



# Friocell Eco + Evo



Patented Forced Air Convection

Cooling Incubators, ICH Q1A Stability & Q1B Photostability



FRIOCELL® cooling incubators & stability chambers are designed to create exact reproducible simulations of a wide range of environmental conditions through precise control of temperature.

FRIOCELL® chambers are suitable for stability testing of drug products and substances, material quality, durability testing, and shelf-life studies. The FRIOCELL® also meets the requirements for ICH Q1B photostability studies when equipped with the EVO advanced controller and fully programmable fluorescent shelf lighting.



ICH Q1A stability and ICH Q1B photostability testing of pharmaceutical products & substances



ICH Q1A stability and ICH Q1B photostability testing of cosmetic products & substances



ICH Q1A stability and ICH Q1B photostability testing of biotech devices, products & substances

### Temperature Range:

0°C up to 100°C (10°C up to 95°C with humidity)

- -10°C min. temperature option available on ECO units
- -20°C min. temperature option available on EVO units

### Patented Air Flow Control:

ECO controlled in 10% increments

EVO controlled in 1% increments

### Chamber Volumes:

22 (.8 ft<sup>3</sup>) ECO only • 55 (2 ft<sup>3</sup>) • 111 (4 ft<sup>3</sup>) • 222 (8 ft<sup>3</sup>) • 404 (14.3 ft<sup>3</sup>) • 707 (25 ft<sup>3</sup>) • 1212 (43 ft<sup>3</sup>)

### Chamber Construction:

- AISI 304 stainless steel chamber (AISI 316 SS option available)
- Double wall, seamless main chamber & removeable inner chamber

### Electrical Data:

115V 50/60Hz: 22, 55, 111, 222, 404, 707; 230V 50/60Hz: 1212 and lighted devices



### ECO Controller

3" LCD display

Fuzzy Logic algorithm constantly monitors chamber conditions and continuously optimizes parameters.

(9) programs with (2) segments each for varying loads and parameters

Audible & visual alarms – temperature, time & humidity

FDA CFR 21 Part 11 compliant with addition of Warmcomm 4.0F software

USB flash & device, RS232 & optional Ethernet port

Integrated USB 30-day data logger for temperature measurement & recording



### EVO Controller

5.7" LCD touch display

Fuzzy Logic algorithm constantly monitors chamber conditions and continuously optimizes parameters.

(100) programs with (100) segments each for varying loads and parameters

Audible & visual alarms – temperature, time & humidity

FDA CFR 21 Part 11 compliant with addition of Warmcomm 4.0F software

USB device, RS232 & optional Ethernet port

Integrated SD card 30-day data logger & multi-level secure user authentication

### Programmable ICH Q1B Lighting Option:

- VIS & UV fluorescent lighting
- VIS LED shelf and door lighting
- Light intensity controlled in 1% increments



### Optional Equipment:

- Access ports 25 (1"), 50 (2"), 100 (4") mm
- Ethernet communication port
- ECO+ add 8 programming segments to the ECO controller
- Rolling carts for 55, 111 & 222 models
- Door sensor and alarm
- Automatic lock and key door lock
- Warmcomm data acquisition software:
  - ✓ 4.0B – Receive data
  - ✓ 4.0P – Receive data and control the device
  - ✓ 4.0F – FDA 21 CFR part 11 compliant
- BMS – Building monitoring alarm contact
- Flexible PT 100 sensor
- Stainless steel exterior
- 4-20mA & BMS contacts
- Socket 115V and 230V
- IQ / OQ protocols with 9pt or 27pt temperature mapping
- 160°C sterilization cycle (EVO only)
- AISI 316 stainless steel chamber

Friocell ECO/EVO Technical Data		Model	55	111	222	404	707	1212
<b>Interior Dimensions</b>  <b>Chamber:</b> AISI 304 stainless steel (AISI 316 stainless steel option available)	Volume	ft <sup>3</sup>	1.9	3.9	7.8	14.3	25	43
		liters	55	111	222	404	707	1212
	Width	inches	15.7	21.25	21.25	21.25	37	3 x 21.25
		mm	400	540	540	540	940	3 x 540
	Depth	inches	14.6/15	14.6/15	20.5/20.9	20.5/20.9	20.5/20.9	20.5/20.9
		mm	370/380	370/380	520/530	520/530	520/530	520/530
	Height	inches	13.8/14	20.9/21	29.9/30.1	55.7	55.7	55.7
		mm	350/355	530/535	760/765	1415	1415	1415
<b>Exterior Dimensions (ECO/EVO)</b>	Width	inches	24.4/25.2	29.9/30.7	29.9/30.7	41.7/43.3	57.5/59	92.9
		mm	620/640	760/780	760/780	1060/1100	1460/1500	2360
	Depth	inches	25.2/29.7	29.2/29.7	35.2/34.8	31.1/34.8	31.1/34.8	34.2/35.4
		mm	640/755	640/755	895/885	790/885	790/885	870/898
	Height (Legs L, Casters C)	inches	34.4L/37C	41.1L/46.7C	50.2L/57.1C	75L/35C	75L/35C	75L/75.6C
		mm	875L/940C	1045L/1187C	1275L/1450C	1905L/1890C	1905L/1890C	1905L/1921C
<b>Shelves: Stainless Steel</b>	Capacity: # of shelf guides in chamber side walls	Maximum #	4	7	10	19	19	3 x 19
		Standard #	2	2	2	2	2	6
<b>Shelf Distance</b>	Min. distance between trays	Inches	2.8	2.8	2.8	2.8	2.8	2.8
		mm	70	70	70	70	70	70
<b>Useable Shelf Area</b>	Width x Depth	Inches	15x13.2	20.5x13.2	20.5x19.1	20.5x19.1	36.3x19.1	20.5x19.1x3
		mm	380x335	520x335	520x485	520x485	920x485	520x485x3
<b>Maximum Shelf Load</b>	One Shelf	lbs	44.1	44.1	66.1	66.1	110.2	66.1
		kg	20	20	30	30	50	30
	Total Per Unit	lbs	110.2	110.2	154.3	220.5	286.6	661
		kg	50	50	70	100	130	300
<b># Outer Metal Doors</b>			1	1	1	1	2	3
<b># Inner Glass Doors</b>			1	1	1	1	2	3
<b>Volume of Steam Space</b>		ft <sup>3</sup>	3.1/3.2	5.8/5.9	10.6/10.8	18.5/18.7	30.9/31	61.9
		liters	89/91	163/167	299/305	524/530	876/878	1753
<b>Operation Temperature</b>	From 0°C (-10°C / -20°C)	Up to °C	100	100	100	100	100	100/70
<b>Temperature Accuracy</b>	Distribution @ 10°C	± °C	<0.5	<0.5	<0.5	<1	<1	<0.6
	Distribution @ 37°C	± °C	<0.5	<0.5	<0.5	<1	<1	<0.5
	Uniformity	± °C	<0.2	<0.2	<0.2	<0.3	<0.4	<0.2
<b>Heating Time to 37°C From the Ambient Temperature</b>		Minutes	<11	<11	<11	<13	<13	<30
<b>Cooling Down Time From 22°C to 10°C</b>		Minutes	<21	<21	<17	<19	<21	<21
<b>Recovery time after door opened for 30 s according to DIN 12880</b>	@ 37°C	Minutes	<5	<5	<2	<2	<6	<10
	@ 50°C	Minutes	<6	<6	<3	<4	<6	<10
<b>Heat Emission</b>	@ 37°C	W	55	70	63	123	148	200
<b>CO2 Concentration (EVO Only)</b>		%	0.1 - 20		-		0.1 - 20	
<b>CO2 Required Pressure (EVO Only)</b>		Bar/PSI	0.3-0.7/5--10		-		0.3-0.7/5--10	
<b>Noise Level of Complete Device</b>		dB	45	46	50	56	58	60
<b>Electrical Data</b>	Max Consumption 50/60Hz	W	700/850**	1000/1150**	1150/1300**	1700	2000/2050**	2500/3300**
		A	7.6	7.7/10	9.2/11.2	16	17.9	11.6
		V	115	115	115	115	115	230
<b>IP Code</b>			IP20	IP20	IP20	IP20	IP20	IP20
<b>ECO/EVO Weight</b>	Net	lbs	183/209.4	233.7/242.5	302/315.3	493.8/507.1	562.2/565.2	1144.2/1201.5
		kg	83/95	106/110	137/143	224/230	255/270	519/545
	Gross	lbs	224.9/396.8	299.8/485	383.6/579.8	606.3/859.8	707.7/1102.3	1849.7/1907
		kg	102/180	136/220	174/263	275/390	321/500	839/865
<b>EVO Weight -20°C</b>	Net	lbs	231.5	44.1	337.3	551.2	639.3	1201.5
		kg	105	120	153	250	290	545
	Gross	lbs	419	507.1	601.9	881.8	1124.4	1907
		kg	190	230	273	400	510	865

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\*\*Value at cooling down to -20°C

ECO Value/EVO Value