Web Version
low resolution

Multitron Cell

The ultimate for cell cultivation

HIGHLY INFORS HT QUALIFIED

- Optimum conditions
- Excellent results
- Intuitive control
- Antimicrobial surface
- Access points for external sensors
- Even easier to clean
- Hygienic direct steam humidification

QUALITY

www.infors-ht.com
May be subject to technical amendments

INFORS HT

Designed for cell cultures

Optimum conditions

The new design of the Multitron Cell is based on the long experience of experts in cell cultivation. Even temperature distribution, a stable CO_2 supply, the particularly gentle drive system with smooth starting and braking behaviour and the precise regulation of cultivation parameters create reproducible conditions for successful parallel cell cultures.

Excellent results

The active yet gentle mixing of cultures in the Multitron Cell produces results around 30% better than in static incubators. The early adaptation of cells to mechanical mixing makes the Multitron Cell ideal for the production of seed cultures for pilot bioreactors.

Antimicrobial surface

The inside and outside of the housing and door of the Multitron Cell are coated with a paint additive of pure metallic silver, which reliably kills microorganisms on the surface. The certified antimicrobial surface reduces the bacterial and fungal count by a minimum factor of 10^5.

Hygienic direct steam humidification

The new hygienic direct steam humidification (optional) offers the advantage of even greater consistency in culture volumes and osmotic pressure.

Access points for external sensors

Cable pass-throughs on the side allow you to feed sensor cables and additional gas lines into the Multitron Cell. Safe and simple.

New: Intuitive control

The newly designed touch controller has modern sensor keys and a newly developed menu structure, allowing parameters to be intuitively switched on and off and set values to be changed.

Even easier to clean

The bottom well of the Multitron Cell is easily accessible and can simply be rinsed clean. You can use the outlet nozzle to drain off excess water or liquid cultures (e.g. after a flask breakage).

HIGHLIGHT

ShakerBag Option – more flexibility in your incubation shaker

The ShakerBag Option provides you with the ability to cultivate mammalian, insect or plant cells in disposable bags with working volumes of 0.2 to 10 L in the orbital incubation shaker.

Direct gassing with air or an air/CO_2 gas mixture makes it possible to supply the separate cultivation bags individually with oxygen and makes for a stable pH value.

Applications

- Parallel cultivation
- Screening
- Protein expression
- Media development
- Scale up
- Process development and optimisation
- Biofuels
- Molecular biology (e.g. mini- and maxipreps)

Key technical data

Dimensions (W x H x D): 1070 x 860 x 550 mm (without cooling system)
Maximum capacity: 6 x 5 L Erlenmeyer flasks
Maximum expansion: Stackable, up to 3 units
Speed ranges: 20–400 rpm (3 mm stroke; up to 999 rpm), depending on the load and stack. Control accuracy +/– 0.1%
Temperature range: 6°C above RT up to 80°C; typically up to 65°C (without cooling system); 20°C under RT (with side-mounted cooling system); 12°C under RT (with top-mounted cooling system). Control accuracy +/– 0.2°C
Standard parameters: Temperature and speed
Optional parameters: Cooling, illumination, humidification, CO_2 control

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INFORS HT

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Operating manual

Multitron Pro

Incubation Shaker

CE Dok-ID: V.01.000 - Original

INFORS HT

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Technical data

Base unit

Description	Value	Unit
Width	1070	mm
Single unit height	520	mm
2-unit staple height	1040	mm
3-unit staple height	1560	mm
Base unit (with door handle) depth	880	mm
Base unit (with open door) depth	1160	mm
Base depth	715	mm

Incubation chamber

Description	Value	Unit
Width	925	mm
Depth	550	mm
Hight	387	mm
Hight with illumination inside	337	mm
Volumn	~200	L

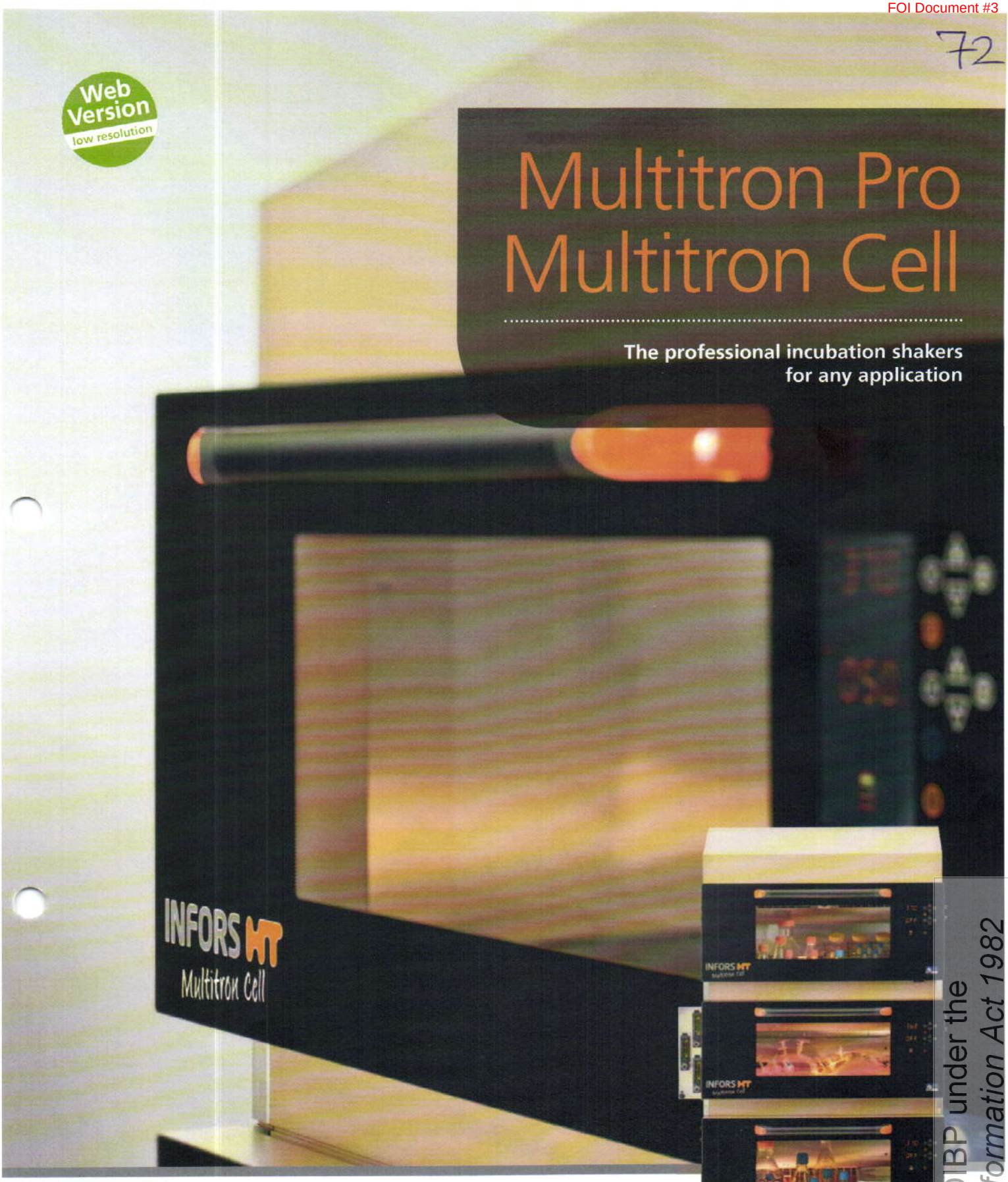
Base frame

Description	Value	Unit
Rubber feet	30	mm
Trolley	90	mm
Frame low	130	mm
Frame high	310	mm

Web Version
low resolution

Multitron Pro
Multitron Cell

The professional incubation shakers for any application



QUALITY

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Images examples only.

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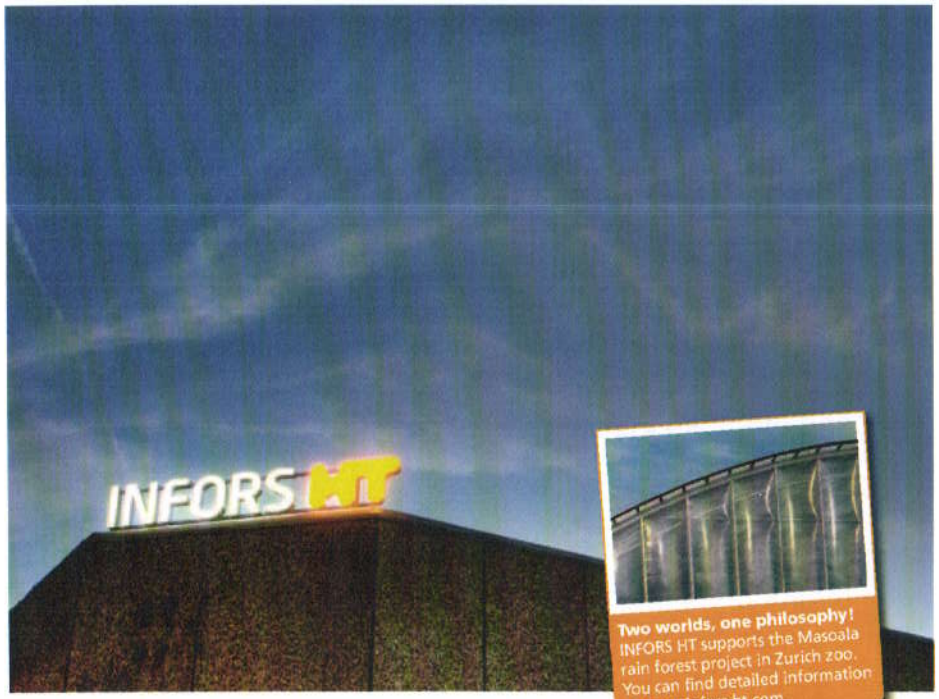
We bring life to your laboratory.

INFORS HT



Cultivating customer visions

INFORS HT is a company of international reputation in the field of biotechnology

Innovative thinking, quality and an understanding of the needs of our partners has secured INFORS HT an unrivalled place amongst manufacturers of bioreactor and shaker equipment. An enthusiasm for experiment and a creative mind has guided the company from its establishment in 1965 through its development to become firmly established as an important player in the field of biotechnology engineering. Independence, a distinctive character and a strong team spirit will continue to serve us well in the future. www.infors-ht.com

About our Quality Label

Quality Standards
- ISO 9001
- CE
- EMV

For process validation to cGMP
- Documentation
- IQ
- OQ
- FAT & SAT

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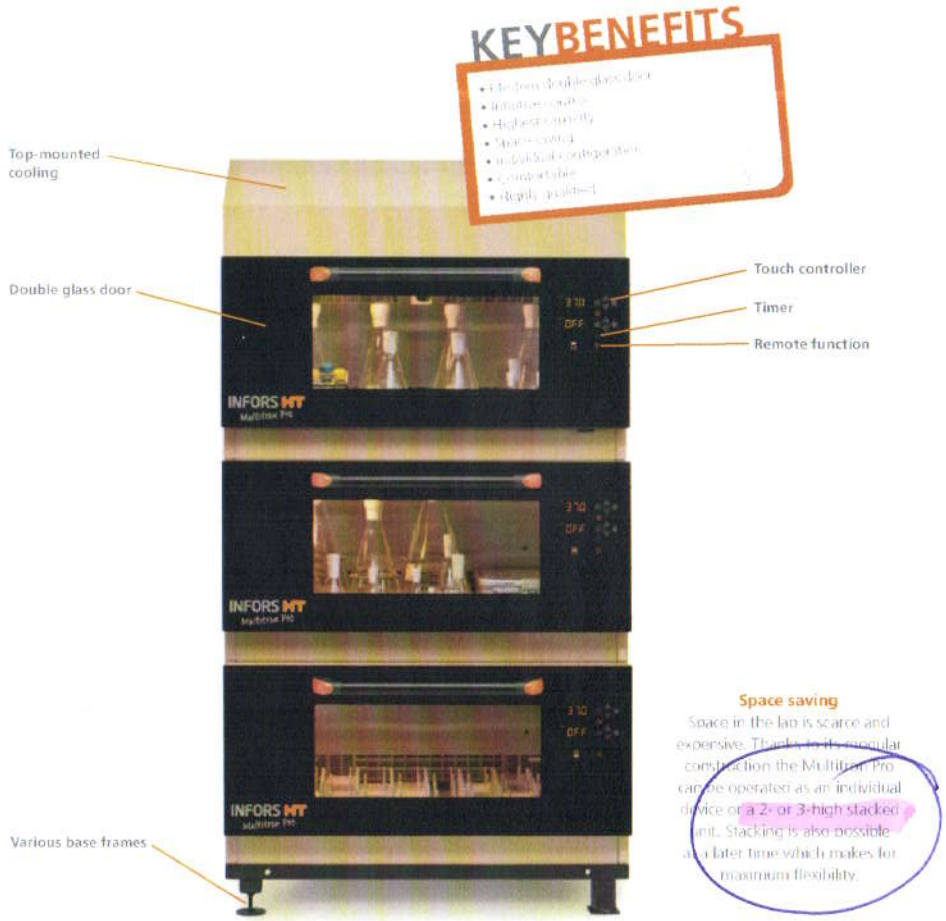
Multitron Pro at a glance



Space saving

Space in the lab is scarce and expensive. Thanks to its modular construction the Multitron Pro can be operated as an individual device or a 2- or 3-high stacked unit. Stacking is also possible at a later time which makes for maximum flexibility.

Key technical data

Dimensions (W x H x D): 1070 x 660 x 550 mm (without cooling system)
Maximum capacity: [illegible]
Maximum expansion: Stackable, up to 3 units
Speed ranges: 20–400 rpm (3 mm stroke, up to 999 rpm, depending on the load and stack). Control accuracy +/– 0.1%
Temperature range: 6°C above RT up to 80°C (typically up to 65°C without cooling system); 20°C under RT (with side-mounted cooling system); 12°C under RT (with top-mounted cooling system). Control accuracy +/– 0.2°C
Standard parameters: Temperature and speed
Optional parameters: [illegible] control

Applications

- Parallel cultivation
- [illegible]
- [illegible]
- Media development
- Scale-up
- Process development and optimization
- [illegible]
- [illegible]

May be subject to technical amendments

Multitron Pro & Multitron Cell | Incubation Shaker INFORS HT

Multitron in detail

The Multitron Pro and the Multitron Cell manage to combine flexibility, user-friendliness and operational reliability with optimum space utilisation. A number of innovative options for cooling, precise CO_2 control, illumination and hygienic direct steam humidification guarantee the ideal conditions for cultures. With around 500 different designs we meet almost every customer requirement. We are also more than happy to provide special configurations. INFORS HT provides you with Swiss quality with a modern design and a high technological level and environmentally friendly energy consumption.

KEY FEATURES

New: Modern double glass door

Robust safety glass, both inside and outside, gives the door a much improved insulation which means temperatures of as low as 23°C below room temperature can be achieved (with optional cooling system). The smooth surfaces make cleaning easy.

Highest capacity

Despite the footprint the Multitron Pro has the largest tray (850 x 450 mm) in its class. Thus you can shake approximately 144 Erlenmeyer flasks with 250 ml or 18 Erlenmeyer flasks with 5000 ml, for example, on an area of less than one square metre.*

Load capacity (effective interior height: 387 mm):

Erlenmeyer flasks (mL)	50	100	250	500	1000	2000	3000	5000
Max. capacity (no.)	131	91	48	31	19	13	9	6

* [illegible]

Comfortable

The various base frame versions mean the Multitron Pro can be set individually to your preferred working height. On a triple unit with a 13 cm base frame the uppermost tray is positioned at a comfortable working height of 1.30 metres – this is world-wide unique! With other incubator shakers the third unit is at a working height of 1.80 m. Individual units can also be positioned on or underneath your laboratory bench.

On hand at all times

The cleverly designed drop-down door serves as a shelf for the pull-out tray at the same time. Another unique feature: the automatic tray release. Your cultivation vessels are easy to access and on hand at all times.

Penta Drive: Reliable and quiet

The innovative Penta Drive guarantees a quiet and reliable vibration-free shaking motion with a shaking speed of up to 400 rpm (999 rpm with a 3 mm stroke). Thus you achieve the optimum oxygen transfer for maximum growth in each unit.

May be subject to technical amendments.

You can choose from 3 fixed shaking diameters (3, 25 or 50 mm) with 25 mm being the universally applicable standard. An optional adjustable shaking diameter is also available, making it possible to switch between 12.5, 25 and 50 mm.

Shaking diameter	3 mm	25 mm	50mm
Recommended for	Microtitre plates	All applications	Large flasks (> 2 L)
Upper unit	999 rpm	350 rpm*	250 rpm*
Middle unit	999 rpm	400 rpm*	300 rpm*
Lower unit	999 rpm	400 rpm*	350 rpm*
Single machine	999 rpm	400 rpm*	350 rpm*

* [illegible]

Even and exact temperature control

The double glass door of the Multitron Pro features excellent insulation. Together with exact PID control and circulating air fans it guarantees an even temperature distribution and constant conditions for your cultures.

MULTITRON PRO OPTIONS

Cooling system

If a set point value of less than 6°C above room temperature is required, a cooling system is needed. All cooling systems are CFC free and are automatically activated only as required – an environmentally friendly solution.

	Temperature range
Without cooling system	6°C above RT up to 80°C *
Side cooling the high-performance version	20°C below RT up to 65°C, minimum +4°C
Top-mounted cooling the slimline version	12°C below RT up to 80°C *, minimum +4°C
External cooling system the flexible version	6°C above coolant up to 80°C *, minimum +4°C

* [illegible]

Illumination

For photosynthesis of plant cells and algae or for other phototropic organisms various inserts with different light spectra (daylight, photosynthesis) and light strengths are available for selection. The timer can be used to program individual day/night cycles. For algae and some plant cultures we recommend a CO_2 control (optional, see page 7 for more information).

Further options

Further options are available, for example, a mobile temperature sensor, CO_2 gassing, hygienic direct steam humidification, access points for external sensors, UV sterilisation, darkening, warranty extension to 3 or 5 years etc. Special custom-made items available on request.

May be subject to technical amendments.

HIGHLIGHT

The ultimate in flexibility

You benefit from a uniquely flexible device in which you can use a wide range culture vessels

Microtitre plates

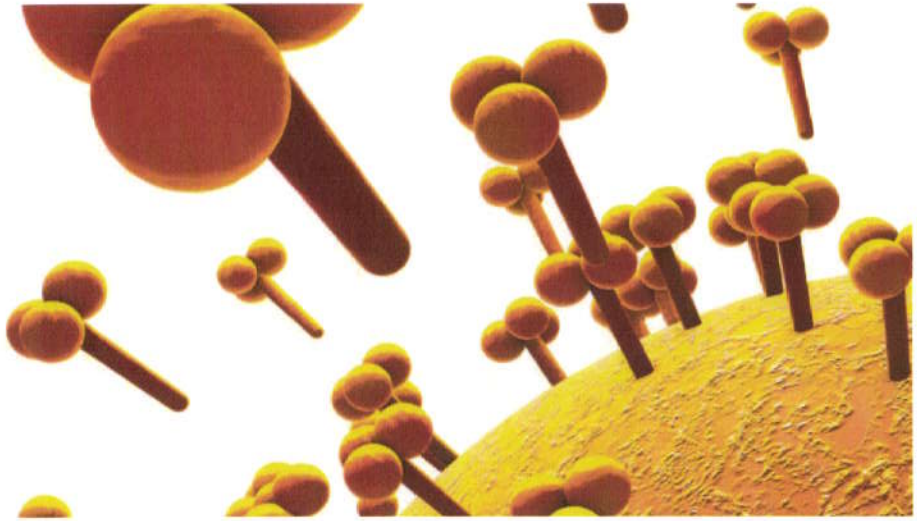
Erlenmeyer flasks

Ultra-Yield™ and Optimum Growth™ flasks

Disposable cultivation bags

Multitron Cell – cell cultivation at the highest level

The active but gentle mixing of the cultures in the Multitron Cell provides for a clearly improved cultivation result compared to static incubators. At the same time it ensures that the cells adapt to mechanical mixing at an early stage. The Multitron Cell is therefore ideal, for example, for producing seed cultures for pilot reactors. The newly developed Multitron Cell design is based on many years of experience of experts in cell cultivation and provides you with unique benefits, e.g. the antimicrobial surface and optional hygienic direct steam humidification. For optimum cell growth.



KEY FEATURES

Antimicrobial surface

The housing and door of the Multitron Cell are equipped with a gold additive of pure metallic silver which kills off microorganisms which come into contact with the surface. The bacterial and fungal count is reduced by a factor of at least 10⁶. The antimicrobial surfaces can be cleaned just like painted surfaces without any restrictions.

Access points for external sensors and gas-measuring connection

The side pass-through allow you to insert cables from sensors, other measuring instruments and additional gas lines into the Multitron Cell. Simple and safe.

One port of a pass-through is fitted with a plug as standard so that you can easily check the CO_2 concentration in the chamber e.g. with an Orsat gas measuring tube.

Even easier cleaning

The newly designed smooth bottom well has a white super finish surface with antimicrobial equipment. The Multitron Cell's bottom well is easily accessible and can be simply cleaned wet. You can drain off excess water or culture liquid (e.g. after a flask brake) via the outlet nozzle.

OPTIONS MULTITRON CELL

Hygienic direct steam humidification

The hygienic direct steam humidification prevents evaporation and makes for a constant culture volume. Thus the osmotic pressure for your cell culture remains low, even with long culture times and small working volumes (e.g. microtitre plates). Distilled water is dropped onto a hot surface in a controlled manner and the resulting steam is fed directly into the incubation chamber. The humidification system does not need to be cleaned due to its completely aseptic design. The new double glass door on the Multitron Cell with improved insulation reliably prevents condensation.

An autoclavable reservoir for connection of up to 3 Multitron units is also optionally available. The 5 L glass flask is sufficient for up to 20 days of humidification in continuous operation (consumption: 10 mL per hour and incubator).

May be subject to technical amendments.

Precise CO_2 control 0–20%

The electronic control of the CO_2 concentration in the incubation chamber is a key element in cultivating mammalian cells as it keeps the pH value of the culture solution stable. Measurements are made using infrared sensor and controlled CO_2-gassing in the range of 0–20% are possible. The CO_2 controller is recommended specifically for cultivating mammal cells or algae.

Safety for the user and the culture

Safe operation is achieved by a number of devices. The most important ones include:

- Automatic shut-down of the shaker and temperature control when the door is opened
- Automatic restart when the door is closed
- Automatic restart and display of power failure
- Monitoring of all parameters
- Optical and acoustic alarms in case a parameter deviates from the set point value
- Triple protection from overtemperature, including manually adjustable temperature limiter
- Safety-glass door
- Floating alarm output

Further optional safety devices can also be supplied, e.g. independent monitoring systems with an interface to the process control system.

Further options

Further options are available, e.g. cooling system, mobile temperature sensors, UV sterilisation, analogue output etc. Special custom-made items available on request.

KEY BENEFITS

May be subject to technical amendments.

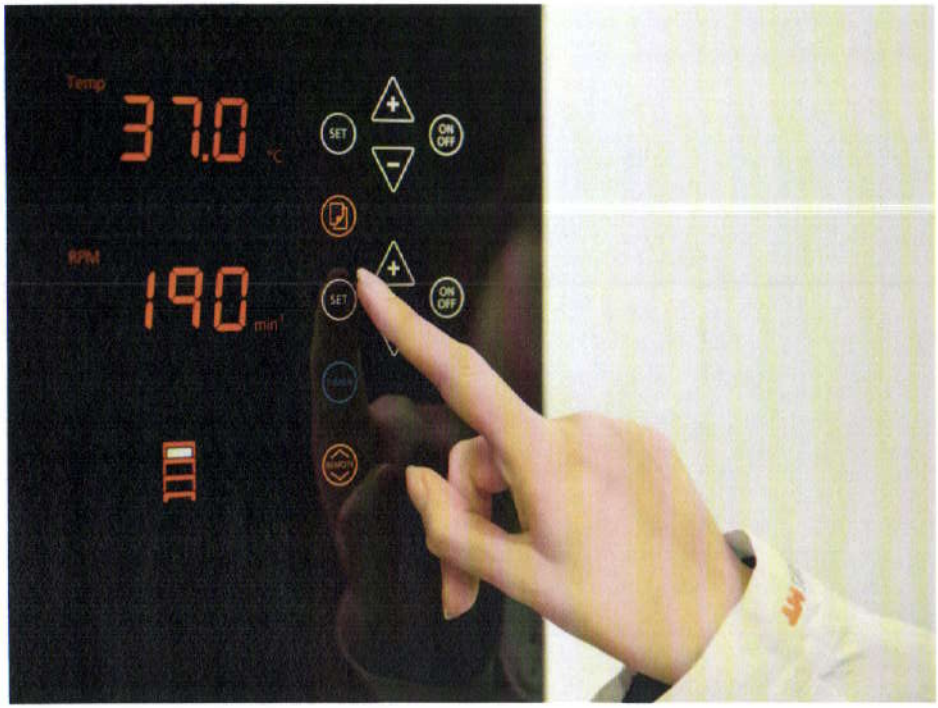
HIGHLIGHT

ShakerBag Option – more flexibility in your incubation shaker

The ShakerBag Option provides you with the ability to cultivate mammalian, insect or plant cells in disposable bags with working volumes of 0.2 to 10 L in the orbital incubation shaker.

Up to 3 x 2 L, 2 x 10 L or 1 x 20 L disposable cultivation bags from various manufacturers can be used in parallel in the same Multitron unit.

Direct gassing with air or an air/CO_2 gas mixture makes it possible to supply the separate cultivation bags individually with oxygen and makes for a stable pH value. The mobile Pt100 regulates the optimum temperature of the cultivation.



Touch controller with intuitive control

The newly designed touch controller has modern sensor keys with a separate display field. Thus you can always keep track and the display field keeps clean. The newly developed menu structure has been optimised by usability experts and offers simple and intuitive operation. Numerous features, e.g. the integrated timer or the clever remote function, make for additional control and comfort.

Intuitive operation

The operating interface of the touch controller has been optimised in detailed tests with users, psychologists and specialist. The result is an intelligent controller which guides the user through the menu with targeted feedback responses. This makes it possible to switch parameters on and off and change set point values intuitively without training for the user being necessary.

The ideal overview

The display field indicates the basic temperature and speed. If more than two parameters are installed, the display switches either automatically or can be switched with the «scroll» key. Readability at a distance has been greatly improved with large number displays and clear symbols. The logical assignment of functions and colours which can be found on the keys makes operation very simple.

Precise control and monitoring

The sensor keys react immediately to a light touch. However, the functions are prevented from being changed or activated accidentally by the intelligent controller.

The integrated timer enables time-controlled changes to parameters. Thus you can easily edit a temperature profile for automatic incubation over the weekend, for example.

Comfortable remote function

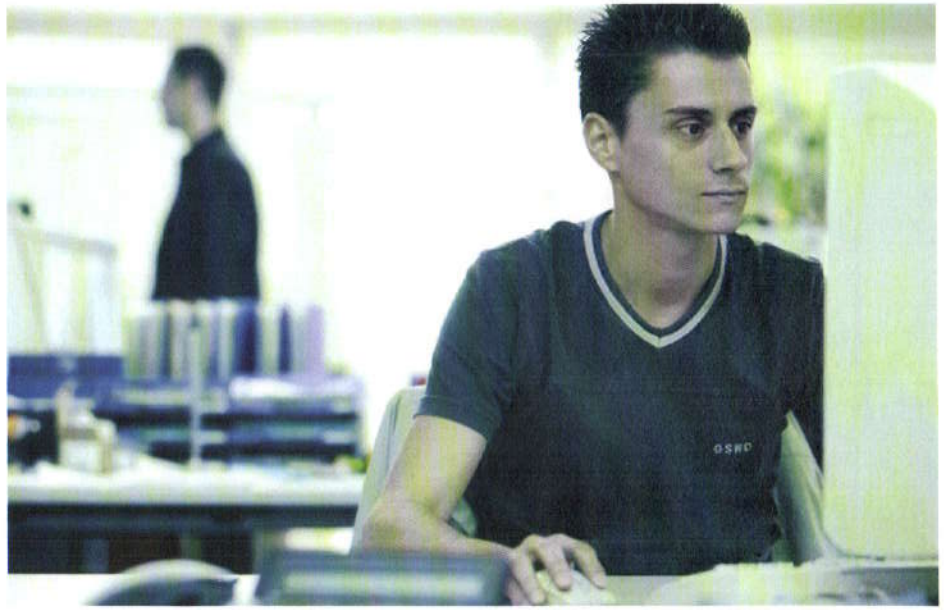
With the clever remote function you can also control the parameters of the lower and upper unit – for more comfort when using stacked units.

Easy cleaning

The touch controller is installed behind a closed surface made from [illegible] and can be cleaned easily.

Parallel bioprocess control software

The Iris parallel bioprocess control software provides flexible options for data logging, customisable feedback control, and data analysis. Peripherals such as biosensors can be connected online to the system. Through integration of both online data and offline analysis results, Iris is the centre for true biological process understanding and control.



Data mining and interpretation

- Links to external programs and devices via OLE, OPC and RS232
- Full data logging of analytical and calculated process data
- A trend view for display of graphical process data
- Online graphics can be annotated for easy reference. Offline analysis data can also be added in real time from this view.

Reliable process control

- Feedback control using sequences
- Compare different experiments and use the best as recipes or as automated follow files
- Build your own custom control loops with our easy-to-use scripting wizard. The system automatically and continuously monitors operations for special events preset to trigger changes in the control strategy, e.g., automatic temperature shift

Data export

An enhanced reporter module makes creation of batch tickets, data export and printing both comprehensive and simple.

Easy to use

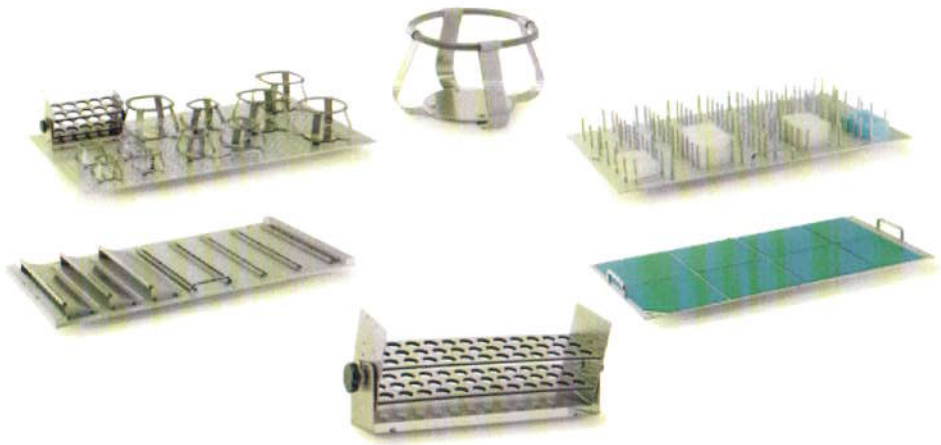
As Iris is fully Windows compliant, it is already familiar to users of other applications. Comprehensive help and the use of wizards combined with many examples provided in the hard-copy operating manual to make for a short learning curve and optimum productivity.

FDA compliant

Iris is FDA 21 CFR Part 11 compliant, with a proven track record in validated processes.

"A qualified solution for the inclusion of shake flask data in process validation and process analytical technology (PAT)"

Comprehensive accessories



Trays

The Multitron trays, at 850 x 470 mm, are the largest in their class and are available in 5 designs.

- **Universal trays** with a drilled grid for individual loading with clamps, test tube holders, holders for microtitre plates and deep well plates.
- **Fixed-load trays** each with one size of clamps and holders. The fixed-load trays are divided up in the ideal manner for the flask size and thus offer between 10 and 20% more capacity than universal trays.
- **Clamping rail trays** for incubating vessels with a wide range of shapes. The clamping rails can be fastened in any position on the support bars.
- **Trays for microtitre plates and deep well plates** with clamping brackets for horizontal incubation or angled incubation. Trays are available for up to 72 deep well plates and up to 144 microtitre plates.

"Sticky Stuff" adhesive mat trays

The green INFORS HT "Sticky Stuff" adhesive mat is a solution with unbeatable flexibility. It can be loaded with any kind of vessel which has a smooth base, with shaking speeds of up to 350 rpm possible. Even other vessels, e.g. microtitre plates, can be shaken on "Sticky Stuff" at up to 220 rpm.

The benefits of "Sticky Stuff"

- Even adhesion from 0 - 60°C
- Vessels are easy to remove at all temperatures
- Speeds: up to 350 rpm (see table)
- Long service life
- Easy to clean: with just water or a mild soapy water solution
- Reusable
- Disinfection with 70% ethanol

Schott Duran® glass Erlenmeyer flasks	"Sticky Stuff" Shaking diameter 50 mm	"Sticky Stuff" Shaking diameter 25 mm
25–750 mL	max. 200 rpm	max. 250 rpm
1000 mL	max. 250 rpm	max. 300 rpm
2000 mL	max. 250 rpm	max. 300 rpm
3000 mL	max. 300 rpm	max. 350 rpm
5000 mL	max. 250 rpm	max. 300 rpm
Corning plastic Erlenmeyer flasks		
125–3000 mL	max. 200 rpm	max. 300 rpm
Corning plastic deep well flasks		
3000 mL	max. 250 rpm	max. 300 rpm

Box for microtitre plates

The use of the box for microtitre plates eliminates evaporation losses. The box alone reduces vaporisation sufficiently in shaking incubators without humidification. The combination of the box and direct steam humidification eliminates evaporation. The box for microtitre plates solves the problem of contaminations in microtitre plates and deep well plates by providing a sterile environment. For cell culture applications it is recommendable to autoclave the box and use a disposable paper filter as a cover for the ventilation openings.

May be subject to technical amendments

Qualification

Compliance with regulatory requirements is becoming a critical issue for more users each year. INFORS HT provides a full qualification service with standard or customised packages to meet this need, e.g., cGMP compliance.

What is available?

The process starts with the Design Qualification and then planning of the production for qualification. Testing occurs at many points in the process and usually ends with a Factory Acceptance Test (FAT).

A package of comprehensive documentation is prepared and shipped with the shaker. Tests for IQ (Installation Qualification) and OQ (Operational Qualification) can then be made using this information. Site Acceptance Test (SAT) is typically carried out to show the equipment meets all necessary requirements.

Our Iris software is compliant with international standards such as FDA 21 CFR Part 11.

An important point to note is that ALL our shakers are manufactured to exactly the same high standards, it is only the amount of testing and documentation which varies.

Service and support

At INFORS HT, we are committed to providing the very highest level of customer support and service, based on our principles of customer proximity, expertise and efficiency.

- Close and direct contact with our specialists
- Technical and scientific experts
- Fast responses when you need it

Our high-quality service sets INFORS HT ahead and makes a real difference for our customers. Key services enable our users to get the most from their equipment, quickly and easily.

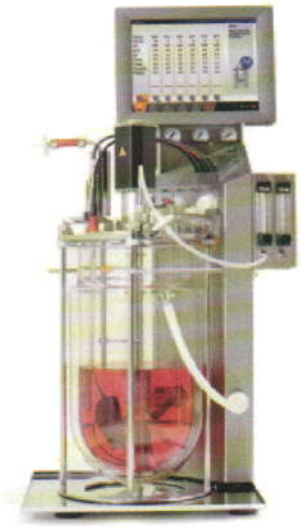
- Customer support (email, phone, on site)
- Technical solutions for special requests
- Installation and commissioning
- Equipment and application training
- Preventative maintenance

May be subject to technical amendments

As unique as your bioprocess!

Multitron Cell

Iris



Labfors

Techfors

INFORS HT equipment is individually adapted to meet the needs of your bioprocess. Our designers and application experts take the time to configure an optimised solution to your needs in partnership with you. Combined with the INFORS HT Iris bioprocess software, the full potential productivity of your cell culture or microbial fermentation can be successfully unlocked.

From laboratory-scale shaker to pilot-scale bioreactor

As different as these devices are, you will find they have a lot in common:

- Individual configuration for your application
- Simplified handling
- Common operation and control
- Turnkey equipment which is usable "out of the box"
- Exceptional Swiss quality
- Outstanding service and support from day 1

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