

DATASHEET

EmbryoS@fe iREF

Laminar flow cabinet with operator & environment protection for IVF



The EmbryoS@fe iREF workstation series has been developed to provide the most controlled and safe environment for Embryo cell culturing. The heated work surface **keeps the cells at a constant temperature during all the steps**, creating a more uniform growth and/or differentiation behaviour. This allows to make sure that experiments involving the use of those cells return more consistent results.

The possibility to install one or two (on the 1.8 size cabinet) **microscopes in the working area** allows the operators to check on their cells while still in a safe, sterile environment.

The EmbryoS@fe iREF cabinets is a **high retention efficiency recirculating cabinet engineered according to the EN12469:2000 European Standard for Microbiological Safety Cabinets**, that offers **Product, Operator and Environment Protection**.



The specially designed air flows allow users to work in full safety, allowing the use of viral vectors or cells of human origin by providing the same level of protection of a Class II cabinet, even with the microscopes installed in the working area!

A complete and user friendly tool for the manipulation of Embryo cells that only experienced European design with over 40 years of know how and accurate quality manufacturing, can provide.

TECHNICAL SPECIFICATIONS

- Ready for the installation of 1 Olympus SZX10 or SZX16 stereo microscopes (lighting base included, microscope is not included and must be purchased separately)
- ThermoHeat technology-based heated built-in worktop with PID control.
- ThermoHeat technology-based heated built-in sample glass stage with PID control granting $\pm 1^{\circ}\text{C}$ overall accuracy with PID self-tuning control Embryo for optimized temperature control performance.
- 6 mm safety glass front sash and lateral sides offer great luminosity and cleanability. Front sash can be opened for cleaning purposes.
- Aperture protection factor (Apf) $\geq 10^5$ as defined by the EN12469:2000 standard for Biohazard Class II cabinets.
- RS232 interface and volt-free contact
- Soft touch Membrane Keyboard
- Internal work chamber in stainless steel AISI 304 with radiussed corners
- Glass side walls.
- Unique removable work surface for easy maintenance and microscope replacement.
- Vertical laminar air flow cabinet providing ISO 5 environment for Embryo cell culturing and In-Vitro Fertilisation procedures.
- H14 filter with micromesh downstream equalising plenum, for the highest airflow speed uniformity.
- Gassing flow meter(s) [number and placement depends on size].
- Electrical socket(s) [number and placement depends on size].

Operating Specifications

- Microprocessor controlled motor blower, with volumetric sensor for exhausted air flow monitoring
- State of the art Microprocessor control system offering:
 - o Large screen monitor.
 - o Automatic control of preset airflow volumes.
 - o Permanent monitoring of HEPA filters life span.
 - o Alarms. Multilevel alarms, with redundancy functions.
 - o Permanent display of working conditions.
 - o Highest air flow stability both in case of transitional disturbances or progressive filter clogging

- o Continuous monitoring of front barrier air flow for the highest operator safety
- o Low barrier alarm
- o Power failure alarm
- Volt-free contact for remote monitoring of exhaust fan.
- Automatic reset of initial conditions in case of power failure

Mechanical and Functional specifications

- Front glass, main filter and back wall sloped for better visibility and air flow uniformity.
- Exhaust HEPA filter fully visible for visual inspection of filter's integrity.
- Main HEPA filter maintenance and changing from the front of the cabinet
- Programmable UV light kit (delay and exposure times) via cabinet software.
- Back-lighted digital display with constant visualisation of cabinet parameters:
 - Nominal functioning conditions "SAFE".
 - Downflow air speed in m/sec.
 - Exhaust air flow speed in m/sec.
 - Bar-graph for immediate visualization of air flow balancing.
- 2 HEPA filters class H14 with 99.999% efficiency on particles with 0,3 micron diameter (99.995% on MPPS as per EN1822-1)
- 1 Motorblower (2 on 1.8 size cabinets)
- Partially Recirculating air flow, granting 25 changes per minute in the working area
- Front aperture height: 195 mm
- Air speed at front aperture (in working position) ≥ 0.5 m/sec.
- Power supply 230 V 50 Hz.
- Maximum current for service sockets 3A.
- Microprocessor with analog watchdog.

Options

- UV Light on back wall, controlled by built-in microprocessor, interlocked with the fluorescent lights and front panel.
- Integral LCD monitor 19" installed on back wall of work area. Can be connected to an external server or to the stereoscope camera.

SPECIFICATIONS

DESCRIPTION	SIZE 1.2	SIZE 1.8
3.1 SPECIFICATIONS		
Reference Standard:	IEC 61010-1:2010 / EN 61010-1:2010 IEC 61326-1:2012 / EN 61236-1:2013 EN 12469:2000	
Electrical insulating/protection class [IEC 61140]:	I	
Mains supply voltage:	230 V~ 50Hz	
Main fuses rating:	F10A H, 250 V (Material: steatite – Size: 5x20 - I ² t: 121)	
Required power line (W): (700 W service socket included)	1200	1750
Absorbed power (W): (fan and light on only)	375	650
Sustained impact maximum energy of the glass [EN 61010-1, clause 8.2.2] (J):	4	
Window glass UVC radiations retention (%):	98	
Leaktightness index [EN 12469]:	NA	
Cleanability index [EN 12469]:	NA	
Sterilizability index [EN 12469]:	NA	
Electrical service socket max current (A):	3	
3.2 USE ENVIRONMENTAL CONDITIONS		
Use:	indoor	
Altitude (m):	up to 2000	
Temperature (°C):	from 10 to 35	
Maximum relative humidity (%):	80 for temperatures up to 31 °C, decreasing linearly to 50 at 40 °C	
Max MAINS supply voltage fluctuations (%):	up to ±10	
TRANSIENT OVERVOLTAGE CATEGORY:	II	
POLLUTION DEGREE:	2	

DESCRIPTION	SIZE 1.2	SIZE 1.8
3.3 TRANSPORT AND STORAGE CONDITIONS		
Ambient temperature (°C):	from -5 to 45	
Relative humidity (%):	up to 90	
Atmospheric pressure (mbar):	from 800 to 1060	
3.4 WEIGHT AND DIMENSIONS		
Weight (kg):	350	450
Overall dimensions L x D x H (mm): (without support stand)	1395 x 860 x 1562	2005 x 860 x 1562
Front aperture dimensions L x H (mm) :	1250 x 168	1860 x 168
Working space dimensions L x D x H (mm):	1248 x 515 x 732	1858 x 515 x 732
Safe working area dimensions L x D (mm):	1048 x 350	1658 x 350
3.5 MATERIALS		
Main structure:	cold rolled steel, stove enamel coated RAL 7035	
Working space surface:	stainless steel AISI 304 - SB	
Front and side walls windows:	laminated safety glass	
3.6 PERFORMANCES		
Laminar Air Flow mean velocity [EN 12469](m/s):	0,35 ÷ 0,40	
Inflow Air Barrier mean velocity [EN 12469](m/s):	0,55 ±10%	
Exhaust Air flow rate (m ³ /h):	450 ±10%	650 ±10%
Exhaust Air flow ratio (%):	30 ±10	
Apf - Aperture Protection Factor [EN 12469]:	≥1,0 x 10 ⁵	
Working space air cleanliness class [EN 14644-1]:	ISO 5	
Work surface temperature (°C):	adjustable in the range 30 ÷ 42	
Temperature accuracy (°C):	± 0,5	
Illuminance [EN 12469] (lux):	>800	
Sound level [EN ISO 3744] (dB[A]):	<58	<60
Vibration [EN 12469] (mm RMS):	<0,005	
Max increase inside cabinet in temperature from the ambient [EN 12469] (°C):	<5	

DESCRIPTION	SIZE 1.2	SIZE 1.8
3.7 HEPA FILTERS DIMENSIONS AND SPECIFICATIONS		
LAF filter dimensions L x D x H (mm):	1219 x 610 x 68	1829 x 610 x 68
EXH filter dimensions L x D x H (mm):	610 x 457 x 115	762 x 610 x 90
Filters efficiency class [EN 1822-1]:	H14	
Filters global MPPS efficiency [EN 1822-1](%):	99,995	
MPPS diameter [EN1822-1](µm):	0,1 ÷ 0,3	
3.8 STANDARD ELECTRICAL EQUIPMENT		
Main switch with all-position removable key	•	•
Automatic electronic airflow velocity control PCB	•	•
Motorblower (fan)	•	•
2 nd motorblower (fan)		•
Fluorescent lamps (2x)	•	•
3.9 MAIN SUPPLY CORD		
<p>The mains supply cord is a detachable flexible cord with IEC 60320 C13 female mains connector and CEE 7/7 mains plug (French-German) moulded at either end. It complies with IEC 60227 or IEC 60245 and it is approved by a Competent Body.</p>		