

# Model CB 220 | CO<sub>2</sub> incubators with hot air sterilization and heat sterilizable CO<sub>2</sub> sensor

The BINDER CB series CO<sub>2</sub> incubator is the premium class among the CO<sub>2</sub> incubators. It is suitable for all sensitive incubation applications and ensures optimal cell growth. A BINDER CB series CO<sub>2</sub> incubator can perform complex cultivation experiments as well as specific environmental conditions.

## BENEFITS

- Hot air sterilization at 180 °C, with sterilizable built-in CO<sub>2</sub> sensor minimizes the risk of contamination
- Homogeneous temperature distribution thanks to VENTAIR™ air jacket system
- Stable pH-values thanks to drift-free CO<sub>2</sub> IR sensor technology
- Saturated relative humidity up to 95 % RH
- Easy cleaning thanks to seamless, deep-drawn inner chamber



Model 220

## MAIN FEATURES

- Temperature range: room temperature plus 7 °C to 60 °C
- Humidity range: up to 95% RH
- Alternative O<sub>2</sub> control ranges: 0.2-20 vol. % O<sub>2</sub> or 10-95 vol. % O<sub>2</sub> (O<sub>2</sub> GO versions)
- Auto-sterilization with hot air at 180 °C
- Double-pan humidification system with condensation protection
- CO<sub>2</sub> gas-mixing jet with Venturi effect
- Hot-air sterilizable CO<sub>2</sub> sensor with infrared technology
- Display via color LCD monitor
- Lockable door handle
- Tightly-sealed inner door made of tempered safety glass
- Seamless, deep-drawn inner stainless steel chamber
- 3 perforated stainless steel shelves
- Units are stackable with stacking adapter
- Troubleshooting system with visual and audible alarms
- Computer interface: Ethernet
- Internal data recording and USB interface
- Zero-voltage alarm contact

## ORDERING INFORMATION

Interior volume [cu.ft.]	Voltage	Option model	Version	Art.-No.
Model CB 220				
7.4	200...240 V 1 ph 50/60 Hz	Standard	CB220-230V	9040-0096
		with 6x divided inner door	CB220-230V-G	9040-0108
		with O <sub>2</sub> control	CB220-230V-O	9040-0098
		with O <sub>2</sub> control and with 6x divided inner door	CB220-230V-GO	9040-0110
	100...120 V 1 ph 50/60 Hz	Standard	CB220UL-120V	9040-0097
		with 6x divided inner door	CB220UL-120V-G	9040-0109
		with O <sub>2</sub> control	CB220UL-120V-O	9040-0099
		with O <sub>2</sub> control and with 6x divided inner door	CB220UL-120V-GO	9040-0111

**TECHNICAL DATA** (Version 1-4 from 8)

Description	CB220-230V <sup>1</sup>	CB220-230V-G <sup>1</sup>	CB220-230V-O <sup>1</sup>	CB220-230V-GO <sup>1</sup>
Article Number	9040-0096	9040-0108	9040-0098	9040-0110
<b>Performance Data Temperature</b>				
Temperature range 7 °C above ambient temperature to [°C]	60	60	60	60
Temperature variation at 37 °C [± K]	0.4	0.4	0.4	0.4
Temperature fluctuation at 37 °C [± K]	0.1	0.1	0.1	0.1
Recovery time after 30 seconds door open at 37 °C [min]	5	5	5	5
<b>Performance Data Climate</b>				
Humidity range	90...95	90...95	90...95	90...95
<b>Gas Data - CO<sub>2</sub>-Data</b>				
CO <sub>2</sub> range [Vol.-% CO <sub>2</sub> ]	0...20	0...20	0...20	0...20
CO <sub>2</sub> measurement	IR	IR	IR	IR
CO <sub>2</sub> Recovery time after 30 seconds door open at 5 Vol.-% CO <sub>2</sub> [min]	5	5	5	5
<b>Gas Data - O<sub>2</sub>-Data</b>				
O <sub>2</sub> range [Vol.-% O <sub>2</sub> ]			0.2...95	0.2...95
O <sub>2</sub> Recovery time after 30 seconds door open at 5 Vol.-% O <sub>2</sub> [min]			18	18
<b>Electrical data</b>				
Rated Voltage [V]	200...240	200...240	200...240	200...240
Power frequency [Hz]	50/60	50/60	50/60	50/60
Nominal power [kW]	1.5	1.5	1.5	1.5
Unit fuse [A]	10	10	10	10
Phase (Nominal voltage) [ph]	1	1	1	1
<b>Measures - Outer dimensions</b>				
Width net [mm]	740	740	740	740
Height net [mm]	1070	1070	1070	1070
Depth net [mm]	715	715	715	715
Wall clearance back [mm]	100	100	100	100
Wall clearance sidewise [mm]	50	50	50	50
<b>Measures - Doors</b>				
Inner doors	1	6	1	6
Unit doors	1	1	1	1
<b>Measures - Internal Dimensions</b>				
Width [mm]	560	560	560	560
Height [mm]	750	750	750	750
Depth [mm]	500	500	500	500
<b>Measures</b>				
Interior volume [L]	210	210	210	210
Net weight of the unit (empty) [kg]	121	129	125	132
permitted load [kg]	30	30	30	30
Load per rack [kg]	10	10	10	10
<b>Environment-specific data</b>				
Energy consumption at 37 °C [Wh/h]	120	120	120	120
<b>Fixtures</b>				
Number of shelves (std./max.)	3/8	3/3	3/8	3/3

<sup>1</sup> 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. All indications are average values, typical for units produced in series. We reserve the right to change technical specifications at any time.

**TECHNICAL DATA** (Version 5-8 from 8)

Description	CB220UL-120V <sup>1</sup>	CB220UL-120V-G <sup>1</sup>	CB220UL-120V-O <sup>1</sup>	CB220UL-120V-GO <sup>1</sup>
Article Number	9040-0097	9040-0109	9040-0099	9040-0111
<b>Performance Data Temperature</b>				
Temperature range 7 °C above ambient temperature to [°C]	60	60	60	60
Temperature variation at 37 °C [± K]	0.4	0.4	0.4	0.4
Temperature fluctuation at 37 °C [± K]	0.1	0.1	0.1	0.1
Recovery time after 30 seconds door open at 37 °C [min]	5	5	5	5
<b>Performance Data Climate</b>				
Humidity range	90...95	90...95	90...95	90...95
<b>Gas Data - CO<sub>2</sub>-Data</b>				
CO <sub>2</sub> range [Vol.-% CO <sub>2</sub> ]	0...20	0...20	0...20	0...20
CO <sub>2</sub> measurement	IR	IR	IR	IR
CO <sub>2</sub> Recovery time after 30 seconds door open at 5 Vol.-% CO <sub>2</sub> [min]	5	5	5	5
<b>Gas Data - O<sub>2</sub>-Data</b>				
O <sub>2</sub> range [Vol.-% O <sub>2</sub> ]			0.2...95	0.2...95
O <sub>2</sub> Recovery time after 30 seconds door open at 5 Vol.-% O <sub>2</sub> [min]			18	18
<b>Electrical data</b>				
Rated Voltage [V]	100...120	100...120	100...120	100...120
Power frequency [Hz]	50/60	50/60	50/60	50/60
Nominal power [kW]	1.5	1.5	1.5	1.5
Unit fuse [A]	16	16	16	16
Phase (Nominal voltage) [ph]	1	1	1	1
<b>Measures - Outer dimensions</b>				
Width net [mm]	740	740	740	740
Height net [mm]	1070	1070	1070	1070
Depth net [mm]	715	715	715	715
Wall clearance back [mm]	100	100	100	100
Wall clearance sidewise [mm]	50	50	50	50
<b>Measures - Doors</b>				
Inner doors	1	6	1	6
Unit doors	1	1	1	1
<b>Measures - Internal Dimensions</b>				
Width [mm]	560	560	560	560
Height [mm]	750	750	750	750
Depth [mm]	500	500	500	500
<b>Measures</b>				
Interior volume [L]	210	210	210	210
Net weight of the unit (empty) [kg]	121	129	125	132
permitted load [kg]	30	30	30	30
Load per rack [kg]	10	10	10	10
<b>Environment-specific data</b>				
Energy consumption at 37 °C [Wh/h]	120	120	120	120
<b>Fixtures</b>				
Number of shelves (std./max.)	3/8	3/3	3/8	3/3

<sup>1</sup> 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. All indications are average values, typical for units produced in series. We reserve the right to change technical specifications at any time.

## OPTIONS AND ACCESSORIES

Designation	Description	*	Art.-No.
Access port with silicone plug	back 30 mm	01	8012-1390
	left 30 mm	01	8012-1391
	right 30 mm	01	8012-1392
Analog output, 4 – 20 mA	for temperature and CO <sub>2</sub> values (outputs not adjustable)	02	8012-0822
Base	with casters	–	9051-0029
Calibration certificate O <sub>2</sub>	for the O <sub>2</sub> control option; a measuring point in center of chamber at a specified O <sub>2</sub> percentage value	–	8012-0229
Calibration certificate, expanded	for temperature; for extending the measurement in center of chamber to include another test temperature	–	8012-1113
Calibration certificate, temperature	for temperature, measurement in center of chamber at specified temperature	–	8012-1132
	temperature measurement incl. certificate and 27 measuring points at specified temperature	–	8012-1592
	temperature measurement incl. certificate, 15- 18 measuring points at specified temperature	–	8012-1571
	temperature measurement incl. certificate, 9 measuring points at specified temperature	–	8012-1550
Calibration certificate, temperature and CO <sub>2</sub>	for temperature and CO <sub>2</sub> , temperature measurement in center of chamber, CO <sub>2</sub> measurement performed using test gas at 37 °C and 5 % CO <sub>2</sub>	–	8012-1235
CELLROLL set	modular, expandable roller bottle system for cell cultivation, 6 roller bottles	–	8012-0572
Electric access port	8-pin, for low voltage with LEMO socket (coverable) and LEMO plug (max. 24 V – 2 A)	–	8012-0826
Gas cylinder connection set	for CO <sub>2</sub> , consisting of a gas tank pressure regulator with connection parts and 5-meter hose	–	8012-0014
	for N <sub>2</sub> , consisting of a gas tank pressure regulator with connection parts and 5-meter hose	–	8012-0016
	for O <sub>2</sub> , consisting of a gas tank pressure regulator with connection parts and 5-meter hose	–	8012-0015
Gas tank changer	external, BINDER Gas Supply Service, for connecting 2 gas tanks (CO <sub>2</sub> , N <sub>2</sub> or O <sub>2</sub> ), with audible and visual alarms, as well as zero-voltage alarm output	–	8012-0408
Interface converter	RS 422 cable set and RS 232 / RS 422 interface converter for connection to 10-way plug distributor or for connection to a unit 120 V, 60 Hz option model	–	8012-0557
	230 V, 50/60 Hz option model	–	8012-0556
	RS 422 cable set and RS 422 / Ethernet interface converter for connection to 10-way plug distributor or for connection to a unit 120 V, 60 Hz option model	–	8012-0405
	230 V, 50/60 Hz option model	–	8012-0380
Interface converter, USB / RS422	RS 422 cable set and RS 422 / USB interface converter for connection to 10-way plug distributor or for connection to a unit (USB-powered converter)	–	8012-0665
Interior socket	waterproof, switched flush-mounting box (LEMO) for nominal voltage in unit interior, coverable, with corresponding plug (nominal voltage; max. 3 A; protection class IP65)	07	8012-0823
O <sub>2</sub> control range	alternative to the standard range, for controlling O <sub>2</sub> concentrations between 10 and 95 vol. %, only in conjunction with option models with O <sub>2</sub> control	–	8012-1106
pH-neutral detergent	concentrated, for gentle remove of residual contaminants; 1 kg	–	1002-0016
RS 422 interface	in place of Ethernet, for communication software	–	8012-0824
	modular plug distributor for 10 RS 422 interfaces	–	8012-0295
RS 422 interface, cable (15 m)	RS 422 connection cable (15 m) between plug distributor and RS 422 interface	–	5023-0036
RS 422 interface, cable (50 m)	RS 422 extension cable (50 m) between interface converter and unit or RS 232 / RS 422 plug distributor	–	5023-0117
Shelf, divided	stainless steel, for divided inner door	–	8012-0607
Shelf, perforated	stainless steel	–	6004-0137

\* Notes › See last page

Designation	Description	*	Art.-No.
Software	APT-COM™ communications software		
	version 2 to 3, GLP edition	19	9053-0016
	version 3, BASIC edition	19	9053-0014
	version 3, GLP edition	19	9053-0015
	version 3, STANDARD edition	19	9053-0013
APT-COM™ communications software, price: for free	version 3, GLP DEMO Edition	19	9053-0008
Stacking adapter, flat	for thermally decoupled stacking of two identical units	–	9051-0036
Stacking frame	stable, vibration-free stacking frame on casters with stop brake for safe stacking of two CB series units	–	9051-0023

\* Notes › See last page

## SERVICES

Designation	Description	*	Art.-No.
<b>Installation services</b>			
Data Logger Kit installation service	and set up of unit at operating location, connect to existing connections	13, 18	DL100200
	unit function instructions for operation and programming of the controller	18	DL100500
<b>Preventive maintenance</b>			
Preventive maintenance	Execution of equipment inspection according to maintenance plan	14, 18	DL200400
<b>Calibration services</b>			
Calibration CO <sub>2</sub>	including certificate, CO <sub>2</sub> measurement with analyzed test gas at 5 % or at specified value	14, 16, 17, 18	DL300401
Calibration O <sub>2</sub>	calibration of O <sub>2</sub> , including certificate (one measuring point in center of chamber at specified O <sub>2</sub> percentage)	14, 16, 17, 18	DL300402
Data Logger Kit calibration service	including certificate, one measuring point in center of chamber at specified temperature	14, 16, 17, 18	DL300101
Temperature measurement 18 measuring points	including certificate, 18 measuring points at specified temperature	14, 16, 17, 18	DL300118
Temperature measurement 27 measuring points	including certificate, 27 measuring points at specified temperature	14, 16, 17, 18	DL300127
Temperature measurement 9 measuring points	including certificate, 9 measuring points at specified temperature	14, 16, 17, 18	DL300109
<b>Validation services</b>			
Data Logger Kit validation service	in accordance with qualification folder	15, 18, 20	DL410200
Execution of IQ/OQ/PQ	in accordance with customer's requirement, price: on request	15, 18	DL440500
Qualification folder IQ/OQ	supporting documents for validation performed by customer, consisting of: IQ/OQ checklists, unit schematics, QM certificate in accordance with ISO 9001	15, 18, 20	8012-0876
Qualification folder IQ/OQ/PQ	supporting documents for validation performed by customer, in accordance with customer's requirement, extension of Qualification folder IQ/OQ by chapter PQ	15, 18	8012-0963
<b>Warranty service</b>			
Extension of the warranty from 2 to 3 years	beginning with the date of delivery, wearing parts are not included	–	DL021041
Extension of the warranty from 2 to 5 years	beginning with the date of delivery, wearing parts are not included	–	DL021042

\* Notes › See last page

## NOTES

- 01 Condensation may occur in the area around the access port. Access ports may be placed in custom locations for an additional charge.
- 02 UL mark is not granted when this option is used.
- 03 Heat resistant only to max. 200 °C.
- 04 Only available on units rated for 230 V.
- 06 Heating-up time may increase as a result of the lower heat conductivity.
- 07 The additional heat input may affect the temperature behavior.
- 09 Not in conjunction with the optional access port, door with window and interior lighting.
- 10 Not available on 23-liter units.
- 11 Not available on 23- or 53-liter units.
- 12 Only available on units rated for 230 V or 400 V.
- 13 Installation and connections take place at unit location; transport within the company only upon consultation.
- 14 We recommend a BINDER service contract (see the chapter on BINDER Service) to cover unit inspections, calibrations and validations.
- 15 OQ according to Yellow Paper = completed factory validation documentation of all OQ checklists.
- 16 Sensor calibration is performed in an accredited calibration laboratory.
- 17 Calibration is performed according to the BINDER factory standard.
- 18 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).
- 19 For additional accessories, refer to the Process documentation chapter.
- 20 When ordering IQ/OQ qualification folders and associated IQ/OQ execution on one order, we offer a 15 % discount for both items.  
When ordering IQ/OQ/PQ qualification folders and associated IQ/OQ/PQ execution on one order, we offer a 15 % discount for the item of the IQ/OQ/PQ folder.