Model KBF-S ECO 400 | Humidity test chambers with environmentally friendly thermoelectric cooling

Thanks to thermoelectric cooling technology with patented heat dissipation, the new KBF-S ECO climatic chamber is one of the most energy-efficient constant climate chambers on the market. The thermoelectric cooling technology means the KBF-S ECO series is also very quiet during operation.

BENEFITS

- Safe thanks to standard-compliant testing according to the ICH Q1A guideline, even with full load.
- Reliable thanks to failsafe operation without compromise.
- Smart, as a wide range of accessories makes it highly compatible for adaptation to specific customer requirements.
- Economical, as energy consumption is minimal thanks to optimized thermoelectric cooling.



Model 400



Model 400

IMPORTANT FEATURES

- Temperature range: 0 °C to +70 °C (max. 26 °C under ambient temperature)
- Humidity range: 10% to 80% RH
- APT.line™ preheating chamber technology
- Independent water supply via tank
- LCD to display temperature and humidity along with additional information and alarms
- Internal data logger, measured values can be read out in open format via USB
- Unit self-test for comprehensive status analysis
- Inner chamber made completely of stainless steel
- 2 stainless steel racks
- Access port with silicone plug Ø 30 mm, left
- Computer interface: Ethernet

ORDERING INFORMATION

Interior volume		Power supply - unit fuse	Plug*	Version	Model version	Art.-No.
[cu.ft.]	[L]					
Model KBF-S ECO 400						
14	400	200...230 V 1~ 50/60 Hz -16,0 A	CEE 7/7	Standard	KBFSECO400-230V	9020-0463
		100...120 V 1~ 50/60 Hz -16,0 A	NEMA 5-20	Standard	KBFSECO400UL-120V	9020-0464

TECHNICAL DATA

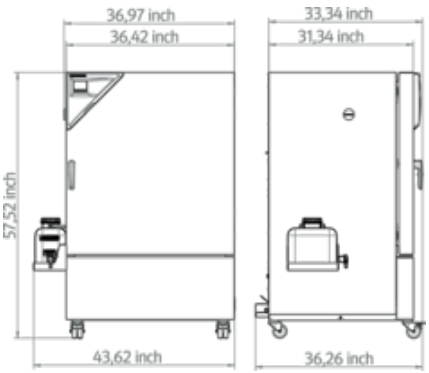
Data		
Article Number	9020-0463	9020-0464
Designation	KBFSECO400-230V	KBFSECO400UL-120V
Option model	Standard	Standard
Performance Data Temperature		
Temperature range	(max. 26 °C under ambient temperature) 0...70 °C	(max. 26 °C under ambient temperature) 0...70 °C
Max. heat compensation at 40°C	300 W	300 W
Performance Data Climate		
Temperature range with humidity	(max. 26 °C under ambient temperature) 5...70 °C	(max. 26 °C under ambient temperature) 5...70 °C
Humidity range	10...80 % r.F.	10...80 % r.F.
Temperature uniformity at 25°C and 60% RH	0.1 ± K	0.1 ± K
Temperature uniformity at 40°C and 75% RH	0.5 ± K	0.5 ± K
Temperature fluctuation at 25°C and 60% RH	0.1 ± K	0.1 ± K
Temperature fluctuation at 40°C and 75% RH	0.1 ± K	0.1 ± K
Humidity fluctuation at 25°C and 60% RH	0.3 ± % r.F.	0.3 ± % r.F.
Humidity fluctuation at 40°C and 75% RH	0.3 ± % r.F.	0.3 ± % r.F.
Recovery time after door was opened for 30 s at 25°C and 60% RH	6 min	6 min
Recovery time after door was opened for 30 s at 40°C and 75% RH	15 min	15 min
Electrical data		
Rated Voltage	200...230 V	100...120 V
Power frequency	50/60 Hz	50/60 Hz
Nominal power	1,1 kW	1,1 kW
Unit fuse	16,0 A	16,0 A
Phase (Nominal voltage)	1~	1~
Dimensions and weights		
Interior volume	14 cu.ft.	14 cu.ft.
Net weight of the unit (empty)	423 lbs	423 lbs
Load per rack	66 lbs	66 lbs
Permitted load	265 lbs	265 lbs

Wall clearance back	3,94 in	3,94 in
Wall clearance sidewise	7,09 in	7,09 in
Housing dimensions not incl. fittings and connections		
Width net	36.42 in	36.42 in
Height net	76.61 in	76.61 in
Depth net	31.34 in	31.34 in
Internal Dimensions		
Interior width	25.59 in	25.59 in
Interior height	49.92 in	49.92 in
Interior depth	19.09 in	19.09 in
Unit doors	1	1
Environment-specific data		
Sound-pressure level	45 dB(A)	45 dB(A)
Energy consumption at 25°C and 60% RH	60 Wh/h	60 Wh/h
Energy consumption at 40°C and 75% RH	70 Wh/h	70 Wh/h
Fixtures		
Number of shelves (std./max.)	2/15	2/15

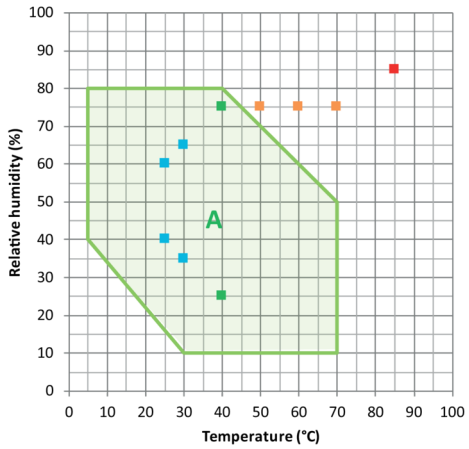
All technical data is specified for unloaded units with standard equipment at an ambient temperature of +22 °C ±3 °C and a power supply voltage fluctuation of ±10 %. The temperature data is determined to BINDER factory standard following DIN 12880, observing the recommended wall clearances of 10 % of the height, width, and depth of the inner chamber. Technical data refers to 100 % fan speed. All indications are average values, typical for units produced in series. We reserve the right to change technical specifications at any time.

For model KBF-S ECO 240, temperature differences are possible up to 28 °C below ambient temperature; for models KBF-S ECO 400, KBF-S ECO 720 and KBF-S ECO 1020, temperature differences are possible up to 24 °C below ambient temperature.
The lowest operating temperature for all units is 0 °C irrespective of the ambient temperature.

DIMENSIONS Incl. fittings and connections [mm]



DIAGRAMS



ICH Long term stability testing
Accelerated stability testing
ICH Stress testing
Industrial THB testing (85/85)

A: Guaranteed condensation-free range

Climate chart

OPTIONS

Designation	Description	KBF-S ECO 400	*	Art.-No.
Access port with silicone plug	left			
	30 mm	•	01	8012-2072
	50 mm	•	01	8012-2079
	100 mm	•	01	8012-2077
	right			
	30 mm	•	01	8012-2071
	50 mm	•	01	8012-2078
	100 mm	•	01	8012-2076
	top			
	30 mm	•	01	8012-2073
	50 mm	•	01	8012-2074
	100 mm	•	01	8012-2075
Calibration certificate, expanded	for temperature and humidity; for extending the measurement in center of chamber to include another test value	•	-	8012-2066
Calibration certificate, temperature	temperature measurement incl. certificate, 9 measuring points at specified temperature	•	-	8012-2067

Designation	Description	KBF-S ECO 400	*	Art.-No.
	temperature measurement incl. certificate, 15- 18 measuring points at specified temperature	•	-	8012-2068
	temperature measurement incl. certificate and 27 measuring points at specified temperature	•	-	8012-2069
Calibration certificate, temperature and humidity	Measurement in center of chamber at 25°C / 60% RH or at specified test values	•	-	8012-2065
	temperature (according to DIN12880) and humidity measurement incl. certificate, 27 temperature measuring points and 1 humidity measuring point, at 25 °C / 60 % RH or at specified values	•	-	8012-2070
Door lock	lockable door handle	•	-	8012-2086

ACCESSORIES

Designation	Description	KBF-S ECO 400	*	Art.-No.
APT-COM™ 4 BASIC-Edition	for simple logging and documentation requirements with up to 5 networked units.			
	version 4, BASIC edition	•	-	9053-0039
APT-COM™ 4 GLP-Edition	for working under GLP-compliant conditions. Measured values are documented in a tamper-proof way in line with the requirements of FDA Regulation 21 CFR 11.			
	version 4, GLP edition	•	-	9053-0042
APT-COM™ 4 PROFESSIONAL-Edition	convenient unit and user management built on the BASIC edition. Suitable for networking up to 100 units.			
	version 4, PROFESSIONAL edition	•	-	9053-0040
BINDER PURE AQUA SERVICE	System for preparation or complete desalination of tap water, complete set containing PURE AQUA 300 single-use cartridge, measuring device, and all necessary connecting parts	•	-	8012-0759
BINDER PURE AQUA SERVICE, accessories	Single-use, replacement cartridge for BINDER PURE AQUA System	•	-	6011-0165
LED light bars	Basic set consisting of 2 pieces, attachment material, control unit for max. 4 light strips, 100-240 V, 50/60 Hz			
	Basic set 300, length 30 cm	•	-	8012-1107
	Basic set 500, length 50 cm	•	-	8012-1108
	Expansion set consisting of 2 pieces, attachment material: clips. For expanding the basic set of light bars			
	Expansion set 300, length 30 cm	•	-	8012-1716
	Expansion set 500, length 50 cm	•	-	8012-1717
pH-neutral detergent	concentrated, for gentle remove of residual contaminants; 1 kg	•	-	8012-2250
Qualification documents IQ/ OQ	IQ/OQ documents digital in PDF format – supporting documents for validation consisting of: IQ/OQ checklists, comprehensive unit documentation covering:			

Designation	Description	KBF-S ECO 400	*	Art.-No.
	temperature and humidity. Excluded: Document execution is separate.	•	-	7057-0011
Qualification documents IQ/ OQ/PQ	IQ/OQ/PQ documents digital in PDF format – supporting documents for validation customizied to customer requirements, PQ section added to the qualification folder IQ/OQ; supporting documents for validation consisting of: IQ/OQ checklists, comprehensive unit documentation covering:			
	temperature and humidity values. Excluded: Document execution is separate.	•	-	7057-0017
Rack	stainless steel	•	-	8012-2050
Rack, reinforced	stainless steel, with fasteners (1 set of 4)	•	-	8012-0638
Rack accessories	fasteners (1 set of 4) for additional security of racks	•	-	8012-2280
Shelf, perforated	Stainless steel	•	-	8012-2163

SERVICES

Designation	Description	*	Art.-No.
Calibration services			
Temperature and humidity calibration	Expansion –Additional Temperature and humidity calibration with 1 measuring point in center of chamber with 1 specified pair of values, including certificate. Travel to be quoted separate.	05	DL30-0302
	Temperature and humidity calibration with 1 measuring point in center of chamber with 1 specified pair of values, including certificate. Travel to be quoted separate.	05	DL30-0310
Temperature measurement, 9 temperature measuring points and 1 humidity measuring point	Temperature measurement with 9 temperature measuring points and 1 humidity measuring point in center of chamber with a pair of values specified by the user, including certificate. Travel to be quoted separate. A total of 3 shelves are required.	05	DL30-0309
Temperature measurement, 18 temperature measuring points and 1 humidity measuring point	Temperature measurement with 18 temperature measuring points and 1 humidity measuring point in center of chamber with a pair of values specified by the user, including certificate. Travel to be quoted separate. A total of 2 shelves are required.	05	DL30-0318
Temperature measurement, 27 temperature measuring points and 1 humidity measuring point	Temperature measurement with 27 temperature measuring points and 1 humidity measuring point in center of chamber with a pair of values specified by the user, including certificate. Travel to be quoted separate. A total of 3 shelves are required.	05	DL30-0327
Installation services			
Unit installation	Connect the unit to the customer-side connections (electricity, water, wastewater, gas), basic functions check, brief operating instructions. (excl.: unpacking, setup, controller instructions, programming, installation work) Travel to be quoted as separate.	05	DL10-0170
Unit instructions	Instruction regarding operating principle and basic functions of the unit, operation of the control electronics including programming. Travel to be quoted as separate Limited to 3 hours.	05	DL10-0550
Maintenance services			
BRONZE 3-year maintenance contract	Annual Device Inspection Includes Preventive Maintenance with Calibration Certificate. 10% Discount on Spare Parts and Labor for any additional Services needed Wear + tear parts to be purchased or billed to customer. Travel to be quoted as separate.	05	DL20-0710

Designation	Description	*	Art.-No.
GOLD 3-year maintenance contract	Annual Device Inspection Includes Preventive Maintenance with Calibration Certificate of Temperature. 25% Discount on Spare Parts and Labor for any additional Services needed. One additional courtesy visit per year can be used for service visit or operator. Wear + tear parts to be purchased or billed to customer. Travel to be quoted separate.	05	DL20-0925
Preventive maintenance	One-off maintenance service in accordance with maintenance schedule. Visual inspection of mechanical and electrical components, testing of all key functions. Checking a test temperature specified by the user in center of usable space without certificate. Wear + tear parts need to be purchased or billed to customer. Travel to be quoted as separate.	05	DL20-0605
SILVER 3-year maintenance contract	Annual Device Inspection Includes Preventive Maintenance with Calibration Certificate 15% Discount on Spare Parts and Labor for any additional Services needed One additional courtesy visit per year can be used for service visit or operator training. Wear + tear parts to be purchased or billed to customer. Travel to be quoted separate.	05	DL20-0825
Validation services			
Execution of IQ/OQ	Execution of IQ/OQ in accordance with qualification folder. Travel to be quoted separate.	05	DL42-0300
Execution of IQ/OQ/PQ	Execution of IQ/OQ/PQ in accordance with qualification folder. Travel to be quoted separate.	05	DL44-0500
Warranty service			
1-year warranty extension	The warranty is extended by 1 year from the delivery date, wear parts are excluded	05	DL50-0030

NOTES

01 Condensation may occur in the area around the access port. Access ports may be placed in custom locations for an additional charge.

05 Quoted prices do not include travel costs. Please refer to the chapter on BINDER Service for travel costs for your region. Quoted prices for services performed in Switzerland do not include a country-specific added fee (available on request).

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