



MMM Group

FRIOCELL, CLIMACELL

Laboratory incubators



Incubators for testing of stability and photostability, experimental growing of plants, ...



protecting human health

FRIOCELL

with forced air convection and cooling

The high technical standard of our FRIOCELL incubators allows exact incubation processes both for variation and deviation. The units have very short recovery times and show an excellent manner in keeping the precise regulation.

A unique cooling system ensures, that the samples are not dried while cooling. A high performance system of lighting ensures outstanding homogenous parameters for tests and growth conditions. These devices are designed for use in biotechnology, botany, food processing industry, pharmacy, cosmetics, chemical industry etc.

CLIMACELL

with forced air convection, cooling and controlled humidity

The CLIMACELL series was specially developed for applications, in which as far as possible exact and reproducible simulation of various environmental conditions is important, e.g. stability testing of components, packaging materials, food or chemicals, drugs, germination studies, plant cell or tissue cultures, insect cultures.

This device offers an interesting alternative to expensive testing chambers and testing rooms. Microprocessor/controlled humidity assembly with powerful lighting system are warranty of excellent homogeneous parameters for tests and grow conditions.

Options

- cooling from -9,9°C (applied to CLC in unregulated humidity only)
- internal lighting – a wide offer of various luminary sources (excluded volume 22 and 55 liters) – wide offer of various light sources – either in the door or on the shelves
- access ports Ø 25, 50, 100 mm (Ø 100 mm is not available for 22-litres volume)
- automatic door lock
- left door versions (excluded volume 22 and 707 liters)
- timer programmable water protected inner socket
- exposure/stimulating lighting (white/day light) digitally adjustable 10–100 %
- exposure illumination in shelves, especially for photo-stability tests (e.g. according to ICH Q1B Guideline)
- illumination measuring UV, VIS
- BMS relay alarm contact
- independent PT100 sensor
- special software WarmComm
- stainless steel casing of the device

Incubators designed for testing of stability and photostability, experimental growing of plants, ...

Devices are in accordance with directions EU 2006/95/EC, 2004/108/EC.

Devices also meet the highest requirements for the photostability tests, according to the ICH guidelines Q1B, option 2 and the European norms.

Cultivating and testing chambers FRIOCELL and CLIMACELL equipped with the exposition light create optimal conditions for plant growth and cultivating of the tissue cultures under the natural conditions. Excellent automatics enables easy programming and offers a wide range of parameters for simulation of day and night (adjustment of air circulation, humidity and lightning).

- wide range of volume 22 up to 707 litres
- various light colours for different purposes (fluorescent)
- fully programmable intensity of the light – microprocessor dimming (0–100%, steps 10%)
- UV or VISIBLE light on-line measurement with data evaluation (display/printer/PC)
- high temperature and humidity homogeneity due to patented double jacket vertical ventilation system
- reflective surfaces in lighting modules made of high/shine stainless steel for higher efficiency of lighting
- minimalisation of condensation in chamber due to efficient airflow system
- flexible position of the lighting and loaded shelves
- vertical construction of the chamber – saves the space in the laboratory
- smart “smiley” design brightens your laboratory



Illustrative photo of use in door or exposition light on trays



Technical Data

Volume: 22, 55 (only FRIOCELL), 111, 222, 404, 707 litres

Working temperature: without humidity 0 °C up to 99.9 °C, FC 22 5 °C–70 °C
with humidity: 10 °C up to 90.0 °C
with light: see table

Refrigerant: R 134a – without CFC (excluded volume 22 litres)

Manual defrosting assembly

Peltier cooling – FC 22

Inner glass door

Interior: stainless steel, mat. No. 1.4301 (AISI 304)

Only for CLIMACELL

Source medium for generating the humidity:

a) drinking water (max. 50 mg Ca/l) – not applied to Climacell with an injection steam generator

b) distilled water

Controlled humidity: 10 %–90 % RH

Microprocessor humidity assembly

Type of standardly installed fluorescent: Luxline Plus – Cool White 840

Light intensity: max 20 000 lx – shelves, max 13 000 lx – door

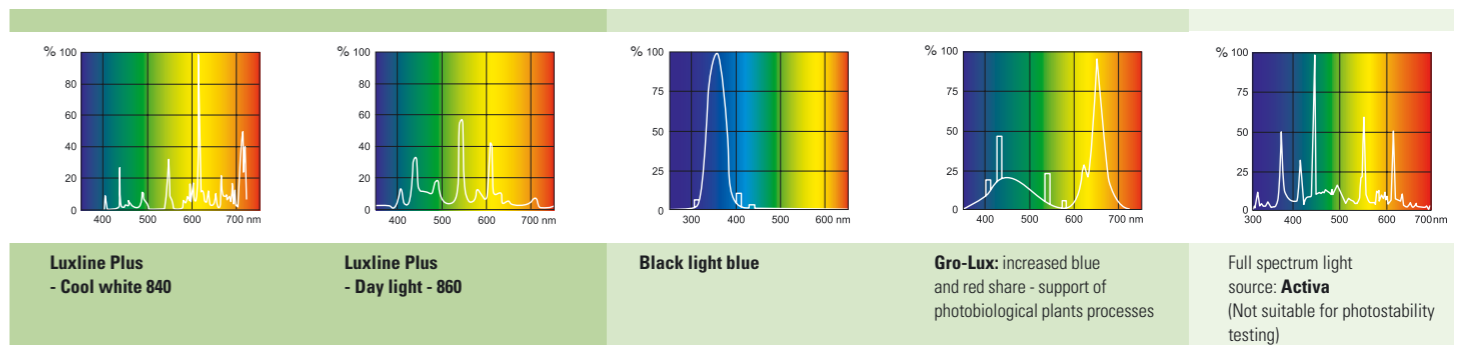
Comfort line

- 6 programs
- chip card system for individual program storage
- RS 232 – interface for printer or PC-communication
- delayed heating start and stop function
- acoustic and visual alarm in error state
- time range 0–40 years with 1 min-intervals
- digital safety thermostat
- real time
- selectable rate of temperature increase or decrease – “RAMPS”
- programming of program time segments – “SEGMENTS”
- programme cycles
- adjustable ventilation rate 10 to 100 %
- keyboard blocking

FRIOCELL: CLIMACELL: LIGHTING SHELVES - VISIBLE AND UV TUBES				
Chamber volume (l)	111	222	404	707
width x depth x high of shelf [mm]	539 x 350 x 90	539 x 500 x 123	539 x 500 x 123	939 x 512 x 93
No. of tubes/each shelf [pcs]	5	8	8	12
Max. no of shelves/unit [pcs]	2	2	3	3
Power input/W/each shelf [W]	75	120	120	180
Length/diameter of tube [mm]	450 / 26	450 / 26	450 / 26	450 / 26
Visible source				
VIS sources 400-700 [nm]	2700 / 3000	2700 / 3000	2700 / 3000	2700 / 3000
Colour temperature [°K]	4000 / 6000	4000 / 6000	4000 / 6000	4000 / 6000
Tube type / power input// each	Luxline Plus / 15 [W]			
Light intensity in the middle of shelf ± 10% / 15 [klx]				
Distance of light source 10 cm	16,5	18	18	20
UV source				
UV source - range - [nm] peak at/nm	300-400, max. 350	300-400, max. 350	300-400, max. 350	300-400, max. 350
Tube type / power - input/each	Black Light Blue / 15 [W]			
Light intensity in the middle of shelf ± 10% [mW/cm ²]				
Distance of light source 10 cm	5	5	5	5
Temperature range °C with lights on and non controlled humidity / Temperature range °C with lights on and controlled humidity / Range of RH %/ with lights on (temperature range 15–50 °C)				
1 shelf	0–99,9 / 10–90 / 10–75	0–99,9 / 10–90 / 10–75	0–99,9 / 10–90 / 10–85	0–99,9 / 10–90 / 10–85
2 shelves	15–99,9 / 17–90 / 10–60	15–99,9 / 15–90 / 10–60	– / – / –	– / – / –
3 shelves	– / – / –	– / – / –	8–99,9 / 15–90 / 10–60	8–99,9 / 15–90 / 10–60
Temperature range °C with lights on and non controlled / controlled humidity				
	0–99,9 / 10–90	0–99,9 / 10–90	0–99,9 / 10–90	0–99,9 / 10–90
Range of controlled RH [%] with lights off				
	10 - 90	10 - 90	10 - 90	10 - 90
Protective system	IP 65	IP 65	IP 65	IP 65
Connectors no. / each shelves [pcs]	2	2	2	4

All technical parameters are related on empty chamber (without samples on sieves), 20–22°C local temperature, ventilator speed 100 %, supply voltage 230 V + 10%. Range of the humidity control is limited according to the data in the user manual for CLIMACELL. The real photometry-values is necessary to measure during the test with an independent measurement device. Our products FRIOCELL and CLIMACELL fulfill all demands (temperature accuracy/homogeneity range and accuracy and light intensity/and spectrum range) for all stability and foto stability testing according to the internationally valid European norms and the pharmaceutical ICH guidelines Q1A R (except point 2.2.7.5 – storage in freezer – and point 2.2.7.6 – storage below minus 20 °C) and ICH Q 1 B, option 2.

Readily types of light sources



Light sources may not be for all chamber sizes and versions available.

FRIOCELL (FC) 22, 55, 111, 222, 404, 707;		CLIMACELL (CLC) 111, 222, 404, 707		CE				
Technical data Inner dimensions Chamber, stainless steel	volume	cca l	22***)	55***)	111	222	404	707
	width	cca mm	400	400	540	540	540	940
	depth	cca mm	370	370	370	520	520	520
	height	cca mm	850	850	530	760	1410	1410
Volume of the steam space		cca l	89	89	163	299	524	876
Tray stainless steel *)	racks	max. No.	7	7	7	10	19	19
	standard equipment	pcs. included	2	2	2	2	2	2
	min. distance between trays	cm	7	7	7	7	7	7
Maximal weight of the load *)	per tray	max. kg/tray	20	20	20	30	30	50
	inside the oven	max. kg/rack	50	50	50	70	100	130
Door	number of outer metal doors/ Number of inner glass doors	No.	1/1	1/1	1/1	1/1	1/1	2/2
	External dimensions FC (including door and handle)	width	cca mm	620	620	760	760	1010
depth		cca mm	640	640	640	790	790	790
height		cca mm	820N	820N	1000N	1230N	1910K	1910K
External dimensions CLC (including door and handle)	width	cca mm	-	-	760	760	1010	1460
	depth	cca mm	-	-	640	790	790	790
	height	cca mm	-	-	1100K	1330K	1910K	1910K
Weigh FC	net	cca kg	80	80	101	132	230	270
	brut	cca kg	99	99	131	169	270	316
Weigh CLC	net	cca kg	-	-	101	132	230	270
	brut	cca kg	-	-	117	153	258	302
Electricity	max. power **) FC	W	1130	1130	1130	1130	2250	2500
	max. power **) CLC	W	-	-	2050	2100	3150	3400
	mains 50/60 Hz	V	230	230	230	230	230	230
	protective system		IP 20	IP 20	IP 20	IP 20	IP 20	IP 20
Temperature data	Working temperature	from 0 °C to °C	°C	99,9	99,9	99,9	99,9	99,9
	Temperature accuracy	at 10 °C accuracy	cca (±) °C	<0,5	<0,5	<0,5	<0,5	<1
at 37 °C		cca (±) °C	<0,5	<0,5	<0,5	<0,5	<1	<1
in time		cca (±) °C	<0,2	<0,2	<0,2	<0,2	<0,3	<0,4
Heating/up time to 37 °C from the ambient temperature		min	23	23	24	25	26	27
Cooling/down time from 22 °C to 10 °C		min	<21	<14	<21	<21	<21	<21
Recovery time after 1 min. door open	at 37 °C	min	4	4	4	4	4	4
	at 50 °C	min	4	4	4	4	4	4
Relative humidity CLC	range	%	-	-	10 - 90	10 - 90	10 - 90	10 - 90
Heat emission	at 37 °C	cca W	62	62	70	97	123	148
Noise level - complete incubator		dB	46	46	46	50	56	58

Note: All technical data are related to 22 °C ambient temperature and ± 10% voltage swing (if not specified). For other parameters see section Electric connections. There occurs temperature and humidity variation in case of regular turbidity removal during the operation.

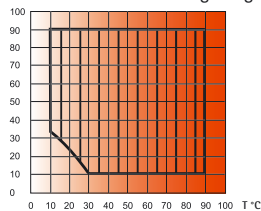
*) Approx. 50 % of the tray area can be filled in a way a uniform air circulation is enabled inside the chamber.

**) Compressor + condenser + electromagnetic valves + ventilator (s) + steam generator heating

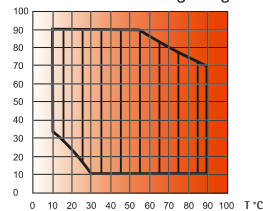
***) Volume 22 and 55 litres without internal lighting

Setting operating conditions of temperature and relative humidity and their limitations

%RH Device without lighting



%RH Device with lighting in doors



Ask for more information about products for laboratories...



Laboratory drying ovens and incubators
– volume 22–707 litres



Laboratory steam sterilizer STERILAB
– volume 25 litres



Laboratory steam sterilizers UNISTERI HP,
STERIVAP HP IL – volume 73–1490 litres



**MMM Medcenter
Einrichtungen GmbH**
Sammelweisstrasse 6
D-82152 Planegg / München

tel.: +49 89 89 92 26 20
fax: +49 89 89 92 26 30
e-mail: medcenter@mmmgroun.com
<http://www.mmm-medcenter.com>