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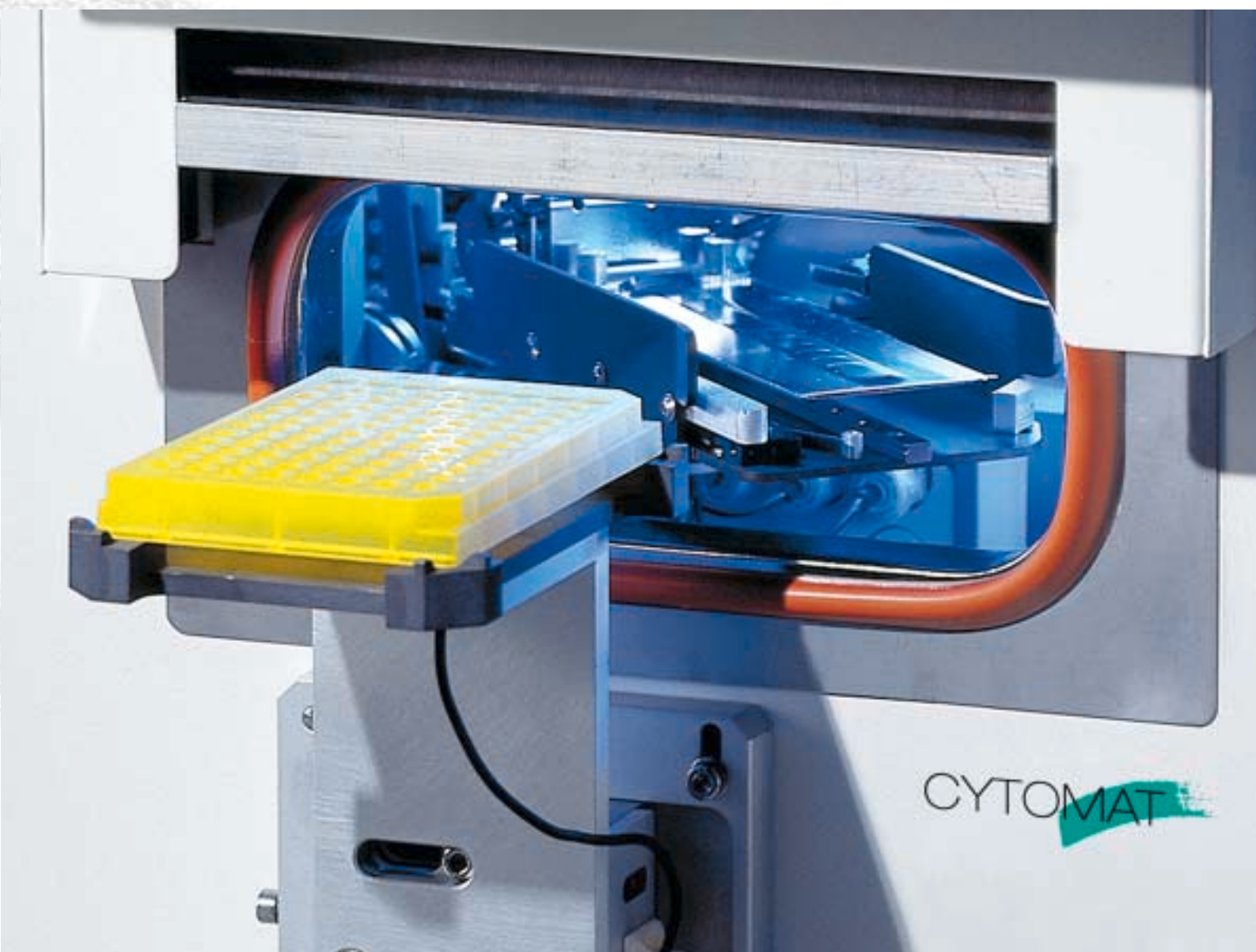
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# CYTOMAT® – AUTOMATED INCUBATORS AND STORAGE SYSTEMS

Environmental Expertise for Your Assays



CYTOMAT

**Incorporating over 35 years of experience in CO<sub>2</sub> incubators technology, the Heraeus® Cytomat® product range provides excellent environmental conditions for incubation, storage and hybridization in automated assay systems.**

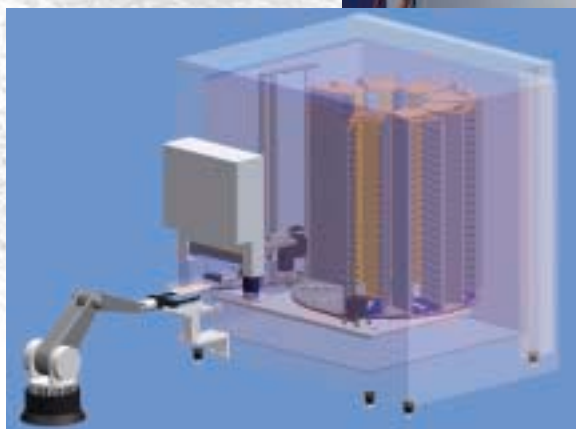
- Extremely uniform and stable environmental conditions for all microplates minimize assay variance.
- Internally automated with a single point of integration, Cytomat® can easily be integrated into any automated assay system.
- Providing a high level of user defined flexibility, Cytomat® can handle all standard microplate formats with choice of temperature and humidity range as well as gaseous atmospheres.
- Certified according to DIN EN ISO 9001 Kendro Laboratory Products produces high quality equipment, providing complete and extensive documentation and a QA Test Certificate for each Cytomat®.
- Simple to use software – Cytomat® offers Windows based software for straightforward and flexible programming, providing an easy accessible user interface.
- Random access of individual microplates optimizes workflow. The new Cytomat® software even enables onsite reconfiguration of microplates and repositioning of plates between stackers.

**ISO 9001 certified**



## **Internally automated**

Within the precisely controlled environment, Cytomat® incorporates an automated storage and retrieval system. The Plate Shuttle™ System consists of a lift system, a handler for x/y/z axes movement and a heated automatic access door. This system delivers the microplates to the single point of integration during unloading and retrieves the plates from this point during loading.



**Plate Shuttle™ System**



# TO THE NEXT BIG HIT



**You define the configuration for your HTS system or workstation with your choice of microplate capacity, temperature and humidity range, gaseous atmospheres and a wide range of options.**

#### **Environmental Expertise**

Cytomat® incubators create ideal growth conditions for cell-based assays. Cooled storage systems ensure an extremely dry climate with an inert atmosphere to minimize absorption of water by DMSO, while hybridization systems create hot and humid conditions for the hybridization of primers.

Designed to help to reduce assay variance, Cytomat® provides excellent parameter uniformity and stability, virtually eliminating recovery times.

#### **Easy to integrate**

Thanks to the automated Plate Shuttle™ System for internal microplate handling, a single point of integration and simple software commands, Cytomat® fits into any automated assay system.

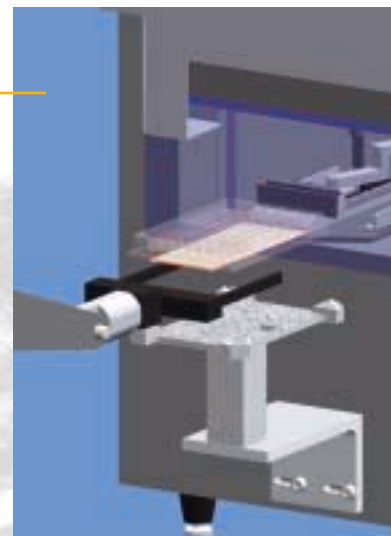
#### **High level of user defined flexibility**

Cytomat® can handle all standard microplate formats, including Deep-well plates. Random plate access optimizes workflow.

#### **Transfer station**

The transfer station is the single point of integration. It enables microplates to be presented to a robotic arm in portrait format.

Several options for the transfer station are available such as 90° turning for presentation in landscape format.



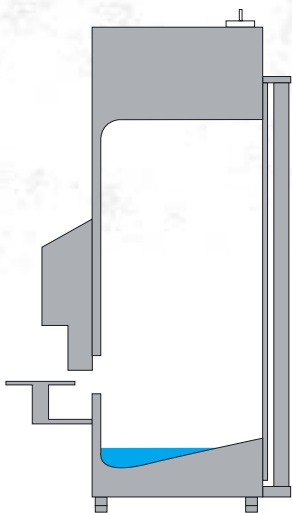
# ENVIRONMENTAL EXPERTISE FOR YOUR ASSAYS

## Virtually Eliminating Recovery Times

All Cytomat® models are equipped with an air-jacketed heating system, an internal water reservoir and sensor technology proven in practice in over 10,000 CO<sub>2</sub> incubators worldwide.

Extensive field trials from our large installed base, supplemented by in-house R&D and QA tests, show that Cytomat® provides uniform and stable temperature, humidity and CO<sub>2</sub> conditions, helping to reduce assay variance.

The graphs below show test results of a Cytomat® 2 C during continuous loading and unloading of 96-well microplates. The automatic door opening every 5 minutes for 10 seconds. Cytomat® virtually eliminates recovery times.



A specially designed water reservoir (see left) and new stackers with ventilation slots (see page 7) minimize evaporation from the microplate wells.

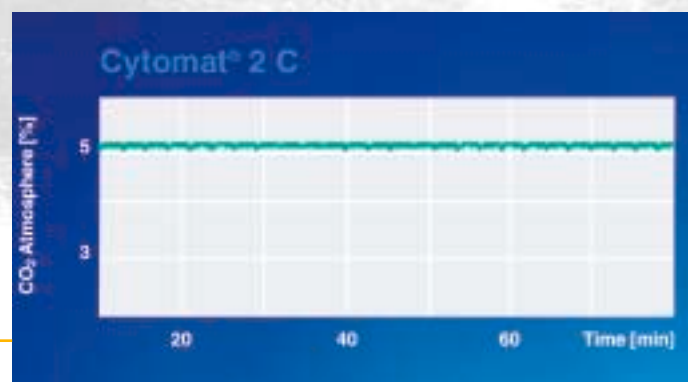


Less than 0.05 °C fluctuation in temperature.



Less than 0.6 % fluctuation in relative humidity.

Cytomat® 2 C virtually eliminates CO<sub>2</sub> recovery times, thereby stabilizing the pH value in cell or bacterial cultures, e.g. 18 to 24 h incubation at 35°C and 5% CO<sub>2</sub> for anti-microbial susceptibility testing to determine the MIC (Minimum Inhibitory Concentration).



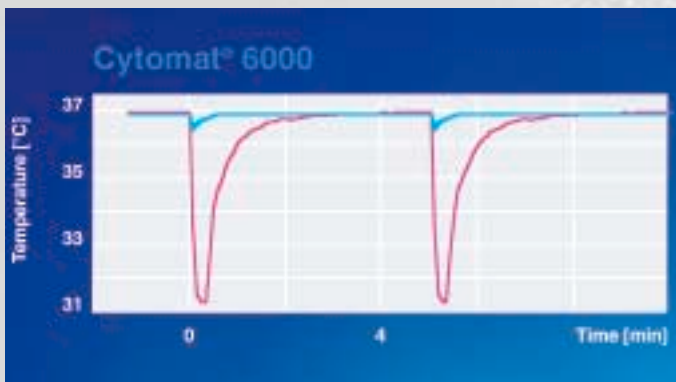
Less than 0.1% fluctuation in CO<sub>2</sub> atmosphere.

All Cytomat® models are equipped with a small automatic access door. Microplates enter and exit the precisely controlled Cytomat® environment in a matter of seconds.

Unlike instruments accessing microplates through a standard large size door, Cytomat® significantly minimizes atmospheric disruptions.

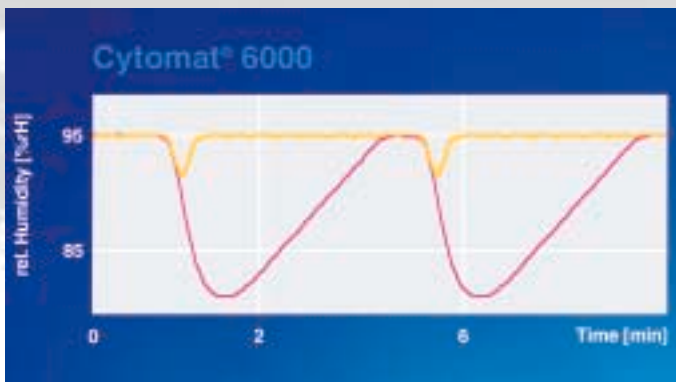
The speed of the system ensures that stored plates are maintained at uniform and stable conditions at all times, while exiting plates remain in the controlled environment until the moment they are needed.

The graphs on this page show test results of a Cytomat® 6000 during continuous loading and unloading of 96-well microplates. The automatic door opening every 5 minutes for 10 seconds.



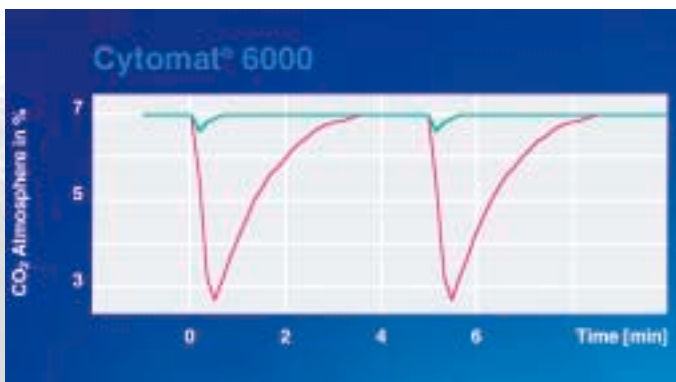
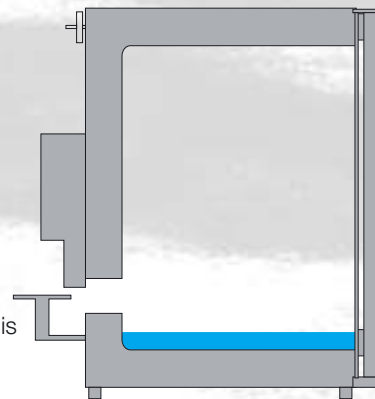
Temperature — Cytomat® — incubators with large size door

The temperature stability achieved by Cytomat® 6000 is 12 times better than with a conventional incubator with a large door.



Relative humidity — Cytomat® — incubators with large size door

The stability of relative humidity achieved by the internal water reservoir (see right) and the small Cytomat® 6000 access door is 4 times better than with a large size door.



CO<sub>2</sub> atmosphere — Cytomat® — incubators with large size door

The stability of CO<sub>2</sub> concentration during continuous loading and unloading of a Cytomat® 6000 incubator is 12 times more stable than with a large door. This is especially important for long-term cell culture such as 21 day incubation of CaCo-2 cell lines for ADME/Tox studies at 37°C and 10% CO<sub>2</sub>.

# USER DEFINED FLEXIBILITY

The right solution for your assay

## A wide spectrum of environmental conditions

The Cytomat® series is available in 16 models and two sizes with choice of temperature and humidity range as well as gaseous atmospheres, providing just the right automated assay solutions for incubation, storage and hybridization.



Cytomat® 2 C/C70



Cytomat® 2 C425/C450/C470



Cytomat® 6000/6001/6004/6070



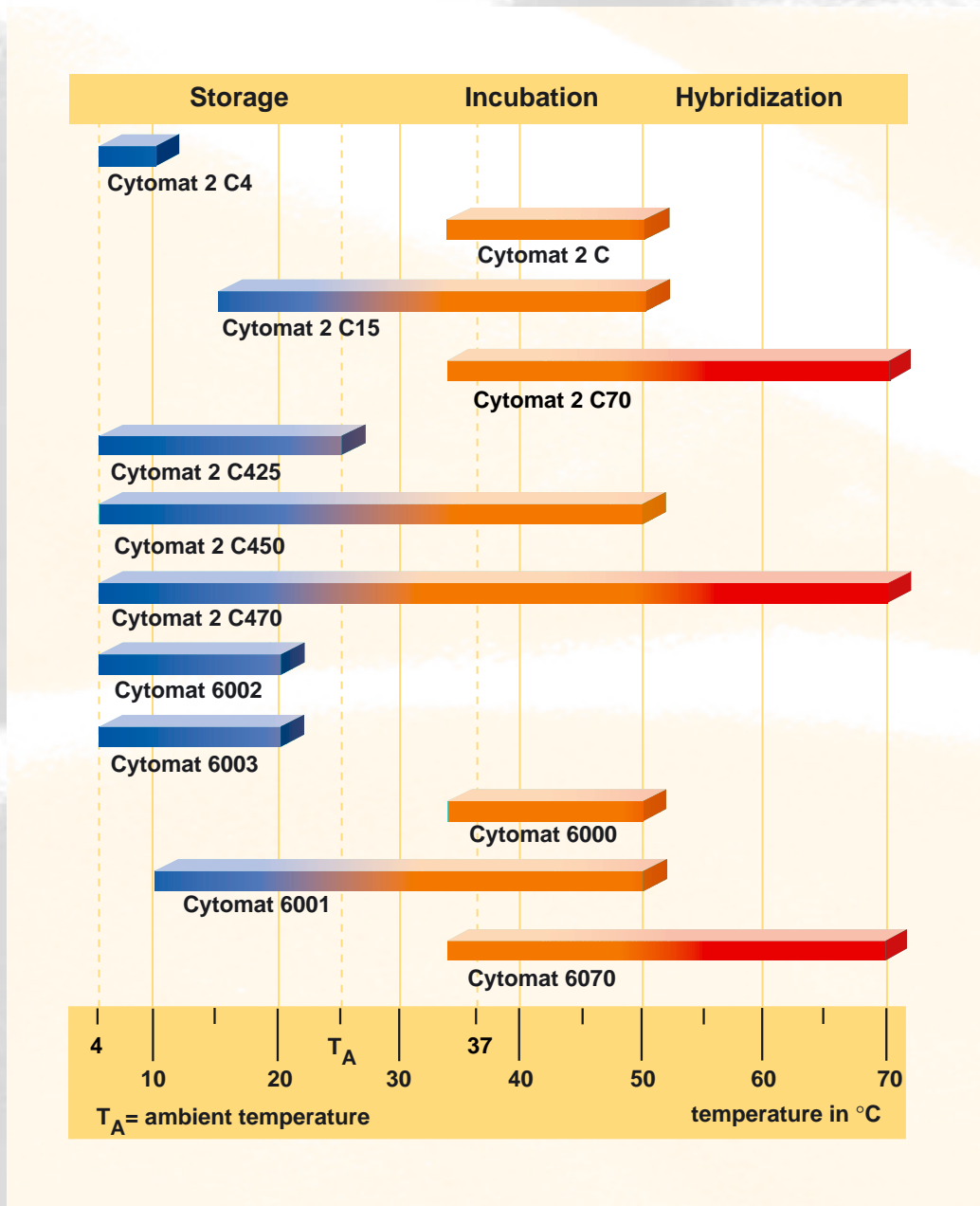
Cytomat® 6002 with Cytomat® hotel



Cytomat® 6003



Cytomat® hotel



### Transfer station options

Cytomat® offers three types of transfer stations, including a 180° turnable Swap Station and a Linear Transfer Station.



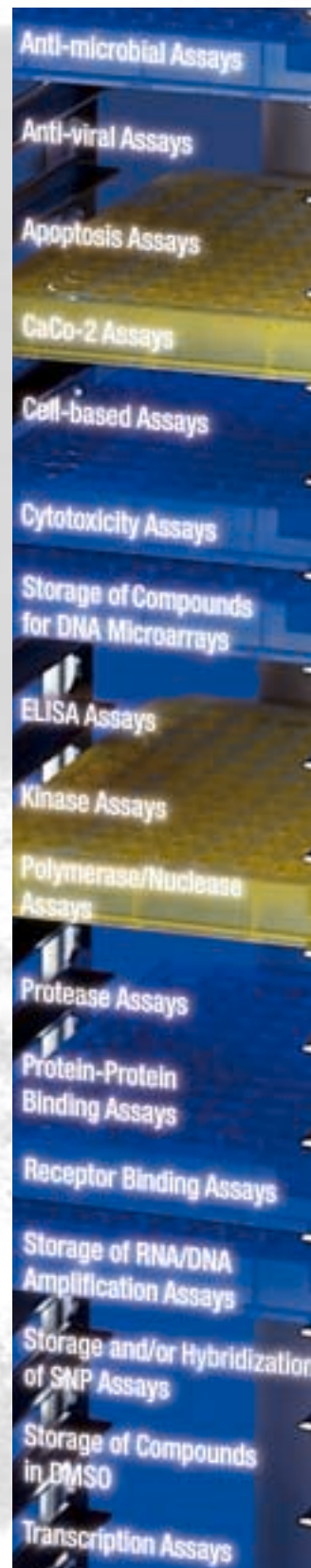
Transfer Station



Swap Station



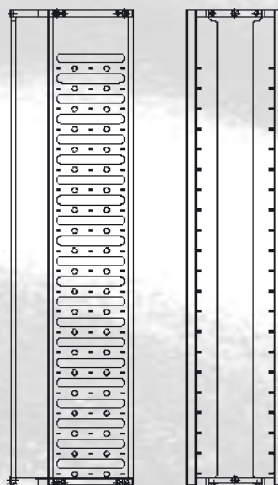
Linear Transfer Station



### Stacker options

Cytomat® can handle all standard microplate formats, including Deep-well plates (see table beside).

The stackers can be easily removed for manual loading and unloading with fixations ensuring accurate positioning. In addition the Cytomat® stackers (full metal design) allow autoclaving and dry heat sterilization at 180 °C.



Stackers with ventilation slots

Microplates	Pitch* in mm	Max. plate height in mm	Number of plates	
			Cytomat® 2	Cytomat® 6000
1536-well	17	12	56	252
384-well	23	18	42	189
96-well	23	18	42	189
24-insert	33	28	30	135
Deep-well	50	45	20	90
Tip box	69	64	14	63

\* others on request



# CYTOMAT® FOR INCUBATION, HYBRIDIZATION AND STORAGE

## TECHNICAL DATA

Capacity		2 Stacker (42 standard 96 or 384 well plates)						
Model Version		Cytomat® 2 C4 Storage Humid climate	Cytomat® 2 C Incubator	Cytomat® 2 C15 Incubator	Cytomat® 2 C70 High Temperature	Cytomat® 2 C425 Wide Range	Cytomat® 2 C450 Wide Range	Cytomat® 2 C470 Wide Range
<b>Microplate capacity</b>								
96-well or 384-well	pcs	42	42	42	42	42	42	42
Deep-well	pcs	20	20	20	20	20	20	20
<b>Temperature range</b>	°C	+4 to 10	T <sub>A</sub> + 8 to 50	+15 to 50	T <sub>A</sub> + 8 to 70	+4 to 25	+4 to 50	+4 to 70
<b>Temperature accuracy</b>								
temporal	°C	± 0.3	± 0.1	± 0.2	± 0.2	< ± 0.2	< ± 0.2	< ± 0.2
spatial	°C	< ± 0.7	< ± 0.5	< ± 1.0	< ± 1.0	< ± 0.7	< ± 0.7	< ± 0.7
<b>Humidity, constant, max.</b>	%rH	75	95	75	95, up to 50°C	95	95	93
<b>CO<sub>2</sub> control</b>	%	–	0 to 20	0 to 20	–	–	0 to 20, up to 50°C	0 to 20, up to 50°C
<b>Access time, max.</b>	s	20	20	20	20	20	20	20
<b>Access mode</b>		random access						
<b>External dimensions</b>						dimensions excl. thermostat		
W/D/H	mm	491/530/1408	491/530/1101	585/530/1101	491/530/1101	491/592/1101	491/592/1101	491/592/1101
W/D/H	inch	19.3/20.9/55.4	19.3/20.9/43.4	23.0/23.3/43.4	19.3/20.9/43.4	19.3/23.3/43.4	19.3/23.3/43.4	19.3/23.3/43.4
<b>Rated voltage</b>		1/PE AC, 230 V 50/60Hz						
<b>Weight net</b>	kg	110	80	90	80	90	90	90
<b>Heat dissipation</b>								
	kWh/h	0.25	0.09	0.39	0.19	0.40	0.40	0.40
	BTU	853.2	307.1	1,330.7	648.3	1,364.9	1,364.9	1,364.9
<b>Rated power</b>	kW	0.3	0.7	0.9	0.7	2.7	2.7	2.7

## OPTIONS

Capacity		2 Stacker (42 standard 96 or 384 well plates)						
Model		Cytomat® 2 C4	Cytomat® 2 C	Cytomat® 2 C15	Cytomat® 2 C70	Cytomat® 2 C425	Cytomat® 2 C450	Cytomat® 2 C470
<b>100-120 V Version</b>		●	●	●	●	●	●	●
<b>CO<sub>2</sub>/O<sub>2</sub> control</b>		○	c	○	○	○	c	○
<b>Barcode scanner</b>		●	●	●	○	●	●	○
<b>Designed for Deep-well plate handling</b>		s	s	s	s	s	s	s
<b>Stackers</b>								
1536-well microplates		●	●	●	●	●	●	●
384-well microplates		●	●	●	●	●	●	●
96-well microplates		●	●	●	●	●	●	●
Transwell microplates		●	●	●	●	●	●	●
Deep-well microplates		●	●	●	●	●	●	●
Tip boxes		○	○	○	○	○	○	○
<b>Transfer stations</b>								
Transfer station with plate sensor		●	●	●	●	●	●	●
90° turnable, with plate sensor		●	●	●	●	●	●	●
Linear transfer station with plate sensor		●	●	●	●	●	●	●
Swap station, with 2 plate sensors		●	●	●	●	●	●	●
<b>Single point of integration</b>								
Positioned top left		○	○	○	○	○	○	○
Positioned bottom right		○	○	○	○	○	○	○
Positioned top right		○	○	○	○	○	○	○
Positioned top		c	c	c	c	c	c	c

● available ○ not available s standard c customized

9 Stacker (189 standard 96 or 384 well plates)

Cytomat® 6002 Storage Dry climate	Cytomat® 6002 Storage Humid climate	Cytomat® 6003 Storage Dry climate	Cytomat® 6003 Storage Humid climate	Cytomat® 6000 Incubator	Cytomat® 6001 Incubator	Cytomat® 6070 High Temperature	Cytomat® 6004 Inert gas	Cytomat® Hotel
189	189	189	189	189	189	189	189	189
90	90	90	90	90	90	90	90	90
+ 4 to 21	+ 4 to 21	+ 4 to 21	+ 4 to 21	T <sub>A</sub> + 10 to 50	+ 10 to 50	T <sub>A</sub> + 10 to 70	Ambient	Ambient
± 1.0	± 1.0	± 1.0	± 1.0	± 0.1	± 0.1	± 0.1	-	-
± 1.0	± 1.0	± 1.0	± 1.0	± 0.5	± 0.5	± 0.5	-	-
3	70	3	70	95	95	95	6	-
-	-	-	-	0 to 20	0 to 20	-	-	-
20	20	20	20	20	20	20	20	20
random access								
900/810/1300 35.4/31.9/51.2	900/810/1300 35.4/31.9/51.2	900/810/1635 35.4/31.9/64.4	900/810/1635 35.4/31.9/64.4	900/810/850 35.4/31.9/33.5	900/810/850 35.4/31.9/33.5	900/810/850 35.4/31.9/33.5	900/810/850 35.4/31.9/33.5	620/650/880 24.4/25.6/34.7
1/PE AC, 230 V 50/60Hz								
280	280	290	290	150	160	150	150	50
0.33	0.33	0.33	0.33	0.09	0.09	0.19	0.01	0.01
1,126.0	1,126.0	1,126.0	1,126.0	307.1	307.1	648.3	0.034	0.034
1.0	1.0	1.0	1.0	1.0	1.0	1.2	0.3	0.07

9 Stacker (189 standard 96 or 384 well plates)

Cytomat® 6002	Cytomat® 6002	Cytomat® 6003	Cytomat® 6003	Cytomat® 6000	Cytomat® 6001	Cytomat® 6070	Cytomat® 6004	Cytomat® Hotel
●	●	●	●	●	●	●	●	s
○	○	○	○	●	●	○	○	○
●	●	●	●	●	●	○	●	●
s	s	s	s	s	s	s	s	Tip box
●	●	●	●	●	●	●	●	●
●	●	●	●	●	●	●	●	●
●	●	●	●	●	●	●	●	●
●	●	●	●	●	●	●	●	●
●	●	●	●	●	●	●	●	●
c	c	c	c	c	c	c	c	s
●	●	●	●	●	●	●	●	●
●	●	●	●	●	●	●	●	●
●	●	●	●	●	●	●	●	●
●	●	●	●	●	●	●	●	●
c	c	c	c	c	c	c	c	c
c	c	c	c	c	c	c	c	c
c	c	c	c	c	c	c	c	c
○	○	○	○	○	○	○	○	○

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