

Model ED 23 | Drying and heating chambers with natural convection

The strengths of a BINDER ED series drying chamber include routine drying and sterilization tasks up to +300 °C. Thanks to the natural convection, all thermal processes which use this drying chamber are highly efficient. The ED series ensures fast, uniform drying.

BENEFITS

- Uniform drying conditions thanks to APT.line™ technology
- Identical test conditions throughout the chamber interior independent of sample size and quantity
- Outstanding thermal insulation saves operation costs



Model 23

IMPORTANT FEATURES

- Temperature range: +5°C above ambient temperature to +300 °C
- APT.line™ preheating chamber technology
- Natural convection
- Adjustable exhaust air flap
- Controller with timer functions
- 2 chrome-plated racks
- Class 2 independent adjustable temperature safety device (DIN 12880) with visual alarm

ORDERING INFORMATION

Interior volume [L]	Power supply - unit fuse	Plug*	Version	Model version	Art.-No.
Model ED 23					
20	230 V 1~ 50/60 Hz -10,0 A	CEE 7/7	Standard	ED023-230V	9010-0190
	120 V 1~ 60 Hz -12,5 A	NEMA 5-20	Standard	ED023UL-120V	9010-0192

TECHNICAL DATA

Designation
Article Number
Option model
Temperature range
Temperature range without illumination cassettes
Temperature range with 100% illumination
Temperature uniformity dependent on set value
Temperature uniformity at -80°C
Temperature uniformity with 100% illumination
Temperature uniformity without illumination cassettes
Temperature uniformity at 37°C
Temperature uniformity at 100°C
Temperature uniformity at 150°C
Temperature fluctuation dependent on set value
Temperature fluctuation at -80°C
Temperature fluctuation at 37°C
Temperature fluctuation with 100% illumination
Temperature fluctuation without illumination cassettes
Temperature fluctuation at 100°C
Temperature fluctuation at 150°C
Heating up time to 100°C
Heating up time to 150°C
Heating up time to 37°C
Average heating-up rate according to IEC 60068-3-5
Cooling down time from 110°C to -40°C
Cooling down time from 180°C to -70°C
Cooling down time from 22°C to -80°C
Average cooling down time according to IEC 60068-3-5

Cooling down time from 180°C to -40°C

Max. heat compensation at 37°C

Max. heat compensation at 40°C

Max. heat compensation at 40°C with illumination

Recovery time after door was opened for 30 s at 150°C

Recovery time after door was opened for 30 s at 37°C

Temperature range with humidity and without illumination cassettes

Temperature range with humidity and 100% illumination

Temperature range with humidity

Humidity range

Humidity range without illumination cassettes

Humidity range with 100% illumination

Temperature uniformity at 25°C and 60% RH

Temperature uniformity at 40°C and 75% RH

Temperature uniformity with illumination at 25°C and 60% RH

Temperature uniformity with illumination at 40°C and 75% RH

Temperature uniformity with humidity dependent on set value

Temperature fluctuation at 25°C and 60% RH

Temperature fluctuation at 40°C and 75% RH

Temperature fluctuation with illumination at 25°C and 60% RH

Temperature fluctuation with illumination at 40°C and 75% RH

Temperature fluctuation with humidity dependent on set value

Humidity fluctuation at 25°C and 60% RH

Humidity fluctuation at 40°C and 75% RH

Humidity fluctuation with illumination at 25°C and 60% RH

Humidity fluctuation with illumination at 40°C and 75% RH

Humidity fluctuation with humidity dependent on set value

Recovery time after door was opened for 30 s at 25°C and 60% RH

Recovery time after door was opened for 30 s at 40°C and 75% RH

Recovery time after door was opened for 30 s with illumination at 25°C and 60% RH

Recovery time after door was opened for 30 s with illumination at 40°C and 75% RH

Max. heat compensation at 25°C and 90% RH

CO₂ range

CO₂ measuring technology

CO₂ recovery time after door was opened for 30 s at 5 vol. % CO₂

Standard O₂ control range

O₂ control ranges with option: O₂ range

O₂ recovery time after door was opened for 30 s at 5 vol. % O₂

ICH compliant illumination for photo stability testing

ICH compliant illumination for photo stability testing

Daylight tubes

Daylight tubes

Fluora® growth lamps

Arabidopsis lamps

Air circulation (approx.)

Volumetric flow rate of exhaust air acc. to EN 1539 at 50 °C

Air change rate at 100°C

Air change rate at 150°C

Permitted end vacuum

Leckrate

Pressure fluctuation over time at 50 mbar

Pressure fluctuation over time at 400 mbar

Highest permitted solvent quantity (at T-180°C, M-100g/mol, U-40g/m³, K=0,5)

Rated Voltage

Power frequency

Nominal power

Unit fuse

Phase (Nominal voltage)

Vacuum connection with small flange

Measuring access port with small flange

Inert gas connection with flow limiter (RP")

Compressed air connection for pressure-encapsulation

Interior volume

Net weight of the unit (empty)

Load per rack

Permitted load

Wall clearance back

Wall clearance sidewise

Width net

Height net

Depth net

Interior width

Interior height

Interior depth

Viewing window width

Viewing window height

Inner doors

Unit doors

Sound-pressure level

Average heat compensation at set value -80°C and Ta = 21°C

Energy consumption at 25°C and 60% RH

Energy consumption at 100°C

Energy consumption at 150°C

Energy consumption at 20°C

Energy consumption at 37°C

Energy consumption at 37°C and 75% RH

Energy consumption at 37°C and with illumination

Energy consumption at 40°C and 75% RH

Energy consumption at 85°C and 85% RH

Energieverbrauch bei Sollwert -80 °C und T_u = 20 °C

Number of shelves (std./max.)

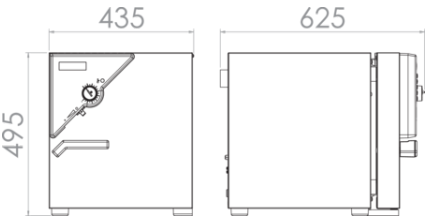
Number of illumination cassettes (std./max.)

Freezer racks per compartment

Cryoboxes, 50 mm

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 in accordance to BINDER factory standard following DIN 12880, observing 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 change technical specifications at any time.

DIMENSIONS Incl. fittings and connections [mm]



OPTIONS

Designation	Description	ED 23	*	Art.-No.
Access port with silicone plug	back			
	10 mm	•	01	8012-1282
	30 mm	•	01	8012-0540
	50 mm	•	01	8012-0546
	left			
	10 mm	•	01	8012-1275
	30 mm	•	01	8012-0537
	50 mm	•	01	8012-0542
	right			
	10 mm	•	01	8012-1268
	30 mm	•	01	8012-0536
	50 mm	•	01	8012-0541
	top			

Designation	Description	ED 23	*	Art.-No.
	10 mm	•	01	8012-1262
	30 mm	•	01	8012-0539
	50 mm	•	01	8012-0545
Alarm function for overheating	Switchable acoustic alarm, with adjustable limit value on the independent temperature safety device			
	120/208 V option model	•	-	8012-1303
	switchable acoustic alarm, with adjustable limit value on the independent temperature safety device. Not in combination with the following option: Door with window			
	230/400 V option model	•	-	8012-1299
Analog output 4-20 mA	for temperature values (output not adjustable)	•	-	8012-0430
Calibration certificate, expanded	for temperature; for extending the measurement in center of chamber to include another test temperature	•	-	8012-1115
Calibration certificate, temperature	for temperature, measurement in center of chamber at specified temperature	•	-	8012-1134
	temperature measurement incl. certificate, 9 measuring points at specified temperature	•	-	8012-1551
	temperature measurement incl. certificate, 15- 18 measuring points at specified temperature	•	-	8012-1572
	temperature measurement incl. certificate and 27 measuring points at specified temperature	•	-	8012-1593
Class 3.1 independent temperature safety device	with visual alarm (DIN 12880)	•	-	8012-0032
Door gasket	made of FKM, silicone-free	•	-	8012-0493
Door lock	lockable door handle	•	-	8012-1246
Measurement of air exchange rate	in accordance with ASTM D5374, definition and protocol according to ambient temperature	•	-	8012-0195
Pt 100 temperature sensor	additional flexible Pt 100, interior, with external connection incl. LEMO connector (3-pin)	•	-	8012-1173
Viewing window and interior lighting	Viewing window 180 x 180 mm in the door and interior lighting 15 W. Not in combination with the following option: Alarm function for overheating			
	230 V option model	•	-	8012-0378

ACCESSORIES

Designation	Description	ED 23	*	Art.-No.
pH-neutral detergent	concentrated, for gentle remove of residual contaminants; 1 kg	•	-	8012-2250

Designation	Description	ED 23	*	Art.-No.
Qualification documents	IQ/OQ/PQ documents – supporting documents for validation performed by customers, according to customer requirements, PQ section added to qualification folder IQ/OQ; parameters: temperature, CO ₂ , O ₂ – or pressure, depending on unit			
	Digital in PDF format	•	-	7057-0005
	Hard copy inside folder	•	-	7007-0005
	IQ/OQ documents – supporting documents for validation performed by customers, consisting of: IQ/OQ checklists incl. calibration guide and comprehensive unit documentation; parameters: temperature, CO ₂ , O ₂ , pressure, depending on unit			
	Digital in PDF format	•	-	7057-0001
	Hard copy inside folder	•	-	7007-0001
Rack	chrome plated	•	-	8012-2031
	stainless steel	•	-	8012-2046
Rubber pads	set anti-slip feet	•	-	8012-2030

SERVICES

Designation	Description	*	Art.-No.
Calibration services			
Calibration certificate, temperature	Calibration of one (1) test temperature specified by the user in center of chamber, including certificate	05	DL30-0110
	Extension of calibration of one (1) additional test temperature specified by the user in the center of the usable space, including certificate	05	DL30-0102
Measurement of air exchange rate	including certificate (in accordance with ASTM D5374)	05	DL33-0000
Temperature measurement, 9 measuring points	Temperature measurement with 9 measuring points with a set value specified by the user, including certificate	05	DL30-0109
Temperature measurement, 18 measuring points	Temperature measurement with 18 measuring points with a set value specified by the user, including certificate	05	DL30-0118
Temperature measurement, 27 measuring points	Temperature measurement with 27 measuring points with a set value specified by the user, including certificate	05	DL30-0127
Installation services			
Unit commissioning	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)	05	DL10-0160
Unit instructions	Instruction regarding operating principle and basic functions of the unit, operation of the control electronics including programming	05	DL10-0540
Maintenance contracts			
BRONZE 3-year maintenance contract	Maintenance service as contractually agreed, visual inspection of mechanical and electrical components, check of control response, 20% discount on spare parts	05	DL20-0720
GOLD 3-year maintenance contract	Maintenance service as contractually agreed, visual inspection of mechanical and electrical components, check of control response, 20% discount on spare parts,	05	DL20-0915

Designation	Description	*	Art.-No.
	testing of all key functions, replacement of wear parts, calibration of one test temperature specified by the user in the center of the usable space, including certificate		
SILVER 3-year maintenance contract	Maintenance service as contractually agreed, visual inspection of mechanical and electrical components, check of control response, 20% discount on spare parts, testing of all key functions, calibration of one test temperature specified by the user in the center of the usable space, without certificate	05	DL20-0815
Maintenance services			
Maintenance	One-off maintenance service in accordance with maintenance schedule. Visual inspection of mechanical and electrical components, testing of all key functions. Calibration of a test temperature specified by the user in center of usable space without certificate	05	DL20-0601
Validation services			
Execution of IQ/OQ	Execution of IQ/OQ in accordance with qualification folder	05	DL40-0100
Execution of IQ/OQ/PQ	Execution of IQ/OQ/PQ in accordance with qualification folder	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	DL50-0010

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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