

# Model KBWF 240 | Growth chambers with light and humidity

## 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
- Pressure humidification with fast response times



Model 240



Model 240

## MAIN FEATURES

- Temperature range: 0 °C to 70 °C
- Temperature range with light: 10 °C to 60 °C
- Humidity range: 10 % to 80 % RH
- 2 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
- Controller with time-segment programming
- Display via color LCD monitor
- Tightly-sealed inner door made of tempered safety glass
- 2 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: RS 422
- Door heating

## ORDERING INFORMATION

Interior volume [L]	Voltage	Option model	Version	Art.-No.
Model KBWF 240				
247	200...240 V 1~ 50 Hz	Standard	KBWF240-230V	9020-0281

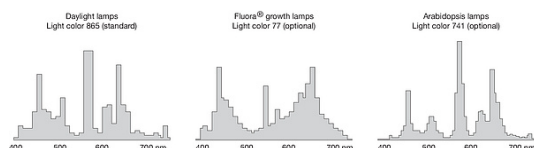
## TECHNICAL DATA

Description	KBWF240-230V
<b>Article Number</b>	<b>9020-0281</b>
Performance Data Temperature	
Temperature range without illumination cassettes [°C]	0...70
Temperature range with illumination cassettes, with illumination [°C]	10...60
Lightdata per Illumination Cassettes	
Daylight tubes [W/m²]	24
Daylight tubes [lx]	9000

**Data Sheet Model KBWF 240**

Description	KBWF240-230V
<b>Article Number</b>	<b>9020-0281</b>
Fluora® growth lamps [W/m²]	23
Fluora® growth lamps [lx]	7500
Arabidopsis lamps [W/m²]	32
Arabidopsis lamps [lx]	11000
<b>Electrical data</b>	
Rated Voltage [V]	200...240
Power frequency [Hz]	50
Nominal power [kW]	2.4
Unit fuse [A]	16
Phase (Nominal voltage)	1~
<b>Measures - Outer dimensions</b>	
Width net [mm]	925
Height net [mm]	1465
Depth net [mm]	800
Wall clearance back [mm]	100
Wall clearance sidewise [mm]	100
<b>Measures - Doors</b>	
Inner doors	1
Unit doors	1
<b>Measures - Internal Dimensions</b>	
Width [mm]	650
Height [mm]	785
Depth [mm]	485
<b>Measures</b>	
Interior volume [L]	247
Net weight of the unit (empty) [kg]	214
Load per rack [kg]	30
<b>Environment-specific data</b>	
Energy consumption at 37 °C and 75 % RH	660 Wh/h
Sound-pressure level [dB(A)]	52

## CHARTS



Light Spectra

## OPTIONS AND ACCESSORIES

Designation	Description	*	Art.-No.
<b>Access port with silicone plug</b>	30 mm, left	01	8012-0648
	30 mm, right	01	8012-0647
	30 mm, top	01	8012-0649
	50 mm, left	01	8012-0653
	50 mm, right	01	8012-0652
	50 mm, top	01	8012-0650
	100 mm, top	01	8012-0651
<b>Alarm output, zero-voltage</b>	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	-	8012-0615
<b>Analog output, 4 – 20 mA</b>	for temperature and humidity values (output not adjustable)	-	8012-0614
<b>Arabidopsis illumination cassette</b>	fluorescent tube set for replacement of daylight fluorescent tubes 17 W option model	-	8012-0655
<b>Arabidopsis illumination cassette, accessories</b>	replacement fluorescent tubes for one illumination cassette (set of 5)	-	8500-0023
<b>BINDER Pure Aqua Service</b>	system for preparation or complete desalination of tap water, containing single-use cartridge, hoses and measuring device	-	8012-0759
<b>Calibration certificate, expanded</b>	for temperature and humidity, each additional measurement at additional points or sets of values	-	8012-0155
<b>Calibration certificate, temperature</b>	temperature measurement incl. certificate and 27 measuring points at specified temperature	-	8012-0923
	temperature measurement incl. certificate, 15- 18 measuring points at specified temperature	-	8012-0920
	temperature measurement incl. certificate, 9 measuring points at specified temperature	-	8012-0917
<b>Calibration certificate, temperature and humidity</b>	for temperature and humidity, measurement in center of chamber at 25 °C / 60 % RH or at specified values	-	8012-0154
	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	-	8012-0924
<b>Class 3.3 independent temperature safety device</b>	with visual alarm (DIN 12880) 230 V option model	-	8012-0610
	T 220: temperature logging from -90 °C to 220 °C	19	8012-0715
<b>Data Logger Kit</b>	TH 70/70: temperature and humidity logging from -40 °C to 70 °C and 0 % to 100 % RH and additional combination sensor for recording environmental conditions	19	8012-0717
	TH 70: temperature and humidity logging from -40 °C to 70 °C and 0 % to 100 % RH	19	8012-0716
<b>Data Logger Kit, software</b>	LOG ANALYZE software kit, configuration and evaluation software for all BINDER Data Logger Kits (incl. USB data cable)	19	8012-0821
<b>Daylight illumination cassette, accessories</b>	replacement fluorescent tubes for one illumination cassette (set of 5)	-	8500-0024
<b>Door lock</b>	lockable door handle	-	8012-0584
<b>Ethernet interface</b>	in place of RS 422, for communication software	-	8012-0613
<b>FLUORA® illumination cassette</b>	fluorescent tube set for replacement of daylight fluorescent tubes	-	8012-0654
<b>FLUORA® illumination cassette, accessories</b>	replacement fluorescent tubes for one illumination cassette (set of 5)	-	8500-0022

\* Notes › See last page

## Data Sheet Model KBWF 240

Designation	Description	*	Art.-No.
<b>Interface converter</b>	RS 422 cable set and RS 232 / RS 422 interface converter for connection to 10-way plug distributor or for connection to a unit 230 V, 50/60 Hz option model	-	8012-0556
<b>Interface converter, USB / RS422</b>	RS 422 cable set and RS 422 / USB interface converter for connection to 10-way plug distributor or for connection to a unit (USB-powered converter)	-	8012-0665
<b>Light photometry</b>	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
<b>Magnetic Pouch (A4)</b>	insert pouch with magnetic strip	-	1007-0065
<b>pH-neutral detergent</b>	concentrated, for gentle remove of residual contaminants; 1 kg	-	1002-0016
<b>Rack</b>	stainless steel	-	6004-0101
<b>Rack, accessories</b>	set of 4 fasteners for additional security	-	8012-0620
<b>Rack, reinforced</b>	stainless steel, with 1 set of 4 fasteners, max. load 70 kg	-	8012-0638
<b>RS 422 interface</b>	modular plug distributor for 10 RS 422 interfaces	-	8012-0295
<b>RS 422 interface, cable (15 m)</b>	RS 422 connection cable (15 m) between plug distributor and RS 422 interface	-	5023-0036
<b>RS 422 interface, cable (50 m)</b>	RS 422 extension cable (50 m) between interface converter and unit or RS 232 / RS 422 plug distributor	-	5023-0117
<b>Shelf, perforated</b>	stainless steel	-	6004-0040
<b>Shelf, reinforced</b>	positioned at bottom level, max. load 67 kg, with additional attachment for operation of shaking device, stirring device or roller bottle system	-	8012-0639
<b>Software</b>	APT-COM™ communications software		
	version 2 to 3, GLP edition	19	9053-0016
	version 3, BASIC edition	19	9053-0014
	version 3, GLP edition	19	9053-0015
	version 3, STANDARD edition	19	9053-0013
	APT-COM™ communications software, price: for free		
	version 3, GLP DEMO Edition	19	9053-0008
<b>Water supply set</b>	external, consisting of fresh- and waste-water containers (20 liters each), cabling and pump	-	8012-0643

\* Notes › See last page

## SERVICES

Designation	Description	*	Art.-No.
<b>Installation services</b>			
Installation	and set up of unit at operating location, connect to existing connections	13, 18	DL100300
Instruction	unit function instructions for operation and programming of the controller	18	DL100700
<b>Preventive maintenance</b>			
Preventive maintenance	Execution of equipment inspection according to maintenance plan	14, 18	DL200400
<b>Calibration services</b>			
Calibration temperature and humidity	including certificate, one measuring point in center of chamber at 25 °C / 60 % RH or at specified values	14, 16, 17, 18	DL300301
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	DL310000
Temperature and humidity measurement according to DIN12880	including certificate (27 temperature measuring points and 1 humidity measuring point, at 25 °C / 60 % RH or at specified values)	14, 16, 17, 18	DL300427
Temperature measurement 18 temperature measuring points and 1 humidity measuring point	including certificate, 18 temperature measuring points and 1 humidity measuring point in center of chamber, at 25 °C / 60 % RH or at specified values	14, 16, 17, 18	DL300318
Temperature measurement 27 temperature measuring points and 1 humidity measuring point	including certificate, 27 temperature measuring points and 1 humidity measuring point in center of chamber, at 25 °C / 60 % RH or at specified values	14, 16, 17, 18	DL300327
Temperature measurement 9 temperature measuring points and 1 humidity measuring point	including certificate, 9 temperature measuring points and 1 humidity measuring point in center of chamber, at 25 °C / 60 % RH or at specified values	14, 16, 17, 18	DL300309

\* Notes › See last page

Designation	Description	*	Art.-No.
<b>Validation services</b>			
Execution of IQ/OQ, incl. light measurement	including light measurement, in accordance with qualification folder	15, 18, 20	DL430400
Execution of IQ/OQ/PQ	in accordance with customer's requirement, price: on request	15, 18	DL440500
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	8012-0878
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	8012-0965
<b>Warranty service</b>			
Extension of the warranty from 2 to 3 years	beginning with the date of delivery, wearing parts are not included	-	DL023041
Extension of the warranty from 2 to 5 years	beginning with the date of delivery, wearing parts are not included	-	DL023042

\* 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 Heat resistant only to max. 200 °C.
- 04 Only available on units rated for 230 V.
- 05 Attention: The pump is delivered separately. The electric connection for the pump (230 V/1~/50 Hz) must be carried out by an authorized electrician.
- 06 Heating-up time may increase as a result of the lower heat conductivity.
- 07 The additional heat input may affect the temperature behavior.
- 08 The pump (packaged separately) is ready for connection.
- 09 Not in conjunction with the optional access port, door with window and interior lighting.
- 10 Not available on 23-liter units.
- 11 Not available on 23- or 53-liter units.
- 12 Only available on units rated for 230 V or 400 V.
- 13 Installation and connections take place at unit location; transport within the company only upon consultation.
- 14 We recommend a BINDER service contract (see the chapter on BINDER Service) to cover unit inspections, calibrations and validations.
- 15 OQ according to Yellow Paper = completed factory validation documentation of all OQ checklists.
- 16 Sensor calibration is performed in an accredited calibration laboratory.
- 17 Calibration is performed according to the BINDER factory standard.
- 18 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).
- 19 For additional accessories, refer to the Process documentation chapter.
- 20 When ordering IQ/OQ qualification folders and associated IQ/OQ execution on one order, we offer a 15 % discount for both items.  
When ordering IQ/OQ/PQ qualification folders and associated IQ/OQ/PQ execution on one order, we offer a 15 % discount for the item of the IQ/OQ/PQ folder.
- 21 ATEX conformity:  
Pumping chamber (pumped gases): II 2G IIC T3 X  
Environment with inert purge gas: II 2G IIB T4 X  
Environment without inert purge gas: II 3G IIB T4 X  
Motor: II 2G Ex d IIB T4 Gb

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