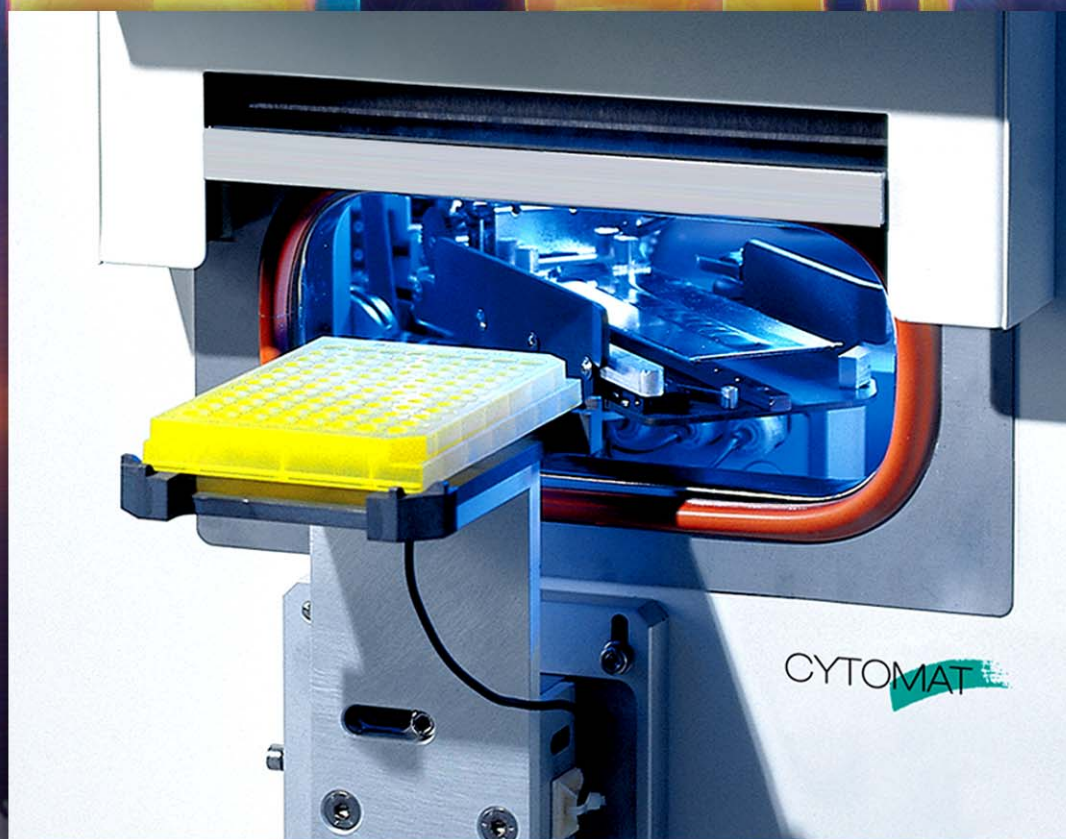


CYTOMAT

# Cytomat<sup>®</sup> Automated Incubators and Storage Systems



# CYTOMAT



## Open the door to your next **drug discovery hit**

The Cytomat® product range spans a variety of robot-accessible incubators and microplate storage modules that integrate seamlessly with all automated assay systems used for drug discovery.

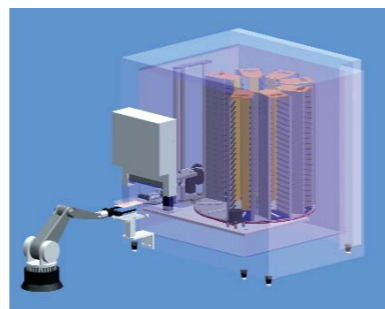
Cytomat products provide superior environmental conditions for automated cell-based assays, cell cultures, bacterial and other assays requiring controlled incubation temperatures. Cytomat products also include automated storage and retrieval systems for samples used in assays, microarraying, compound libraries and other processes requiring robots. Ambient storage models are available in various sizes.

- Incorporating over 40 years of experience in CO<sub>2</sub> incubator technology
- Temperatures from -20°C to +70°C to cover storage, temperature and hybridization applications
- Capacities from 40 to 1,008 SBS size microplates
- Uniform, stable environmental conditions for microplates minimize assay variance
- Internally automated and with a single point of integration, modules are easily integrated with all automated assay systems
- Cytomat products accommodate all standard microplate formats, and provide a choice of temperature and humidity ranges as well as gaseous atmospheres
- Random access of individual microplates optimizes workflow. Easy to use, windows-based software allows on-site reconfiguration and testing of the system
- Cytomat Stacker System ensures optimal flexibility, enabling storage of glass slides to tip boxes and allowing on-site reconfiguration
- Systems are certified to DIN EN ISO 9001 and provided with full documentation and a quality test certificate



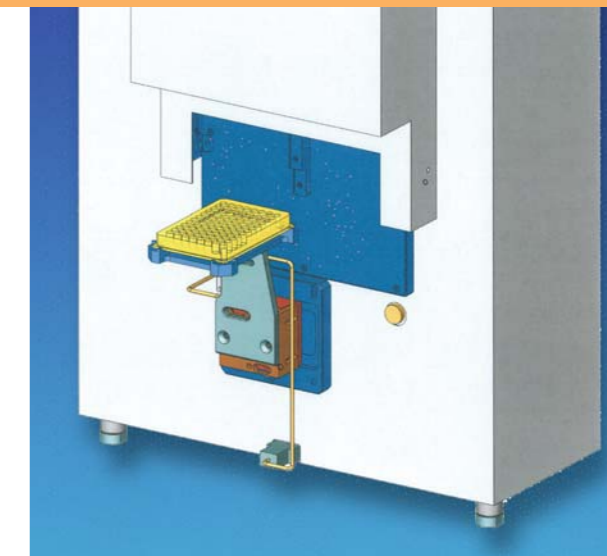
### INTERNALLY AUTOMATED

Cytomat modules incorporate an automated storage and retrieval system within a precisely controlled environment. The Plate Shuttle™ system consists of a lift system, a handler for x/y/z axes of 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.



### 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, including 90° turning for presentation in a landscape format.



CYTOMAT® TRANSFER STATION

You define the configuration of your HTS system or workstation through a choice of microplate capacities, temperature and humidity ranges, and several gassing options to provide the right atmosphere for different screening or sample storage applications.

### ENVIRONMENTAL EXPERTISE

Cytomat incubators provide ideal environmental 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 systems ensure excellent parameter uniformity and stability, virtually eliminating recovery times.

### EASY TO INTEGRATE

With the automated Plate Shuttle™ system for internal microplate handling, a single point of integration and simple software commands, Cytomat systems integrate with any automated assay system.

# Environmental expertise for your assays

Cytomat® systems provide uniform and stable temperature, humidity and atmosphere conditions. Recovery times are virtually eliminated, which helps to minimize assay variance.

All models are equipped with a small access door. Microplates enter and exit the precisely controlled Cytomat environment in seconds, significantly minimizing disruption to the controlled environment.

The speed of the system ensures that stored plates are maintained under uniform and stable conditions

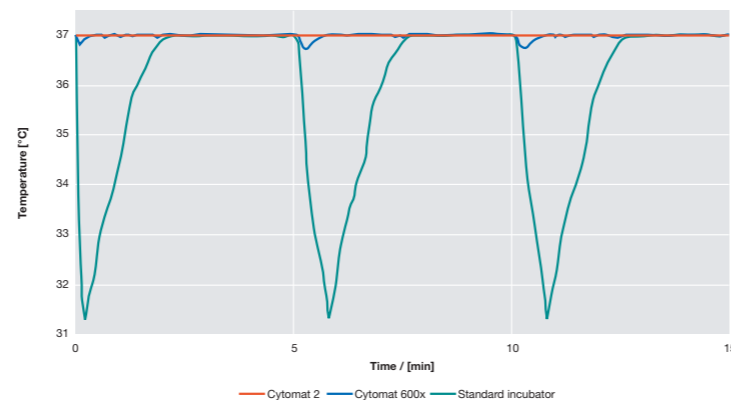
at all times, while exiting plates remain in the controlled environment until the moment they are needed.

Cytomat systems are equipped with an air-jacketed heating system, an internal water reservoir and proven sensor technology.

## TEMPERATURE

Temperature stability is extremely important in achieving reproducible assay results and optimal cell growth. Cytomat models ensure optimal temperature conditions, even when in automated operation.

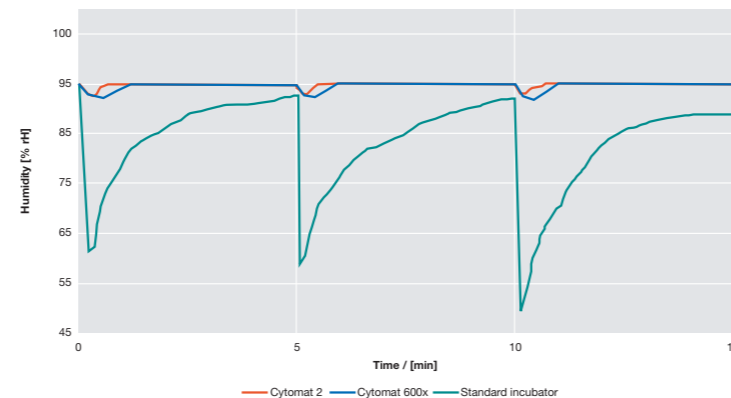
*Temperature recovery with gate in operation (gate opening every 5 minutes for 10 seconds, set temperature 37°C)*



## HUMIDITY

Evaporation prevention is essential in cell culture applications and plate storage. High, stable humidity minimizes edge effects on cell culture assay plates. Specially designed internal water reservoirs, and stackers with ventilation slots (see page 11), minimize evaporation from microplate wells.

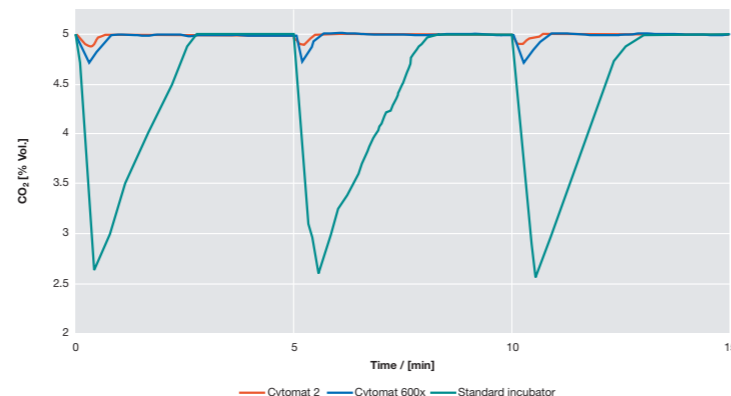
*Recovery times with gate in operation (gate opening every 5 minutes for 10 seconds, 95% rH)*



## CO<sub>2</sub> ATMOSPHERE

Cytomat models virtually eliminate recovery times for any gaseous atmosphere. A stabilized CO<sub>2</sub> atmosphere, for example, and the related pH value in a cell or bacterial culture, is essential in any cell-based assay.

*Recovery times with gate in operation (gate opening every 5 minutes for 10 seconds, set CO<sub>2</sub> 5% volume)*



# Custom solutions for specialist needs

Customized Cytomat® systems, tailored to clients' individual needs, can be produced to meet very specific laboratory requirements. Contact your Cytomat Sales Representative to discuss the specific system needs of your personalized Cytomat.

## CUSTOM CAPABILITIES

- Extended transfer reach
- Extended temperature range
- Extended capacity
- Non-standard plate sizes
- Customer-specified gassing and humidity environments
- Protected plate transportation
- Clean air equipment combinations



The **ROLLERMAT** automated CO<sub>2</sub> incubator offers a capacity of 40 roller bottles for cell culture applications. It is equipped with a bottle turning device and a Plate Shuttle system for automated bottle access.



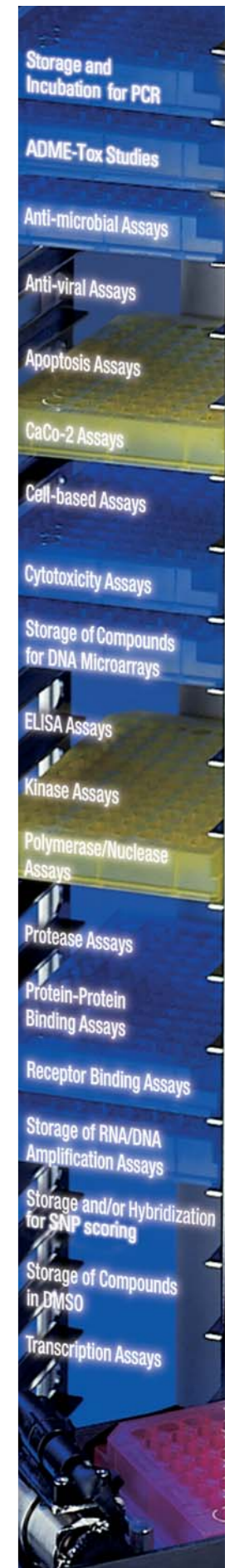
Fast defrost cycles are provided by the **CYTOMAT 24 TU** thawing unit. Features include a heating system, HEPA filter-based forced air circulation and a 504 plate capacity.



**CYTOMAT 600X SYSTEMS** can be stacked and configured with different transfer station positions.



Options available for the **CYTOMAT 8 LINEAR HOTEL** include orbital shaking and a dual transfer station.



# The **right solution** for your assay

## A WIDE RANGE OF ENVIRONMENTAL CONDITIONS

The Cytomat® series is available in a wide range of models and sizes, with a choice of temperature and humidity ranges as well as different gassing atmospheres, providing the right automated assay conditions for incubation, storage and hybridization.



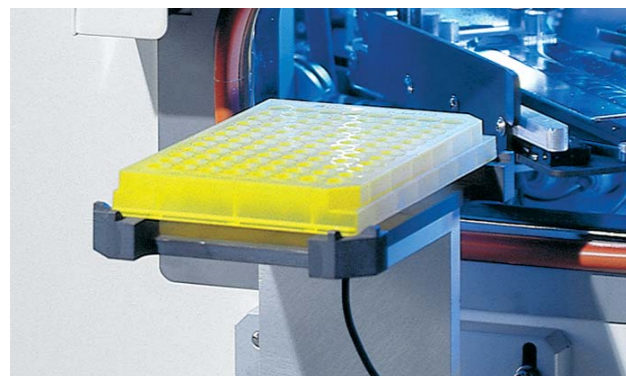
CYTOMAT 44 D/HC/H



CYTOMAT 24



CYTOMAT 2 C425/C450/C470



TRANSFER STATION



CYTOMAT 2 C/C70



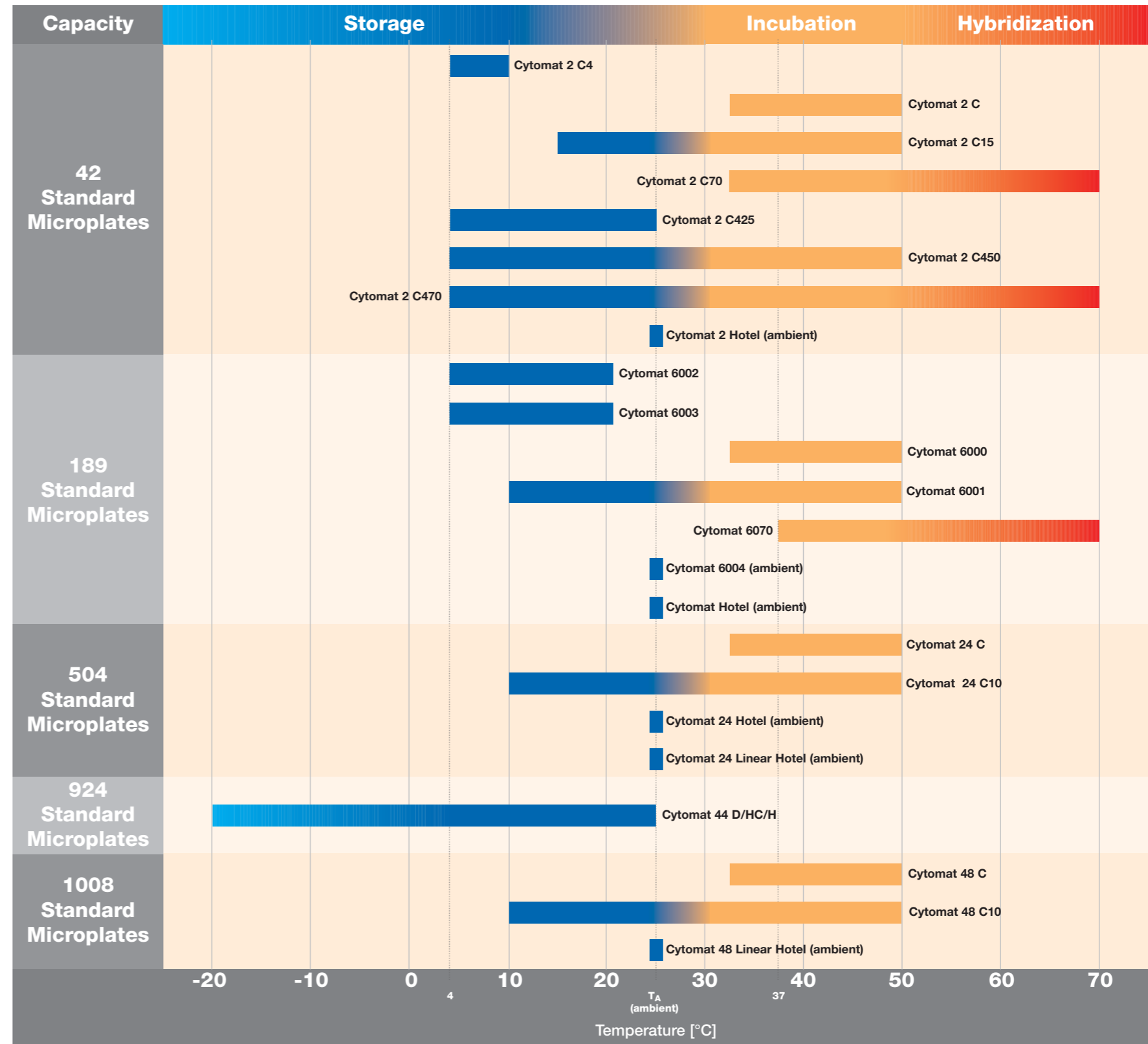
CYTOMAT HOTEL



CYTOMAT 6000/6001/  
6004/6070



CYTOMAT 6003



# Technical Specifications

Capacity		2 Stacker (42 standard 96 or 384 well plates)								9 Stacker (189 standard 96 or 384 well plates)								24 Stacker (504 standard 96 or 384 well plates)				44 Stacker (924 standard 96 or 384 well plates)			48 Stacker (1008 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	Cytomat 2 Hotel	Cytomat 6002	Cytomat 6002	Cytomat 6003	Cytomat 6003	Cytomat 6000	Cytomat 6001	Cytomat 6070	Cytomat 6004	Cytomat Hotel	Cytomat 24 C	Cytomat 24 C10	Cytomat 24 Hotel	Cytomat 24 Linear Hotel	Cytomat 44 D	Cytomat 44 H C	Cytomat 44 H	Cytomat 48 C	Cytomat 48 C 10	Cytomat 48
Version		Storage	Incubator	Incubator	High Temperature	Storage	Wide Range	Wide Range	Tip Box	Storage	Storage	Storage	Storage	Incubator	Incubator	High Temperature	Inert Gas	Tip Box	Incubator	Incubator	Tip Box	Linear Hotel	Storage	Storage	Storage	Incubator	Incubator	Linear Hotel
		Humid climate				Humid climate				Dry climate	Humid climate	Dry climate	Humid climate									Tip Box	Dry	Humid Controlled	Humid Climate	Double Chamber	Double Chamber	Tip Box
<b>Microplate capacity</b>																												
96 well or 384 well	pcs	42	42	42	42	42	42	42	42	189	189	189	189	189	189	189	189	189	504	504	504	504	924	924	924	1008	1008	1008
Deepwell	pcs	20	20	20	20	20	20	20	20	90	90	90	90	90	90	90	90	90	240	240	240	240	440	440	440	480	480	480
<b>Temperature range</b>	°C	+4 to +10	TA+ 8 to +50	+15 to +50	TA+ 8 to +70	+4 to +25	+4 to +50	+4 to +70	Ambient	+4 to +21	+4 to +21	+4 to +21	+4 to +21	TA+ 8 to +50	+10 to +50	TA+ 12 to +70	Ambient	Ambient	TA+ 8 to +50	+10 to +50	Ambient	Ambient	-20 to +25	+4 to +25	+4 to +25	TA+ 8 to +50	+10 to +50	Ambient
Temperature accuracy																												
temporal	°C	± 0.3	± 0.1	± 0.2	± 0.2	< ± 0.2	< ± 0.2	< ± 0.2	-	± 1.0	± 1.0	± 1.0	± 1.0	± 0.1	± 0.1	± 0.1	-	-	± 0.1	± 0.1	-	-	± 1.0	± 1.0	± 1.0	± 0.2	± 0.2	-
spatial	°C	< ± 0.7	< ± 0.5	< ± 1.0	< ± 1.0	< ± 0.7	< ± 0.7	< ± 0.7	-	± 1.0	± 1.0	± 1.0	± 1.0	± 0.5	± 0.5	± 0.5	-	-	± 0.5	± 1.0	-	-	± 2.5	± 2.0	± 2.0	± 1.0	± 1.0	-
<b>Humidity, constant, max.</b>	%rH	75	95	75	95, up to 50°C	95	95	93	-	3	70	3	70	95	95	95	6	-	93	93	-	-	10 (35 at -20°C)	20 to 50	70	93	93	-
<b>CO<sub>2</sub> control</b>	%	-	0 to 20	0 to 20	-	-	0 to 20	0 to 20, up to 50°C	-	-	-	-	-	0 to 20	0 to 20	-	-	-	0 to 20	0 to 20	-	-	-	-	-	0 to 20	0 to 20	-
<b>Access time, max.</b>	s	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	30	30	30	30	60	60	60	30	30	30
<b>Access mode</b>		random access								random access								random access				random access						
<b>External dimensions</b>		random access								random access								random access				random access						
W/D/H excluding transfer station	mm	491/530/1391	491/530/1101	585/530/1101	491/530/1101	491/592/1101	491/592/1101	491/592/1101	368/395/771	900/810/1300	900/810/1300	900/810/1635	900/810/1635	900/810/850	900/810/850	900/810/850	900/810/850	620/650/880	897/863/1860	897/863/1860	804/680/1471	770/1106/1720	1962/820/1982	1962/820/1982	1962/820/1982	1840/985/1675	1840/985/1675	770/1790/1720
W/D/H excluding transfer station	inch	19.3/20.9/54.8	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	14.5/15.6/30.4	35.4/31.9/51.2	35.4/31.9/51.2	35.4/31.9/64.4	35.4/31.9/64.4	35.4/31.9/33.5	35.4/31.9/33.5	35.4/31.9/33.5	35.4/31.9/33.5	24.4/25.6/34.7	35.3/33.98/73.2	35.3/33.98/73.2	31.7/26.8/58.0	30.3/43.5/67.7	77.3/32.2/78.1	77.3/32.2/78.1	77.3/32.2/78.1	72.5/38.8/66.0	72.5/38.8/66.0	30.3/70.5/67.7
Weight net	kg	110	80	90	80	90	90	90	40	280	280	290	290	150	160	150	150	50	250	250	175	400	700	700	700	500	500	630
Heat dissipation	kWh/h	0.25	0.09	0.39	0.19	0.4	0.4	0.4	0.01	0.33	0.33	0.33	0.33	0.09	0.09	0.19	0.01	0.01	0.18	0.18	0.01	0.01	0.18	0.18	0.01	0.36	0.36	0.01
Heat dissipation	BTU	853.2	307.1	1,330.7	648.3	1,364.9	1,364.9	1,364.9	0.034	1,126.0	1,126.0	1,126.0	1,126.0	307.1	307.1	648.3	0.034	0.034	310	310	0.034	0.034	310	310	0.034	620	620	0.034
<b>Rated voltage</b>		1/PE AC, 230 V 50/60Hz								1/PE AC, 230 V 50/60Hz								1/PE AC, 230 V 50/60Hz				1/PE AC, 230 V 50/60Hz						
<b>Rated power 230 V/120 V</b>	kW	0.3	0.7	0.9	0.7	2.45/1.55	2.45/1.55	2.45/1.55	0.15	1.0	1.0	1.0	1.0	1.0	1.0	1.2	0.3	0.15	1.2	2.45/1.55	0.15	0.2	2.3	2.3	2.3	2 x 1.2	2 x 2.45/1.55	0.2
Rated current at 230 V	A	1.3	3	3.91	3	11.74	11.74	11.74	0.65	4.35	4.35	4.35	4.35	4.35	4.35	5.2	1.3	0.65	5.2	11.74	0.65	0.87	10	10	10	2 x 5.2	2 x 11.74	0.87
Rated current at 120 V	A	2.5	5.83	7.5	5.83	12.91	12.91	12.91	1.25	8.33	8.33	8.33	8.33	8.33	8.33	10	2.5	1.25	10	12.91	1.25	1.67	11.06 at 208 V	11.06 at 208 V	11.06 at 208 V	2 x 10	2 x 12.91	1.67

# Options

Capacity		2 Stacker (42 standard 96 or 384 well plates)								9 Stacker (189 standard 96 or 384 well plates)								24 Stacker (504 standard 96 or 384 well plates)				44 Stacker (924 standard 96 or 384 well plates)			48 Stacker (1008 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	Cytomat 2 Hotel	Cytomat 6002	Cytomat 6002	Cytomat 6003	Cytomat 6003	Cytomat 6000	Cytomat 6001	Cytomat 6070	Cytomat 6004	Cytomat Hotel	Cytomat 24 C	Cytomat 24 C10	Cytomat 24 Hotel	Cytomat 24 Linear Hotel	Cytomat 44 D	Cytomat 44 H C	Cytomat 44 H	Cytomat 48 C	Cytomat 48 C 10	Cytomat 48
<b>100-120 V version</b>		+	+	+	+	+	+	+	s	+	+	+	+	+	+	S	S	+	+	S	S	200-208 V	200-208 V	200-208 V	+	+	S	
<b>O<sub>2</sub> control</b>		C	C	C	C	C	C	C	n/a	C	C	C	C	+	+	C	C	n/a	+	+	n/a	n/a	C	C	C	+	+	n/a
<b>Barcode scanner</b>		+	+	+	n/a	+	+	n/a	+	+	+	+	+	+	+	n/a	+	+	+	+	+	+	+	+	+	+	+	+
<b>Designed for deepwell plate handling</b>		S	S	S	S	S	S	S	Tip Box	S	S	S	S	S	S	S	S	Tip Box	Tip Box	Tip Box	Tip Box	Tip Box	Tip Box	Tip Box	Tip Box	Tip Box	Tip Box	Tip Box
<b>Stackers</b>																												
1536 well microplates		+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
384 well microplates		+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
96 well microplates		+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Transwell microplates		+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Deepwell microplates		+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Tip boxes		C	C	C	C	C	C	C	S	C	C	C	C	C	C	C	C	S	+	+	+	+	+	+	+	+	+	
<b>Transfer stations</b>																												
Transfer station with plate sensor		+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
90°C 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		-	-	-	-	-	-	-	-	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	-
Positioned bottom right		-	-	-	-	-	-	-	-	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	-
Positioned top right		-	-	-	-	-	-	-	-	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	-
Positioned top		C	C	C	C	C	C	C	flexible face side (in middle)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	

+ available - not relevant n/a not available S standard C customized

# Cyтомat® Options

## TRANSFER STATION OPTIONS

Cyтомat® systems are available with different types of transfer station, including a 180° turnable Swap Station and a Linear Transfer Station.



LINEAR TRANSFER STATION



TRANSFER STATION



SWAP STATION

## STACKER OPTIONS

Cyтомat systems accommodate all standard microplate formats, including deepwell plates and tip boxes. Stackers are easily removed for manual loading and unloading with fixings ensuring accurate positioning.

Cyтомat stackers can be autoclaved and dry heat sterilized at 180°C.



STACKER WITH VENTILATION SLOTS

## STACKER OPTIONS

Microplates	Pitch in mm	Max. plate height in mm	Levels per stacker	Number of plates				
				Cyтомat 2	Cyтомat 600x	Cyтомat 24	Cyтомat 44	Cyтомat 48
1536 well	17	12	28	56	252	672	1232	1344
96 or 384 well	23	18	21	42	189	504	924	1008
Roboflask	23	18	21	42	189	504	924	1008
24 insert	33	28	15	30	135	360	660	720
Deepwell	50	45	10	20	90	240	440	480
Tip box	69	64	7	14	63	168	308	336

## SHAKER OPTION

The Cyтомat 2 C450 is available as the 2 C450 S, which provides the option of orbital shaking for applications such as insect cell growth and gene expression, where sample agitation is required. Shaking frequency is 100-2,000 min<sup>-1</sup> with an amplitude of 2 mm. Commands for shaking are included in the software protocol.

*Cyтомat technical drawings are available on request. For your free CD, contact your local Kendro Lab Automation Representative.*

## BARCODE READER

All Cyтомat models are available with a barcode reader for plate or sample tracking. The barcode reader functions with standard-sized SBS microplates and reads plates both inside and outside of the controlled environment. An inventory scan function allows retrieval of information on every position, even when manually loaded.

With the barcode reader, the Cyтомat 44 can function as a data bank and compound store, proving a database for sample and plate tracking.



Kendro Lab Automation, part of Kendro Laboratory Products, is a business group dedicated to customers with laboratory automation requirements. The group markets the company's **Cyтомat**<sup>®</sup>, **Medical Air Technology**, **Rhombix**<sup>®</sup> and **Teleshake** product ranges, and provides integrated sales, service and systems support to laboratory automation customers worldwide.

#### For Ordering or Technical Information



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