

Friocell ECO P

Peltier Cooling Incubators

Patented Forced Air Convection with Peltier Thermoelectric Cooling



Temperature:

22 - 222 models: 21°C below ambient up to 45°C above ambient.
(programmable from 0°C up to 70°C)

404 & 707 models: 14°C below ambient up to 30°C above ambient.
(programmable from 0°C up to 70°C)

Patented Airflow Control:

Fan controlled in 10% increments.

Chamber:

AISI 304 stainless steel (AISI 316 option available).
Double wall, seamless main chamber with removable inner chamber.

Electrical:

115V 50/60Hz or 230V 50/60

Optional Equipment:

- Stainless steel exterior: AISI 304 or 316.
- AISI 316 stainless steel chamber.
- 1" (25mm) / 2" (50mm) / 4" (100mm) access port.
- Flexible PT 100 temperature sensor.
- Ethernet communication port
- Automatic key and door lock.
- Door sensor and alarm.
- Rolling cart for 22, 55, 111, 222.
- BMS contacts (24V, 1A).
- 4-20mA contacts.
- IQ/OQ protocols with 9pt. or 27pt. temperature mapping.
- USB drive, 30-day data logging: 22, 55, 111.
- Warmcomm software:
 - 4.0B - data monitoring.
 - 4.0P - data monitoring and control.
 - 4.0F - FDA 21 CFR part 11 compliance.

Friocell ECO Peltier cooling incubators simulate specific environmental conditions through precise temperature control.

Peltier cooling technology enables the Friocell ECO to meet demands for an environmentally-friendly, efficient and economical incubator without compromising temperature control and stability. Given its low energy consumption, the Friocell ECO P is an ideal choice for long-term incubation and storage applications.

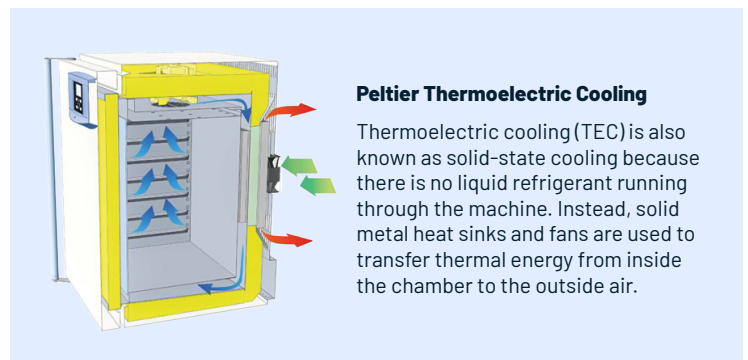
Key Benefits:

- Equipped with Peltier cooling technology that is environmentally-friendly with **no liquid refrigerant** and **low energy consumption**.
- Pharmaceutical-grade stainless steel chamber for easier cleaning and sterilization.
- Patented forced air convection system with simultaneous vertical and horizontal airflow for precise temperature uniformity.
- Ideal for long-term sample storage and studies with limited door openings.



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.
- Real-time programming and cycling.
- Programmable audible & visual alarms - temperature and time.
- USB flash & device, RS232 & optional Ethernet port.
- Integrated USB 30-day data logger for temperature measurement and recording: 222, 404, 707 devices.
- Keypad lock against unauthorized access.
- Optional FDA CFR 21 part 11 compliance.



Friocell ECO Peltier Technical Data			22	55	111	222	404	707	
Interior Dimensions	Volume	ft ³	0.8	2	4	8	14.3	25	
		liters	22	55	111	222	404	707	
	Width	inches	9.4	15.7	21.3	21.3	21.3	37	
		mm	240	400	540	540	540	940	
	Depth	inches	12	14.6	14.6	20.5	20.5	20.5	
		mm	305	370	370	520	520	520	
Height	inches	11.6	13.8	20.9	29.9	55.7	55.7		
	mm	295	350	530	760	1415	1415		
Exterior Dimensions	Width	inches	16	24.4	29.9	29.9	29.9	45.7	
		mm	406	620	760	760	760	1160	
	Depth	inches	24	26.8	26.8	32.7	31.1	31.1	
		mm	610	680	680	830	790	790	
	Height (Legs L, Casters C)	inches	24	26.8	33.9	42.9	75.2	75.2	
		mm	610 L	680 L	860 L	1090 L	1910 C	1910 C	
Packaging – Box (Crate)	Width	inches	28.7	31.5	32.7	37	35.8	52.4	
		mm	730	800	830	940	910	1330	
	Depth	inches	30.7	33.1	35.8	37.8	38.2	39.8	
		mm	780	840	910	960	970	1010	
	Height (Pallet Included)	inches	33.7	35.4	42.7	51.6	83.7	83.7	
		mm	855	900	1085	1310	2125	2125	
Weight	Net	lbs	75	127.9	178.6	233.7	343.9	485	
		kg	34	58	81	106	156	220	
	Gross	lbs	86	152	205	269	396.8	540.1	
		kg	39	69	93	122	180	245	
Shelves: Stainless Steel	Capacity: # of shelf guides in chamber side walls	maximum #	4	4	7	10	19	19	
		standard #	2	2	2	2	2	2	
Shelf Distance	Min. distance between trays	inches	2.4	2.8	2.8	2.8	2.8	2.8	
		mm	60	70	70	70	70	70	
Useable Shelf Area	Width x Depth	inches	7.2x10.4	15x13.2	20.5x13.2	20.5x19.1	20.5x19.1	36.2x19.1	
		mm	185x265	380x335	520x335	520x485	520x485	920x485	
Maximum Shelf Load	One Shelf	lbs	22	44.1	44.1	60.1	60.1	110.2	
		kg	10	20	20	30	30	50	
	Total Per Unit	lbs	55.1	110.2	110.2	154.3	220.5	286.6	
		kg	25	50	50	70	100	130	
Operation Temperature		°C	0 to 70**	0 to 70**	0 to 70**	0 to 70**	0 to 70**	0 to 70**	
Deviations from operation temperature according to DIN 12880	10°C	Space	± °C	< 0.4	< 0.2	< 0.2	< 0.2	< 0.2	
		Time	± °C	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	
	37°C	Space	± °C	< 0.3	< 0.2	< 0.2	< 0.3	< 0.4	
		Time	± °C	< 0.1	< 0.1	< 0.1	< 0.1	< 0.2	
Cooling Time	From ambient temp. to 10°C	minutes	< 36	< 60	< 50	< 60	< 100	< 100	
Heating Time	From ambient temp. to 37°C	minutes	< 32	< 35	< 50	< 60	< 50	< 55	
Recovery time after door opened for 30 seconds according to DIN 12880	@ 10°C	seconds	< 2	< 4	< 3	< 4	< 6	< 6	
	@ 50°C	seconds	< 3	< 4	< 4	< 3	< 3	< 4.2	
Heat Loss	@ 37°C	W	9	14	15	12	12	36	
Electrical Data – 50/60Hz mains	Max power consumption		W	155	193	353	353	427/585****	585/753****
	Power consumption @ 10°C		W	50	47	92	83	166	217
	Power consumption @ 37°C		W	39	48	69	67	106	137
	Power consumption @ standby		W	5	5	5	5	5	5
	Max current @ 230V		A	0.7	0.8	1.5	1.5	1.9(2.5*)	2.5
	Max current @ 115V		A	1.3	1.7	3.1	3.1	3.7(5.1*)	5.1
	Max current @ 240V (UL Design)		A	0.6	0.8	1.5	1.5	1.8(2.4*)	2.4
Max current @ 120V (UL Design)		A	1.3	1.6	2.9	2.9	3.6(4.9*)	4.9	
IP Code			IP20	IP20	IP20	IP20	IP20	IP21	
Noise Level		dB	<50	<50	<53	<53	<53	<55	

All technical data are valid in an empty chamber (without samples on trays) for the ambient temperature of 22°C and the supply voltage of 230 V ± 10 %.

*) The trays can be filled up to approx. 50% of the area, if possible, in such a way as to allow an even flow of air inside the chamber space.

**) For volumes 22, 55, 111 and 222, the operation temperature range of 21 °C below ambient temperature to 45 °C above ambient temperature is guaranteed.

***) For volumes 404 and 707, the operation temperature range of 14 °C below ambient temperature to 30 °C above ambient temperature is guaranteed.

For the same range of operating temperatures as for smaller devices, it is possible to additionally purchase enhanced cooling/heating, only for the volumes of 404 and 707.

****) Enhanced cooling.