

Climate chambers with illumination and humidity The BINDER KBWF series shines with its homogeneous light distribution with natural illumination from above. It creates consistent climate conditions – even with illumination.



Advantages:

- Homogeneous light distribution
- Natural growth conditions
- Temperature, humidity & light in one unit

Areas of application:



Cosmetics Industry



Plant / Insect Growth



Packaging Industry

Features	Customer benefits	Characteristics
APT.line™ climate technology	<ul style="list-style-type: none"> • Same test conditions throughout the chamber interior • Independent of specimen size and quantity • No drying out of specimens 	APT.line™ <ul style="list-style-type: none"> • Constant and gentle circulation of air through large-surface side walls even under a full load • Homogeneous climate conditions throughout all specimens
Light	<ul style="list-style-type: none"> • Up to 20% greater usable space • Light sources adjustable to specimen sizes • Same irradiation results throughout the chamber interior 	<ul style="list-style-type: none"> • Flexible positioning and fully removeable illumination cassettes • Excellent light uniformity for all specimens on the entire shelf • Different light spectra can be used
Cooling system	<ul style="list-style-type: none"> • Reliable testing independent of ambient conditions 	<ul style="list-style-type: none"> • Powerful compressor cooling system with large power reserves for lighting applications • No freezing thanks to double evaporator plate • Carefully measured cooling
Water supply	<ul style="list-style-type: none"> • Flexible solution independent of water supply and installation site • Easy plug-and-play handling 	Suitable for any water quality <ul style="list-style-type: none"> • Direct connection to the domestic water system • Convenient water treatment with BINDER PURE AQUA SERVICE • Sewage pump for discharges up to 1 m (3.28 ft.) in height • Back Pack System
Humidification system	<ul style="list-style-type: none"> • Very accurately measured values • Minimal maintenance requirements • Safe, reproducible attainment of test results 	<ul style="list-style-type: none"> • Vapor pressure humidification for fast response times • Drift-free, capacitive humidity sensor • Short recovery time after door opening
Standard equipment	<ul style="list-style-type: none"> • No extra costs • Chamber is easily moved on casters 	Comprehensive standards <ul style="list-style-type: none"> • Communication interface • Access port diameter 30 mm (1.2 inch) • BINDER test certificate • Casters • Inner glass door and double outer door seal • Door heated against condensation
Unit design	<ul style="list-style-type: none"> • Minimum space requirements • Easy assembly • Large chamber interior volume • Easy cleaning 	<ul style="list-style-type: none"> • Optimal ratio of usable space and footprint • Large access area thanks to wide design • Chamber interior made out of high-quality stainless steel • Closed illumination cassettes • No permanent fixtures
Accessories and Services	<ul style="list-style-type: none"> • Complete solution • Everything from one source • BINDER Service is always nearby 	Comprehensive product portfolio <ul style="list-style-type: none"> • Various options: BINDER Data Logger Kits, access ports in various sizes and positions, control and documentation software APT-COM™ • Years of proven and recognized validation and documentation materials • Worldwide service network

- Electronically controlled APT.line™ preheating chamber assuring temperature accuracy and reproducible results
- Temperature range 0 °C to 70 °C (32 °F to 158 °F) (without humidity and illumination)
- Temperature range 10 °C to 60 °C (50 °F to 140 °F) (with humidity and illumination)
- Humidity range 10 % to 80 % RH (without illumination)
- Humidity range 10 % to 75 % RH (with illumination)
- 2 variable positioned illumination cassettes with 5 daylight illumination tubes, each, in steps switchable
- The patented illumination system assures an unique homogeneous light distribution
- MCS controller with 25 storable programs of 100 sections each for a maximum of 500 program segments for programming of day and night cycles
 - Integrated electronic chart recorder
 - Variety of options for the graphic display of process parameters
 - Real-time clock
- Controlled humidification and dehumidification system with capacitive humidity sensor
- Independent adjustable temperature safety device class 3.1, providing full protection against chamber over-temperature, with visual and audible temperature alarm
- Access port Ø 30 mm (1.18 inch), left side
- Inner glass door
- Safety connection kit for water supply and drainage, including water hose, total length 6 m (19.7 ft.)
- RS 422 interface for use with optional GMP/GLP and FDA guideline 21 CFR Part 11 compliant APT-COM™ DataControlSystem software
- 2 stainless steel racks
- BINDER technical specification conformance certificate

KBWF 240 (E5.2)

Exterior dimensions	
Width (mm/inch)	930 / 36.6
Height (incl. casters) (mm/inch)	1460 / 57.5
Depth incl. door handle, I-triangle, connection 80 mm (3.15 inch) (mm/inch)	800 / 31.5
Wall clearance, rear (mm/inch)	100 / 3.9
Wall clearance, side (mm/inch)	100 / 3.9
Steam space volume (l/cu.ft.)	348 / 12.3
Number of doors (ea.)	1
Inner glass door(s) (ea.)	1

Interior dimensions	
Width (mm/inch)	650 / 25.6
Height (mm/inch)	785 / 30.9
Depth (mm/inch)	485 / 19.1
Interior volume (l/cu.ft.)	247 / 8.7
Racks (number standard/max.)	2 / 7
Load per rack (kg/lbs.)	30 / 66
Permitted total load (kg/lbs.)	100 / 221
Weight (empty) (kg/lbs.)	214 / 472
Variable position illumination cassettes	2

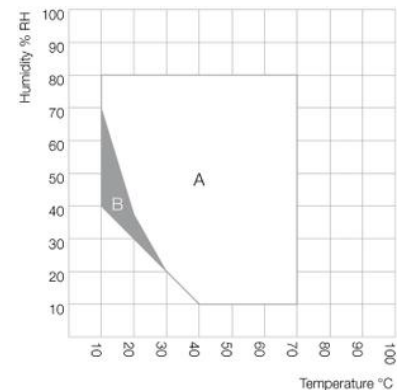
Temperature data (without humidity)	
Temperature range without illumination cassettes (°C)	0 - 70 / 32 - 158
Temperature range with illumination cassettes with illumination (°C)	10 - 60 / 50 - 140
Max. heat compensation up to 40 °C (104 °F) with illumination (W)	400

Variable position illumination cassette



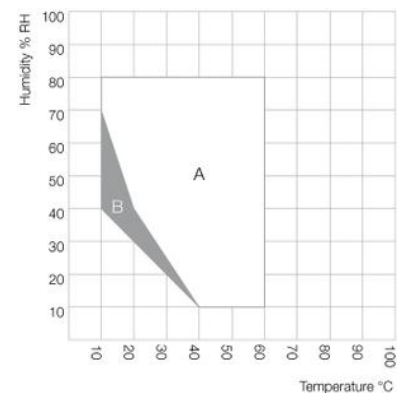
Illumination with 3 bright white and 2 BINDER Synergie Light fluorescent tubes

Temperature-humidity chart without illumination



A: Guaranteed condensation free range / B: Temporary usable operation (up to 24 h)

Temperature-humidity chart with illumination

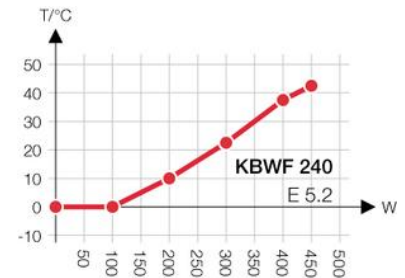


A: Guaranteed condensation free range / B: Temporary usable operation (up to 24 h)

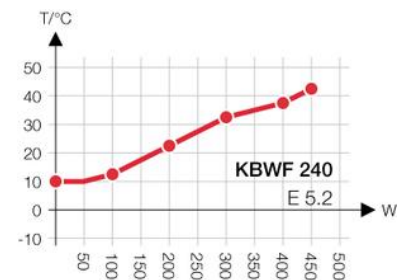
KBWF 240 (E5.2)

▶ Climate data (with humidity)	
Temperature range without illumination cassettes (°C/°F)	10 - 70 / 50 - 158
Temperature range with illumination cassettes with illumination (°C/°F)	10 - 60 / 50 - 140
Temperature variation with illumination (± K)	0.5 - 1.0
Temperature fluctuation with illumination (± K)	0.1 - 0.5
Humidity range without illumination cassettes (% RH)	10 - 80
Humidity range with illumination cassettes, with illumination (% RH)	10 - 75
Humidity fluctuation with illumination (± % RH)	2
▶ Illumination data per light cassette	
Daylight tubes (Lux)	10000
Daylight tubes (W/m ²)	36
Fluora® growth lamps (Lux)	6500
Fluora® growth lamps (W/m ²)	34
Arabidopsis tubes (Lux)	10000
Arabidopsis tubes (W/m ²)	40
▶ Electrical data	
IP protection class acc. to EN 60529	IP 20
Voltage (± 10 %) 50 / 60 Hz (V)	200 - 240, 1 N ~
Nominal power at 240 V (kW)	2.4
Energy consumption at 37 °C (98.6 °F)/ 75 % RH 1) (W)	600
Noise level approx. (dB (A))	52

Heat compensation without illumination

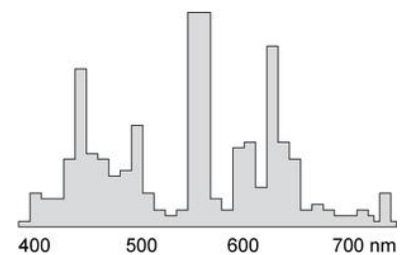


Heat compensation with illumination



Light spectrum

Day light tubes
Light colour 865 (standard)



1) These values can be used for dimensioning air condition systems.

All technical data are specified for units with standard equipment at an ambient temperature of 25 °C (77 °F) and a line voltage fluctuation of ±10%. The temperature data is determined in accordance to factory standard following DIN 12880, respecting the recommended wall clearances of 10% of the height, width and depth of the inner chamber. All figures are typical average values for series devices. We reserve the right to alter technical specifications at any time.



BINDER Pure Aqua Service

This convenient and flexible water treatment system extends maintenance intervals and is easily implemented independent of water quality.
The specific advantage: Point-of-use system with water quality display and replaceable filter cartridge



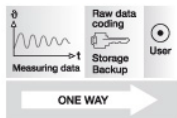
BINDER Data Logger Kits

The new BINDER Data Logger Kits – Makes independent recording of temperature and humidity data in the BINDER device possible. The tailored product solution contains helpful accessories: from mounting the logger to the BINDER device to cable access assistance to the sensor mount



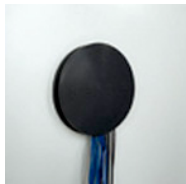
External water supply set

External water supply set from fresh and waste water container, wiring and pump



APT-COM™ DataControlSystem GLP Edition

Software for GLP-compliant control, programming and documentation. Allows networking of up to 30 devices or controllers. Meets FDA 21 CFR Part 11 requirements



Access port

With silicone plugs for introducing external measuring instruments into the chamber, access ports with 30, 50 or 100 mm (1.18, 1.97, 3.94 inch) diameters



Calibration certificate & validation

BINDER can significantly reduce the workload in qualifying and validating devices. Nobody knows our devices as well and has as much experience in certifications as we do

KBWF 240 (E5.2)

Access ports with silicone plug 30, 50, 100 mm (1.18, 1.97, 3.94 inch)	O
Securing elements for additional fastening of racks (1 set of 4 pieces)	O
Keyboard lock	O
Ethernet interface for communication software APT-COM™ DataControlSystem	O
External fresh water supply set consists of fresh and waste water tank with 20 l (0.7 cu.ft.) each, cabling and pump	O
BINDER PURE AQUA SERVICE consisting of disposable cartridge, hose set and measuring unit	O
Disposable cartridge for BINDER PURE AQUA SERVICE	O
Factory calibration certificate for temperature and humidity. Measurement in center of chamber at 25 °C (77 °F) / 60 % RH or at specified values	O
Extension to factory calibration certificate for temperature and humidity. Each additional measurement at an additional measuring point or set of values	O
Temperature precision measurement according to DIN 12880 and 9-point humidity measurement / factory standard with measurement log and certificate, measured at (25 °C /77 °F) / 60 % RH or at specified values	O
Data Logger Kit TH 70: For the continuous temperature and humidity recording of -40 °C (-40 °F) to 70 °C (158 °F) / 0 % to 100 % RH. Kit includes 1 data logger, 1 attachable combined humidity/temperature sensor with 2 m extension cable and 1 fixture for the connection at the BINDER unit	O
Data Logger Kit TH 70/70: With two attachable combined sensors. One for the continuous temperature and humidity recording of -40 °C (-40 °F) to 70 °C (158 °F) / 0 % to 100 % RH. Second one at the data logger for recording the environmental conditions. Kit includes 1 data logger, 2 attachable combined humidity/temperature sensors with 2 m extension cable and 1 fixture for the connection at the BINDER unit	O
Data Logger Kit T 220: For the continuous temperature recording of -90 °C (-130 °F) to 220 °C (428 °F). Kit includes 1 data logger, PT 100 sensor with 2 m Teflon extension cable and 1 fixture for the connection at the BINDER unit	O
Data Logger converter cable RS 232 to USB 2.0	O
Data Logger Software: Configuration und evaluation software for all BINDER Data Logger Kits, incl. data cable (RS 232)	O
Rack, stainless steel	O
Shelf, perforated, stainless steel	O
Reinforced rack, stainless steel, with 1 set of securing elements (1 set of 4 pieces), max. load 70 kg (154 lbs.)	O
Vibration compatible shelf / platform (positioned at bottom level) to be mounted inside the chamber for shaker / spinner / roller operation. Other positions available on request	O
4-20 mA analog output for temperature and humidity measurements (e.g. chart recorder connection), with 6-pin DIN socket. Outputs are adjusted automatically as the controller is adjusted	O
Zero-voltage relay alarm outputs for temperature (± 2 °C) and humidity (± 5 % RH), accessible via 6-pin DIN socket, with audible signal that can be switched off (maximum power rating 24 V AC/DC, 2.5 A)	O
FLUORA® growth lamps set as replacement for the standard tubes for 230 V	O
Arabidopsis fluorescent tubes set as replacement for the standard tubes for 230 V	O
Replacement set of standard daylight illumination tubes for one illumination cassette	O
Replacement set of FLUORA® illumination tubes for one illumination cassette	O
Replacement set of Arabidopsis illumination tubes for one illumination cassette	O
Locking door handle with key	O
Temperature safety device, class 3.3 (DIN 12880) with optical alarm	O