



Cell culture

Uncompromising protection and safety

BBD6220 CO₂ Incubators

Contamination protection

Without compromise

The Thermo Scientific™ BBD6220 CO₂ Incubator features an advanced design for uncompromising safety and contamination protection. With its outstanding performance and quality, the large 220 liter (8.5 cu.ft.) capacity BBD6220 incubator 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 cancer research, tissue engineering and immunology.

Proven decontamination with active humidification

The BBD6220 CO₂ incubator incorporates a unique active humidity control system featuring an external humidity water supply. The entire humidity vapor generation system is heated to help prevent contamination.

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 common contaminants

Confirmed by an independent test laboratory.

- *Mycoplasma pneumoniae*
- *Mycoplasma orale*

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, including spores.

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

Fully automatic hot-air disinfection helps eliminate contamination

To minimize risk of contamination, the BBD6220 interior is easily disinfected with a fully automatic 180 °C high temperature decontamination cycle.

Your advantage

The BBD6220 CO₂ incubator eliminates the time consuming removal and refitting of internal components as the unit's integral decontamination 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 decontamination. After the cycle is complete, the incubator automatically returns to pre-set temperature control settings for convenience of use.



Thermo Scientific BBD6220 CO₂ incubator

Helps maximize 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
- Decontamination 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

Optimum growth conditions

The BBD6220 CO₂ incubator includes numerous features that ease your daily work routine, including:

Auto-start

This helps ensure 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 help ensure internal temperature consistency, the BBD6220 CO₂ incubator features a microprocessor-based temperature controller and a platinum resistance (Pt 100) temperature sensor.

Precise CO₂ regulation

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

Continuous humidity control

The BBD6220 CO₂ incubator 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.

The incubator with advanced features

To help safeguard your critical work

The BBD6220 CO₂ incubator includes several features that safeguard your daily work routine, including:

Upper temperature limit protection

Safety comes first: The BBD6220 incubator 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 incubator automatically returns to the originally selected incubation conditions as soon as power is restored.

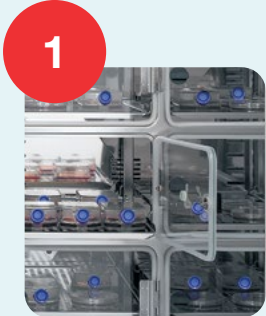
Central monitoring

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

Flexible oxygen regulation (optional)

The BBD6220 CO₂ incubator is ideally suited for oxygen-sensitive applications including primary cell 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 remain in place during the 180 °C decontamination routine and is calibrated automatically (auto-cal).



1

Gas-tight screen

The optional six-door gas-tight screen helps 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.



2

Easy to read display



4

Lockable outer door

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



3

Start button for 180 °C sterilization routine



5

Divided shelves

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

Accessories

Reinforced shelves

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

Gas monitor GM 2 [Figure 1]

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 [Figure 2]

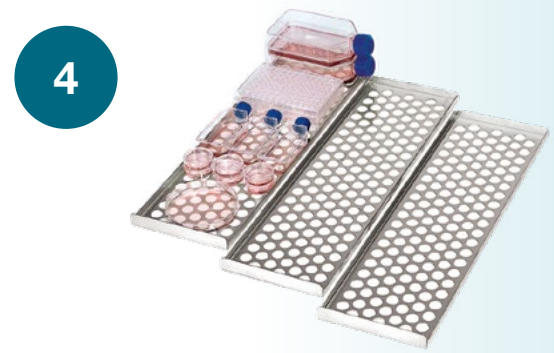
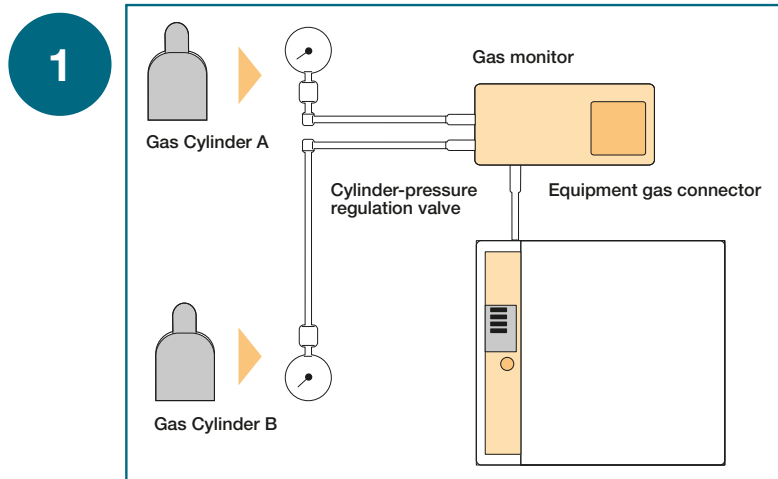
To help eliminate risk of contamination, floor stands (300 mm high) and cabinets (780 mm high) are available to avoid direct floor placement.

Portable IR-CO₂ gas tester [Figure 3]

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

HERAtray [Figure 4]

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 with auto-start routine | | |
| Start-up time at set temp. of 37 °C | hrs | approx. 4.5 |
| Disinfection routine (efficiency proven by accredited laboratory) | | |
| Disinfection temperature on all surfaces areas | °C / h | 180 / 3 |
| Total time | | ~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 with external water reservoir | | |
| Measuring principle | | capacitive humidity control |
| 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 |
| 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 |
| 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 TA = 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 |
| 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 | |
| Gas cylinder monitor GM 2 | 50046033 |
| Stacking frame | |
| Set for stacking of two BBD6220 incubators = two support frames (150 mm/1.165 mm high) with castors | 50053628 |

Learn more at thermofisher.com/co2

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