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



Model

MAIN 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 [cu.ft.]	Voltage	Option model	Version	Art.-No.
14.1	200…240 V 1~ 50/60 Hz	Standard	KBW400-230V	9020-0339

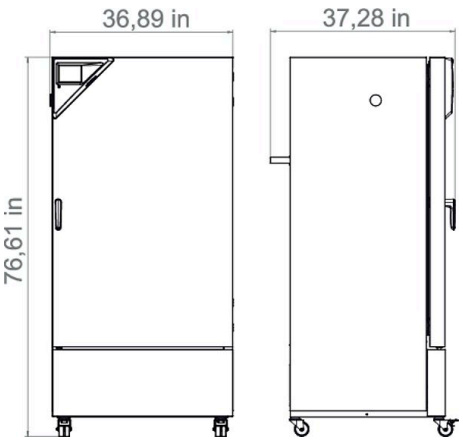
TECHNICAL DATA

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/m²]*[2]	24
Daylight tubes [lx]*[2]	9000
Fluora® growth lamps [W/m²]*[2]	23
Fluora® growth lamps [lx]*[2]	7500
Arabidopsis lamps [W/m²]*[2]	32
Arabidopsis lamps [lx]*[2]	11000
Electrical data	
Nominal Voltage [V]	200...240
Power frequency [Hz]	50/60
Nominal power [kW]	1.6
Unit fuse [A]	16
Phase (Nominal voltage)	1~
Measures	
Interior volume [cu.ft.]	14.1
Net weight of the unit (empty) [lbs]	589
permitted load [lbs]	265
Load per rack [lbs]	66
Wall clearance back [in]	3.94
Wall clearance sidewise [in]	3.94
Internal Dimensions	
Interior width [in]	25.61
Interior height [in]	50
Interior depth [in]	19.11
Doors	
Inner doors	1
Unit doors	1
Housing dimensions not incl. fittings and connections	
Width net [in]	36.45
Height net [in]	76.8
Depth net [in]	31.72
Environment-specific data	
Energy consumption at 37 °C and with illumination [Wh/h]	620
Sound-pressure level [dB(A)]	53
Fixtures	
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/m2 refer to global radiation.

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
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
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
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

ACCESSORIES

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

* Notes › See last page

SERVICES

Designation	Description	*	Art.-No.
Maintenance services			
Calibration services			
Validation services			
Installation services			
Warranty service			
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
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
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
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
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
Temperature calibration	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
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

* Notes › See last page

Designation	Description	*	Art.-No.
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
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)	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
Warranty extension from 2 to 3 years	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).

BINDER GmbH
Tuttlingen, Germany
TEL +49 7462 2005 0
FAX +49 7462 2005 100
info@binder-world.com
www.binder-world.com

BINDER Asia Pacific (Hong Kong) Ltd.
Kowloon, Hong Kong, P.R. China
TEL +852 39070500
FAX +852 39070507
asia@binder-world.com
www.binder-world.com

BINDER Environmental Testing Equipment (Shanghai) Co., Ltd.
Shanghai, P.R. China
TEL +86 21 685 808 25
FAX +86 21 685 808 29
china@binder-world.com
www.binder-world.com

BINDER Inc.
Bohemia, NY, USA
TEL +1 631 224 4340
FAX +1 631 224 4354
usa@binder-world.com
www.binder-world.us