

Thermo Scientific Heraeus® BBD6220 CO₂ Incubators

**Uncompromising
Protection and Safety**



Contamination Protection Without Compromise

The Thermo Scientific Heraeus CO₂ Incubator BBD6220 features design innovations for uncompromising safety and contamination protection. With its outstanding performance and quality, the large 220 liter (8.5 cu.ft.) capacity BBD6220 enables you to reproduce your research results safely and accurately. It is ideal for environments that demand the highest levels of sample integrity and reproduction including microbiology, cancer research, tissue engineering and in-vitro fertilization.

Permanent sterilization with active humidification

The Heraeus BBD6220 incorporates a unique active humidity control system featuring an external humidity water supply. The entire humidity vapor generation system is sterilized to prevent contamination.

The external water reservoir allows continuous thermal decontamination with cyclical heating to 80°C. This method is known as tyndallization or fractional sterilization. Proven effective by independent accredited test laboratories, this method kills harmful microorganisms, particularly spores.

The humidifying vapor produced is briefly exposed to high temperatures before it enters the internal chamber and is thus effectively sterilized once more.

Fully automatic hot-air disinfection eliminates contamination

To minimize risk of contamination, the BBD6220 interior is easily and continuously disinfected with fully automatic 180°C hot-air disinfection.

Your advantage

The BBD6220 eliminates the time consuming removal and refitting of internal components as the unit's integral sterilization cycle may be activated with all sensors, hardware and fittings in place. No need for separate autoclaving! An easy to read display clearly indicates each phase of disinfection. After the cycle is complete, the incubator automatically returns to pre-set temperature control settings for convenience of use.

Proven effectiveness

microorganisms are proven by an accredited (DIN EN 45001) GLP laboratory:

- Bacillus subtilis (ATCC 6633)
- Bacillus subtilis spores (ATCC 9372)
- Bacillus stearothermophilus (ATCC 7953)
- Enterococcus faecalis (ATCC 29212)
- Escherichia coli (ATCC 8739)
- Pseudomonas aeruginosa (ATCC 9027)
- Aspergillus niger (ATCC 16404)

Effectiveness on other tests

microorganisms has been confirmed by an independent test laboratory.

- Mycoplasma pneumoniae
- Mycoplasma orale

DIN EN ISO 9000



Thermo Scientific Heraeus BBD6220

Maximizing Your Productivity

Winning formula

Fully automatic hot-air disinfection

- 180°C / 3 h
- Including all fittings
- Including all sensors

Active humidification system

- Control range: 60% to 95% RH
- Condensation-free interior
- Sterilization of water reservoir and of the vapor generated

Oxygen regulation (optional)

- Oxygen content 3% to 90%
- Maintenance-free zirconium oxide sensor with auto-cal function

Working to GMP standards

Optimum growth conditions

The Heraeus BBD6220 includes numerous features that ease your daily work routine, including:

Auto-start

This ensures reliable calibration of the measuring systems, and adjusts the internal space to the preset incubation conditions. Upon completion of the auto-start routine, the incubator is ready to operate and can be loaded straight away.

Constant temperature control

To ensure internal temperature consistency, the BBD6220 features a microprocessor-based temperature controller and a platinum resistance (Pt 100) temperature sensor.

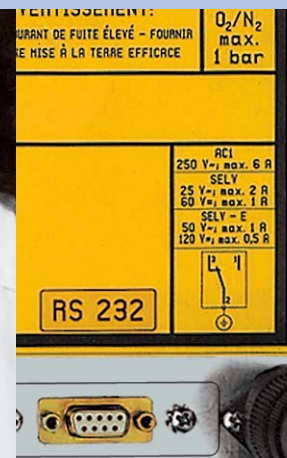
Precise CO₂ regulation

The BBD6220 has a reliable CO₂ measuring cell for constant and stable CO₂ control with long-term stability.

Continuous humidity content

The BBD6220 actively regulates humidity from 60% to 95% RH. A measuring probe continuously measures humidity and is regulated with water vapor injections. You may choose between high humidity for optimum cell culture or low humidity for the safe functioning of stirrers, shakers or roller systems.

Smooth, easy-to-clean interior ▶



▲ Potential contact and RS232 are provided as standard for data logging.



Safeguarding Your Critical Work

Safety

The Heraeus BBD6220 includes several features that safeguard your daily work routine, including:

Upper temperature limit protection

Safety comes first: The BBD6220 features a second, completely independent controller with its own temperature sensor. In the event of a fault, the back-up controller automatically takes over to protect cell cultures from overheating.

Monitoring and documentation

Operating parameters (T, CO₂, O₂, RH) may be continuously monitored via the serial RS232 interface for documentation. An accessory HERALine option can be employed to convert operating signals from the RS232 interface into analog signals (0...1 V or 4...20 mA) for use with third party alarm systems.

Alarm and error diagnosis

Each control parameter includes an audible or visual alarm to warn of any parameter deviation.

Power failure safety

If the power fails, the BBD6220 automatically returns to the originally selected incubation conditions as soon as power is restored.

Central monitoring

The BBD6220 is equipped with a floating potential contact for connection to a central monitoring system.

Operation according to GMP standards

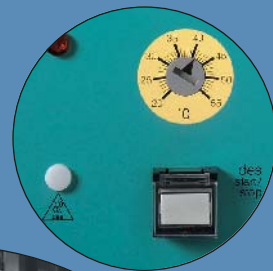
- Alarm functions
 - Documentation functions
 - Built-in safety functions
 - 180°C hot-air disinfection routine
- All these functions provide an ideal basis for operation according to GMP standards.



Gas-tight screen

The optional six-door gas-tight screen to effectively reduce the gas exchange between the incubator interior and the outer air. When the option of oxygen regulation is chosen, a gas-tight screen is included as standard in the equipment supplied.

Start button for 180°C sterilization routine



Divided shelves

The practical, divided shelves easily subdivide the interior to reduce risk of specimen mix-ups. The specimens can be incubated separately according to staff member, working group or projects.



Flexible Equipment Options

Flexible Oxygen regulation (optional)

The Heraeus BBD6220 is ideally suited for oxygen-sensitive applications including in-vitro fertilization, tissue culture and stem cell research. It offers the most flexibility with optional wide-ranging oxygen regulation (from 3%-90% O₂).

The cells can be cultivated both under physiological, tissue-typical oxygen partial-pressure (hypoxic – 3% to 21% O₂, regulated by gassing with N₂), and hyperoxic (21% to 90% O₂, regulated by gassing with O₂). The O₂ content is measured with a zirconium oxide sensor which has long-term stability. The sensor is maintenance-free, can be disinfected in hot-air at 180°C and is calibrated automatically (auto-cal).

Lockable outer door

With increased concern for securing biologically hazardous material, the lockable outer door protects your material against unauthorized access all times.

Easy to read display



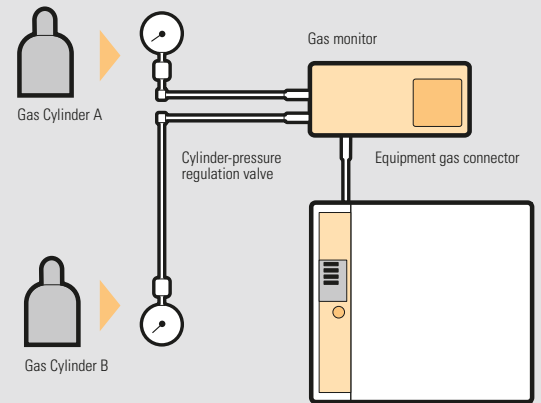
Accessories

Reinforced shelves

The Heraeus BBD6220 is available with rugged, 2 mm stainless steel reinforced shelves.

Gas monitor GM 2

A gas monitor GM 2 is available for connecting two cylinders of CO₂ or O₂/N₂. When the first cylinder is empty, an alarm sounds and the monitor automatically switches over to the second cylinder. Several incubators can be connected to the gas monitor.



HERAline

The HERAline analog interface converts the digital values from the incubator RS232 interface into analog signals. It has four outputs, one each for temperature, CO₂ concentration, relative humidity and oxygen concentration (if present).

HERAline is available in two versions, either with 0...1 VDC or 4...20 mA output. The resolution of the D/A conversion is 10 bits per channel. This allows data logging with conventional monitoring devices as well as with analog devices.



Floor stands

To eliminate risk of contamination, floor stands (300 mm high) and cabinets (780 mm high) are available to avoid direct floor placement.



Portable IR-CO₂ gas tester

Equipped with a maintenance-free infrared measuring cell for monitoring CO₂ concentrations. It delivers efficient and accurate measuring over a wide range and conforms to GMP/GLP. The optional PM-COM software enables downloading of data and calibration.

HERAtray

Improve the organization of your specimens. Each shelf can be separated with the appropriate set into two, three or four separate areas.





Technical Specifications

Type	Unit	Value/Description
Dimensions		
External dimensions (w x h x d)	mm	920 x 855 x 775
	inch	36 x 34 x 31
Internal dimensions (w x h x d)	mm	607 x 669 x 585
	inch	24 x 27 x 23
Total volume	l	220
Shelves		
Dimensions (w x d)	mm	560 x 500
	inch	22 x 20
No. of shelves standard / maximum	number	3 / 12
Maximum area load / shelf	kg / lbs	5 / 11
Maximum total load / unit	kg / lbs	30 / 66
Weight (without accessories)	kg / lbs	107 / 236
Access port		
Bottom left rear wall Ø	mm / inch	20 / 0.8
Material		
Inner chamber and fittings		stainless steel
Start-up		
Start-up time at set temp. of 37°C	hrs	with auto-start routine approx. 4.5
Disinfection routine		
Disinfection temperature on all surfaces areas	°C / h	efficiency proven by an accredited laboratory 180 / 3
Total time	hrs	~12
Efficiency spectrum		bacteria, fungi, spores (USP 23),
Temperature control		
Measuring and control range	°C	T _A ¹ + 5 ... 50
Temperature deviation (time) ²	K	± 0.1
Temperature deviation at 37°C (spatial) ²	K	± 0.5
Heating up time with auto-start to 37°C (Ambient temperature 22°C, empty unit)	hrs	approx. 4.5
Ambient temperature range	°C	18 ... 30
Recovery time ³	min	3
Humidity control		
Measuring principle		external water reservoir capacitive humidity control 180°C hot air disinfection
Setting range	% RH	60 ... 95
Setting accuracy	% RH	± 1
Recovery time at 95% rH ³	min	9
CO₂ control		
Measuring principle		thermal conductivity device with auto-start and auto-zero function, 180°C hot air disinfection
Measuring and control range	Vol-%	0 ... 20
Operating accuracy	Vol-%	0,1
Recovery time at 5% CO ₂ ³	min	2 (max. 1.4%/min)
O₂ control		
Measuring principle		zirconium oxide sensor with auto-cal function, 180°C hot air disinfection
Control range (3 ... 21% with N ₂ -gassing, 21 ... 90% with O ₂ -gassing)	Vol-%	3 ... 90
Control accuracy	Vol-%	± 0.5
Recovery time at 7% O ₂ ³	min	15

¹ T_A = ambient temperature

² DIN 12880, part 2/11.78

³ at 37°C, following 30 secs. of door open, to 98%



Ordering Information

Description	Cat. no.
BBD6220 CO₂ incubator	
BBD6220, 220 liter (8.5 cu.ft.) inner chamber shelf system and three full-width shelves, stainless steel, 230 VAC, 50/60 Hz	51020241
BBD6220, 220 liter (8.5 cu.ft.) inner chamber shelf system and three full-width shelves, stainless steel, 150 VAC, 50/60 Hz	51020262
Options	
O ₂ -control 3 ... 90% with six gas tight inner doors and half-width shelves, stainless steel	51900763
Six half-width shelves instead of three full-width shelves	51900276
Six gas tight inner doors instead of glass door	51900277
Reinforced shelves (three pcs.) for increased mechanical demands	51900753
Lockable outer door	51900279
Accessories	
Additional shelves	
Full-width shelves with two support bars, 1 mm stainless steel	50029945
Reinforced shelves with two support bars, 2 mm stainless steel	50079077
Half-width shelves with two support bars, stainless steel	50029943
Shelf trays	
Set HERAtray (1/3 width, three pcs.), stainless steel	50065805
Set HERAtray (1/4 width, four pcs.), stainless steel	50065807
Set HERAtray (1/2 width, four pcs.) for half-width shelf, stainless steel	50065809
Support frame	
Support frame for single unit, height = 300 mm (without castors)	50031349
Support frame for single unit, height = 780 mm (without castors)	50029597
Four castors for support frame 50029597 and 50031349	50052528
Datalogging	
HERAline – analog outputs 4 ... 20 mA for T, CO ₂ , RH and O ₂	50077463
HERAline – analog outputs 0 ... 1 V for T, CO ₂ , RH and O ₂	50055102
Gas Cylinder Monitor GM 2	50046003
Stacking frame	
Set for stacking of two BBD6220 = two support frames (150 mm/1.165 mm high) with castors	50053628

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