

## Model KBW 720 | Growth chambers with light

The BINDER climate chamber with illumination of the KBW series achieves homogeneous light distribution with its natural illumination. That allows this growth chamber to create constant lighting and temperature conditions.

### BENEFITS

- Patented lighting system ensures homogeneous light distribution
- Flexible positioning of illumination cassettes, three different light spectra, individually selectable
- Integrated weekly program in real-time



Model 720



Model 400

### MAIN FEATURES

- Temperature range: 0 °C to +70 °C
- Temperature range with light: +5 °C to +60 °C
- 3 positionable illumination cassettes, each with 5 fluorescent tubes
- APT.line™ preheating chamber technology
- Adjustable fan speed
- Intuitive touchscreen controller with time-segment and real-time programming with internal data recording
- Tight-sealing inner door made of safety glass (ESG)
- Avoidance of glass corrosion by special TIMELESS coating
- 3 stainless steel racks
- Access port with silicone plug, 30 mm, left
- Class 3.1 independent temperature safety device (DIN 12880) with visual and audible temperature alarm
- Computer interface: Ethernet
- Door heating

### ORDERING INFORMATION

Interior volume [L]	Voltage	Option model	Version	Art.-No.
698	200...240 V 1~ ph 50/60 Hz	Standard	KBW720-230V	9020-0340

**TECHNICAL DATA**

Description	KBW720-230V <sup>1</sup>
<b>Article Number</b>	<b>9020-0340</b>
<b>Performance Data Temperature</b>	
Temperature range with 100% illumination [°C]	5...60
Temperature range without illumination cassettes [°C]	0...70
Temperature variation with 100% illumination [± K]	1.0
Temperature variation without illumination cassettes [± K]	0.5
Temperature fluctuation with 100% illumination [± K]	0.1
Temperature fluctuation without illumination cassettes [± K]	0.1
<b>Lightdata per Illumination Cassettes</b>	
Daylight tubes [W/m <sup>2</sup> ]* <sup>2</sup>	38
Daylight tubes [lx]* <sup>2</sup>	13000
Fluora® growth lamps [W/m <sup>2</sup> ]* <sup>2</sup>	36
Fluora® growth lamps [lx]* <sup>2</sup>	10500
Arabidopsis lamps [W/m <sup>2</sup> ]* <sup>2</sup>	43
Arabidopsis lamps [lx]* <sup>2</sup>	14000
<b>Electrical data</b>	
Rated Voltage [V]	200...240
Power frequency [Hz]	50/60
Nominal power [kW]	2.7
Unit fuse [A]	16
Phase (Nominal voltage)	1~
<b>Measures</b>	
Interior volume [L]	698
Net weight of the unit (empty) [kg]	377
Permitted load [kg]	150
Load per rack [kg]	45
Wall clearance back [mm]	100
Wall clearance sidewise [mm]	100
<b>Internal Dimensions</b>	
Width [mm]	970
Height [mm]	1250
Depth [mm]	576
<b>Doors</b>	
Inner doors	2
Unit doors	2
<b>Housing dimensions not incl. fittings and connections</b>	
Width net [mm]	1250
Height net [mm]	1925
Depth net [mm]	890
<b>Environment-specific data</b>	
Energy consumption at 37 °C and with illumination [Wh/h]	880
Sound-pressure level [dB(A)]	59
<b>Fixtures</b>	
Number of shelves (std./max.)	3/12
Number of illumination cassettes (std./max.)	3/3

- 1 All technical data is specified for unloaded units with standard equipment at an ambient temperature of +22 °C ±3 °C and a power supply voltage fluctuation of ±10 %. The temperature data is determined in accordance to BINDER factory standard following DIN 12880, observing 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 change technical specifications at any time.
- 2 Average value, measured at 25 °C with a spherical sensor (±10 %) by 12 cm below the light cassette. The values given in W/m<sup>2</sup> refer to global radiation.

**DIMENSIONS incl. fittings and connections [mm]****OPTIONS**

Designation	Description	*	Art.-No.
	left		
	30 mm	01	8012-1445
	50 mm	01	8012-1475
	right		
<b>Access port with silicone plug</b>	30 mm	01	8012-1439
	50 mm	01	8012-1469
	top		
	30 mm	01	8012-1451
	50 mm	01	8012-1457
	100 mm	01	8012-1463
<b>Alarm output, zero-voltage</b>	for temperature ( $\pm 2$ °C) and humidity ( $\pm 5$ % RH), accessible via 6-pin DIN socket (max. 24 V - 2.5 A), with audible signal that can be switched off	-	8012-1761
<b>Analog output 4-20 mA</b>	for temperature and humidity values (output not adjustable)	-	8012-1737
<b>Arabidopsis illumination</b>	Illumination cassettes equipped with Arabidopsis fluorescent tubes instead of daylight fluorescent tubes	-	8012-0686
<b>Calibration certificate, expanded</b>	for temperature; for extending the measurement in center of chamber to include another test temperature	-	8012-1121
	for temperature, measurement in center of chamber at specified temperature	-	8012-1140
<b>Calibration certificate, temperature</b>	temperature measurement incl. certificate and 27 measuring points at specified temperature	-	8012-1599
	temperature measurement incl. certificate, 15- 18 measuring points at specified temperature	-	8012-1578
	temperature measurement incl. certificate, 9 measuring points at specified temperature	-	8012-1557
<b>Class 3.3 independent temperature safety device</b>	with visual alarm (DIN 12880)	-	8012-1100
<b>Door lock</b>	lockable door handle	-	8012-1778
<b>FLUORA® illumination</b>	Illumination cassettes equipped with FLUORA® fluorescent tubes instead of daylight fluorescent tubes	-	8012-0685
<b>Light photometry</b>	including certificate, illumination and irradiance for visible light and UV-A, 25 measuring points on 3 measurement levels, as well as spectral distribution (250 – 785 nm)	-	8012-0910
<b>Pt 100 temperature sensor</b>	additional flexible Pt 100, interior, for displaying the temperature on the unit display	-	8012-1746
<b>RS 485 interface, 2-wire</b>	Additional serial interface can be used parallel to Ethernet, for Multi Management Software APT-COM™	-	8012-1742
<b>Shelf, reinforced</b>	positioned at bottom level, max. load 45 kg, with additional attachment for operation of shaking device, stirring device or roller bottle system	-	8012-1492
<b>Zero voltage relay contacts</b>	for controlling 3 relay contacts via program regulators, accessible via 6-pin DIN socket (max. 24 V - 2.5 A)	-	8012-0695

\* Notes › See last page

## ACCESSORIES

Designation	Description	*	Art.-No.
<b>APT-COM™ 4 BASIC-Edition</b>	for simple logging and documentation requirements with up to 5 networked units. version 4, BASIC edition	-	9053-0039
<b>APT-COM™ 4 GLP-Edition</b>	for working under GLP-compliant conditions. Measured values are documented in a tamper-proof way in line with the requirements of FDA Regulation 21 CFR 11. version 4, GLP edition	-	9053-0042
<b>APT-COM™ 4 PROFESSIONAL-Edition</b>	convenient unit and user management built on the BASIC edition. Suitable for networking up to 100 units. version 4, PROFESSIONAL edition	-	9053-0040
<b>pH-neutral detergent</b>	concentrated, for gentle remove of residual contaminants; 1 kg	-	1002-0016
<b>Qualification documents</b>	IQ/OQ documents – supporting documents for validation performed by customers, consisting of: IQ/OQ checklists incl. calibration guide and comprehensive unit documentation; parameters: temperature, humidity, and light values Digital in PDF format	-	7057-0003
	Hard copy inside folder	-	7007-0003
	IQ/OQ/PQ documents – supporting documents for validation performed by customers, according to customer requirements, PQ section added to qualification folder IQ/OQ; parameters: temperature, humidity, and light values Digital in PDF format	-	7057-0007
	Hard copy inside folder	-	7007-0007
<b>Rack</b>	stainless steel	-	8012-2051
<b>Rack accessories</b>	fasteners (1 set of 4) for additional security of racks	-	8012-0620
<b>Rack, reinforced</b>	stainless steel, with fasteners (1 set of 4)	-	8012-0674
<b>RS 485 / RS 422 interface converter</b>	RS 422 cable set and RS 485 / RS 422 interface converter for connection to 10-way plug distributor		
	115 V option model	-	8012-0599
	230 V option model	-	8012-0589
<b>Shelf, perforated</b>	Stainless steel	-	8009-0486

\* Notes › See last page

## SERVICES

Designation	Description	*	Art.-No.
<b>Installation services</b>			
Unit commissioning	Connect the unit to the customer-side connections (electricity, water, wastewater, gas), basic functions check, brief operating instructions. (excl.: unpacking, setup, controller instructions, programming, installation work)	05	DL10-0300
Unit instructions	Instruction regarding operating principle and basic functions of the unit, operation of the control electronics including programming	05	DL10-0700
<b>Maintenance contracts</b>			
<b>Maintenance services</b>			
BRONZE 3-year maintenance contract	Maintenance service as contractually agreed, visual inspection of mechanical and electrical components, check of control response, 20% discount on spare parts	05	DL20-0710
GOLD 3-year maintenance contract	Maintenance service as contractually agreed, visual inspection of mechanical and electrical components, check of control response, 20% discount on spare parts, testing of all key functions, replacement of wear parts, calibration of one temperature/humidity/pressure value, including certificate	05	DL20-0930
Maintenance	One-off maintenance service in accordance with maintenance schedule. Visual inspection of mechanical and electrical components, testing of all key functions. Calibration of a test temperature specified by the user in center of usable space without certificate	05	DL20-0400
SILVER 3-year maintenance contract	Maintenance service as contractually agreed, visual inspection of mechanical and electrical components, check of control response, 20% discount on spare parts, testing of all key functions, calibration of one test temperature specified by the user in the center of the usable space, without certificate	05	DL20-0820
<b>Calibration services</b>			
Calibration certificate, temperature	Calibration of one (1) test temperature specified by the user in center of chamber, including certificate	03, 04, 05	DL30-0101
	Extension of calibration of one (1) additional test temperature specified by the user in the center of the usable space, including certificate	03, 04, 05	DL30-0102
Radiometric light photometry	Radiometric measurement in the visible spectrum with determination and documentation of intensity distribution from an illumination cassette on 3 measurement levels, including certificate	03, 04, 05	DL31-0000

\* Notes › See last page

Designation	Description	*	Art.-No.
Temperature measurement, 18 measuring points	Temperature measurement with 18 measuring points with a set value specified by the user, including certificate	03, 04, 05	DL30-0118
Temperature measurement, 27 measuring points	Temperature measurement with 27 measuring points with a set value specified by the user, including certificate	03, 04, 05	DL30-0127
Temperature measurement, 9 measuring points	Temperature measurement with 9 measuring points with a set value specified by the user, including certificate	03, 04, 05	DL30-0109
<b>Validation services</b>			
Execution of IQ/OQ incl. light photometry	Execution of IQ/OQ including light photometry in accordance with qualification folder	05	DL43-0400
Execution of IQ/OQ/PQ	Execution of IQ/OQ/PQ in accordance with qualification folder	05	DL44-0500
<b>Warranty service</b>			
1-year warranty extension	The warranty is extended by 1 year from the delivery date, wear parts are excluded	-	DL50-0030

\* Notes › See last page

## NOTES

- 01 Condensation may occur in the area around the access port. Access ports may be placed in custom locations for an additional charge.
- 02 UL mark is not granted when this option is used.
- 03 Sensor calibration is performed in an accredited calibration laboratory.
- 04 Calibration is performed according to the BINDER factory standard.
- 05 Quoted prices do not include travel costs. Please refer to the chapter on BINDER Service for travel costs for your region. Quoted prices for services performed in Switzerland do not include a country-specific added fee (available on request).

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