

KB 53 (E3.1) - Refrigerated incubator with program controller

The 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, 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.



► Performance features and equipment:

- Electronically controlled APT.line™ preheating chamber and patented DCT™ refrigeration system assuring temperature accuracy and reproducible results in both heating and cooling situations
- Temperature range: -5 °C to 100 °C (23 °F to 212 °F)
- MP controller with 2 programs with 10 sections each, alternatively switchable to 1 program with 20 sections
- Features:
 - Integrated week program timer with real time function
 - Adjustable ramp function via program editor
 - Digital temperature setting with an accuracy of a tenth of a degree
 - Adjustable fan speed
 - Elapsed time indicator
- Independent adjustable temperature safety device, Class 3.1 (DIN 12880) with visual and acoustic alarm
- Inner glass door
- 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



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Exterior dimensions	
Width (mm/inch)	634 / 25.0
Height (inclusive feet) (mm/inch)	837 / 33.0
Depth (mm/inch)	576 / 22.7
Plus door handle, I-panel, connection (mm/inch)	100 / 3.9
Wall clearance (mm/inch)	100 / 3.9
Wall clearance with open door(s) (mm/inch)	160 / 6.3
Steam space volume (l/cu.ft.)	77 / 2.7
Number of doors	1
Number of inner glass doors	1
Interior dimensions	
Width (mm/inch)	400 / 15.8
Height (mm/inch)	400 / 15.8
Depth (mm/inch)	330 / 13.0
Interior volume (l/cu.ft.)	53 / 1.9
Racks (number standard/max.)	2 / 4
Load per rack (kg/lbs.)	15 / 33
Permitted total load (kg/lbs.)	40 / 88
Weight (empty) (kg/lbs.)	72 / 159
Temperature data	
Temperature range (°C/°F) 1)	-5 - 100 / 23 - 212
Temperature variation	
at 5 °C (9 °F) (± °C)	0.6
at 25 °C (45 °F) (± °C)	0.2
at 40 °C (72 °F) (± °C)	0.3
Temperature fluctuation	
at 5 °C (9 °F) (± °C)	0.1
at 40 °C (72 °F) (± °C)	0.1
Heating up time to 40 °C (72 °F) (Min.) 2)	5
Cooling down time from 40 °C (72 °F) to 5 °C (9 °F) (Min.) 2)	58
Recovery time after door was open for 30 sec 1)	
at 5 °C (9 °F) (Min.)	4
at 40 °C (72 °F) (Min.)	1
Electrical data	
Housing protection acc. to EN 60529	IP 20
Nominal voltage (±10 %) 50/60 Hz (V)	230 / 115
Nominal power (W)	460
Energy consumption 3)	
at 5 °C (9 °F) (W)	260
at 40 °C (72 °F) (W)	215

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) 1) at an ambient temperature ≤20 °C (68 °F)

2) up to 98 % of the set value

3) these values can be used upon calculation of air conditioning systems

All technical data are specified for units with standard equipment at an ambient temperature of 25 °C and a voltage fluctuation of ±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.



▶ Waterproof interior socket

Switchable waterproof interior socket 230 V AC (max. 200 W), IP65 protected, with corresponding plug. Max. allowed operating temperature 50 °C (122 °F).



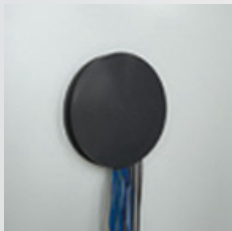
▶ Additional PT 100 temperature sensor

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.



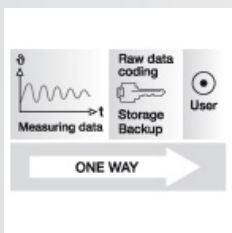
▶ Calibration certificates and validation

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, 100 mm (0.4, 1.2, 2, 3.94 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.

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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)	<input type="radio"/>
Factory calibration certificate. Measurement in center of chamber at 37 °C (98.6 °F) or at specified testing temperature	<input type="radio"/>
Extension to factory calibration certificate. Each additional measurement at an additional measuring point or temperature	<input type="radio"/>
Temperature measurement acc. to DIN 12880 (27 measuring points) at 37 °C (98.6 °F) or at specified temperature with measuring protocol and certificate	<input type="radio"/>
Securing elements for additional fastening of racks (1 set of 4 pieces)	<input type="radio"/>
Anti-slip rubber pads for safe stacking (1 set of 4 pieces)	<input type="radio"/>
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	<input type="radio"/>
Data Logger Software: Configuration und evaluation software for all BINDER Data Logger Kits, incl. data cable	<input type="radio"/>
Zero-voltage relay outputs accessible via 6-pin DIN socket. Additional module for controlling 2 relay outputs via 2 of the programmable controller's controller contacts. Outputs can be switched on and off program-controlled either automatically, or also manually	<input type="radio"/>
Switchable waterproof interior socket 230 V AC (max. 200 W), IP65 protected, with corresponding plug. Max. allowed operating temperature 50 °C (122 °F)	<input type="radio"/>
Additional PT 100 temperature sensor, flexibly installed, with external connection, including LEMO connector (3-pin)	<input type="radio"/>
Analog temperature output, 4-20 mA, with 6-pin DIN socket (output not adjustable)	<input type="radio"/>
Rack, stainless steel	<input type="radio"/>
Shelf, perforated, stainless steel	<input type="radio"/>
Fixed shelf (positioned at bottom level), with additional fixtures to enable shaker operation. Other positions available on request	<input type="radio"/>
Door lock	<input type="radio"/>
Temperature safety device, class 3.3 (DIN 12880) with visual alarm	<input type="radio"/>
Interior lighting (15 W)	<input type="radio"/>