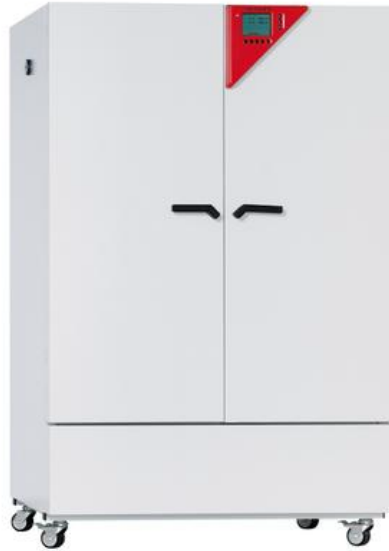


## Constant climate chamber with additional photometry

The special advantage of the BINDER KBF LQC series: the patented photometry for photostability testing. Two spherical 3D ball-type sensors capture visible light intensity and UV light intensity – if the desired light dosage is achieved, the KBF LQC constant climate chamber switches off automatically.



### Advantages:

- Long-term stable test conditions
- Independent of the water supply
- one-stop solution: Temperature/humidity/light simulation in one chamber

### Areas of application:



Pharmaceuticals  
Industry

Features	Customer benefits	Characteristics
APT.line™ climate technology	<ul style="list-style-type: none"> <li>• Same test conditions throughout the chamber interior</li> <li>• Independent of specimen size and quantity</li> </ul>	<b>APT.line™</b> <ul style="list-style-type: none"> <li>• Constant and gentle circulation of air through large-surface side walls even under a full load</li> <li>• Homogeneous climate conditions throughout test specimens</li> </ul>
Photostability tests	<ul style="list-style-type: none"> <li>• Light uniformity for all specimens on the entire shelf</li> <li>• Flexible use for Q1A and/or Q1B</li> <li>• Automatic photostability tests under consistent conditions</li> </ul>	<b>Realistic light photometry in 3D</b> <ul style="list-style-type: none"> <li>• ICH-compliant illumination with BINDER Q1B Synergy Light™</li> <li>• Removable illumination cassettes</li> <li>• Spherical 3D ball-type sensors</li> </ul>
Water supply	<ul style="list-style-type: none"> <li>• Flexible solution independent of water supply and installation site</li> <li>• Easy plug-and-play handling</li> </ul>	<ul style="list-style-type: none"> <li>• Direct connection to the domestic water system</li> <li>• Convenient water treatment with BINDER PURE AQUA SERVICE</li> <li>• Sewage pump for discharges up to 1 m in height</li> </ul>
Humidification system	<ul style="list-style-type: none"> <li>• Very accurately measured values</li> <li>• Minimal maintenance requirements</li> <li>• FDA-compliant test results</li> </ul>	<ul style="list-style-type: none"> <li>• Vapor pressure humidification for fast response times</li> <li>• Drift-free, capacitive humidity sensor</li> <li>• Short recovery time after door opening</li> </ul>
Cooling system	<ul style="list-style-type: none"> <li>• Reliable test results even under extreme climate and site conditions</li> <li>• Stable, long-term tests according to GLP/GMP</li> <li>• Large power reserves, e.g. for lighting applications</li> </ul>	<ul style="list-style-type: none"> <li>• Powerful compressor cooling system for ambient temperatures up to 32 °C</li> <li>• No freezing thanks to double evaporator plate</li> </ul>
Standard equipment	<ul style="list-style-type: none"> <li>• No extra costs</li> <li>• Chamber is easily moved on casters</li> <li>• Condensation-free glass door for clear viewing and constant climate</li> </ul>	<b>Comprehensive standards</b> <ul style="list-style-type: none"> <li>• Ethernet interface</li> <li>• Access port diameter 30 mm</li> <li>• Casters from 240 l volume</li> <li>• Inner glass door with seal and double outer door seal</li> <li>• Door heated against condensation</li> </ul>
Controller	<ul style="list-style-type: none"> <li>• All measured values read at a glance</li> <li>• Convenient documentation</li> <li>• Easy operation</li> <li>• Convenient HMI (Human Machine Interface)</li> </ul>	<b>MCS screen controller</b> <ul style="list-style-type: none"> <li>• 25 program memory</li> <li>• Digital continuous-line recorder for monitoring limits</li> <li>• Alarm function</li> </ul>
Qualification	<ul style="list-style-type: none"> <li>• FDA- and GLP/GMP-compliant documentation</li> <li>• Maximum process stability</li> <li>• FDA approved for several years</li> </ul>	<b>More than 10 years of experience with:</b> <ul style="list-style-type: none"> <li>• GLP/GMP, IQ, OQ, PQ, DQ</li> <li>• FDA-compliant software APT-COM™</li> <li>• Years of proven and recognized validation and documentation materials</li> </ul>
Accessories and Services	<ul style="list-style-type: none"> <li>• Complete solution</li> <li>• Everything from one source</li> <li>• BINDER Service is always nearby</li> </ul>	<ul style="list-style-type: none"> <li>• Various options: BINDER Data Logger Kits, GLP compliance, access ports in various sizes and positions, object temperature measurement</li> <li>• Worldwide service network</li> </ul>

- Electronically controlled APT.line™ preheating chamber and refrigerating system assuring temperature accuracy and reproducible results
- 3 variable positioned illumination cassettes with BINDER Q1B Synergy Light™ for unique homogenous light distribution
- Illumination is specified for stability in accordance with ICH guideline Q1B, option 2
- Light Quantum Control LQC, precise measurement and integration of light intensity and ultraviolet light intensity directly at the sample location, automatic deactivation after reaching the wanted light dosage
- Temperature range 0 °C to 70 °C (without illumination and humidity)
- Temperature range 20 °C to 60 °C (with illumination and humidity)
- Humidity range 10 % to 80 % RH (without illumination)
- Humidity range 10 % to 75 % RH (with illumination)
- MCS controller with 25 storable programs of 100 sections each for a maximum of 500 program segments
  - User friendly LCD screen
  - Easy-to-read menu guide
  - Integrated electronic chart recorder
  - Variety of options for the graphic display of process parameters
  - Real time clock
- Electronically controlled humidification and dehumidification system with capacitive humidity sensor suitable for stability tests according to ICH guideline Q1A (R2)
- Inner glass door with sealing
- Independent adjustable temperature safety device class 3.1 (DIN 12880), with visual and audible temperature alarm
- Access port with silicone plug Ø 30 mm, left side
- Safety connection kit for water supply and drainage, including water hose, total length 6 m
- Ethernet interface for APT-COM™ DataControlSystem software
- 3 stainless steel racks
- BINDER test confirmation

## KBF LQC 720 (E5.2)

▶ Exterior dimensions	
Width (mm)	1250
Height (incl. casters) (mm)	1925
Depth (plus door handle, l-panel, connection 80 mm) (mm)	890
Wall clearance, rear (mm)	100
Wall clearance, side (mm)	200
Steam space volume (l)	918
Number of doors (ea.)	2
Inner glass door (ea.)	2

▶ Interior dimensions	
Width (mm)	973
Height (mm)	1250
Depth (mm)	576
Interior volume (l)	700
Racks (number standard/max.)	3 / 12
Load per rack (kg)	45
Permitted total load (kg)	150
Weight (empty) (kg)	374

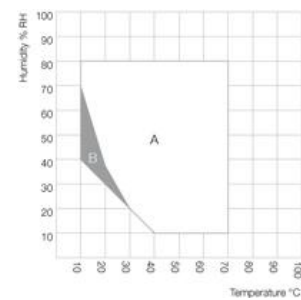
▶ Temperature data (without humidity)	
without illumination cassettes (°C)	0 - 70
with illumination cassettes, with illumination (°C)	10 - 60
Max. heat compensation up to 40 °C with illumination (W)	1000

## BINDER Light Quantum Control (LQC)



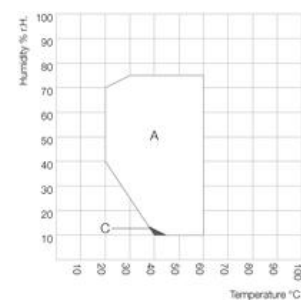
2 spherical sensors for non-directional measurement, directly at the sample location

### Temperature-humidity chart without illumination



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

### Temperature-humidity chart with illumination

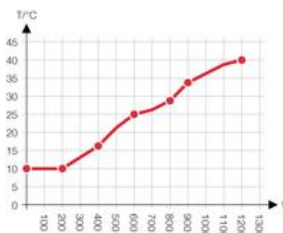


A: Guaranteed condensation free range / C: Deviation of technical data may be possible

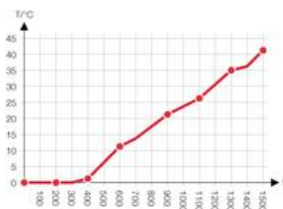
**KBF LQC 720 (E5.2)**

Climate data (with humidity)	
Temperature range without illumination cassettes (°C)	0 - 70
Temperature range with illumination cassettes with illumination (°C)	20 - 60
Temperature variation with illumination	
at 25 °C and 60 % RH (± K)	1,2
at 40 °C and 75 % RH (± K)	1,2
Temperature fluctuation with illumination	
at 25 °C and 60 % RH (± K)	0,2
at 40 °C and 75 % RH (± K)	0,2
Humidity range without illumination cassettes (% RH)	
Humidity range with illumination cassettes, with illumination 1) (% RH)	10 - 80
Humidity fluctuation with illumination	
at 25 °C and 60 % RH (± % RH)	2
at 40 °C and 75 % RH (± % RH)	2
Recovery time after doors were open for 30 sec.	
at 25 °C and 60 % RH with illumination (min.)	1
at 40 °C and 75 % RH with illumination (min.)	5
Illumination data per light cassette	
ICH-compliant illumination device for photostability testing (Lux) / (UVA W/m <sup>2</sup> )	9900 / 2,1

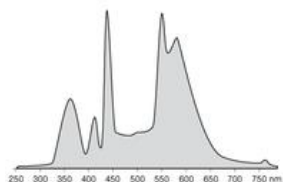
**Heat compensation without illumination**



**Heat compensation with illumination**



**Light spectrum**



Electrical data	
IP protection class acc. to EN 60529	IP 20
Voltage (± 10 %) 50 Hz (V)	200 - 240, 1 N ~
Nominal power at 240 V (kW)	3,5
Energy consumption at 40 °C / 75% RH 1) (W)	2350
Noise level approx. (dB (A))	53

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 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



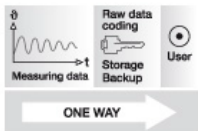
### External water supply set

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



### Access port

With silicone plugs for introducing external measuring instruments into the chamber, access ports with 30, 50 or 100 mm diameters



### 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



### 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



### Temperature measurement of the specimen

Additional PT 100 temperature sensor for accurate temperature measurement of the specimen and digital display of measured values. Recording of measured data via Ethernet or RS 422 interface optional

**KBF LQC 720 (E5.2)**

Access ports with silicone plug 30, 50, 100 mm	<input type="radio"/>
Securing elements for additional fastening of racks (1 set of 4 pieces)	<input type="radio"/>
Keyboard lock	<input type="radio"/>
RS 422 interface for communication software APTCOM™ DataControlSystem	<input type="radio"/>
Additional PT 100 temperature sensor, flexibly installed, with external connection, including DIN connector (6-pin)	<input type="radio"/>
Factory calibration certificate for temperature and humidity. Measurement in center of chamber at 25 °C / 60 % RH or at specified values	<input type="radio"/>
Extension to factory calibration certificate for temperature and humidity. Each additional measurement at an additional measuring point or set of values	<input type="radio"/>
Temperature precision measurement according to DIN 12880 and 9-point humidity measurement / factory standard with measurement log and certificate, measured at 25 °C / 60 % RH or at specified values	<input type="radio"/>
External fresh water supply set consists of fresh and waste water tank with 20 liter each, cabling and pump	<input type="radio"/>
BINDER PURE AQUA SERVICE consisting of disposable cartridge, hose set and measuring unit	<input type="radio"/>
Disposable cartridge for BINDER PURE AQUA SERVICE	<input type="radio"/>
Data Logger Kit TH 70: For the continuous temperature and humidity recording of -40 °C to 70 °C / 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	<input type="radio"/>
Data Logger Kit TH 70/70: With two attachable combined sensors. One for the continuous temperature and humidity recording of -40 °C to 70 °C / 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	<input type="radio"/>
Data Logger Kit T 220: For the continuous temperature recording of -90 °C to 220 °C. Kit includes 1 data logger, PT 100 sensor with 2 m Teflon extension cable and 1 fixture for the connection at the BINDER unit	<input type="radio"/>
Data Logger converter cable RS 232 to USB 2.0	<input type="radio"/>
Data Logger Software: Configuration und evaluation software for all BINDER Data Logger Kits, incl. data cable (RS 232)	<input type="radio"/>
Rack, stainless steel	<input type="radio"/>
Reinforced rack, stainless steel, with 1 set of securing elements (1 set of 4 pieces), max. load 70 kg	<input type="radio"/>
Shelf, perforated, stainless steel	<input type="radio"/>
Safety device, class 3.3 (DIN 12880) with visual alarm	<input type="radio"/>
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	<input type="radio"/>
Zero-voltage relay alarm outputs for temperature ( $\pm 2$ °C) and humidity ( $\pm 5$ % 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)	<input type="radio"/>
Locking door handle with key	<input type="radio"/>
Replacement set illumination tubes for one illumination cassette, including 3 cool white fluorescent tubes and 2 BINDER Q1B Synergy Light™ fluorescent tubes	<input type="radio"/>