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	• Same test conditions throughout the chamber interior • Independent of specimen size and quantity • No drying out of specimens	**APT.line™** • Constant and gentle circulation of air through large-surface side walls even under a full load • Homogeneous climate conditions throughout all specimens
Light	• Up to 20% greater usable space • Light sources adjustable to specimen sizes • Same irradiation results throughout the chamber interior	• 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	• Reliable testing independent of ambient conditions	• Powerful compressor cooling system with large power reserves for lighting applications • No freezing thanks to double evaporator plate • Carefully measured cooling
Standard equipment	• No extra costs • Chamber is easily moved on casters	**Comprehensive standards** • 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	• Minimum space requirements • Easy assembly • Large chamber interior volume • Easy cleaning	• 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	• Complete solution • Everything from one source • BINDER Service is always nearby	**Comprehensive product portfolio** • 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 720 (E5.1)

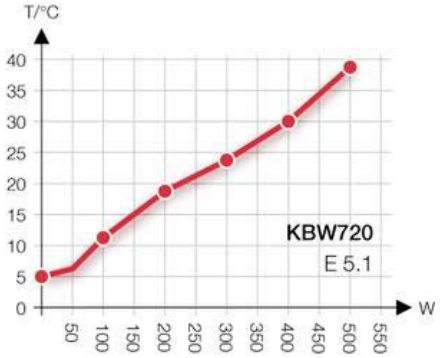
Exterior dimensions	
Width (mm)	1249
Height (incl. casters) (mm)	1924
Depth (incl. door handle, I-panel, connection) (mm)	939
Wall clearance, rear (mm)	100
Wall clearance, side (mm)	100
Steam space volume (l)	918
Number of doors (ea.)	2
Inner glass door(s) (ea.)	2

Interior dimensions	
Width (mm)	970
Height (mm)	1250
Depth (mm)	576
Interior volume (l)	698
Racks (number standard/max.)	3 / 12
Load per rack (kg)	45
Permitted total load (kg)	150
Weight (empty) (kg)	377
Variable position illumination cassettes	3

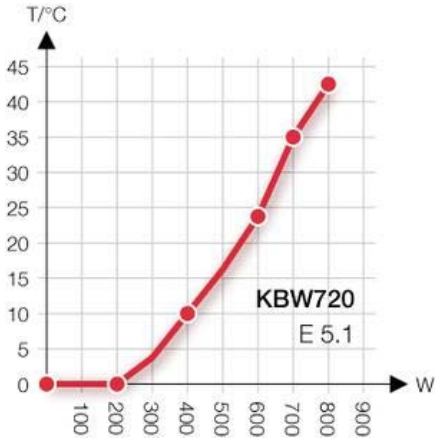
Temperature data (without illumination)	
Temperature range (°C)	0 - 70
Temperature variation (± C)	0,5
Temperature fluctuation (±K)	0,1
Max. heat compensation up to 40 °C (W)	750

Temperature data (with 100% illumination)	
Temperature range (°C)	5 - 60
Temperature variation (± C)	1
Temperature fluctuation (±K)	0,1
Max. heat compensation up to 40 °C (W)	500
Illumination data (per illumination cassette)	
Daylight tubes (Lux) / (W/m2)	14.200 / 38
Fluora® growth lamps (Lux) / (W/m2)	10.500 / 31
Arabidopsis tubes (Lux) / (W/m2)	14.000 / 38

Heat compensation with illumination



Heat compensation without illumination



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KBW 720 (E5.1)

Electrical data	
IP protection class acc. to EN 60529	IP 20
Voltage (± 10%) 50 / 60 Hz (V)	200-240 1N~
Nominal power (kW)	2,7
Energy consumption 1)	
without illumination at 0 °C (W)	455
with illumination at 4 °C (W)	880
with illumination at 25 °C (W)	820
with illumination at 37 °C (W)	885
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 ±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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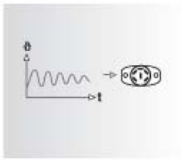
Variable illumination

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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KBW 720 (E5.1)

Access ports with silicone plug, 30, 50, 100 mm	O
Fasteners for additional security for racks (1 set of 4)	O
Additional PT 100 temperature sensor, flexibly installed with external connection, includes 6-pin DIN socket	O
Ethernet interface for communication software APT-COM™ DataControlSystem	O
Temperature measurement acc. to DIN 12880 (27 measuring points) at 37 °C or at specified temperature with measuring protocol and certificate	O
Calibration certificate, measurement in center of chamber at 37 °C or at specified testing temperature	O
Extension to calibration certificate. Each additional measurement at additional measuring point or testing temperature	O
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	O
Data Logger Software: Configuration and evaluation software for all BINDER Data Logger Kits, incl. data cable	O
Rack, stainless steel	O
Perforated shelf, stainless steel	O
Reinforced rack, stainless steel, with 1 set of fasteners (1 set of 4), max. load 70 kg	O
Stable shelf (positioned at bottom shelf level) with additional mounting for shaker operation. Other positions possible on request	O
Independent temperature safety device class 3.3 (DIN 12880) with optical alarm	O
Analog output for temperature 4 - 20 mA with 6-pin DIN socket (output not adjustable)	O
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	O
FLUORA® growth fluorescent tube set for replacing the daylight fluorescent tubes	O
Arabidopsis fluorescent tube set for replacing the daylight fluorescent tubes	O
Replacement fluorescent tube set for one illumination cassette	O
Replacement FLUORA® illumination tube set for one illumination cassette	O
Replacement Arabidopsis lamp set for one illumination cassette	O
Door lock	O

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