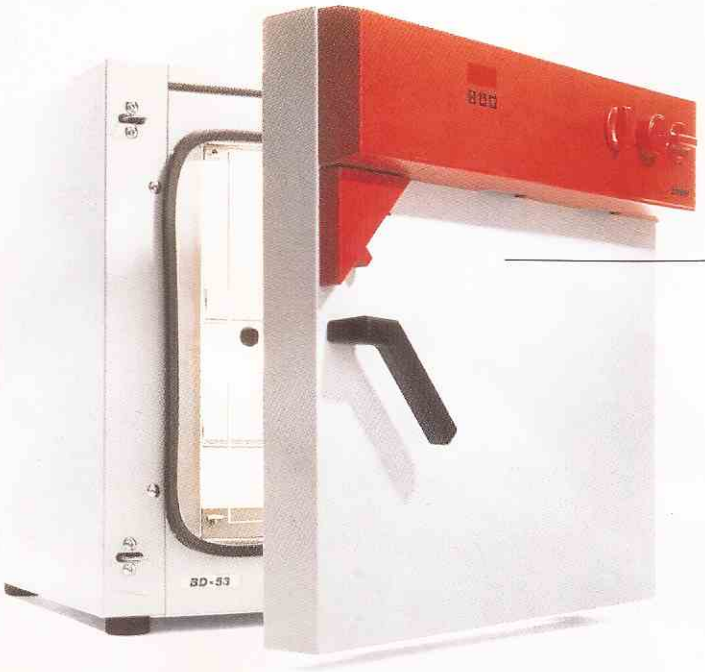
WTB binder
APT.Line

Firmly under control: Incubation.

Intelligent Temperature Technology

APT.Line BD/BED

The precision incubator with natural convection



The highly modern APT.Line temperature technology provides also for the incubators of the series BD and BED the prerequisites for optimum conditions of incubation. Furthermore, it fulfills all qualitative requirements for the certified laboratory. And the complete standard equipment guarantees an excellent price/performance ratio, as for all APT.Line units.

Precision.
The most important prerequisites for excellent incubation conditions are highly precise and absolutely homogeneous temperature conditions. The APT.Line preheating chamber technology in combination with the microprocessor control – accurate to one decimal degree – guarantee both highly precise and constant temperatures and homogeneous temperature distribution in the whole inner chamber – all this without any disturbing air change by fans. The temperature range is between 5° C above ambient and 99,9° C.

Reliable and safe.
The standard overheat controller cl. 3.1 guarantees the safe and trouble-free incubation process. The drying out of the cultures is surely prevented by an additional inner glass door, which tightens the inner chamber densely. All unit functions are designed for continuous working for years. Furthermore, the consequent use of high quality material and first-class workmanship guarantee optimum corrosion resistance and thus long working life. All units are built up according to DIN 12880, routine-checked according to VDE 0113 and bear the VDE-/GS-sign.

Userfriendly.
The APT.Line concept convinces by its practical handling. All functions can be used easily and comfortably as they are clearly arranged. An important feature is the easy cleaning of all parts and the avoidance of undesired contamination. Thanks to the completely detachable inner walls, the non-tip shelves, the weldless pressed APT.Line shelf-holders and the inner chamber made of stainless steel with rounded edges, the APT.Line unit concept for incubators offers all prerequisites for an easy and thorough cleaning and therefore for quick and safe working.

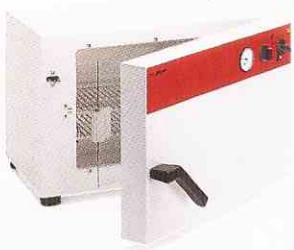
APT.Line complete equipment.
The very modern APT.Line unit concept is unique from the technical point of view and offers really a maximum of quality, performance and safety thanks to its complete equipment. Beside the standard model BD there is the incubator BED, which is additionally equipped with a convenient multifunctional controller for extended time and temperature functions and a serial interface RS 232 C (monologue) for the documentation according to ISO 9000 and GLP.

APT.Line B 28

28 litres small incubator with mechanical control

Functional.
The B 28 convinces by its robust, space-saving construction and the easy handling. The inner chamber made of stainless steel with integrated shelf-holders allows an absolutely safe and easy cleaning without any residues. Thanks to the non-tip shelves the incubator can be charged easily. The complete housing is made of galvanized steel and is powder-coated. This guarantees a maximum protection against corrosion.

Reliable.
The hydraulic-mechanical control guarantees reliable and constant temperature conditions. The optimal temperature accuracy of +/- 1 K is reached at about 37° C. The inner glass door offers the possibility of observing the incubation process without influencing the temperature constancy. All units are produced according to VDE-standards and are routine-checked according to VDE 0113.



Favourable in price.
With the B 28 you receive a reliable and efficient small incubator with solid equipment at a very favourable price.

And here everything at once: APT.Line BD/BED

- **Highly precise and homogeneous temperature conditions**
- **Maximum reliability and safety**
- **Convenient handling and easy cleaning**
- **Excellent price/performance ratio**
- **Modern and comfortable possibilities of documentation**
- **Only from WTB Binder: APT.Line temperature technology for highly precise temperature accuracy**

APT.Line complete equipment
(Here the most important technical information)

- **APT.Line temperature technology**
- **Microprocessor PID-control with LED-display - accurate to one decimal degree**
- **Timer 0-24 h**
- **Adjustable ventilation slide**
- **Safety device (TWW) cl. 3.1**

APT.Line series BED – Incubator with multifunctional microprocessor control:

- **4 timer functions: continuous working, 0 - 99,59 h delayed ON or delayed OFF, temperature-dependent delayed OFF**
- **Temperature ramp function for extremely careful heating up**
- **Heat load 0 - 100 % adjustable in steps of 10 %**
- **Adjustable printing intervals from 0 - 250 min.**
- **Printer interface RS 232 C (monologue) for the output of numerical and graphical temperature data**

Please find the accessories and options in the technical data listing

APT.Line KB

The cooled incubator

Second to none.
The new APT.Line cooled incubator sets new standards because of its pioneer unit concept and the unique temperature technology. A maximum of precision, reliability and safety for all growth parameters guarantees optimal incubation conditions. Furthermore, the cooled incubator KB is constructed for maximal loading capacity – also in case of continuous operation for years. Its performance spectrum is second to none: Thanks to the universal unit concept, the KB meets all technical and application specific requirements for examinations in the fields of e. g. biotechnology, medicine, food, pharmaceutical and cosmetic industry, botany and zoology.

Perfect temperature performance for optimal growth conditions.
Two important temperature technologies were combined in order to achieve the perfect temperature performance: The newly developed DCT-cooling system, a direct cooling method in combination with the APT.Line preheating chamber technology, creates the unique prerequisite for the achievement of extremely accurate temperature performances from 0,0° C - 99,9° C and very short recovery times after opening the door.

The absolutely new DCT-cooling system.
Direct, fast, precise. Labyrinth plate evaporators with a big surface are integrated in the outer walls of the preheating chamber system. Contrary to the indirect systems, such as air jacket systems, they transfer the cold directly into the atmosphere of the inner chamber. Thus considerably higher cooling capacities can be transferred, which lead to considerable shorter recovery times after opening the door. Thanks to the temperature controlled plate evaporators with a large surface a relatively high humidity can be maintained even during the cooling process. This prevents the drying out of the probes. The incubation process is not interrupted in any way, as the system does not need defrosting.

The APT.Line preheating chamber system.
It guarantees unequalled high temperature accuracies relating to space and time by means of the direct and regular air flow into the inner chamber. The temperature is controlled with an accuracy of one decimal degree. This is very important for the maintenance of the temperatures – especially in case of fully charged units – and for the recovery of the optimal growth conditions after opening the door. The inner glass door guarantees temperature constancy when observing the incubation process. The fan supports the exact achieving and keeping of the temperature accuracies desired. The fan speed can be adjusted digitally from 0 - 100 %. The heating and the cooling system are microprocessor controlled, accurate to one decimal degree.

Absolutely environmentally-friendly due to use of the refrigerant R 134 a.
There are no restrictions according to the currently valid environmental legislation for the use of the refrigerant R 134 a. All materials are 100 % environmentally compatible and can be completely recycled. Direct tempering and utmost insulation guarantee a low energy consumption.

Convenient handling. Easy cleaning.
The APT.Line concept convinces through its practical handling. All unit functions can be handled easily and conveniently as they are clearly arranged. The most important features are the easy cleaning of all unit parts and the prevention of undesired contamination. Thanks to the completely detachable inner walls, the non-tip shelves made of stainless steel, the weldless pressed APT.Line shelf-holders and the inner chamber made of stainless steel with rounded edges, the APT.Line unit concept for the cooled incubator offers all prerequisites for an easy and thorough cleaning and therefore for quick and safe working.

The APT.Line-complete equipment.
The very modern APT.Line unit concept of the KB offers a very large performance range. The most modern temperature technology with microprocessor control and LED-display, comfortable multifunctional controller equipped with further time and temperature functions, possibility of documentation according to ISO 9000/GLP, as well as the standard safety device (TWW) cl. 3.1 belong to the standard equipment. Further equipment features can be found in the technical data. The standard multifunctional controller can be optionally replaced by the program controller PD1, which is provided with 5 storable programs with 20 sections each. The controller PD1 has a computer interface RS 232 C (or RS 485) for computer communication. Furthermore, a software package CIT100 or CIT200 for interfacing, controlling and recording is available.

The cooled incubator KB in brief.

- **Compact, universal unit concept. Energy saving**
- **Perfected temperature accuracies and short recovery times guarantee optimum incubation conditions**
- **Modern temperature technology with microprocessor control**
- **High humidity. No drying out of the probes**
- **Environmentally-friendly thanks to refrigerant R 134 a**

The APT.Line complete equipment
(Here the most important technical information)

- **Newly developed DCT-cooling system with APT.Line preheating chamber technology**
- **Multifunctional microprocessor controller with LED-display, accurate to one decimal degree**
- **Safety device (TWW) cl. 3.1 according to DIN 12880 for maximum safety**
- **Printer interface RS 232 C for practical temperature documentation according to ISO 9000 / GLP with digitally adjustable printing intervals**
- **Multifunctional controller for programming various timer functions from 0 up to 99,59 h, such as delayed ON, delayed OFF, temperature-dependent delayed OFF, as well as programming of the fan speed, reduction of the heating capacity, temperature ramp function**

Accessories and options for the KB.

Please find the extensive offer in the technical data listing

Only at WTB Binder:
DCT-cooling system with APT.Line preheating chamber

APT.Line KBF

The temperature chamber with controlled humidity

Thanks to a microprocessor controlled humidifying and dehumidifying system the cooled incubator KB becomes the highly precise unit for storing in humid atmosphere. Thus further important applications can be effected.

Constantly climatic.
The KBF fulfills in full extension the requirements for the prescribed stability and durability tests in the pharmaceutical and in the food industry. Furthermore, constant climatic conditions for further applications, such as high humidity and condensation tests in the paper industry can be simulated.

Microprocessor controlled humidification and dehumidification.
A maintenance-free electrode steam humidifying system provides the humidification of the air. No special requirements as to the water quality are demanded. For the optimum operation, normal tap water is sufficient. Attention has to be paid only to the conductibility of the water. For this purpose, a separate water supply and water drain are needed. New is the additional dehumidification. This allows test cycles below the ambient humidity down to a minimum value of 15 % rH. Furthermore, the dehumidification guarantees the safe observing of the adjusted set point both at extremely warm and humid ambient conditions and in case of exceeding the set point through the ambient air humidity. In the inner chamber the air humidity is measured by a hygromatic humidity sensor and controlled by a microprocessor humidity controller. This guarantees a stability of about +/- 1 to 2 % rH. Depending on the working temperature there is a humidity range of 15 % up to 90 % rH (please see also diagram).

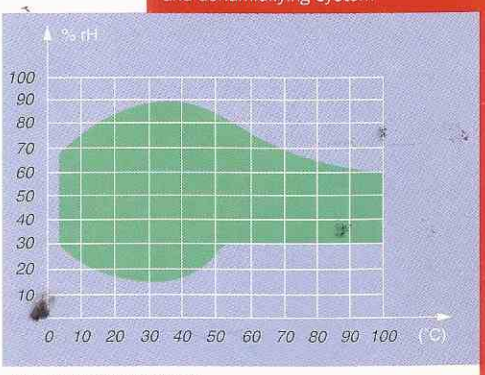
Exact documentation.
Due to the fact that applications with controlled humidity are always longterm tests, most of the time, the registration and documentation of the test cycles with the parameters temperature and humidity is necessary. For the stability tests of pharmaceutical products such a documentation is even requested according to the new European Standard III/3335/92-EN. For exact protocolling, WTB Binder offers additionally a 2-channel-recorder, which is integrated into the humidity module.

The highlights of the temperature chamber KBF:

- **Microprocessor controlled humidifying and dehumidifying system**
- **Fulfillment of all requirements regarding stability and durability tests in the pharmaceutical industry etc.**
- **Exact simulation of constant climatic conditions**
- **Maintenance-free electrode steam humidifying system**
- **Humidity range from 15 % up to 90 % rH**
- **Possibility of exact protocolling of temperature and humidity (optional)**

For further details please see KB

Temperature/Humidity diagram for KBF and KBW with humidifying and dehumidifying system



Ambient temperature 22° C
Ambient relative Humidity 50 % rH

APT.Line KBW

The precision growth chamber

Precise growth parameters.
The KBW is used in many fields, such as plant research, pesticide research and zoology for the exact simulation of growth parameters with day/night simulation. The KBW is unique with regard to the precise and safe observance of the requested growth parameters temperature and light. The important base for the requested requirements are the unit concept and the temperature technology with the DCT-cooling system assumed from the cooled incubator KB.

Exact day/night simulation.
Strong and constant illuminating performance guarantees extremely good and homogeneous growth conditions in the KBW. The KBW is equipped with 6 efficient FLUORA-growth lamps. The illumination power can be adjusted thanks to the lamps which can be switched in pairs of 2, 4 or 6. The growth tubes are installed in the doors, separated from the inner chamber. This guarantees that the optimum temperature conditions are not affected in any way. Special reflexion material in the doors provides optimum distribution of the light and thus the efficient exploitation of the high illumination power. This can be increased considerably by means of daylight illumination tubes with different light spectrum. For the automatic day/night simulation both the temperature cycle and the light control are freely programmable via the digital program timer with week program.

APT.Line complete equipment.
Like the cooled incubator KB, the growth chamber KBW offers also a highly modern, universal performance range. The most modern APT.Line temperature technology with microprocessor control and LED-display, the multifunctional controller and the printer interface for documentation according to ISO 9000/GLP and the standard safety (safety device cl. 3.1) are as important as the convenient handling and easy cleaning. The KBW is always equipped with 2 closable access ports (29 mm) on the upper and lower right side e. g. for an additional ventilation or gas inlet resp.

The program controller.
The standard multifunctional controller can be replaced by the program controller PD1 (optional), which is provided with 5 storable programs with 20 sections each. The temperature can be controlled individually for each program section via the program controller. Thus more demanding applications, such as day/night simulation with extended temperature/time functions (medium cooling speed ≤ 0,3° C/min, medium heating up speed ≤ 0,5° C/min) become possible. The program controller is equipped with a computer interface RS 232 C (or RS 485) for computer communication. Furthermore, a software package CIT100 or CIT200 for interfacing, controlling and recording is available.

The controlled humidity for the KBW.
The optional microprocessor controlled humidifying and dehumidifying system extends the application possibilities of the growth chamber considerably. A very important field is e. g. the exact simulation of constant climatic conditions in the sector plant research and zoology. Please find the technical description in the chapter „cooled incubator with controlled humidity system KBF".

At once. The precision growth chamber: KBW

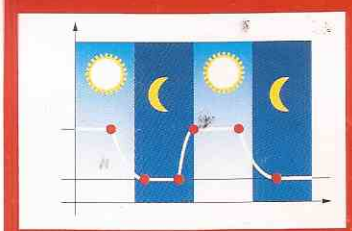
- **Compact, universal unit concept**
- **Precise growth parameters**
- **Exact, automatic day/night simulation**
- **Automatic working processes**
- **Homogeneous growth results**
- **Unique unit combination with microprocessor-controlled humidifying and dehumidifying system (optional)**

The APT.Line complete equipment
(The most important technical data)

- **Newly developed DCT-cooling system with APT.Line preheating chamber technology**
- **FLUORA-growth lamps (6 pieces)**
- **Automatic temperature cycle and light control**
- **Microprocessor control with LED-display - accurate to one decimal degree**
- **Safety device cl. 3.1 according to DIN 12880 for maximum safety**
- **Printer interface RS 232 C for the practical temperature documentation according to ISO 9000/GLP with digitally adjustable printing intervals**
- **Multifunctional controller for programming various timer functions from 0 up to 99,59 h such as delayed ON, delayed OFF, temperature-dependent delayed OFF. Further parameters such as fan speed, reduction of the heating capacity and temperature ramp function can be programmed**
- **Access ports at the upper and lower right side**

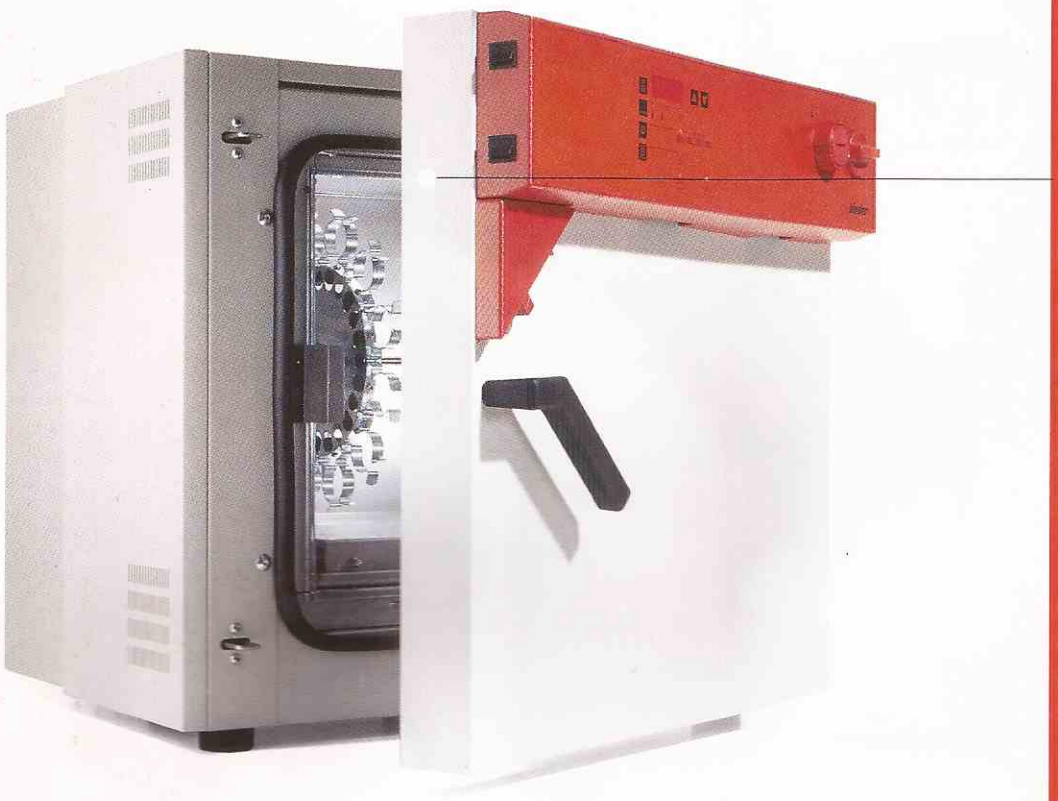
Accessories and options for the KBW.

Please find the extensive offer in the technical data listing



APT.Line BFD/BFED

The universal hybridization oven



Perfectly tempered.
The already proven APT.Line temperature technology from the well-known APT.Line standard program guarantees absolutely precise temperature performances. The temperature is controlled via a microprocessor PID-controller – with a digital display – accurate to one decimal degree. Thanks to its high technical performance, the unit is designed for the unlimited universal use as high precision incubator, oven and hybridization unit.

Hybridization with the BFD – precise, reliable, comfortable.
The BFD is equipped with all necessary functions for precise and convenient hybridization. It can store 12 big flasks (300 x 35 mm) or 24 small flasks (150 x 35 mm) in a rotation unit at the same time. In order to reduce the hybridization liquid, the flasks can be inclined. The rotation unit has a constant speed of 6 rotations/min. and can be easily detached. The rotation unit can be handled via an on/off switch. For safety reasons, it is automatically switched off when opening the inner glass door. The unit can be easily handled and allows a simple cleaning without any residues.

Completely safe.
The BFD standard equipment offers both a 0-24 h timer and an exhaust duct with a progressively adjustable ventilation slide. The standard safety device cl. 3.1 – according to DIN 12880 – protects the probes reliably from exceeding of the working temperature.

The universal hybridization oven APT.Line BFED.

First-class.
The additional equipment components of the BFED result in further application possibilities, such as the hybridization in bags, the incubation of pistons by shaking, the tempering of washing solutions and the „in-situ"-hybridization. A shaking unit is used for the installation of various bottle holders. It can be controlled digitally and can be reproducibly adjusted from 20 up to 60 movements/min. in steps of 10 %. The shaking unit can be handled via an on/off switch and is automatically switched off when opening the unit.

Optional program.
The multifunctional controller allows the programming of various timer functions. Furthermore, other parameters such as shaking frequency of the shaking unit, reduction of the heating capacity, a temperature ramp function, etc. can be programmed.

Documented quality.
The BFED has as standard a printer interface RS 232 C for temperature documentation, such as for routine checks or for operation under GLP or ISO 9000.

Economical.
The universal unit concept of the hybridization ovens APT.Line BFD and BFED offers for the first time the possibility to use a unit both as high precision incubator or oven and as hybridization oven. For this reason, it is not necessary to purchase several units. And, through the optimum efficient use, space and money can be saved. Thanks to the APT.Line technology and the modern unit equipment, the universal WTB Binder hybridization unit fulfills the requirements towards highly precise temperature performances and absolutely exact and easy working in all respects.

In short terms. APT.Line BFD/BFED 53:

- Highly precise APT.Line temperature technology with microprocessor control
- Universal unit concept for additional applications
- Economic and space saving thanks to universal use
- Standard safety

Complete equipment:

- APT.Line preheating chamber technology
- Microprocessor PID-control – adjustable to one decimal degree with LED-display – accurate to one decimal degree
- Timer resp. digital timer functions
- Safety device class 3.1
- Inner glass door
- Printer interface RS 232 C for BFED

Please find options and accessories in the technical data listing

At all APT.Line units. Non-tip shelves with practical handles.

APT.Line CB 210

The CO_2-incubator

Technically perfect. The APT.Line CB 210

- **Modern unit technology for exact in-vitro simulation of natural ambient conditions**
- **Maximum reliability and safety**
- **Ideal growth conditions thanks to the safe observance of all physiological parameters at the same time**
- **Extremely short recovery times of all parameters**
- **Highly precise and constant temperature performances**

With the CO_2-incubator CB 210 WTB Binder developed a very modern unit technology, which fulfills all important requirements for an exact in-vitro-simulation of natural ambient conditions for cell and tissue cultures. To the same extent the CB 210 guarantees a trouble-free continuous operation, maximum reliability and safety. Many years of experience with microbiological incubators and the consequent dialogue with industrial and research institutes as well as laboratories created the competent basis for the CB 210. Here WTB Binder solved systematically the demanding task of respecting all physiological parameters, which are important for an ideal growth ambiance.

- **Absolutely precise, homogeneous and constant temperature conditions**
- **Homogeneous and precise CO_2-concentration**
- **High relative humidity with condensation-free inner chamber as well as**
- **maximum avoidance of contamination risks**

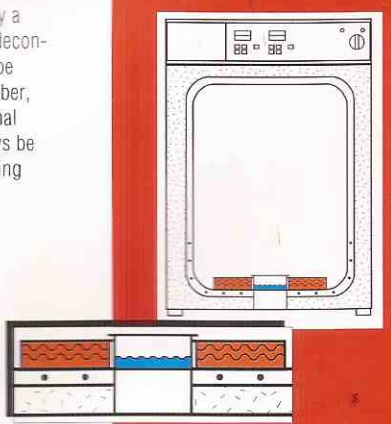
The extremely short recovery times of all parameters in the CB 210 allow an ideal growth process after unavoidable disturbances, such as opening the door.

The APT.Line CB 210 – technically perfect:

1. New: The fan-assisted air-jacket system for highly precise and homogeneous temperature performances and for maximum temperature constancy.
WTB Binder combined and improved consequently the advantages of the already existing air and water-jacket systems in a new concept. The newly developed fan-assisted air-jacket system creates the ideal temperature conditions for an optimum growth process: Thanks to the considerably faster heat transfer, extremely short recovery times are achieved, which guarantee extremely precise and homogeneous temperature conditions in the whole inner chamber and maximum temperature constancy during the whole process.

2. Fast, precise measuring of the CO_2-concentration for short recovery times
The CO_2-concentration is measured via a high quality infrared-absorption-measuring cell. Contrary to the common heat conductivity measuring cell the measurement is guaranteed independently from temperature and air humidity. Complicated auto-calibration and starting are not necessary. Recalibration once a year is sufficient. The infrared-measuring cell guarantees extremely high measuring accuracies – dissolution 0,1 %. It is almost drift-free and for this reason guarantees longterm stability. The direct measuring process provides also for short recovery times. The measuring cell is comprised in a compact, pluggable unit and is protected against pollution by a Sinter-PTFE-filter. For cleaning or decontamination, the measuring cell can be easily removed from the inner chamber, without using any tools. An additional CO_2 control measurement can always be done thanks to the closable measuring port in the inner glass door.

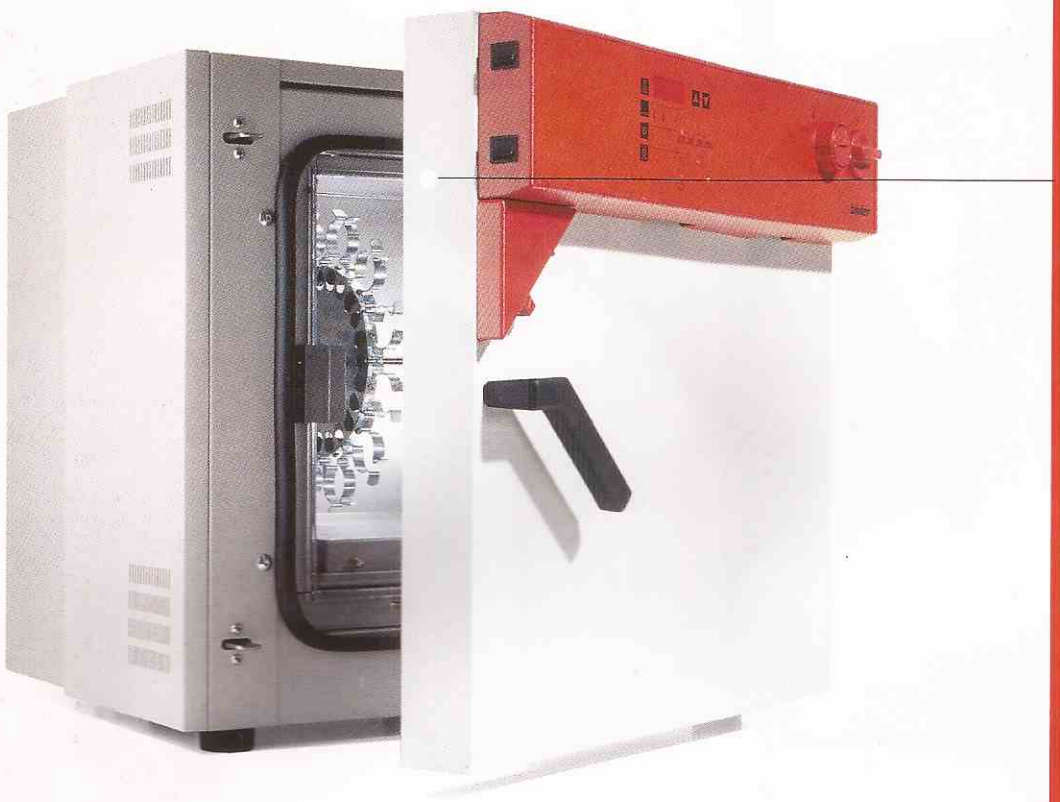
Only from WTB Binder!
New: The fan-assisted air-jacket system.



Permadry system for completely dry inner walls.

APT.Line BFD/BFED

The universal hybridization oven



In short terms. APT.Line BFD/BFED 53:

- Highly precise APT.Line temperature technology with microprocessor control
- Universal unit concept for additional applications
- Economic and space saving thanks to universal use
- Standard safety

Complete equipment:

- APT.Line preheating chamber technology
- Microprocessor PID-control – adjustable to one decimal degree with LED-display – accurate to one decimal degree
- Timer resp. digital timer functions
- Safety device class 3.1
- Inner glass door
- Printer interface RS 232 C for BFED

Please find options and accessories in the technical data listing

Perfectly tempered.
The already proven APT.Line temperature technology from the well-known APT.Line standard program guarantees absolutely precise temperature performances. The temperature is controlled via a microprocessor PID-controller – with a digital display – accurate to one decimal degree. Thanks to its high technical performance, the unit is designed for the unlimited universal use as high precision incubator, oven and hybridization unit.

Hybridization with the BFD – precise, reliable, comfortable.
The BFD is equipped with all necessary functions for precise and convenient hybridization. It can store 12 big flasks (300 x 35 mm) or 24 small flasks (150 x 35 mm) in a rotation unit at the same time. In order to reduce the hybridization liquid, the flasks can be inclined. The rotation unit has a constant speed of 6 rotations/min. and can be easily detached. The rotation unit can be handled via an on/off switch. For safety reasons, it is automatically switched off when opening the inner glass door. The unit can be easily handled and allows a simple cleaning without any residues.

Completely safe.
The BFD standard equipment offers both a 0-24 h timer and an exhaust duct with a progressively adjustable ventilation slide. The standard safety device cl. 3.1 – according to DIN 12880 – protects the probes reliably from exceeding of the working temperature.

The universal hybridization oven APT.Line BFED.

First-class.
The additional equipment components of the BFED result in further application possibilities, such as the hybridization in bags, the incubation of pistons by shaking, the tempering of washing solutions and the „in-situ"-hybridization. A shaking unit is used for the installation of various bottle holders. It can be controlled digitally and can be reproducibly adjusted from 20 up to 60 movements/min. in steps of 10 %. The shaking unit can be handled via an on/off switch and is automatically switched off when opening the unit.

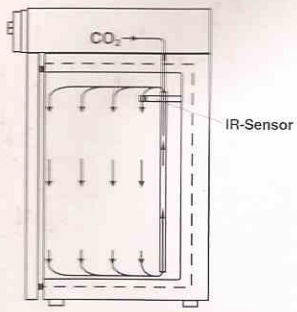
Optional program.
The multifunctional controller allows the programming of various timer functions. Furthermore, other parameters such as shaking frequency of the shaking unit, reduction of the heating capacity, a temperature ramp function, etc. can be programmed.

Documented quality.
The BFED has as standard a printer interface RS 232 C for temperature documentation, such as for routine checks or for operation under GLP or ISO 9000.

Economical.
The universal unit concept of the hybridization ovens APT.Line BFD and BFED offers for the first time the possibility to use a unit both as high precision incubator or oven and as hybridization oven. For this reason, it is not necessary to purchase several units. And, through the optimum efficient use, space and money can be saved. Thanks to the APT.Line technology and the modern unit equipment, the universal WTB Binder hybridization unit fulfills the requirements towards highly precise temperature performances and absolutely exact and easy working in all respects.

At all APT.Line units. Non-tip shelves with practical handles.

3. Absolutely homogeneous CO_2-concentration
Thanks to a homogenisation system the CO_2 gas concentration is distributed according to the shower principle: Higher concentrations which at first settle at the bottom, are sucked off by the homogenisation system, then transported upwards and finally distributed homogeneously in the whole inner chamber. The homogenisation system is assisted by a mini-fan, which works totally turbulent-free and reliably avoids the spreading of germs. The advantages of this system are both the good mixture of the CO_2 gas and the air as well as the absolutely homogeneous distribution of the CO_2 in the whole inner chamber, even if the unit is fully charged. The homogenisation system also supports considerably the recovery times of the relative humidity and of the temperature. For cleaning, the homogenisation system can be removed easily, without using any tools.



4. New: Permadry-system for dry inner walls at maximum air humidity. Maximum safety for the cells and for the user.
The drying out of the cell cultures can only be avoided by means of a very high relative air humidity in the incubator. Up to now, it was difficult to keep the inner walls completely dry – while obtaining high air humidity. Condensation spots in the inner chamber mean higher contamination risk, both for the cell cultures and also for the user. Thanks to the newly developed Permadry-system WTB Binder created for the first time the prerequisites for completely dry inner walls up to a maximum air humidity of about 95 % rH. In the CB 210 a maximum air humidity of about 98 % rH can be obtained. The Permadry-system is a newly created double basin humidifying system. The outer basin is heated, the inner basin is cooled. The large-surface warm water basin provides both, maintenance of the maximum air humidity and faster recovery times after charging. Contrary to this, the integrated cold water basin as defined cold spot avoids reliably any condensation at the inner walls. Furthermore, the doors of the CO_2 incubator are heated in order to avoid condensation spots. Additionally to this, the Permadry-system offers the possibility to control the desired air humidity in the inner chamber, i. e. to adjust the optimum air humidity according to the ambient conditions. The Permadry water basin system with its extra high outer walls can be removed very easily without spilling.

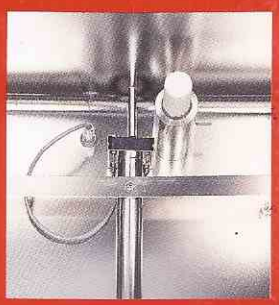
5. Maximum avoidance of contamination – easy cleaning.
WTB Binder optimized technically all unit details of the CB 210 in regard to a maximum contamination protection. The possibilities of uncontrolled nesting places were eliminated right from the beginning. All unit parts can be easily cleaned and disinfected. Examples herefore are:
- The inner chamber made of stainless steel 1.4571/V4A – according to the guidelines of the pharmaceutical industry – is deepdrawn in one piece, completely weld- and jointless and electropolished. All edges have very big radia. There are no fix installations.
- The shelf holder with 11 positions can be completely removed and can easily be cleaned in the laboratory rinsing machine.
- All access ports in the inner chamber are equipped with copper germ barriers.
- Hinges and seal of the inner glass door are specially glued. Thus the former installation elements are no longer needed. For this reason the inner part of the glass door is completely smooth and can be easily cleaned. The high quality ring-shaped silicone gasket can be easily removed.

For perfect decontamination an additional hot-air autosterilization is available as option.

6. Microprocessor controlled measuring and control system with electronic failure auto-diagnosis system.
The CB 210 has a microprocessor controlled temperature and CO_2-concentration. Set and actual value for temperature and CO_2-concentration are permanently shown in the display. Thus eventual deviations can immediately be recognized. Temperature and gas concentration can be adjusted and read with an accuracy of 0,1° C and 0,1 % resp. All unit and auto-diagnosis functions are steadily controlled via an intelligent control system. For the trouble-free unit operation, all further unnecessary unit functions are protected behind a so-called parameter shutter. These can be additionally locked via a key-switch. After opening the parameter shutter the user has access to the alarm plane and to all other operating parameters, such as:
- Alarm pilot lamp of the auto-diagnosis system
- Safety device cl. 3.3 for over and under temperature, electronically independent from the main controller according to DIN 12880
- Selection switch for acoustic alarm
- On/off switch for door heating (necessary in case of very high ambient temperatures)
- Key-switch for blocking all adjusted operating parameters
- Sterile filter
- Hot-air autosterilization (optional)

At once: The CB 210:

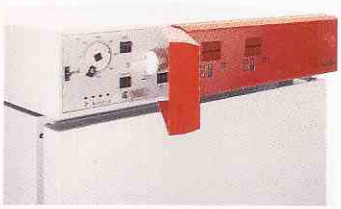
- **Very short recovery times thanks to direct, precise CO_2-infrared-measuring**
- **Absolutely homogeneous CO_2-concentration thanks to the newly created homogenisation system**
- **New: Permadry-system for completely dry inner walls**
- **Optimum degree of humidity**
- **Maximum avoidance of contamination risks**
- **Easy cleaning**


Infrared-absorption-measuring unit


Totally smooth inner chamber

7. Safety.
The CO_2-incubator is equipped in series with an electronic safety device class 3.3 according to DIN 12880, which safely maintains the adjusted growth temperatures even in case of failure. Disturbances, such as a broken sensor, over and under temperature, CO_2 over and under concentration, empty gas bottle, etc. are recognized via the auto-diagnosis system and are reported via optical and/or acoustic alarm signals. Thanks to the standard alarm switching contact all disturbances can be passed on to a central monitoring unit – especially in case of unattended operation.

8. Easy, safe handling.
The CB 210 offers optimum user comfort thanks to its easily understandable and clearly arranged displays and function keys. The seal mechanisms of the outer and inner door are designed according to the latest ergonomic findings. Thus the doors can be opened and closed with the utmost ease. The cleaning of all unit parts, which bear the risk of contamination – especially the smooth inner chamber – is absolutely easy.



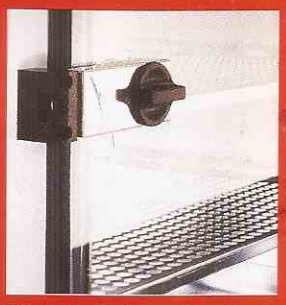
9. Maximum service friendliness.
At the CB 210 special attention was paid to fast and cost saving service and repairing. The failure auto-diagnosis system allows a quick identification and analysis of the failure. All relevant parts for control of the unit and the microprocessor controller are stored compactly in an electronic plug-in-unit. This can be completely drawn out and inclined. Thus necessary repairs can be effected conveniently, even in case of stacked units. The user himself can replace single parts, such as the CO_2 sterile filter or the silicone door gasket without any problems and without using any tools.

10. Communication.
The CB 210 has standard GMP adequate, analogue printer outputs 4-20 mA for documentation of the temperature and the CO_2-concentration.

11. Options and accessories.
Beside the extensive complete equipment, many accessories and options for the CB 210 are available. The glass door divided into 6 parts available on request, is absolutely tight and allows the access towards single cultures without opening the whole door. For the trouble-free operation the CB 210 can be equipped with an automatical CO_2-bottle changer with acoustic signal. A fix installed PT100 temperature sensor and an external LEMO connection also facilitate the external temperature measuring and documentation (e. g. for ISO 9000, GLP, GMP). Please find further accessories and options in the technical data listing. On request an extended special equipment, such as bottle turning gear and magnetic mixer-settler for spinning bottles can be supplied.

What else is to say:

- **Intelligent controlling and monitoring system for all unit functions**
- **Microprocessor control with digital display for temperature and CO_2-concentration**
- **Steady control thanks to electronic failure autodiagnosis system**
- **Maximum safety thanks to standard over and undertemperature safety device cl. 3.3**
- **Standard analogue printer outputs 4-20 mA for protocolling of the temperature and CO_2-concentration**
- **Clearly arranged instrument panel for easy operation of all functions**
- **Extensive complete equipment**
- **Compact and space saving unit concept**
- **Extensive range of accessories, options and special equipment**



Tightly closing inner glass door; interior totally smooth

Electronic plug-in unit, which can be pulled out

Technical Data

APT.Line BD/BED and B 28			BD/BED 53	BD/BED 115	BD/BED 240	BD/BED 400	BD/BED 720	B 28
Dimensions, housing	Width	mm	634	834	1034	1234	1234	580
	Height (inclusive feet/castors)	mm	621	701	821	1029	1529	402
	Depth	mm	575	645	745	765	865	425
	plus instrument panel/door handle	mm	70	70	70	70	70	50
Wall clearance		mm	100	100	100	100	100	100
Wall clearance with open door		mm	160	160	160	160	160	100
Steam space volume		l	70	142	283	457	808	–
Interior dimensions	Width	mm	400	600	800	1000	1000	400
	Height	mm	400	480	600	800	1200	280
	Depth	mm	330	400	500	500	600	250
Interior volume		l	53	115	240	400	720	28
Shelves, chrome-plated		number standard/max.	2/4	2/5	2/7	2/10	2/16	2/4
Load per shelf		kg	15	20	30	35	45	10
Permitted total load		kg	40	50	70	90	120	25
Weight of the unit (empty)		kg	43	64	104	145	180	18
Temp. range, 5° C above ambient up to		°C	99,9	99,9	99,9	99,9	99,9	30/37-70
Temperature variation	at 37° C	± °C	0,4	0,5	0,5	0,5	0,5	–
	at 50° C	± °C	1,4	1,5	1,5	1,8	2,1	–
Temperature fluctuation		≤ ± °C	0,1	0,1	0,1	0,1	0,1	±1
Heating up time to 37° C [1]		min.	10	15	26	33	47	–
Recovery time after door was opened for 30 sec. [1]	at 37° C	min.	5	6	11	11	16	–
	at 50° C	min.	7	7	7	10	16	–
Nominal voltage (±10 %) 50/60 Hz		V	230	230	230	230	230	230
Nominal power		W	400	400	550	850	1250	250
Energy consumption at 37° C		Wh/h	11	20	33	56	80	–
Doors		number	1	1	2	2	2	1
Equipment			**BD/BED 53**	**BD/BED 115**	**BD/BED 240**	**BD/BED 400**	**BD/BED 720**	**B 28**
Hydraulic-mechanical thermostat			–	–	–	–	–	●
Analogous thermometer			–	–	–	–	–	●
Microprocessor temperature controller with LED-display			●/●	●/●	●/●	●/●	●/●	–
Timer 0-24 h			●/–	●/–	●/–	●/–	●/–	–
Safety device cl. 3.1 according to DIN 12880, part 1			●/●	●/●	●/●	●/●	●/●	–
Multifunctional controller with different timer functions, ramp function, reduction of the heating capacity			–/●	–/●	–/●	–/●	–/●	–
Printer interface (monologue) RS 232 C with adjustable printing intervals			–/●	–/●	–/●	–/●	–/●	–
Inner glass door			●/●	●/●	●/●	●/●	●/●	●
Exhaust duct ø 50 mm with adjustable ventilation slide			●/●	●/●	●/●	●/●	●/●	–
Four lockable castors			–/–	–/–	–/–	–/–	●/●	–
Options/Accessories								
Shelves, chrome-plated resp. stainless steel			○/○	○/○	○/○	○/○	○/○	○
Safety device cl. 1 according to DIN 12880, part 1			–	–	–	–	–	○
Safety device cl. 3.3 according to DIN 12880, part 1			○/○	○/○	○/○	○/○	○/○	–
Lockable door			○/○	○/○	○/○	○/○	○/○	–
Measurement and protocol according to DIN 12880, part 2			○/○	○/○	○/○	○/○	○/○	–
Round chart recorder, built in for temperature documentation			○/–	○/–	○/–	○/–	○/–	–
Printer Hybrid for numerical and graphical temperature registration			–/○	–/○	–/○	–/○	–/○	–

The following is valid for all technical data:

Symbols: ● = Standard equipment ○ = Option – = not available

All technical data are specified for an ambient temperature of +22° C and a nominal variation of ± 10 %.
Subject to technical alteration.

[1] Up to 98 % of the set value
[2] With the option „humidifying and dehumidifying system" the total height is the same as KBF
[3] Temperature range with total illumination: +5° C up to 99,9° C
[4] Values without illumination
[5] Only in combination with option „humidifying and dehumidifying system"
[6] For the installation of the „humidifying and dehumidifying system" a water tap (1-10 bar) with normal tap water (conductibility from about 200 up to 500 µS/tolerance, ± 300-150 µS) is necessary. Furthermore a water drain ø 40 mm with descending gradient is needed.
[7] At KBW with the option „humidifying and dehumidifying system" the nominal power is increased by 1350 Watt.

The product range of WTB binder

The WTB Binder APT.Line offers a maximum range of products for all applications in volumes from 23 l to 720 l.

Function	Type	WTB Binder	Standard equipment	Extended standard equipment	Safety device class	Natural convection	Forced convection	Temperature range in °C	Volume 23 l	Volume 28 l	Volume 53 l	Volume 115 l	Volume 210 l	Volume 240 l	Volume 400 l	Volume 720 l
Drying Warming Sterilizing	Hot air sterilizer/ Oven	**E**	●		0/1	●		60-230		●						
	Oven/ Hot air sterilizer	**ED**	●		2	●		30*-300			●	●		●	●	●
	Oven/ Hot air sterilizer	**EED**		●	2	●		30*-300			●	●		●	●	●
	Oven/ Hot air sterilizer	**FD**	●		2		●	30*-300			●	●		●	●	●
	Oven/ Hot air sterilizer	**FED**		●	2		●	30*-300			●	●		●	●	●
	Vacuum drying oven	**VD**		●	2			30*-200	●		●	●				
Drying of material containing solvents	Safety vacuum oven	**VDL**		●	2			30*-200	●		●	●				
	Safety drying oven/ Paint drying oven	**FED 115 L**		●	2		●	30*-300				●				
Incubation	Incubator	**B**	●		0/1	●		30-37/70		●						
	Microbiological incubator	**BD**	●		3.1	●		30*-99,9			●	●		●	●	●
	Microbiological incubator	**BED**		●	3.1	●		30*-99,9			●	●		●	●	●
	CO_2-incubator	**CB**		●	3.3	●		30**-60					●			
	Cooled incubator	**KB**		●	3.1		●	0-99,9			●	●		●		●
	Cooled incubator with controlled humidity	**KBF**		●	3.1		●	0-99,9				●		●		●
	Growth chamber with day/night simulation	**KBW**		●	3.1		●	0-99,9						●		●
Hybridization	Universal hybridization oven	**BFD**	●		3.1		●	30*-99,9			●					
	Universal hybridization oven with additional shaking platform	**BFED**		●	3.1		●	30*-99,9			●					
Testing	Multifunctional precision oven/Ageing chamber	**M**		●	2		●	30*-300			●	●		●	●	●
	Cold/Heat test chamber	**MK**		●	2		●	-40 - 180			●			●		●

*) 5°C above ambient temperature
**) 7°C above ambient temperature

Further options are available
Please ask for detailed product information!

Your distributor:

WTB Binder Labortechnik GmbH

Bergstr. 14
D-78532 Tuttlingen
P. O. Box 102
D-78502 Tuttlingen
Tel. 00 49 / 74 61 / 17 92-0
Fax 00 49 / 74 61 / 17 92-10

APT.Line KB/KBF/KBW				KB 53	KB 115	KB 240	KB 720	KBF 115	KBF 240	KBF 720	KBW 240	KBW 720
Dimensions, housing	Width		mm	634	834	1034	1234	834	1034	1234	1034	1234
	Height (incl. feet/castors)		mm	778	858	978	1686	1250	1370	1983	978[2]	1686[2]
	Depth		mm	575	645	745	865	645	745	865	745	865
	plus door handle		mm	50	50	50	50	50	50	50	50	50
Wall clearance			mm	100	100	100	100	100	100	100	100	100
Wall clearance with open door			mm	100	100	100	100	100	100	100	100	100
Steam space volume			l	77	158	308	869	158	308	869	308	869
Interior dimensions	Width		mm	400	600	800	1000	600	800	1000	800	1000
	Height		mm	400	480	600	1200	480	600	1200	600	1200
	Depth		mm	330	400	500	600	400	500	600	500	600
Interior volume			l	53	115	240	720	115	240	720	240	720
Shelves, stainless steel		number standard/max.		2/4	2/5	2/7	2/16	2/5	2/7	2/16	2/7	2/16
Load per shelf			kg	15	20	30	45	20	30	45	30	45
Permitted total load			kg	40	50	70	120	50	70	120	70	120
Weight of the unit (empty)			kg	72	97	145	262	115	184	345	151	268
Temperature range			°C	0-99,9	0-99,9	0-99,9	0-99,9	0-99,9	0-99,9	0-99,9	0[3]-99,9	0[3]-99,9
Temperature variation		at 10° C	± °C	0,3	0,4	0,4	0,4	0,4	0,4	0,4	0,4	0,4
		at 37° C	± °C	0,3	0,3	0,4	0,4	0,3	0,4	0,4	0,4	0,4
Temperature fluctuation			≤ ± °C	0,1	0,1	0,1	0,1	0,1	0,1	0,1	0,1	0,1
Heating-up time to 37° C[1]			min.	28	23	30	28	23	30	28	30	28
Cooling down time from ambient down to 10° C[1]			min.	35	35	35	35	35	35	35	35[4]	35[4]
Recovery time after door was open for 30 sec.[3]		at 37° C	min.	5	5	5	5	5	5	5	5	5
		at 50° C	min.	3	4	4	4	4	4	4	4	4
Nominal voltage (± 10 %) 50/60 Hz			V	230	230	230	230	230	230	230	230	230
Nominal power			W	460	460	650	1350	1810	2000	2760	800[7]	1600[7]
Energy consumption at 37° C			Wh/h	64	77	100	160	77	100	160	100	160
Doors			number	1	1	2	2	1	2	2	2	2
Inner glass doors			number	1	1	2	2	1	2	2	2	2
Equipment												
Microprocessor temperature controller with LED-display				●	●	●	●	●	●	●	●	●
Safety device cl. 3.1 according to DIN 12880, part 1				●	●	●	●	●	●	●	●	●
Multifunctional controller with different digital timer functions, ramp function, reduction of the heating capacity				●	●	●	●	●	●	●	●	●
Printer interface (monologue) RS 232 C with adjustable printing intervals				●	●	●	●	●	●	●	●	●
Inner glass door				●	●	●	●	●	●	●	●	●
Digital speed controller for ventilator				●	●	●	●	●	●	●	●	●
DCT-cooling system with refrigerent R 134 a				●	●	●	●	●	●	●	●	●
Microprocessor controlled humidifying and dehumidifying system[6] (humidity range please see diagram), accuracy about ± 2 % rH				–	–	–	–	●	●	●	○	○
Growth lamps OSRAM-Fluora,				–	–	–	–	–	–	–	●	●
light colour 77 (DIN 5035) in the doors,			number:								6	6
Nominal power			Watt:								108	216
Illumination intensity (at the centre of the inner chamber)			Lux:								~4600	~4600
Automatic light control and temperature cycle				–	–	–	–	–	–	–	●	●
Four lockable castors				–	–	–	●	–	–	●	–	●
Options/Accessories												
Shelves, stainless steel				○	○	○	○	○	○	○	○	○
Safety device cl. 3.3 according to DIN 12880, part 1				○	○	○	○	○	○	○	○	○
Interior lighting				○	○	○	○	○	○	○	–	–
Lockable door				○	○	○	○	○	○	○	○	○
Closable access ports				○	○	○	○	○	○	○	●	●
Program controller PD1 for temperature cycles				○	○	○	○	○	○	○	○	○
Timer with day or week program				○	○	○	○	○	○	○	–	–
Temperature cycle device				○	○	○	○	○	○	○	●	●
Printer Hybrid for numerical and graphical temperature documentation				○	○	○	○	○	○	○	○	○
Measurement and protocol according to DIN 12880, part 2				○	○	○	○	○	○	○	○	○
2-channel recorder for temperature and humidity				–	–	–	–	○	○	○	○[5]	○[5]
Increased illumination light colour Nr. 11, light intensity			Lux approx.:	–	–	–	–	–	–	–	○ ~8000	○ ~8000

SERVICE-CARD

Please send me a non-binding offer for:

- ☐ Incubators
- ☐ Cooled incubators
- ☐ Cooled incubators with controlled humidity
- ☐ Growth chambers
- ☐ Hybridization ovens
- ☐ CO_2-incubators

Furthermore I would like to receive detailed information on:

- ☐ Warming, Drying, Sterilizing
- ☐ Drying of material containing solvents
- ☐ Testing, Ageing

Please fix an appointment with me:

- ☐ My requested date: _____
- ☐ You can reach me by phone at _____ o'clock
- ☐ My telephone number: _____

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- ☐ Testing, Ageing

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- ☐ My requested date: _____
- ☐ You can reach me by phone at _____ o'clock
- ☐ My telephone number: _____

APT.Line BFD/BFED			BFD 53	BFD 53
Dimensions, housing	Width	mm	659	659
	Height (inclusive feet)	mm	621	621
	Depth (plus instrument panel/door handle)	mm	575/70	575/70
Wall clearance		mm	100	100
Wall clearance with open door		mm	160	160
Steam space volume		l	77	77
Interior dimensions	Width	mm	400	400
	Height	mm	400	400
	Depth	mm	330	330
Interior volume		l	53	53
Shelves, chrome-plated		number standard/max.	1/4	1/4
Load per shelf		kg	15	15
Permitted total load		kg	40	40
Weight of unit (empty)		kg	45	45
Temperature range, 5° C above ambient up to		°C	99,9	99,9
Temperature variation at 37° C		± °C	0,5	0,5
Temperature fluctuation		≤ ± °C	0,1	0,1
Heating up time to 37° C[1]		min.	12	12
Recovery time after door was opened for 30 sec.[1] at 37° C		min.	1	1
Nominal voltage (± 10 %) 50/60 Hz		V	230	230
Nominal power		W	400	400
Energy consumption at 37° C		Wh/h	20	20
Equipment				
Microprocessor temperature controller with LED-display			●	●
Timer 0-24 h			–	–
Safety device cl. 3.1 according to DIN 12880, part 1			●	●
Multifunctional controller with different digital timer functions, ramp function, reduction of the heating capacity			–	●
Printer interface (monologue) RS 232 C with adjustable printing intervals			–	●
Exhaust duct ø 50 mm with adjustable ventilation slide			●	●
Rotation unit for 12/24 hybridization flasks			●	●
Rotations of the unit (constant) (approx. rot./min.)			6	6
Shaking unit, platform 350 x 295 mm			–	●
Inner glass door			●	●
Options/Accessories				
Shelves, chrome-plated			○	○
Set of accessories consisting of: 4 hybridization flasks 35 x 300 mm 5 meshes 230 x 230 mm, 1 hand book manual			○	○
Printer Hybrid for numerical and graphical temp. registration			–	○

APT.Line CB 210			CB 210
Dimensions, housing	Width	mm	740
	Height (inclusive feet)	mm	1078
	Depth (plus 70 mm for instrument panel)	mm	695
Wall clearance		mm	50
Interior dimensions	Width	mm	560
	Height	mm	750
	Depth	mm	495
Interior volume		l	210
Weight (empty)		kg	128
Perforated shelves, stainless steel		number standard/max.	3/11
Dimensions of perforated shelves	Width	mm	540
	Depth	mm	470
Temperature range, 7° C above ambient up to		°C	60
Temperature variation at 37° C (DIN 58945)		± °C	0,3
Temperature fluctuation		≤ ± °C	0,1
Recovery time after door was opened for 30 sec.[1] at 37° C		min.	10
CO_2-range		% CO_2	0-20
Setting accuracy		% CO_2	0,1
Recovery time after door was opened for 30 sec.[2] up to 5 %		min.	6
CO_2-measurement			IR
Connection hose nozzle for CO_2		mm	8
Humidity (constant)		% RH	95-98
Recovery time after door was opened for 30 sec.[1] up to 95 % rH		min.	24
Nominal voltage (± 10 %) 50/60 Hz		V	230
Nominal power		W	1200
Energy consumption at 37° C		Wh/h	140
Equipment			
Microproces. temp. controller with LED-displays for set and actual value			●
Microproces.-CO_2-controller with LED-displays for set and actual value			●
Almost drift-free CO_2-infrared-absorption-measuring system			●
Condensation-free Permadry-constant humidity system			●
Tightly closing inner glass door			●
Analogue printer outputs 4-20 mA for temp. und CO_2-concentration			●
Connection for central monitoring			●
Safety device cl. 3.3 according to DIN 12880, part 1			●
Options/Accessories			
Perforated shelves stainless steel or copper			○
Replacement sterile filter			○
Inner glass door, divided into 6 parts			○
Consoles with a height of 200 mm or 780 mm			○
Built-in CO_2-bottle changer			○
CO_2-connection kit			○
Hot-air auto-sterilization			○

Name

First Name

Company

Department

Street

Postcode/City

Tel.

Fax

Branch

Name

First Name

Company

Department

Street

Postcode/City

Tel.

Fax

Branch

WTB binder

APT.Line

WTB Binder has the temperature firmly under control