

## CO<sub>2</sub> Incubators INCO



**NEW! with O<sub>2</sub> module**

*Absolutely precise control of temperature, humidity, CO<sub>2</sub> and O<sub>2</sub> content from the experts for controlled atmosphere*

*Seven additional optional modules guarantee a top-class price-performance for every application*

*Working chamber including all fittings as well as all sensors sterilisable at 160 °C*

**100% AtmoSAFE**

**Choose your own top model for your application**

**Contamination? Not with us!**

>>>> [www.memmert.com](http://www.memmert.com)





## Stainless steel – the noble material

The inner chamber of the INCO consists exclusively of high-grade, fully recyclable hygienic stainless steel 1.4301 (ASTM 304). The additional electropolishing of the chamber, seamlessly welded by laser, ensures particularly smooth surfaces and therefore reduction in contamination risk (feature: Hygiene module). The outer casing is made mainly from sturdy textured stainless steel and is in accord with Memmert's holistic quality philosophy.

## Your own top model for your application

With seven additional optional modules the INCO can be upgraded to your own top model:

**Comfort module:** two gas connections with quick release connectors, automatic switch-over of gas cylinders (not in combination with O<sub>2</sub> module)

**Hygiene module:** electropolished interior, seamlessly welded by laser

**Communication module:** USB interface, "Celsius" standard software for programming and logging, ring log memory, printer interface

**CO<sub>2</sub> module:** extended CO<sub>2</sub> range from 0 to 20%

**Premium module:** includes Comfort, Hygiene, Communication and CO<sub>2</sub> module (not in combination with O<sub>2</sub> module)

**Humidity module:** active microprocessor-controlled humidification and dehumidification (40-97% rh)

**O<sub>2</sub> module:** control of oxygen concentration by N<sub>2</sub> inlet; adjustment range 1% bis 20% O<sub>2</sub> (not in combination with Comfort and Premium module)

## Lean perfection, top precision!

Standard model plus the module you need! The INCO provides for all kinds of applications a top-class price-performance. Every single equipment variation – from standard to premium – guarantees absolute precision and reliability. To include more comfort, optimum hygiene as well as perfect communication and documentation, users can now easily choose their own special top model, selecting from seven additional optional modules.

3 sizes: 108 – 153 – 246 litre chamber volume

Standard equipment: CO<sub>2</sub> concentration up to 10%, adjustable temperature from 20 to 50 °C, 88-97% rh with humidity limit control





## Germ-free through sterilisation, because disinfection is not sufficient!

Hygiene is the be-all and end-all for highly-sensitive applications with an organic chamber load. To prevent appliance-related (cross-) contamination, **the chamber, including the ventilation system, the water trays and all the sensors can be sterilised in a 4-hour programme at 160 °C** (in accordance with DIN 12 880: 2007-05).

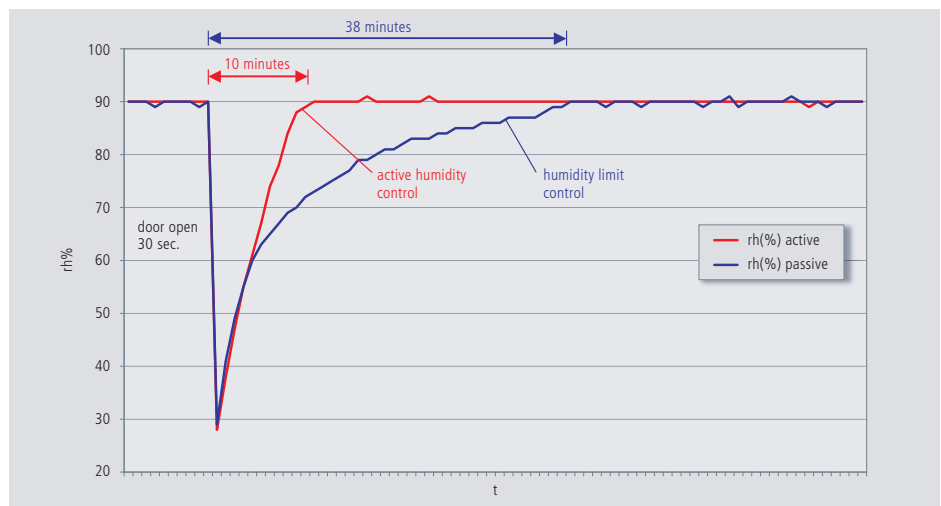
To prevent unintentional start, the automatic sterilisation cycle (part of the standard equipment) can only be activated via the MEMMERT STERICard.

A Memmert special: the all-round heating is located below deep-drawn ribs which carry the non-tipping stainless steel shelves and at the same time ensure optimal and particularly gentle heat transfer to the incubator load.

## Short recovery times due to active humidity control

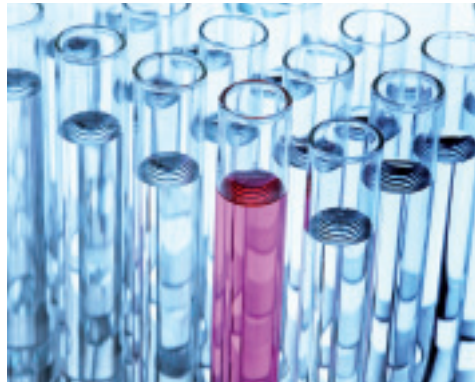
The INCO is equipped with a humidity limit control by which the maximum relative humidity created by water dishes in the chamber can be reduced from 97% down to 88%. The Humidity module, an active humidification system, can be incorporated optionally, with controlled evaporation of water through a steam generator and sterile dry steam mixed into the air flow. This system offers an extended control range of 40% to 97% rh.

Your advantage: more useful volume, optimum hygiene and short recovery time after opening the door.



The difference in humidity recovery time between humidity limit control and active humidity control (example: INCO/108).





# There's no such thing as a little bit reliable!

CO<sub>2</sub> atmosphere, exact temperature control up to 50 °C and condensation-free electronic humidity control up to 97% rh create a controlled and physiologically perfect environment for cell and tissue cultures growing in vitro.

## Guarantee: Expression for best quality

2 years guarantee as standard on all INCO equipment variations. Optionally, this period can be extended to 3 years

**More functionality**

## Accuracy: for regulated procedures

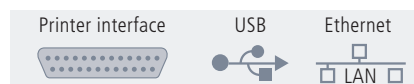
Technical features for faultless processes:

- Internal ventilation for turbulence-free and uniform distribution of CO<sub>2</sub>, O<sub>2</sub>, humidity and temperature
- Multifunctional fuzzy-supported control for exact setting of temperature, humidity, CO<sub>2</sub> and O<sub>2</sub> content (with O<sub>2</sub> module only)
- Calibration facility for temperature, CO<sub>2</sub> and humidity on the actual controller
- Option: up to three additional and freely positionable Pt100 sensors
- Digitised NDIR CO<sub>2</sub> sensor with cyclic auto-zero function
- Capacitive humidity sensor
- Long-lived O<sub>2</sub> sensor (with O<sub>2</sub> module only)
- Barometric pressure compensation

## Documentation: for controlled quality

The premium outfit for professional quality assurance (Communication module):

- Standard "Celsius" software for programming and documentation, also optional FDA-conforming software
- Driver for communication with LabView
- Internal ring memory for uninterrupted, long-term documentation fully protected against manipulation (approx. 3 months).
- USB interface (optional Ethernet) for programming and storage as well as printer interface



## Security: of course!

Still more functions with no error:

- Integral auto-diagnostic system with visual and audible error indication
- Multiple temperature monitoring
- Two high-grade Pt100 sensors Class A in 4-wire circuit, mutually monitoring
- Audible and visible signal on over- and under-temperature, CO<sub>2</sub> and humidity (with optional Humidity module), open door and empty gas cylinder
- Option: volt-free contacts on "combination error" and "setpoint reached"
- Option: personal User-ID-Card for protection against unauthorised operation
- Option: door with lock
- Option: HEPA-filter system acc. to EN 1822

## Comfort: Just made for you!

The INCO is easy to use:

- Clear, easy-to-clean underglass function display
- Memmert's unique feature: the push-turn control (patented) for intuitive selection from the entire menu
- Feet with height adjustment as standard
- Auto start-up programme
- Optional Comfort module: two gas connections with quick release connectors, automatic switch-over of gas cylinders (not in combination with O<sub>2</sub> module)



### Timer

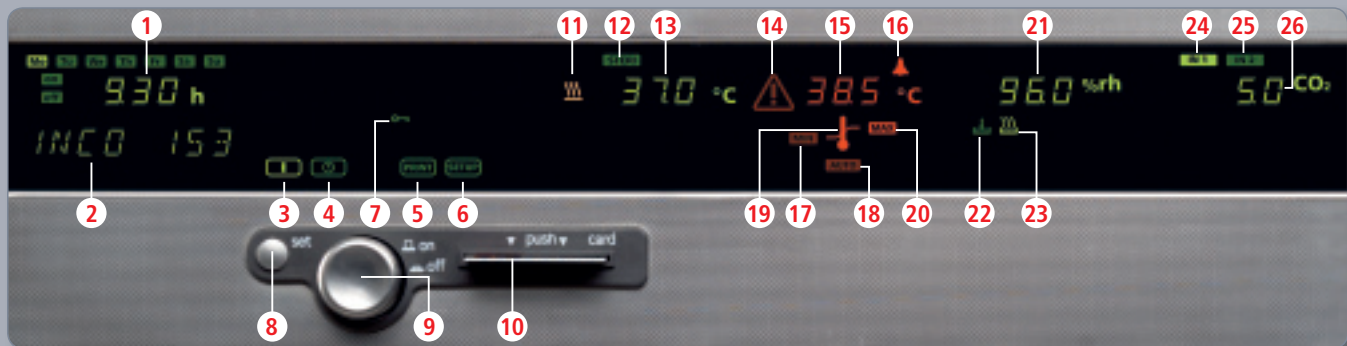
- 1 Time indication (real-time)
- 2 Text messages (with optional O<sub>2</sub> module text and O<sub>2</sub> display)

### Temperature

- 11 Heating
- 12 Sterilisation operation
- 13 Setpoint/actual temperature
- Temperature adjustment: 20 – 50 °C (control range from 8°C above ambient temperature up to 50 °C)
- Variation (time): ±0.1 °C max.
- Uniformity (spatial): ±0.3 °C max.

### CO<sub>2</sub> atmosphere

- 24 Gas cylinder 1 (active)
- 25 Gas cylinder 2 (with optional Comfort module)
- 26 CO<sub>2</sub> setpoint/actual
- CO<sub>2</sub>-concentration selection 0-10% adjustable in 0.1% steps (optional CO<sub>2</sub> module: adjustable CO<sub>2</sub> concentration up to 20%)
- Variation (time) ±0.1% CO<sub>2</sub> max.
- Uniformity (spatial) ±0.3% CO<sub>2</sub> max.



### Operating mode

- 3 Normal operation (active)
- 4 Weekly timer\*
- 5 Printer
- 6 Configuration
- 7 Data manipulation prevented through optional User-ID-Card (extra charge)
- 8 SET key
- 9 Push-turn control
- 10 Chip card reader for STERICard and optional User-ID-Card

### Monitor

- 14 Visual alarm
- 15 Alarm limit (heating switch-off temperature)
- 16 Sounder
- 17 Low alarm limit
- 18 Automatic alarm limit (ASF)
- 19 Temperature limiter
- 20 High alarm limit

### Humidity

- 21 Setpoint/actual humidity
- 22 Water level in storage tank
- 23 Steam generation
- Humidity selection 88-97% rh with humidity limit control selected in 1% steps (optional Humidity module: selectable rh concentration 40-97% with active humidity control)
- Variation (time) ±1% rh max.

\* Weekly timer programmable with one ON and OFF time per weekday; additional group function

## Technical data, models and accessories for CO<sub>2</sub> Incubators INCO

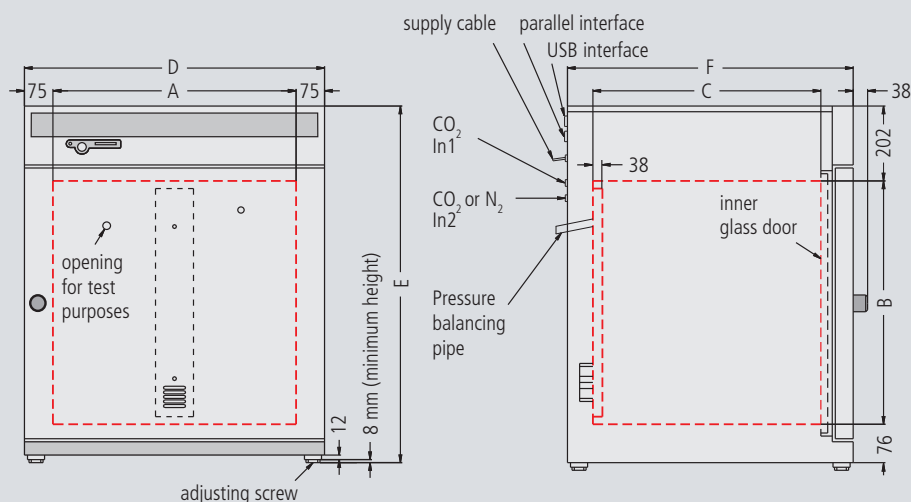
Interfaces: Optional with Communication or Premium module



Optional: (instead of USB):



Dimensions of CO<sub>2</sub> Incubators (see table below)



Model sizes		INCO	108	153	246
Stainless steel interior (deep-drawn)	Volume	approx. l	108	153	246
	Width / Height / Depth (less 25 mm for air duct in the middle of the back wall) (A) / (B) / (C)	mm	560 / 480 / 400	480 / 640 / 500	640 / 640 / 600
	Provision for perforated shelves or grids half width / full width	number	- / 4	- / 6	2 x 6 / 6
Stainless steel exterior (rear zinc-plated steel)	Width (D)	mm	710	630	790
	Height (variable through adjustable feet) (E)	mm	778	938	938
	Depth (without door handle, depth of handle 38 mm) (F)	mm	550	650	750
	Fully insulated, heated stainless steel door		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Extra internal glass door		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ventilation	Uniform atmosphere and temperature distribution through enclosed non-turbulent ventilation system, fully covered by the sterilisation process		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Temperature	Electronic microprocessor temperature controller with Pt100 and auto-diagnostic system		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Temperature sensors Pt100 Class A in 4-wire circuit for uninterrupted operation on failure of one Pt100 with warning indication		double	double	double
	Temperature range (during sterilisation the temperature is fixed at 160 °C – set value)	° C	from 20 <sup>1)</sup> up to 50	from 20 <sup>1)</sup> up to 50	from 20 <sup>1)</sup> up to 50
	Temperature fluctuations with time (to DIN 12 880: 2007-05)	° C	≤ ± 0,1	≤ ± 0,1	≤ ± 0,1
	Temperature variation in chamber at 37 °C (to DIN 12 880: 2007-05)	° C	≤ ± 0,3	≤ ± 0,3	≤ ± 0,3
Sterilisation	STERICard for automatic chamber sterilisation cycle 4 h at 160 °C (not for sterilising the load!)		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
CO <sub>2</sub>	Digital electronic CO <sub>2</sub> control with autozero, NDIR system with auto-diagnostic system, acoustic fault indication, barometric pressure compensation		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Setting accuracy	CO <sub>2</sub>	0,1 %	0,1 %	0,1 %
	Adjustment range	CO <sub>2</sub>	0 up to 10 %	0 up to 10 %	0 up to 10 %
Humidity	Capacitive humidity sensor (sterilisable)		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Standard water dishes	number	1	1	2
	Adjustable humidity limit control (88 – 97%) incl. digital indication and auto-diagnostic system with visual and acoustic fault indication (air supply via sterile filter) ensures rapid reaching of set humidity and short recovery times while avoiding condensate formation		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Monitor	Microprocessor temperature monitor acting as overtemperature protection, with Pt100 incorporating fault diagnostics with visual and audible alarm		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Digital over- and undertemperature monitor		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Temperature monitoring band automatically linked to the setpoint (ASF)		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Relay for reliable heating cut-off in case of fault		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Mechanical temperature limiter (TB)		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<b>Audible alarm:</b> Over- and under-temperature, over-CO <sub>2</sub> and empty gas cylinder, open door, over-humidity and empty water tank		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Timer functions	Real-time/weekly programmer with group function (e.g. Monday-Friday)		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Setup	Calibration (no separate PC required): Temperature: 3-point calibration on controller. CO <sub>2</sub> : 3-point calibration at 5%, 7% and 10%, Auto-zero-function of NDIR CO <sub>2</sub> -sensor after every sterilisation and cyclically every 24 h. Humidity: 2-point calibration at 20% and 90%		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Setting of language for dialogue and display D / UK / E / F / I		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Further data	Electrical supply <sup>2)</sup>	V / Hz	230 / 50/60	230 / 50/60	230 / 50/60
	Electrical load at a voltage of 230 V <sup>2)</sup> (±10%), 50/60 Hz	approx. W	1000	1500	2000
	Net weight / Gross weight	approx. kg	70 / 78	80 / 96	110 / 125

Model sizes		INCO	108	153	246
Standard accessories	Perforated stainless steel shelves (full width)	number	2 <input type="checkbox"/>	3 <input type="checkbox"/>	3 <input type="checkbox"/>
	Stainless steel water dishes, 40 mm high	number	1 (full width)	1 (full width)	2 (half width)
	Works calibration certificate (test point chamber centre at 37 °C)		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Standard version	Incubator INCO		INC 108	INC 153	INC 246
Modules	<b>Comfort module:</b> <sup>2)</sup> two gas connections with quick release connectors, automatic switch-over of gas cylinders		T1	T1	T1
	<b>Hygiene module:</b> electropolished interior, seamlessly welded by laser		T2	T2	T2
	<b>Communication module:</b> USB interface, "Celsius" <sup>1)</sup> standard software for the control and logging of temperature, CO <sub>2</sub> , O <sub>2</sub> (with O <sub>2</sub> module) and relative humidity; internal log memory 1024 kB as ring memory for all setpoint values, actual values, errors, settings with real time and date; logging approx. 3 months at 1 min. logging interval; parallel printer interface for all PCL3-compatible printers		T3	T3	T3
	<b>CO<sub>2</sub> module:</b> extended CO <sub>2</sub> range from 0 to 20%		T4	T4	T4
	<b>Premium module:</b> <sup>2)</sup> includes Comfort, Hygiene, Communication and CO <sub>2</sub> module		T5	T5	T5
	<b>Humidity module:</b> active microprocessor control for humidifying and dehumidifying (40 – 97 % rh), incl. digital indication and auto-diagnostic system; humidity supply with distilled water (from an external tank), dehumidifying via sterile filter; (standard humidity limit control and water dishes are omitted).		K7	K7	K7
	<b>O<sub>2</sub> module:</b> <sup>2)</sup> Control of oxygen concentration by N <sub>2</sub> inlet, adjustment range 1 % bis 20 % O <sub>2</sub> , setting accuracy 0,1 %		T6	T6	T6
Options	Entry port at the back, heated, can be closed by a silicone stopper, inner diameter 57 mm		F9	F9	F9
	Additional Pt100 temperature sensor, positioned flexibly in chamber or load, for local temperature measurement (up to 3 additional sensors are possible). The measured temperature can, if required, be indicated on the multifunction display, recorded in the integral ring store, and can be documented via the "Celsius" <sup>1)</sup> software or on an attached printer		H8(x)	H8(x)	H8(x)
	HEPA-filter for chamber according to EN 1822, packed in sterile condition, incl. fixing unit		H9	H9	H9
	4-part partitioning of interior with 4-part gas baffle (replacement of 3 full-width shelves by 6 half-width shelves)		–	–	K4
	Door with lock (safety-lock)		B6	B6	B6
	Door hinged on the left		B8	B8	B8
	Additional perforated stainless steel shelf, half width		–	–	E6(x)
	Additional perforated stainless steel shelf, full width		E7(x)	E7(x)	E7(x)
	Additional stainless steel grid, full width		E3(x)	E3(x)	E3(x)
	Additional water dish		E2(x) (full width)	E2(x) (full width)	E2(x) (half width)
	Stacking version for 2 units of equal size (bottom unit modification)		G3	G3	G3
	Subframe (622 mm high) <sup>3)</sup>		G5	G5	G5
	Subframe (130 mm high for 2 stacked incubators) <sup>3)</sup>		G7	G7	G7
	STERICard (additional or as replacement) for automatic chamber sterilisation cycle (not for sterilising the load!)		V9	V9	V9
	Oven-linked authorisation card (User-ID-Card) prevents undesired manipulation by unauthorised third parties		V1	V1	V1
	Computer interface RS485 (for networking a maximum of 16 ovens) instead of USB <sup>4)</sup>		V2	V2	V2
	Interface RS232 instead of USB <sup>4)</sup>		W6	W6	W6
	Interface Ethernet instead of USB incl. software "Celsius Ethernet-Edition" <sup>4)</sup>		W4	W4	W4
	Parallel/USB converter cable with integrated power supply unit to connect HP printers with USB interface to MEMMERT units <sup>4)</sup>		W1	W1	W1
	Documentation package consisting of parallel USB converter cable including PLC3-compatible HP colour inkjet printer with USB interface (HP Deskjet 6980 or successor) for direct connection of printer to Memmert unit <sup>4)</sup>		W2	W2	W2
	USB connection cable for computer interface <sup>4)</sup>		W7	W7	W7
	Connection cable for computer interface RS232 according to DIN 12 900-1 <sup>4)</sup>		V6	V6	V6
	Potential-free contact (24 V/2 A) with socket to NAMUR NE 28 for external monitoring (setpoint of temperature and CO <sub>2</sub> is reached)		H5	H5	H5
	Potential-free contact (24 V/2 A) with socket to NAMUR NE 28 for combination error message of temperature and CO <sub>2</sub> controller (e. g. supply failure, sensor fault or fuse)		H6	H6	H6
	Pressure reducing valve to DIN 8546, incl. gas cylinder monitor		H7	H7	H7
	Works calibration certificate for 5%, 7% and 10% CO <sub>2</sub> (measured at 37 °C)		Z5	Z5	Z5
	IQ check list with works test data for incubator as support for validation by customer		Q1	Q1	Q1
	OQ check list with works data for one freely selectable CO <sub>2</sub> , humidity and temperature value <sup>5)</sup> incl. temperature distribution survey for 27 measuring points to DIN 12880: 2007-05 with works test data as support for validation by customer		Q2	Q2	Q2
	Software "Celsius FDA Edition" <sup>4) + 6)</sup> for up to 16 units. Meets the requirements for the use of electronically stored data sets and electronic signatures as laid down in Regulation 21 CFR Part 11 of the US Food and Drug Administration (FDA)		Q3	Q3	Q3
	Integration of additional units (up to max. 16 units) into an already existent FDA-software licence <sup>4) + 6)</sup>		Q4	Q4	Q4
Start-up of INCO incubators and brief training <sup>7)</sup> (D, A, CH only) through MEMMERT service. Requirement: incubator is at its final location and all services have been provided by the purchaser. (Applies only in connection with orders and payments for new units)		K9	K9	K9	
Guarantee extension by 1 year		Q5	Q5	Q5	

Subject to technical modifications

All performance data are typical average

values for standard appliances.

Standard model, basic specification

– Not available

(x) Please specify quantity required after the order number

1) MEMMERT "Celsius" software has been

tested for Windows 7, Vista and XP

2) Combination O<sub>2</sub> module with Comfort

and Premium module impossible

3) Screws for adjusting height are taken out of the feet and mounted into the subframe

4) Only in combination with Communication or Premium module

5) Additional temperature values optionally

6) Requires Windows 2000 Professional or XP Professional

7) Service not subject to any discount

Universal ovens  
Incubators  
Hot air sterilisers  
**Ovens**



**Vacuum ovens**



Peltier-cooled incubators  
Compressor-cooled incubators  
**Cooled incubators**



**CO<sub>2</sub> incubators**



**Storage chambers**



**Humidity chambers**



**Constant climate chambers**



Temperature test chambers  
Climatic test chambers  
**Environmental test chambers**



**Water and oil baths**



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**memmert®**

**Memmert GmbH + Co. KG**  
P.O. Box 1720  
D-91107 Schwabach  
Germany  
Tel. +49 (0) 9122 / 925 - 0  
Fax +49 (0) 9122 / 145 85  
E-Mail: sales@memmert.com  
www.memmert.com

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