

Model KBW 400 | 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 400



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IMPORTANT FEATURES

- Temperature range: 0 °C to +70 °C
- Temperature range with light: +5 °C to +60 °C
- 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
- Internal data logger, measured values can be read out in open format via USB
- Unit self-test for comprehensive status analysis
- Tight-sealing inner door made of safety glass (ESG)
- Avoidance of glass corrosion by special TIMELESS coating
- 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		Power supply - unit fuse	Plug*	Version	Model version	Art.-No.
[L]	[L]					
Model KBW 400						
400	400	200...240 V 1~ 50/60 Hz -16,0 A	CEE 7/7	Standard	KBW400-230V	9020-0339

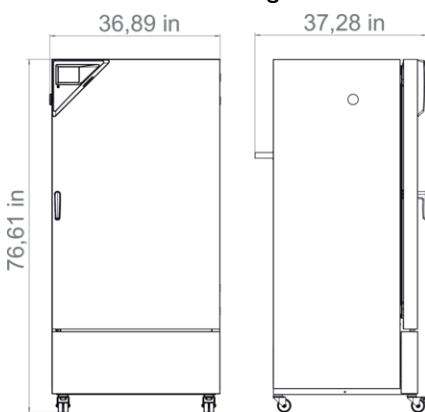
TECHNICAL DATA

Data	
Designation	KBW400-230V
Article Number	9020-0339
Option model	Standard
Performance Data Temperature	
Temperature range	0...70 °C
Temperature range without illumination cassettes	0...70 °C
Temperature range with 100% illumination	5...60 °C
Temperature uniformity with 100% illumination	1,5 ± K
Temperature uniformity without illumination cassettes	0,5 ± K
Temperature fluctuation with 100% illumination	0,2 ± K
Temperature fluctuation without illumination cassettes	0,1 ± K
Max. heat compensation at 40°C	600 W
Max. heat compensation at 40°C with illumination	450 W
Lightdata per Illumination Cassettes	
Daylight tubes	24 W/m ²
Daylight tubes	9000 lx
Fluora® growth lamps	7500 lx
Arabidopsis lamps	11000 lx
Electrical data	
Rated Voltage	200...240 V
Power frequency	50/60 Hz
Nominal power	1,6 kW
Unit fuse	16,0 A
Phase (Nominal voltage)	1~
Dimensions and weights	
Interior volume	400 L
Net weight of the unit (empty)	252 kg
Load per rack	30 kg

Permitted load	120 kg
Wall clearance back	100 mm
Wall clearance sidewise	100 mm
Housing dimensions not incl. fittings and connections	
Width net	925 mm
Height net	1,950 mm
Depth net	805 mm
Internal Dimensions	
Interior width	650 mm
Interior height	1,270 mm
Interior depth	485 mm
Inner doors	1
Unit doors	1
Environment-specific data	
Sound-pressure level	53 dB(A)
Energy consumption at 37°C and with illumination	620 Wh/h
Fixtures	
Number of shelves (std./max.)	3/12
Number of illumination cassettes (std./max.)	3/3

All technical data is specified for unloaded units with standard equipment at an ambient temperature of $+22\text{ °C} \pm 3\text{ °C}$ and a power supply voltage fluctuation of $\pm 10\%$. 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.

DIMENSIONS Incl. fittings and connections [mm]



OPTIONS

Designation	Description	*	Art.-No.	
Access port with silicone plug	left			
	30 mm	01	8012-1445	
	50 mm	01	8012-1475	
	right			
	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	
	Alarm output, zero-voltage	for temperature (± 2 °C) and humidity (± 5 % RH), accessible via 6-pin DIN socket (max. 24 V - 2.5 A), with audible signal that can be switched off	-	8012-1757
	Analog output 4-20 mA	for temperature and humidity values (output not adjustable)	-	8012-1721
Arabidopsis illumination	Illumination cassettes equipped with Arabidopsis fluorescent tubes instead of daylight fluorescent tubes	-	8012-0791	
Calibration certificate, expanded	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	
Calibration certificate, temperature	temperature measurement incl. certificate, 9 measuring points at specified temperature	-	8012-1557	
	temperature measurement incl. certificate, 15- 18 measuring points at specified temperature	-	8012-1578	
	temperature measurement incl. certificate and 27 measuring points at specified temperature	-	8012-1599	
Class 3.3 independent temperature safety device	with visual alarm (DIN 12880)	-	8012-1750	
Door lock	lockable door handle	-	8012-1775	
FLUORA® illumination	Illumination cassettes equipped with FLUORA® fluorescent tubes instead of daylight fluorescent tubes	-	8012-0790	
Light photometry	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	
Pt 100 temperature sensor	additional flexible Pt 100, interior, for displaying the temperature on the unit display	-	8012-1746	
RS 485 interface, 2-wire	Additional serial interface can be used parallel to Ethernet, for Multi Management Software APT-COM™	-	8012-1742	
Shelf, reinforced	positioned at bottom level, max. load 45 kg, with additional attachment for operation of shaking device, stirring device or roller bottle system	-	8012-1429	

Designation	Description	*	Art.-No.
Zero voltage relay contacts	for controlling 3 relay contacts via program regulators, accessible via 6-pin DIN socket (max. 24 V - 2.5 A)	-	8012-0679

ACCESSORIES

Designation	Description	*	Art.-No.
APT-COM™ 4	Multi Management Software APT-COM™		
	version 4, BASIC edition	-	9053-0039
	version 4, GLP edition	-	9053-0042
	version 4, PROFESSIONAL edition	-	9053-0040
Qualification documents	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
	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
RS 485 / RS 422 interface converter	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
Rack	stainless steel	-	8012-2050
Rack, reinforced	stainless steel, with fasteners (1 set of 4)	-	8012-0638
Rack accessories	fasteners (1 set of 4) for additional security of racks	-	8012-2280
pH-neutral detergent	concentrated, for gentle remove of residual contaminants; 1 kg	-	8012-2250

SERVICES

Designation	Description	*	Art.-No.
Calibration services			
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. Travel to be quoted separate.	-	DL31-0000

Designation	Description	*	Art.-No.
Temperature calibration	Extension of calibration of one (1) additional test temperature specified by the user in the center of the usable space, including certificate Travel to be quoted separate.	–	DL30-0102
Temperature measurement, 9 measuring points	Temperature measurement with 9 measuring points with a set value specified by the user, including certificate. Travel to be quoted separate. A total of 3 shelves are required.	–	DL30-0109
Temperature measurement, 18 measuring points	Temperature measurement with 18 measuring points with a set value specified by the user, including certificate. Travel to be quoted separate. A total of 2 shelves are required.	–	DL30-0118
Temperature measurement, 27 measuring points	Temperature measurement with 27 measuring points with a set value specified by the user, including certificate. Travel to be quoted separate. A total of 3 shelves are required.	–	DL30-0127
Installation services			
Unit installation	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) Travel to be quoted as separate.	–	DL10-0300
Unit instructions	Instruction regarding operating principle and basic functions of the unit, operation of the control electronics including programming. Travel to be quoted as separate Limited to 3 hours.	–	DL10-0700
Maintenance services			
GOLD 3-year maintenance contract	Annual Device Inspection Includes Preventive Maintenance with Calibration Certificate of both Temperature and Humidity, 25% Discount on Spare Parts and Labor for any additional Services needed. One additional courtesy visit per year can be used for service visit or operator. Wear + tear parts to be purchased or billed to customer. Travel to be quoted separate.	–	DL20-0950
Validation services			
Execution of IQ/OQ/PQ	Execution of IQ/OQ/PQ in accordance with qualification folder. Travel to be quoted separate.	–	DL44-0500
Execution of IQ/OQ incl. light photometry	Execution of IQ/OQ including light photometry in accordance with qualification folder. Travel to be quoted separate.	–	DL43-0400
Warranty service			
1-year warranty extension	The warranty is extended by 1 year from the delivery date, wear parts are excluded	–	DL50-0030

NOTES

01 Condensation may occur in the area around the access port. Access ports may be placed in custom locations for an additional charge.

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