

## 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 240



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### IMPORTANT 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 capacitive 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		Power supply - unit fuse	Plug*	Version	Model version	Art.-No.
[L]	[L]					
<b>Model KBWF 240</b>						
247	247	200...240 V 1~ 50 Hz -16,0 A	CEE 7/7	Standard	KBWF240-230V	9020-0336

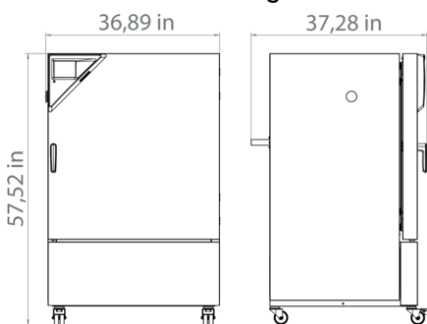
## TECHNICAL DATA

Data	
Designation	KBWF240-230V
Article Number	9020-0336
Option model	Standard
Performance Data Temperature	
Temperature range without illumination cassettes	0...70 °C
Temperature range with 100% illumination	10...60 °C
Max. heat compensation at 40°C with illumination	400 W
Performance Data Climate	
Temperature range with humidity and without illumination cassettes	10...70 °C
Temperature range with humidity and 100% illumination	10...60 °C
Humidity range without illumination cassettes	10...80 % r.F.
Humidity range with 100% illumination	...75 % r.F.
Lightdata per Illumination Cassettes	
Daylight tubes	24 W/m <sup>2</sup>
Daylight tubes	9000 lx
Fluora® growth lamps	7500 lx
Arabidopsis lamps	11000 lx
Electrical data	
Rated Voltage	200...240 V
Power frequency	50 Hz
Nominal power	2,4 kW
Unit fuse	16,0 A
Phase (Nominal voltage)	1~
Measures	
Interior volume	247 L
Net weight of the unit (empty)	214 kg
Load per rack	30 kg
Permitted load	100 kg
Wall clearance back	100 mm

Wall clearance sidewise	100 mm
<b>Housing dimensions not incl. fittings and connections</b>	
Width net	925 mm
Height net	1,465 mm
Depth net	800 mm
<b>Internal Dimensions</b>	
Interior width	650 mm
Interior height	785 mm
Interior depth	485 mm
Inner doors	1
Unit doors	1
<b>Environment-specific data</b>	
Sound-pressure level	53 dB(A)
Energy consumption at 37°C and 75% RH	760 Wh/h
<b>Fixtures</b>	
Number of shelves (std./max.)	2/7
Number of illumination cassettes (std./max.)	2/2

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.

### DIMENSIONS Incl. fittings and connections [mm]



### OPTIONS

Designation	Description	*	Art.-No.
	left		
Access port with silicone plug	30 mm	01	8012-1447

Designation	Description	*	Art-No.
	50 mm	01	8012-1477
	right		
	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 ( $\pm 2$ °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	-	8012-1760
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
	temperature measurement incl. certificate, 9 measuring points at specified temperature	-	8012-1566
Calibration certificate, temperature	temperature measurement incl. certificate, 15- 18 measuring points at specified temperature	-	8012-1587
	temperature measurement incl. certificate and 27 measuring points at specified temperature	-	8012-1607
	Measurement in center of chamber at 25°C / 60% RH or at specified test values	-	8012-1186
Calibration certificate, temperature and humidity	temperature (according to DIN12880) and humidity measurement incl. certificate, 27 temperature measuring points and 1 humidity measuring point, at 25 °C / 60 % 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
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

## 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
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
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		
RS 485 / RS 422 interface converter	Digital in PDF format	-	7057-0003
	Hard copy inside folder	-	7007-0003
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
Shelf, perforated	Stainless steel	-	8012-2163
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
pH-neutral detergent	concentrated, for gentle remove of residual contaminants; 1 kg	-	8012-2250

## SERVICES

Designation	Description	*	Art-No.
<b>Calibration services</b>			
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
Temperature and humidity calibration	Expansion –Additional Temperature and humidity calibration with 1 measuring point in center of chamber with 1 specified pair of values, including certificate. Travel to be quoted separate.	–	DL30-0302
	Temperature and humidity calibration with 1 measuring point in center of chamber with 1 specified pair of values, including certificate. Travel to be quoted separate.	–	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	–	DL30-0427
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. Travel to be quoted separate. A total of 3 shelves are required.	–	DL30-0309
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. Travel to be quoted separate. A total of 2 shelves are required.	–	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. Travel to be quoted separate. A total of 3 shelves are required.	–	DL30-0327
<b>Installation services</b>			
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
<b>Maintenance services</b>			
BRONZE 3-year maintenance contract	Annual Device Inspection Includes Preventive Maintenance with Calibration Certificate. 10% Discount on Spare Parts and Labor for any additional Services needed Wear + tear parts to be purchased or billed to customer. Travel to be quoted as separate.	–	DL20-0710
GOLD 3-year maintenance contract	Annual Device Inspection Includes Preventive Maintenance with Calibration Certificate of Temperature, Humidity and pressure value. 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.	–	DL20-0930
Preventive maintenance	One-off maintenance service in accordance with maintenance schedule. Visual inspection of mechanical and electrical components, testing of all key functions. Checking a test temperature specified by the user in center of usable space without certificate. Wear + tear parts need to be purchased or billed to customer. Travel to be quoted as separate.	–	DL20-0400
SILVER 3-year maintenance contract	Annual Device Inspection Includes Preventive Maintenance with Calibration Certificate 15% 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 training. Wear + tear parts to be purchased or billed to customer. Travel to be quoted separate.	–	DL20-0820

Designation	Description	*	Art.-No.
<b>Validation services</b>			
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
<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

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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