / 31
Fluora® growth lamps (Lux) / (W/m2)	7.500 / 28
Arabidopsis tubes (Lux) / (W/m2)	11.000 / 35

Heat compensation with illumination



Heat compensation without illumination



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▶ Electrical data	
IP protection class acc. to EN 60529	IP 20
Voltage ($\pm 10\%$) 50 / 60 Hz (V)	200-240 1N~
Nominal power (kW)	1,6
Energy consumption 1)	
without illumination at 0 °C (W)	405
with illumination at 4 °C (W)	675
with illumination at 25 °C (W)	660
with illumination at 37 °C (W)	705
Noise level db (A)	53

1) These values can be used for dimensioning air condition systems.

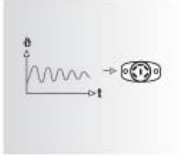
All technical data are specified for units with standard equipment at an ambient temperature of 25 °C and a line voltage fluctuation of $\pm 10\%$. The temperature data is determined in accordance to factory standard following DIN 12880, respecting the recommended wall clearances of 10% of the height, width and depth of the inner chamber. All figures are typical average values for series devices. We reserve the right to alter technical specifications at any time.

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Variable illumination

The illumination selection is based on the application, light spectrum and intensity. For example: FLUORA® growth fluorescent tubes may be exchanged for daylight fluorescent tubes



Analog outputs

For temperature 4 - 20 mA with 6-pin DIN socket (output cannot be adjusted)



BINDER DataLogger Kits

The new BINDER Data Logger Kits – Makes independent recording of temperature and humidity data in the BINDER device possible. The tailored product solution contains helpful accessories: from mounting the logger to the BINDER device to cable access assistance to the sensor mount.

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Access ports with silicone plug, 30, 50, 100 mm	<input type="radio"/>
Fasteners for additional security for racks (1 set of 4)	<input type="radio"/>
Additional PT 100 temperature sensor, flexibly installed with external connection, includes 6-pin DIN socket	<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 or at specified temperature with measuring protocol and certificate	<input type="radio"/>
Calibration certificate, measurement in center of chamber at 37 °C or at specified testing temperature	<input type="radio"/>
Extension to calibration certificate. Each additional measurement at additional measuring point or testing temperature	<input type="radio"/>
Data Logger Kit T 220: For continuous temperature recording of -90 °C to 220 °C. Kit includes 1 data logger, PT 100 sensor with 2 m Teflon extension cable and 1 fixture for mounting to the BINDER unit	<input type="radio"/>
Data Logger Software: Configuration and evaluation software for all BINDER Data Logger Kits, incl. data cable	<input type="radio"/>
Rack, stainless steel	<input type="radio"/>
Perforated shelf, stainless steel	<input type="radio"/>
Reinforced rack, stainless steel, with 1 set of fasteners (1 set of 4), max. load 70 kg	<input type="radio"/>
Stable shelf (positioned at bottom shelf level) with additional mounting for shaker operation. Other positions possible on request	<input type="radio"/>
Independent temperature safety device class 3.3 (DIN 12880) with optical alarm	<input type="radio"/>
Analog output for temperature 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 contacts. Zero-voltage relay outputs can be switched on and off either automatically and manually	<input type="radio"/>
FLUORA® growth fluorescent tube set for replacing the daylight fluorescent tubes	<input type="radio"/>
Arabidopsis fluorescent tube set for replacing the daylight fluorescent tubes	<input type="radio"/>
Replacement fluorescent tube set for one illumination cassette	<input type="radio"/>
Replacement FLUORA® illumination tube set for one illumination cassette	<input type="radio"/>
Replacement Arabidopsis lamp set for one illumination cassette	<input type="radio"/>
Door lock	<input type="radio"/>

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