# 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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## 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 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
- 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: Ethernet
- Door heating

## ORDERING INFORMATION

| Interior volume [L] | Voltage | Option model | Version | Art.-No. |
|---|---|---|---|---|
| Model KBWF 240 | | | | |
| 247 | 200…240 V 1~ ph 50 Hz | Standard | KBWF240-230V | 9020-0336 |

## TECHNICAL DATA

| | |
|---|---|
| Description | KBWF240-230V[1] |
| 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/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 | |
| Rated Voltage [V] | 200…240 |
| Power frequency [Hz] | 50 |
| Nominal power [kW] | 2.4 |
| Unit fuse [A] | 16 |
| Phase (Nominal voltage) | 1~ |
| Internal Dimensions | |
| Depth [mm] | 485 |
| Height [mm] | 785 |
| Width [mm] | 650 |
| Housing dimensions not incl. fittings and connections | |
| Width net [mm] | 925 |
| Height net [mm] | 1465 |
| Depth net [mm] | 800 |
| Measures | |
| Wall clearance back [mm] | 100 |
| Wall clearance sidewise [mm] | 100 |
| Interior volume [L] | 247 |
| Net weight of the unit (empty) [kg] | 214 |
| permitted load [kg] | 100 |
| Load per rack [kg] | 30 |
| Doors | |
| Inner doors | 1 |
| Unit doors | 1 |
| 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.

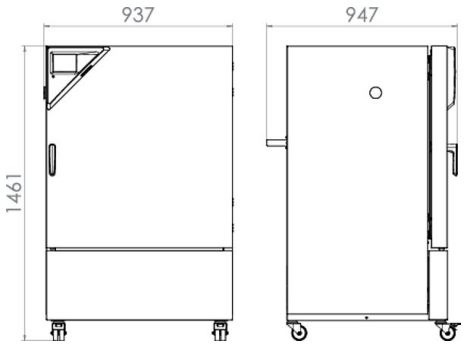
2 Average value, measured at 25 °C with a spherical sensor (±10 %) by 12 cm below the light cassette. The values given in W/m2 refer to global radiation.

| | |
|---|---|
| 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 °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 AND ACCESSORIES

| Designation | Description | * | Art.-No. |
|---|---|---|---|
| Access port with silicone plug | left | | |
| | 30 mm | 01 | 8012-1447 |
| | 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 (±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 | – | 8012-1760 |
| Analog output 4-20 mA | for temperature and humidity values (output not adjustable) | – | 8012-1736 |
| 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 | – | 8012-1479 |
| BINDER PURE AQUA SERVICE | system for preparation or complete desalination of tap water, containing single-use cartridge, hoses and measuring device | – | 8012-0759 |
| BINDER PURE AQUA SERVICE, accessories | Single-use, replacement cartridge for BINDER PURE AQUA System | – | 6011-0165 |

* Notes › See last page

| Designation | Description | * | Art.-No. |
|---|---|---|---|
| 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 °C / 60% 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 °C / 60 % RH or at specified values | – | 8012-1613 |
| Class 3.3 independent temperature safety device | with visual alarm (DIN 12880) | – | 8012-1753 |
| 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 |
| | TH 70/70: For continuous temperature and humidity logging from -40 °C to 70 °C / 0% to 100% RH and additional logging of ambient conditions. Kit includes 1 data logger, 2 attachable combined humidity/temperature sensors, 2 m extension cable and 1 fixture for mounting to the BINDER unit | 19 | 8012-0717 |
| | TH 70: For continuous temperature and humidity logging from -40 °C to 70 °C; 0% to 100% RH. Kit includes 1 data logger, Pt 100 sensor with 2 m extension cable, and 1 magnetic fixture for mounting to the BINDER unit | 19 | 8012-0716 |
| 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 | – | 8012-1776 |
| 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 |
| 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 | – | 8012-1749 |
| 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 422 interface | in place of Ethernet, for Multi Management Software APT-COM™ | – | 8012-1435 |
| 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™ | – | 8012-1745 |
| 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 | – | 8012-1430 |
| Water supply set | consisting of fresh- and waste-water containers (20 liters each), cabling and pump | | |
| | external, free-standing | – | 8012-1846 |
| | external, consisting of fresh- and waste-water containers (20 liters each), cabling and pump | | |
| | external, for hanging from the back of the device | – | 8012-0643 |

* 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 and humidity | including certificate, one measuring point in center of chamber at 25 °C / 60 % RH or at specified values | 14, 16, 17, 18 | DL30-0301 |

* Notes › See last page

| Designation | Description | * | Art.-No. |
|---|---|---|---|
| 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 and humidity measurement according to DIN12880 | including certificate (27 temperature measuring points and one humidity measuring point, at 25 °C / 60 % RH or at specified values) | 14, 16, 17, 18 | DL30-0427 |
| 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 | DL30-0318 |
| 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 | DL30-0327 |
| 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 | DL30-0309 |
| 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 |
| 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 |
| Warranty service | | | |
| Extension of the warranty from 2 to 3 years | beginning with the date of delivery, wearing parts are not included | – | DL02-3041 |
| Extension of the warranty from 2 to 5 years | beginning with the date of delivery, wearing parts are not included | – | DL02-3042 |

* Notes › See last page

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