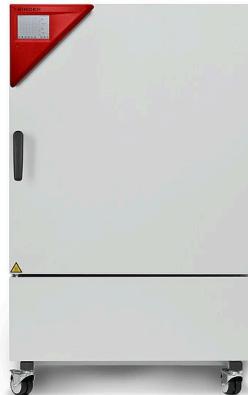


Model KBWF 240 | Growth chambers with light and humidity

The BINDER climate chamber with illumination of the KBW series achieves homogeneous light distribution with its natural illumination. That allows this climate 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
- Pressure humidification with fast response times



Model



Model

MAIN FEATURES

- Temperature range: 0 °C to +70 °C
- Temperature range with light: +10 °C to +60 °C
- Humidity range: 10 % to 80 % RH
- positionable illumination cassettes, each with 5 fluorescent tubes
- APT.line™ preheating chamber technology
- Adjustable fan speed
- Humidity regulation with capacitative humidity sensor and vapor humidification
- 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
- Display via color LCD monitor
- 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
- 60 Hz version on request

ORDERING INFORMATION

Interior volume [cu.ft.]	Voltage	Option model	Version	Art.-No.
8.7	200...240 V 1~ 50 Hz	Standard	KBWF240-230V	9020-0336

TECHNICAL DATA

Description	KBWF240-230V¹
Article Number	9020-0336
Performance Data Temperature	
Temperature range with 100% illumination [°C]	10...60
Temperature range without illumination cassettes [°C]	0...70
Performance Data Climate	
Temperature range with 100% illumination [°C]	10...60
Temperature range without illumination cassettes [°C]	10...70
Humidity range with illumination cassettes, with illumination [% RH]	10...75
Humidity range without illumination [% RH]	10...80
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
Nominal power [kW]	2.4
Unit fuse [A]	16
Phase (Nominal voltage)	1~
Measures	
Interior volume [cu.ft.]	8.7
Net weight of the unit (empty) [lbs]	472
Permitted load [lbs]	220
Load per rack [lbs]	66
Wall clearance back [in]	3.94
Wall clearance sidewise [in]	3.94
Internal Dimensions	
Width [in]	25.61
Height [in]	30.93
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]	57.7
Depth net [in]	31.52
Environment-specific data	
Energy consumption at 37 °C and 75 % RH [Wh/h]	760
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.

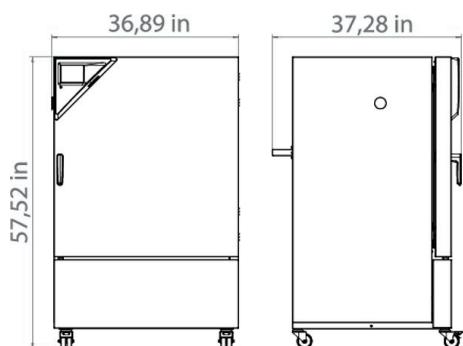
² Average value, measured at 25 °C with a spherical sensor (±10 %) by 12 cm below the light cassette. The values given in W/m² refer to global radiation.

Description	KBWF240-230V ¹
Article Number	9020-0336
Fixtures	
Number of shelves (std./max.)	2/7
Number of illumination cassettes (std./max.)	2/2

1 All technical data is specified for unloaded units with standard equipment at an ambient temperature of $+22^{\circ}\text{C} \pm 3^{\circ}\text{C}$ 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.

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

DIMENSIONS INCL. FITTINGS AND CONNECTIONS [MM]



OPTIONS

Designation	Description	*	Art.-No.
	left		
	30 mm	01	8012-1447
	50 mm	01	8012-1477
	right		
Access port with silicone plug	30 mm	01	8012-1441
	50 mm	01	8012-1471
	top		
	30 mm	01	8012-1453
	50 mm	01	8012-1459
	100 mm	01	8012-1465
Alarm output, zero-voltage	for temperature ($\pm 2^{\circ}\text{C}$) and humidity ($\pm 5\% \text{ RH}$), accessible via 6-pin DIN socket (max. 24 V - 2.5 A), with audible signal that can be switched off	-	8012-1760
Analog output 4-20 mA	for temperature and humidity values (output not adjustable)	-	8012-1736
Arabidopsis illumination	Illumination cassettes equipped with Arabidopsis fluorescent tubes instead of daylight fluorescent tubes	-	8012-1479
Calibration certificate, expanded	for temperature and humidity; for extending the measurement in center of chamber to include another test value	-	8012-1192
Calibration certificate, temperature	temperature measurement incl. certificate and 27 measuring points at specified temperature	-	8012-1607
	temperature measurement incl. certificate, 15- 18 measuring points at specified temperature	-	8012-1587
	temperature measurement incl. certificate, 9 measuring points at specified temperature	-	8012-1566
Calibration certificate, temperature and humidity	Measurement in center of chamber at $25^{\circ}\text{C} / 60\% \text{ RH}$ or at specified test values	-	8012-1186
	temperature (according to DIN12880) and humidity measurement incl. certificate, 27 temperature measuring points and 1 humidity measuring point, at $25^{\circ}\text{C} / 60\% \text{ RH}$ or at specified values	-	8012-1613
Class 3.3 independent temperature safety device	with visual alarm (DIN 12880)	-	8012-1753
Door lock	lockable door handle	-	8012-1776
FLUORA® illumination	Illumination cassettes equipped with FLUORA® fluorescent tubes instead of daylight fluorescent tubes	-	8012-1478

* Notes > See last page

Designation	Description	*	Art.-No.
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)	–	8012-1547
Pt 100 temperature sensor	additional flexible Pt 100, interior, for displaying the temperature on the unit display	–	8012-1749
RS 485 interface, 2-wire	Additional serial interface can be used parallel to Ethernet, for Multi Management Software APT-COM™	–	8012-1745
Shelf, reinforced	positioned at bottom level, max. load 45 kg, with additional attachment for operation of shaking device, stirring device or roller bottle system	–	8012-1430

* Notes > See last page

ACCESSORIES

Designation	Description	*	Art.-No.
BINDER PURE AQUA SERVICE	System for preparation or complete desalination of tap water, complete set containing PURE AQUA 300 single-use cartridge, measuring device, and all necessary connecting parts	–	8012-0759
BINDER PURE AQUA SERVICE, accessories	Single-use, replacement cartridge for BINDER PURE AQUA System	–	6011-0165
Multi Management Software	Multi Management Software APT-COM™	–	
version 4, BASIC edition		–	9053-0039
version 4, GLP edition		–	9053-0042
version 4, PROFESSIONAL edition		–	9053-0040
pH-neutral detergent	concentrated, for gentle remove of residual contaminants; 1 kg	–	1002-0016
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	–	8012-0620
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
Shelf, perforated	Stainless steel	–	6004-0040
Water supply set	consisting of fresh- and waste-water containers (20 liters each), cabling and pump	–	
external, for hanging from the back of the device		–	8012-0643
external, free-standing		–	8012-1846

* Notes > See last page

SERVICES

Designation	Description	*	Art.-No.
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)	05	DL10-0300
Maintenance services			
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

* Notes > See last page

Designation	Description	*	Art.-No.
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
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	03, 04, 05	DL31-0000
Temperature and humidity calibration	Expansion –Temperature and humidity calibration with 1 measuring point in center of chamber with 1 specified pair of values, including certificate	03, 04, 05	DL30-0302
	Temperature and humidity calibration with 1 measuring point in center of chamber with 1 specified pair of values, including certificate	03, 04, 05	DL30-0301
Temperature and humidity measurement according to DIN12880	Temperature measurement in accordance with DIN 12880 with 27 temperature measuring points and 1 humidity measuring point in center of chamber with a pair of values specified by the user, including certificate	03, 04, 05	DL30-0427
Temperature measurement, 18 temperature measuring points and 1 humidity measuring point	Temperature measurement with 18 temperature measuring points and 1 humidity measuring point in center of chamber with a pair of values specified by the user, including certificate	03, 04, 05	DL30-0318
Temperature measurement, 27 temperature measuring points and 1 humidity measuring point	Temperature measurement with 27 temperature measuring points and 1 humidity measuring point in center of chamber with a pair of values specified by the user, including certificate	03, 04, 05	DL30-0327
Temperature measurement, 9 temperature measuring points and 1 humidity measuring point	Temperature measurement with 9 temperature measuring points and 1 humidity measuring point in center of chamber with a pair of values specified by the user, including certificate	03, 04, 05	DL30-0309
Validation services			
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
Warranty service			
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).

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