

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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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.
Model KBW 400				
400	200...240 V 1~ ph 50/60 Hz	Standard	KBW400-230V	9020-0339

TECHNICAL DATA

Description	KBW400-230V ¹
Article Number	9020-0339
Performance Data Temperature	
Temperature range with 100% illumination [°C]	5...60
Temperature range without illumination cassettes [°C]	0...70
Temperature variation with 100% illumination [± K]	1.5
Temperature variation without illumination cassettes [± K]	0.5
Temperature fluctuation with 100% illumination [± K]	0.2
Temperature fluctuation without illumination cassettes [± K]	0.1
Lightdata per Illumination Cassettes	
Daylight tubes [W/m ²] ²	24
Daylight tubes [lx] ²	9000
Fluora® growth lamps [W/m ²] ²	23
Fluora® growth lamps [lx] ²	7500
Arabidopsis lamps [W/m ²] ²	32
Arabidopsis lamps [lx] ²	11000
Electrical data	
Rated Voltage [V]	200...240
Power frequency [Hz]	50/60
Nominal power [kW]	1.6
Unit fuse [A]	16
Phase (Nominal voltage)	1~
Internal Dimensions	
Depth [mm]	485
Height [mm]	1270
Width [mm]	650
Housing dimensions not incl. fittings and connections	
Width net [mm]	925
Height net [mm]	1950
Depth net [mm]	805
Measures	
Wall clearance back [mm]	100
Wall clearance sidewise [mm]	100
Interior volume [L]	400
Net weight of the unit (empty) [kg]	252
permitted load [kg]	120
Load per rack [kg]	30
Doors	
Inner doors	1
Unit doors	1
Environment-specific data	
Energy consumption at 37 °C and with illumination [Wh/h]	620
Sound-pressure level [dB(A)]	53

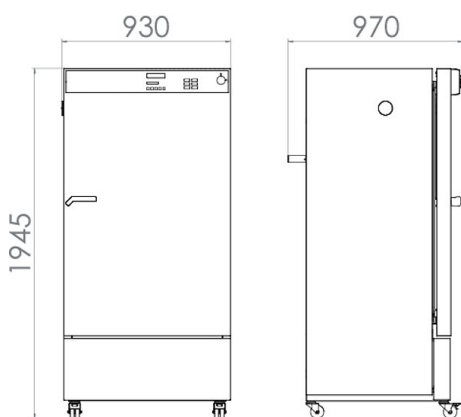
1 All technical data is specified for unloaded units with standard equipment at an ambient temperature of +22 °C ±3 °C and a power supply voltage fluctuation of ±10 %. The temperature data is determined in accordance to BINDER factory standard following DIN 12880, observing the recommended wall clearances 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/m² refer to global radiation.

Description	KBW400-230V ¹
Article Number	9020-0339
Fixtures	
Number of shelves (std./max.)	3/12
Number of illumination cassettes (std./max.)	3/3

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- 2 Average value, measured at 25 °C with a spherical sensor (±10 %) by 12 cm below the light cassette. The values given in W/m² refer to global radiation.

DIMENSIONS incl. fittings and connections [mm]



OPTIONS AND ACCESSORIES

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
APT-COM™ 4 BASIC-Edition	for simple logging and documentation requirements with up to 5 networked units. version 4, BASIC edition	19	9053-0039
APT-COM™ 4 GLP-Edition	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	19	9053-0042
APT-COM™ 4 PROFESSIONAL-Edition	convenient unit and user management built on the BASIC edition. Suitable for networking up to 100 units. version 4, PROFESSIONAL edition	19	9053-0040
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

* Notes › See last page

Designation	Description	*	Art.-No.
Calibration certificate, temperature	for temperature, measurement in center of chamber at specified temperature	-	8012-1140
	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
Class 3.3 independent temperature safety device	with visual alarm (DIN 12880)	-	8012-1750
Data Logger Kit	T 220: For continuous temperature logging from -90 °C to 220 °C. The kit includes 1 data logger, Pt 100 sensor with 2 m extension cable and 1 magnetic fixture for mounting to the BINDER unit	19	8012-0715
Data Logger Software	LOG ANALYZE software kit, configuration and evaluation software for all BINDER Data Logger Kits (incl. USB data cable)	19	8012-0821
Door lock	lockable door handle	-	8012-1775
FLUORA® illumination	Illumination cassettes equipped with FLUORA® fluorescent tubes instead of daylight fluorescent tubes	-	8012-0790
Interior socket	Waterproof, switched flush-mounting box (CA3GD) for nominal voltage in unit interior, with cover and corresponding plug (nominal voltage; max. 500 W; max. 90 °C; protection class IP67)	07	8012-1741
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
pH-neutral detergent	concentrated, for gentle remove of residual contaminants; 1 kg	-	1002-0016
Pt 100 temperature sensor	additional flexible Pt 100, interior, for displaying the temperature on the unit display	-	8012-1746
Rack	stainless steel	-	6004-0101
Rack accessories	fasteners (1 set of 4) for additional security of racks	-	8012-0620
Rack, reinforced	stainless steel, with fasteners (1 set of 4)	-	8012-0638
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
RS 485 interface, 2-wire	Additional serial interface can be used parallel to Ethernet, for Multi Management Software APT-COM™	-	8012-1742
Shelf, perforated	Stainless steel	-	6004-0040
Shelf, reinforced	positioned at bottom level, max. load 67 kg, with additional attachment for operation of shaking device, stirring device or roller bottle system	-	8012-1429
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

* Notes › See last page

SERVICES

Designation	Description	*	Art.-No.
Installation services			
Installation	and set up of unit at operating location, connect to existing connections	13, 18	DL10-0300
Instruction	unit function instructions for operation and programming of the controller	18	DL10-0700
Preventive maintenance			
Preventive maintenance	Executive of equipment inspection according to maintenance plan	14, 18	DL20-0400
Calibration services			
Calibration temperature incl. certificate	including certificate, one measuring point in center of chamber at specified temperature	14, 16, 17, 18	DL30-0101
Light photometry	including certificate, radiometric measurement in the visible spectrum with determination and documentation of intensity distribution from an illumination cassette on 3 measurement levels	14, 16, 17, 18	DL31-0000
Temperature measurement 27 measuring points	including certificate, 27 measuring points at specified temperature	14, 16, 17, 18	DL30-0127
Temperature measurement 9 measuring points	including certificate, 9 measuring points at specified temperature	14, 16, 17, 18	DL30-0109
Validation services			
Execution of IQ/OQ incl. light measurement	including light measurement, in accordance with qualification folder	15, 18, 20	DL43-0400
Execution of IQ/OQ/PQ	in accordance with customer's requirement, price: on request	15, 18	DL44-0500

* Notes › See last page

Designation	Description	*	Art.-No.
Qualification folder IQ/OQ	supporting documents for validation performed by customer, consisting of: IQ/OQ checklists, unit schematics, QM certificate in accordance with ISO 9001	15, 18, 20	8012-0877
Qualification folder IQ/OQ/PQ	supporting documents for validation performed by customer, in accordance with customer's requirement, extension of Qualification folder IQ/OQ by chapter PQ	15, 18	8012-0964
Warranty service			
Extension of the warranty from 2 to 3 years	beginning with the date of delivery, wearing parts are not included	-	DL02-2041
Extension of the warranty from 2 to 5 years	beginning with the date of delivery, wearing parts are not included	-	DL02-2042

* Notes › See last page



Wolflabs

Wolf Laboratories Limited

www.wolflabs.co.uk

Tel: 01759 301142

Fax: 01759 301143

sales@wolflabs.co.uk



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