

## KBF 115 (E2) - Constant climate chamber

The KBF series was particularly designed for absolutely reliable stability tests and precise maintenance of constant climatic conditions. With its large reserve capacity and many optional features, it is designed to meet future challenges for many years to come.



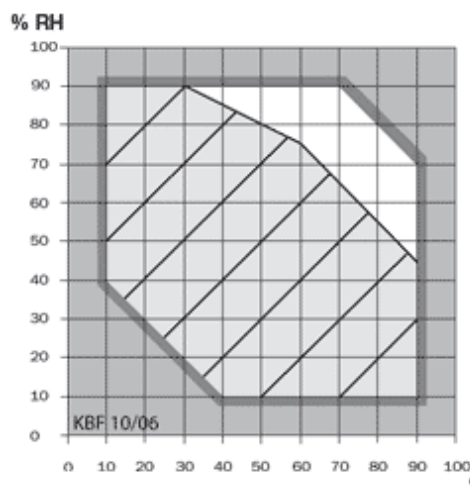
### ► Performance features and equipment:

- Electronically controlled APT.line™ preheating chamber and refrigerating system assuring temperature accuracy and reproducible results
- Temperature range -10 °C (14 °F) up to 100 °C (212 °F) - without humidity
- Humidity range 10 % RH to 90 % RH
- MCS controller with 25 storable programs of 100 sections each for a maximum of 500 program segments
- Features:
  - User friendly LCD screen
  - Easy-to-read menu guide
  - Integrated electronic chart recorder
  - Real time clock
- Electronically controlled humidification and dehumidification system with capacitive humidity sensor
- Suitable for stability tests according to ICH guideline Q1A
- Inner glass door
- Environmental friendly refrigerant R 134a
- Independent adjustable temperature safety device class 3.1 (DIN 12880), with visual and audible temperature alarm
- Access port with silicone plug Ø 30 mm (1.18 inch), left side
- Complete 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 included
- BINDER test certificate



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## Temperature-humidity chart



The light area indicates the control range of temperature and relative humidity.  
The hatched area indicates the control range of temperature and relative humidity without condensation.

### Exterior dimensions

Width (mm/inch)	834 / 32.8
Height (inclusive feet/castors) (mm/inch)	1022 / 40.2
Depth (mm/inch)	646 / 25.4
Plus door handle, I - panel, connection (mm/inch)	100 / 3.9
Wall clearance rear (mm/inch)	100 / 3.9
Wall clearance side (mm/inch)	160 / 6.3
Steam space volume (l/cu.ft.)	158 / 5.6
Height of water connections (± 3 mm / 0.12 inch)	84 / 3.3
Number of doors	1
Number of inner glass doors	1

### Interior dimensions

Width (mm/inch)	600 / 23.6
Height (mm/inch)	480 / 18.9
Depth (mm/inch)	400 / 15.8
Interior volume (l/cu.ft.)	115 / 4.1
Racks (number standard/max.)	2 / 5
Load per rack (kg/lbs.)	20 / 44
Permitted total load (kg/lbs.)	50 / 110
Weight of the unit (empty) (kg/lbs.)	115 / 254

### Temperature data

Temperature range	
without humidity °C / °F	-10 - 100 / 14 - 212
with humidity (approx. °C / °F)	10 - 90 / 50 - 194
Temperature variation without humidity	
at 10 °C (± °C)	0.4
at 37 °C (± °C)	0.3
Temperature variation with humidity 2) (± °C)	1
Temperature fluctuation from 5 °C above ambient temp. 2) (± °C)	0.1
Temperature fluctuation when refrigerating (± °C)	0.5
Heating up time 1) 2) to 37°C (min.)	23
Cooling down time from room temp. 1) 2) to 10°C (min.)	35
Recovery time after doors were open for 30 sec 1) 2)	
at 37 °C (minutes)	5
at 50 °C (minutes)	4
Humidity fluctuation 2) 4) (± RH %)	1.5

### Electrical data

Housing protection acc. to EN 60529	IP 20
Nominal voltage (±10 %) 50 / 60 Hz (V)	230

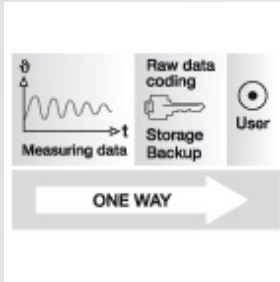
Nominal power (W)	1300
Energy consumption 4) at 37 °C (89.6 °F) (KBF 240 at 40 °C (104 °F)) (W)	530

- 1) up to 98 % of the set value
  - 2) value without lighting
  - 3) Upon door opening or water exchange in humidity cylinder:  $\pm 1.5$  RH %, recovery time approx. 20 min
  - 4) These energy consumption values can be used upon calculation of air conditioning systems.
  - 5) Maximal value, measured in center of usable volume
- By bringing in a humidity source to the inner chamber the minimal humidity range is affected. A water tap (1 – 6 bar) with normal tap water (approx. 200 – 500  $\mu$ S/tolerance +300 – 150  $\mu$ S, total hardness appr. 4-8°dH) is necessary for the installation of the "humidifying and dehumidifying system". Furthermore, a 40 mm water drain with descending gradient is required.
- All technical data are specified for units with standard equipment at an ambient temperature of 20 °C and a voltage fluctuation of  $\pm 10$  %. The temperature data are 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 indications are average values, typical for units produced in series. We reserve the right to alter technical specifications at all times.



## ► Access ports

With silicon plugs for inserting external measuring devices into the chamber. Access ports with 10, 30, 50, and 100 mm diameter.



## ► APT-COM™ DataControlSystem GLP Edition

Software for GLP compliant control, programming, and documentation. Permits networks of up to 30 units and/or controllers. Meets the requirements of FDA 21 CFR Part 11.



## ► Calibration certificates and validation

BINDER can significantly reduce the time and effort needed for equipment qualification and validation. We draw on unparalleled knowledge of our equipment applications and years of experience in certification.

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Access port with silicone plugs, 10 mm (0.39 inch), 30 mm (1.18 inch), 50 mm (1.97 inch), 100 mm (3.94 inch)	O
Securing elements for additional fastening of racks (1 set of 4)	O
Safety device, Class 3.3 (DIN 12880) with optical alarm	O
Locking of controller keyboard	O
Cleaning kit for equipment maintenance and disinfection, consisting of pH - neutral detergent (1000 g / 2.21 lbs., concentrate), spray disinfectant (500 ml / 0.13 gal. ready - for - use solution) and lint - free cleansing tissues	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
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
Built-in 2-channel chart recorder, with digital display and programmable text output (date, time) for the documentation of temperature and humidity values	O
Switchable waterproof interior socket 230 V AC (max. 500 W), IP 65 protected, with corresponding plug (IP 66 protected)	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 ( $\pm 2$ °C) and humidity ( $\pm 5$ % RH), accessible via 6 - pin DIN socket, with acoustic signal that can be switched off (maximum power rating 24 V AC / DC, 2.5 A)	O
Rack, stainless steel	O
Shelf, perforated, stainless steel	O
Lockable door	O