

KB series

Refrigerated microbiological incubators with program controller

KB is the all-rounder for microorganisms. With its wide range of individual programming functions, including a real-time clock function and an enormous temperature span from -10°C to 100°C, it can be used for a broad range of sophisticated applications in laboratories – with minimal dehumidification of specimens and impressive extra performance. The APT.line™ with its electronically controlled preheating chamber ensures rapid recovery times and maximum precision, unaffected by the ambient temperature.

**Leistungsmerkmale/Ausstattung:**

- Electronically controlled APT.line™ preheating chamber technology
- Temperature range: -10 °C to 100 °C (14 °F - 212 °F)
- KB 23 Benchtop: 0 °C - 100 °C (32 °F - 212 °F)
- MP controller with 2 programs with 10 sections each, alternatively switchable to 1 program with 20 sections
- The time interval of single program sections can be adjusted up to a maximum of 99:59 hours or 999:59 hours. This adjustment applies to all program sections.
- Adjustable ramp function via program editor
- Integrated week program timer with real time function
- Digital temperature setting with an accuracy of a tenth of a degree
- Adjustable fan speed (0 to 100 %)
- Elapsed time indicator
- Independent adjustable temperature safety device, Class 3.1 (DIN 12880) with visual and acoustic alarm
- Inner glass door
- Environmentally friendly refrigerant R 134a
- RS 422 interface for communication software APT-COM™ DataControlSystem, or switch over to printer output with RS 232 / RS 422 interface converter
- Adjustable intervals for printer
- Units up to 115 liters (4.1 cu.ft) are stackable
- 2 stainless steel racks
- BINDER test certificate

| | KB 23 | KB 53 | KB 115 | KB 240 | KB 400 | KB 720 |
|---|------------------|----------------------|--------------------|--------------------|--------------------|--------------------|
| Exterior dimensions | | | | | | |
| Width (mm/inch) | 433 / 17.1 | 634 / 25.0 | 834 / 32.8 | 1034 / 407 | 884 / 34.8 | 1234 / 48.6 |
| Height (inclusive feet/casters) (mm/inch) | 618 / 24.3 | 837 / 33.0 | 1022 / 40.2 | 1142 / 45.0 | 1850 / 72.8 | 1816 / 71.5 |
| Depth (mm/inch) | 516 / 20.3 | 576 / 22.7 | 646 / 25.4 | 746 / 29.4 | 716 / 28.2 | 867 / 34.1 |
| Plus door handle, I-panel, connection (mm/inch) | 73 / 2.9 | 100 / 3.9 | 100 / 3.9 | 100 / 3.9 | 100 / 3.9 | 100 / 3.9 |
| Wall clearance (mm/inch) | 100 / 3.9 | 100 / 3.9 | 100 / 3.9 | 100 / 3.9 | 100 / 3.9 | 100 / 3.9 |
| Wall clearance with open door(s) (mm/inch) | 100 / 3.9 | 160 / 6.3 | 160 / 6.3 | 160 / 6.3 | 160 / 6.3 | 160 / 6.3 |
| Steam space volume (l/cu.ft.) | 36 / 1.3 | 77 / 2.7 | 158 / 5.6 | 308 / 10.9 | 515 / 18.2 | 855 / 30.2 |
| Number of doors | 1 | 1 | 1 | 2 | 1 | 2 |
| Number of inner glass doors | 1 | 1 | 1 | 2 | 1 | 2 |
| Interior dimensions | | | | | | |
| Width (mm/inch) | 222 / 8.7 | 400 / 15.8 | 600 / 23.6 | 800 / 31.5 | 650 / 25.6 | 1000 / 39.4 |
| Height (mm/inch) | 330 / 13.0 | 400 / 15.8 | 480 / 18.9 | 600 / 23.6 | 1308 / 51.5 | 1168 / 46.0 |
| Depth (mm/inch) | 277 / 10.9 | 330 / 13.0 | 400 / 15.8 | 500 / 19.7 | 470 / 18.5 | 600 / 23.6 |
| Interior volume (l/cu.ft.) | 20 / 0.7 | 53 / 1.9 | 115 / 4.1 | 240 / 8.5 | 400 / 14.1 | 700 / 24.7 |
| Racks (number standard/max.) | 2 / 3 | 2 / 4 | 2 / 5 | 2 / 7 | 2 / 15 | 2 / 14 |
| Load per rack (kg/lbs.) | 10 / 22 | 15 / 33 | 20 / 44 | 30 / 66 | 20 / 44 | 45 / 99 |
| Permitted total load (kg/lbs.) | 25 / 55 | 40 / 88 | 50 / 110 | 70 / 115 | 100 / 221 | 120 / 265 |
| Weight (empty) (kg/lbs.) | 44 / 97 | 72 / 159 | 105 / 232 | 147 / 325 | 216 / 477 | 262 / 578 |
| Temperature data | | | | | | |
| Temperature range (°C/°F) 1) | 0 - 100 / 32-212 | -10 - 100 / 32 - 212 | -10 - 100 / 32-212 | -10 - 100 / 32-212 | -10 - 100 / 32-212 | -10 - 100 / 32-212 |
| Temperature variation | | | | | | |
| at 5 °C (9 °F) (± °C) | 0,7 | 0,6 | 0,4 | 0,5 | 0,6 | 0,2 |
| at 25 °C (45 °F) (± °C) | 0,3 | 0,2 | 0,1 | 0,2 | 0,3 | 0,1 |
| at 40 °C (72 °F) (± °C) | 0,3 | 0,3 | 0,2 | 0,4 | 0,3 | 0,2 |
| Temperature fluctuation | | | | | | |
| at 5 °C (9 °F) (± °C) (± °C) | 0,2 | 0,1 | 0,1 | 0,1 | 0,1 | 0,1 |
| at 40 °C (72 °F) (± °C) | 0,2 | 0,1 | 0,1 | 0,1 | 0,1 | 0,2 |
| Heating up time 1) to 40 °C (72 °F) (Min.) | 11 | 5 | 9 | 10 | 10 | 13 |
| Cooling down time from 40 °C (72 °F) 1) | | | | | | |
| to 5 °C (9 °F) (Min.) | 61 | 58 | 83 | 102 | 96 | 160 |
| Recovery time after door (90°) was open for 30 sec 1) | | | | | | |
| at 5 °C (9 °F) (Min.) | 5 | 4 | 5 | 8 | 6 | 17 |
| at 40 °C (72 °F) (Min.) | 2 | 1 | 1 | 1 | 1 | 2 |
| Electrical data | | | | | | |
| Housing protection acc. to EN 60529 | IP 20 | IP 20 | IP 20 | IP 20 | IP 20 | IP 20 |
| Nominal voltage (±10 %) 50/60 Hz (V) | 230 / 115 | 230 / 115 | 230 / 115 | 200-240 / 100-120 | 230 / 115 | 230 / 115 |
| Nominal power (W) | 340 | 460 | 460 | 930 | 1100 | 1350 |
| Energy consumption 3) | | | | | | |
| at 5 °C (9 °F) (W) | 50 | 260 | 222 | 221 | 450 | 538 |
| at 40 °C (72 °F) (W) | 60 | 215 | 115 | 186 | 120 | 501 |

Based on the ice increase on the evaporators the refrigerating capacity decreases at a set value of < 0 °C (32 °F). For this reason the chambers have to be defrosted regularly (approx. once a week).

- 1) up to 98 % of the set value
- 2) not applicable for units with option independent adjustable temperature safety device 3.3
- 3) these energy consumption values can be used upon calculation of air conditioning systems

All technical specification are specified for units with standard equipment at an ambient temperature of +25 °C (68 °F) and a voltage fluctuation of ±10 %. The temperature data are determined in accordance to factory standard following DIN 12880, part 2 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.



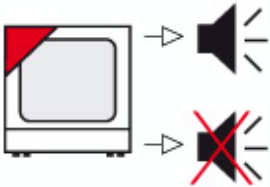
Waterproof interior power socket in the inner chamber

Connected to the main switch. To connect ancillary equipment inside the chamber.



Additional PT 100 temperature sensor

In situ or flexible installation for exact temperature measurement within the specimen material; connects to a special plug on the back wall of the inner chamber.



Acoustic alarm

Activates in the event of excess temperature, with adjustable setpoint at the temperature controller. Acoustic alarm can be switched off.



Petri dish rack

For fast and organized loading of specimens. Available in stainless steel or with different color coding for rapid identification of batches.



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.



Access ports

With silicon plugs for inserting external measuring devices into the chamber. Access ports with 10, 30, 50 mm (0.4, 1.2, 2 inch) diameter.

Operational data documentation: APT-COM™ DataControlSystem

The only standard software that guarantees seamless documentation of all testing parameters in compliance with standards. Can be fully validated in accordance with GLP/GMP and FDA 21 CFR Part 11.

| | KB 23 | KB 53 | KB 115 | KB 240 | KB 400 | KB 720 |
|---|-------|-------|--------|--------|--------|--------|
| Access port with silicone plug | ○ | ○ | ○ | ○ | ○ | ○ |
| Rack, chrome-plated or stainless steel | ○ | ○ | ○ | ○ | ○ | ○ |
| Rack, perforated, stainless steel | ○ | ○ | ○ | ○ | ○ | ○ |
| Perforated shelf (positioned at bottom level), with additional fixation for shaker operation | - | ○ | ○ | ○ | ○ | ○ |
| Reinforced rack, stainless steel, with 1 set of rack securings (max. 70 kg / 154 lbs.) | - | - | - | ○ | ○ | ○ |
| Securing elements for additional fastening of racks (1 set of 4) | ○ | ○ | ○ | ○ | ○ | ○ |
| Enhanced refrigeration system | - | - | - | ○ | ○ | ○ |
| Interior lighting | - | ○ | ○ | ○ | ○ | ○ |
| Lockable door | ○ | ○ | ○ | ○ | ○ | ○ |
| Waterproof interior socket 230 V (maximum 500 W) | - | ○ | ○ | ○ | ○ | ○ |
| Temperature measurement according to DIN 12880-2 or with 9 measuring points with measurement log and certificate | ○ | ○ | ○ | ○ | ○ | ○ |
| Ind. adjustable temp. safety device, Class 3.3 (DIN 12880) | - | ○ | ○ | ○ | ○ | ○ |
| Additional PT 100 temperature sensor flexible or fix with external connection, incl. LEMO collector (3-pin) | - | ○ | ○ | ○ | ○ | ○ |
| Analog temperature output, 4-20 mA, with 6-pin DIN socket (output not adjustable) | - | ○ | ○ | ○ | ○ | ○ |
| Potential free switching outputs accessible via 6-pin DIN socket. Additional module to control 3 switching outputs via 3 contacts of program controller | - | ○ | ○ | ○ | ○ | ○ |
| Over-temperature alarm, acoustic, can be switched off | - | - | - | - | - | - |
| Rubber pads for safe stacking | ○ | ○ | ○ | - | - | - |
| Serial printer with interface converter for printing temp. logs. Incl. set of connection cables for RS 422 interface and RS 232/RS 422 interface converter, 230 V | - | ○ | ○ | ○ | ○ | ○ |
| Calibration certificate | ○ | ○ | ○ | ○ | ○ | ○ |
| Extension of calibration certificate (additional values) | ○ | ○ | ○ | ○ | ○ | ○ |
| Cleaning kit cleaning and disinfection | ○ | ○ | ○ | ○ | ○ | ○ |
| Rack for stacking petri dishes | ○ | ○ | ○ | ○ | ○ | ○ |
| Stable table on castors with locking brakes | - | ○ | ○ | ○ | ○ | - |

○ Option - not available

Technical specifications subject to change

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